



CHAPTER 5

Troubleshooting the Cisco MXE 3000

This chapter provides basic troubleshooting information to help you identify some common problems that might occur with your Cisco MXE 3000.

This chapter contains the following sections:

- [Identifying System Problems, page 5-2](#)
- [Checking Connections and Switches, page 5-2](#)
- [Power-On Self Test \(POST\), page 5-3](#)
- [NMI Functionality, page 5-11](#)
- [Trouble Indicators and Status LEDs, page 5-11](#)
- [System LEDs and Internal Health LED Combinations, page 5-11](#)
- [Troubleshooting Undetermined Problems, page 5-12](#)
- [General Problem-Solving Tips, page 5-13](#)
- [Collecting Information for Technical Support, page 5-15](#)

Use the information in this chapter to determine whether a problem originates with the hardware or the software. For further assistance, contact your customer service representative.



Note

The keyboard and mouse are supported by the BIOS for power-on self-test (POST) and the diagnostic programs that are located in the device ROM.

When console redirection is enabled, all the tests available from a keyboard are accessible through the console connection as well. (Mouse support, however, is not available through the console connection.)

You can run all the diagnostics and tests that are supported by the BIOS, with a few exceptions. Tests for ports that are not supported by the Cisco MXE 3000 software are invalid.



Caution

Components that are not orderable as spare hardware options can only be replaced by a qualified service technician. Once you have identified a faulty component, contact the Cisco Technical Assistance Center (TAC).



Note

Read the [“Working Inside the Cisco MXE 3000 with the Power On”](#) section on page 2-4 before opening the chassis cover.

Identifying System Problems

To identify system problems, follow these steps:

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- Step 1** Check the power LED.
 - Step 2** Power down the device and all external devices.
 - Step 3** Check all cables and power cords. (See the [“Checking Connections and Switches”](#) section on page 5-2.)
 - Step 4** Set all display controls on the terminal or display device to the middle position.
 - Step 5** Power up all external devices.
 - Step 6** Power up the device.
 - Step 7** Record any POST error messages that are displayed on the screen. If an error is displayed, look up the first error in the [“POST Error Codes”](#) section on page 5-4.
 - Step 8** If the diagnostic programs were completed successfully and you still suspect a problem, see the [“Troubleshooting Undetermined Problems”](#) section on page 5-12.
 - Step 9** Check the system error log to see if an error was recorded by the system.
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Checking Connections and Switches

Improperly set switches and controls and loose or improperly connected cables are the most likely source of problems for the chassis or other external equipment. A quick check of all the switches, controls, and cable connections can easily solve these problems. (See [Figure 1-1](#) for the location of front panel controls and indicators. See [Figure 1-3](#) for the location of back panel connectors on the system.)

To check all the connections and switches, follow these steps:

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- Step 1** Power down the system, including any attached peripherals such as external drives. Disconnect all the power cables from their electrical outlets.
 - Step 2** If the system is connected to a power strip (or power distribution unit), turn the power strip off and then on again.
 - Is the power strip receiving power?
 - Yes.* Go to [Step 5](#).
 - No.* Go to [Step 3](#).
 - Step 3** Plug the power strip into another electrical outlet.
 - Is the power strip receiving power?
 - Yes.* The original electrical outlet probably does not function. Use a different electrical outlet.
 - No.* Go to [Step 4](#).
 - Step 4** Plug a system that you know works into the electrical outlet.
 - Does the system receive power?
 - Yes.* The power strip is probably not functioning properly. Use another power strip.
 - No.* Go to [Step 5](#).

- Step 5** Reconnect the system to the electrical outlet or power strip.
Make sure that all connections fit tightly together.
- Step 6** Power up the system.
Is the problem resolved?
Yes. The connections were loose. You have fixed the problem.
No. Call your customer service representative. (See the [“Obtaining Documentation and Submitting a Service Request”](#) section on page x.)
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Power-On Self Test (POST)

This section describes the power-on self test (POST) and the POST error codes and messages.

This section contains the following topics:

- [POST Overview, page 5-3](#)
- [POST Error Codes, page 5-4](#)

POST Overview

When you power up the device, it performs a series of tests to check the operation of device components and some of the hardware options installed in the device. This series of tests is called the power-on self-test, or POST.

If POST finishes without detecting any problems, a single beep sounds, and the first screen of your operating system or application program appears.

If POST detects a problem, more than one beep sounds, and an error message appears on your screen. See the [“POST Error Codes”](#) section on page 5-4 for more information.

**Note**

If you have a power-up password or administrator password set, you must enter the password and press **Enter** when prompted, before POST will continue.

**Note**

A single problem might cause several error messages. When this situation occurs, you should correct the cause of the first error message. After you correct the cause of the first error message, the other error messages usually will not occur the next time that you run the test.

The POST error log contains the three most recent error codes and messages that the system generated during POST. The system error log contains all messages issued during POST and all system status messages from the service processor.

You can view the contents of the system error log from the diagnostic programs.

POST Error Codes

The error messages and codes in this section include all messages generated by the Cisco MXE 3000 appliance. Some messages are informational only and do not indicate any error. A server generates only the codes that are applicable to its configuration and options.



Warning

To avoid potential problems, ALWAYS read the warnings and cautionary information in the server documentation before removing, replacing, reseating, or modifying system components

Advanced Memory Protection mode: Advanced ECC

Possible Cause: Advanced ECC support is enabled.

Action: None.

Advanced Memory Protection mode: Advanced ECC with hot-add support

Possible Cause: Advanced ECC with Hot-Add support is enabled.

Action: None.

Advanced Memory Protection mode: Online spare with Advanced ECC ...Xxxx MB System memory and xxxx MB memory reserved for Online Spare.

Possible Cause: This message indicates Online Spare Memory is enabled and indicates the amount of memory reserved for this feature.

Action: None.

Advanced Memory Protection mode: Multi-board mirrored memory with Advanced ECC ...Xxxx MB System memory and xxxx MB memory reserved for Mirroring.

Possible Cause: This message indicates Mirrored Memory is enabled and indicates the amount of memory reserved for this feature.

Action: None.

Advanced Memory Protection mode: RAID memory with Advanced ECC ...Xxxx MB System memory and xxxx MB memory reserved for RAID.

Possible Cause: This message indicates RAID Memory is enabled and indicates the amount of memory reserved for this feature.

Action: None.

An Unexpected Shutdown occurred prior to this power-up

Possible Cause: The server shut down because of an unexpected event on the previous boot.

Action: Check the System Management Log or OS Event Log for details on the failure.

Critical Error Occurred Prior to this Power-Up

Possible Cause: A catastrophic system error, which caused the server to crash, has been logged.

Action: If the problem persists contact your Cisco representative to arrange for repair.

Fan Solution Not Fully Redundant

Possible Cause: The minimum number of required fans is installed, but some redundant fans are missing or failed.

Action: Install fans or replace failed fans to complete redundancy.

Fan Solution Not Sufficient

Possible Cause: The minimum number of required fans is missing or failed.

Action: Install fans or replace any failed fans.

Fatal DMA Error

Possible Cause: The DMA controller has experienced a critical error that has caused an NMI.

Action: If the problem persists contact your Cisco representative to arrange for repair.

Fatal Express Port Error

Possible Cause: A PCI Express port has experienced a fatal error that caused an NMI.

Action: Reseat any loose PCI Express boards. If the problem persists contact your Cisco representative to arrange for repair.

Fatal Front Side Bus Error

Possible Cause: The processor front-side bus experienced a fatal error.

Action: Reseat any loose processors. If the problem persists contact your Cisco representative to arrange for repair.

Fatal Global Protocol Error

Possible Cause: The system experienced a critical error that caused an NMI.

Action: If the problem persists contact your Cisco representative to arrange for repair.

Fatal Hub Link Error

Possible Cause: The hub link interface has experienced a critical failure that caused an NMI.

Action: If the problem persists contact your Cisco representative to arrange for repair.

FATAL ROM ERROR: The System ROM is not Properly Programmed.

Possible Cause: The System ROM is not properly programmed.

Action: Replace the physical ROM part.

Fibre Channel Mezzanine/Balcony Not Supported.

Description: The Fibre Channel adapter is not supported on the server.

Action: Install the supported Fibre Channel adapter.

High Temperature Condition detected by Processor X

Possible Cause: Ambient temperature exceeds recommended levels, fan solution is insufficient, or fans have failed.

Action: Adjust the ambient temperature, install fans, or replace the failed fans.

Illegal Opcode - System Halted

Possible Cause: The server has entered the Illegal Operator Handler because of an unexpected event. This error is often software-related and does not necessarily indicate a hardware issue.

Action: Be sure that all software is installed properly. If the problem persists contact your Cisco representative to arrange for repair.

iLO Generated NMI

Possible Cause: The iLO controller generated an NMI.

Action: Check the iLO logs for details of the event.

Internal CPU Check - Processor

Possible Cause: A processor has experienced an internal error.

Action: If the problem persists contact your Cisco representative to arrange for repair.

Invalid memory types were found on the same node. Please check DIMM compatibility. - Some DIMMs may not be used

Description: Invalid or mixed memory types were detected during POST.

Action: Use only supported DIMM pairs when populating memory sockets. Refer to the applicable server user guide memory requirements.

Invalid Password - System Halted!

Possible Cause: An invalid password was entered.

Action: Enter a valid password to access the system.

Invalid Password - System Restricted!

Possible Cause: A valid password that does not have permissions to access the system has been entered.

Action: Enter a valid password with the correct permissions.

Memory found on unpopulated Node. — Processor is required to be installed for memory to be used.

Description: The system detects DIMMs, but is unable to use the DIMMs because a processor is not installed in the corresponding socket.

Action: To use the installed DIMMs, install a processor in the corresponding socket.

Mixed processor speeds detected. Please make sure that all processors are the same speed. — System Halted!

Description: Mixed processor speeds are not supported.

Action: Refer to the server documentation for supported processors. Be sure that all installed processors are the same speed.

Network Server Mode Active and No Keyboard Attached

Possible Cause: A keyboard is not connected. An error has not occurred, but a message is displayed to indicate the keyboard status.

Action: No action is required.

NMI - Button Pressed!

Possible Cause: The NMI button was pressed, initiating a memory dump for crash dump analysis.

Action: Reboot the server.

NMI - Undetermined Source

Possible Cause: An NMI event has occurred.

Action: Reboot the server.

Node Interleaving disabled - Invalid memory configuration

Description: Each node must have the same memory configuration to enable interleaving.

Action: Populate each node with the same memory configuration and enable interleaving in RBSU.

No Floppy Drive Present

Possible Cause: No diskette drive is installed or a diskette drive failure has occurred.

Action:

-
- | | |
|---------------|--|
| Step 1 | Power down the server. |
| Step 2 | Replace a failed diskette drive. |
| Step 3 | Be sure a diskette drive is cabled properly, if a diskette drive exists. |
-

No Keyboard Present

Possible Cause: A keyboard is not connected to the server or a keyboard failure has occurred.

Action:

-
- | | |
|---------------|--|
| Step 1 | 1. Power down the server, and then reconnect the keyboard. |
| Step 2 | 2. Be sure no keys are depressed or stuck. |
| Step 3 | 3. If the failure reoccurs, replace the keyboard. |
-

Parity Check 2 - System DIMM Memory

Possible Cause: An uncorrectable error memory event occurred in a memory DIMM.

Action: Use the DIMM LEDs to identify failed DIMMs and replace the DIMMs. If the problem persists contact your Cisco representative to arrange for repair.

PCI Bus Parity Error, PCI Slot x

Possible Cause: A PCI device has generated a parity error on the PCI bus.

Action: For plug-in PCI cards, remove the card. For embedded PCI devices, run Insight Diagnostics and replace any failed components as indicated.

Power Fault Detected in Hot-Plug PCI Slot x

Possible Cause: PCI-X Hot Plug expansion slot was not powered up properly.

Action: Reboot the server.

Processor X Unsupported Wattage.

Possible cause: Processor not supported by current server.

Action: Refer to the server documentation for supported processors. If the processor is supported, remove the processor, update the system to latest ROM, and then reinstall the processor.

Redundant ROM Detected - This system contains a valid backup system ROM.

Possible Cause: The system recognizes both the system ROM and redundant ROM as valid. This is not an error.

Action: None

REDUNDANT ROM ERROR: Backup ROM Invalid. -run ROMPAQ to correct error condition.

Possible Cause: The backup system ROM is corrupted. The primary ROM is valid.

Action: Run ROMPaq Utility to flash the system so that the primary and backup ROMs are valid.

**REDUNDANT ROM ERROR: Bootblock Invalid. - ...
...contact Your Representative.**

Possible Cause: ROM bootblock is corrupt.

Action: Contact an authorized service provider.

**REDUNDANT ROM ERROR: Primary ROM invalid. Booting Backup ROM. -...
...run ROMPAQ to correct error condition**

Possible Cause: The primary system ROM is corrupt. The system is booting from the redundant ROM.

Action: Run ROMPaq Utility to restore the system ROM to the correct version.

Temperature violation detected - system Shutting Down in x seconds

Possible Cause: The system has reached a cautionary temperature level and is shutting down in X seconds.

Action: Adjust the ambient temperature, install fans, or replace any failed fans.

There must be a first DIMM in pair if second DIMM in pair is populated. Second DIMM in pair ignored.

Description: The first DIMM socket in the pair is not populated. The second DIMM in the pair is not recognized or used.

Action: Populate the DIMM socket.

This system only supports 667 MHz Front Side Bus Speed Processors. One or more 800 MHz Front Side Bus Speed Processors have been initialized at 667 MHz. System Halted!

Possible cause: One or more 800-MHz front side bus speed processors have been initialized at 667-MHz.

Action: Correct the processor configuration.

Unsupported DIMM(s) found in system. - DIMM(s) may not be used

Description: Unsupported memory types found in system.

Action: Refer to the applicable server user guide memory requirements and replace with supported DIMMs.

Unsupported PCI Card Detected Remove PCI Card from Slot

Possible cause: The PCI card installed in the slot referenced in the message is strictly not supported on this system.

Action: Remove the card from the slot reported in the message.

Unsupported Processor Detected System will ONLY boot ROMPAQ Utility. System Halted.

Possible Cause: Processor and/or processor stepping is not supported by the current system ROM.

Action: Refer to the server documentation for supported processors. If a ROM version exists that supports the processor,

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- | | |
|---------------|---|
| Step 1 | Power down the server. |
| Step 2 | Insert a Systems ROMPAQ diskette containing the latest ROM version. |
| Step 3 | Boot the system to flash the system to the latest ROM version. Allow 15 minutes for the process to complete. Successful completion is indicated by a series of beeps of increasing pitch. |
-

**WARNING: A Type 2 Header PCI Device Has Been Detected...
The BIOS will not configure this card. It must be configured properly by the OS or driver.**

Possible Cause: Only Type 0 and Type 1 Header PCI Devices are configured by the system ROM. The device will not work unless the OS or device driver properly configure the card. Typically this message only occurs when PCI cards with a PCI to PCMCIA bridge are installed.

Action: Refer to the operating system documentation or the device driver information that ships with the Type 2 PCI device.

WARNING - Mixed Stepping Processors were detected. System cannot proceed.

Possible cause: One or more 800-MHz front side bus speed processors have been initialized at 667-MHz.

Action: Correct the processor configuration.

301-Keyboard Error

Possible Cause: Keyboard failure occurred.

Action:

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- Step 1** Power down the server, and then reconnect the keyboard.
- Step 2** Be sure no keys are depressed or stuck.
- Step 3** If the failure reoccurs, replace the keyboard.
-

301-Keyboard Error or Test Fixture Installed

Possible Cause: Keyboard failure occurred.

Action:

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- Step 1** Power down the server, and then reconnect the keyboard.
- Step 2** Be sure no keys are depressed or stuck.
- Step 3** If the failure reoccurs, replace the keyboard.
-

303-Keyboard Controller Error

Possible Cause: System board, keyboard, or mouse controller failure occurred.

Action:

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- Step 1** Be sure the keyboard and mouse are connected.



Caution

Only authorized technicians should attempt to remove the system board. If you believe the system board requires replacement, contact your support representative before proceeding.

- Step 2** If the problem persists contact your Cisco representative to arrange for repair.
-

304-Keyboard or System Unit Error

Possible Cause: Keyboard, keyboard cable, mouse controller, or system board failure.

Action:

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- Step 1** Be sure the keyboard and mouse are connected.



Caution

Only authorized technicians should attempt to remove the system board. If you believe the system board requires replacement, contact your support representative before proceeding.

- Step 2** If the problem persists contact your Cisco representative to arrange for repair.
-

NMI Functionality

An NMI crash dump enables administrators to create crash dump files when a system is hung and not responding to traditional debug mechanisms.

Crash dump log analysis is an essential part of diagnosing reliability problems, such as hangs in operating systems, device drivers, and applications. Many crashes freeze a system, and the only available action for administrators is to cycle the system power. Resetting the system erases any information that could support problem analysis, but the NMI feature preserves that information by performing a memory dump before a hard reset.

To force the OS to invoke the NMI handler and generate a crash dump log, the administrator can do any of the following:

- Short the NMI jumper pins (See the “[System Board Components](#)” section on page 1-7.)
- Press the NMI switch
- Use the iLO Virtual NMI feature

Trouble Indicators and Status LEDs

If the system error LED on the front of the device is on, one or more LEDs inside the device or on the power supply will be on. Your device has LEDs to help you identify problems with some device components. See “[System Board LEDs](#)” section on page 1-8 for the location and description of these indicators.

System LEDs and Internal Health LED Combinations

When the internal health LED on the front panel illuminates either amber or red, the appliance is experiencing a health event. Combinations of illuminated system LEDs and the internal health LED indicate system status.

The front panel health LEDs indicate only the current hardware status. In some situations, SIM may report server status differently than the health LEDs because the software tracks more system attributes. For the location of server LEDs, see the “[System Board Components and LEDs](#)” section on page 1-6.

[Table 5-1](#) describes the system LEDs and internal health LED combinations.

Table 5-1 System LED and Internal LED Color Combinations and Statuses

System LED and Color	Internal Health LED Color	Status
Processor failure (amber)	Red	One or more of the following conditions may exist: <ul style="list-style-type: none"> • Processor has failed. • Processor is not installed in the socket. • Processor is unsupported. • ROM detects a failed processor during POST.
—	Amber	Processor is in a pre-failure condition.
PPM failure (amber)	Red	PPM has failed.

Table 5-1 System LED and Internal LED Color Combinations and Statuses

System LED and Color	Internal Health LED Color	Status
DIMM failure, slot X (amber)	Red	<ul style="list-style-type: none"> DIMM in slot X has failed. DIMM in slot X is an unsupported type, and no valid memory exists in another bank.
—	Amber	<ul style="list-style-type: none"> DIMM in slot X has reached single-bit correctable error threshold. DIMM in slot X is in a pre-failure condition. DIMM in slot X is an unsupported type, but valid memory exists in another bank.
DIMM failure, all slots in one bank (amber)	Red	No valid or usable memory is installed in the system.
Overtemperature (amber)	Amber	The Health Driver has detected a cautionary temperature level.
—	Red	The server has detected a hardware critical temperature level.
Fan module (red)	Red	The minimum fan requirements are not being met in one or more of the fan modules. One or more fans have failed or are missing.
Power supply signal interlock (amber)	Red	The power supply signal cable is not connected to the system board.

Troubleshooting Undetermined Problems

Use the information in this section if the diagnostic tests did not identify the failure, the devices list is incorrect, or the system is inoperative.


Note

Damaged data in CMOS can cause undetermined problems.


Note

Damaged data in BIOS code can cause undetermined problems.

Check the LEDs on all the power supplies. If the LEDs indicate the power supplies are working correctly, follow these steps:

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- Step 1** Power down the device.
- Step 2** Be sure the device is cabled correctly.
- Step 3** Remove or disconnect the following devices (one at a time) until you find the failure (power up the device and reconfigure it each time):
- Any external devices
 - Surge suppressor device (on the device)

- Modem, printer, mouse, or non-Cisco devices
- Each adapter
- Disk drives
- Memory modules (minimum requirement = 4 GB; two banks of 2 GB DIMMs)



Note Any component that is internal to the device, with the exception of customer-replaceable adapters, must be serviced by trained and qualified personnel. Contact your customer service representative.

Step 4 Power up the device. If the problem remains, check the following parts in the order listed:

- a. Power backplane
- b. System board



Note If the problem goes away when you remove an adapter from the system, and replacing that adapter does not correct the problem, check the system board.



Note If you suspect a networking problem and all the system tests pass, check if there is a network cabling problem external to the system.

General Problem-Solving Tips

This section contains the following topics:

- [Server Power-On Problems, page 5-13](#)
- [POST Problems, page 5-14](#)
- [Server Fault Indications, page 5-14](#)

Server Power-On Problems

Symptoms:

- The server does not power on.
- The system power LED is off or amber.
- The external health LED is red or amber.
- The internal health LED is red or amber.



Note For the location of server LEDs, see the [“System Board Components and LEDs”](#) section on page 1-6.

Possible causes:

- Improperly seated or faulty power supply
- Loose or faulty power cord
- Power source problem
- Power on circuit problem
- Improperly seated component or interlock problem
- Faulty internal component

See the [“Checking Connections and Switches”](#) section on page 5-2.

POST Problems

Symptoms:

- Server does not complete POST



Note The server has completed POST when the system attempts to access the boot device.

- Server completes POST with errors

Possible problems:

- Improperly seated or faulty internal component
- Faulty KVM device
- Faulty video device

See the [“Power-On Self Test \(POST\)”](#) section on page 5-3.

Server Fault Indications

Symptoms:

- Server boots, but the internal health LED, external health LED, or component health LED is red or amber



Note For the location of server LEDs, see the [“System Board Components and LEDs”](#) section on page 1-6.

Possible causes:

- Improperly seated or faulty internal or external component
- Unsupported component installed
- Redundancy failure
- System overtemperature condition

See the [“Troubleshooting Undetermined Problems”](#) section on page 5-12.

Collecting Information for Technical Support

Because of the variety of hardware and software combinations that can be encountered, use the following information to assist you in identifying the problems. Have this information available when requesting technical assistance.

For information about submitting a service request, see the [“Obtaining Documentation and Submitting a Service Request” section on page x](#).

- Machine type and model
- Microprocessor or hard disk upgrades
- Failure symptom
 - Do diagnostics fail?
 - What, when, where; single or multiple systems?
 - Is the failure repeatable?
 - Has this configuration ever worked?
 - If it has been working, what changes were made before it failed?
 - Is this the original reported failure?
- Diagnostics type and version level
- Hardware configuration
 - Print (print screen) configuration currently in use
 - BIOS level
- Operating system software type and version level

To eliminate confusion, identical systems are considered identical only if they meet all these conditions:

- Are the exact machine type and models
- Have the same BIOS level
- Have the same adapters or attachments in the same locations
- Have the same address jumpers, terminators, and cabling
- Have the same software versions and levels
- Have the same diagnostics code
- Have the same configuration options set in the system
- Have the same setup for the operating system control files

Comparing the configuration and software setup in working and nonworking systems might help to resolve the problem.

