NetApp® Hardware

Error Message and Troubleshooting Guide

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Preface

About this guide

This guide describes hardware platform error messages and basic methods of troubleshooting hardware.

Audience

This guide is for both end-users and Professional Service personnel.

Command conventions

You can enter storage appliance commands on the system console or from any client that can obtain access to the appliance using a Telnet session. In examples that illustrate commands executed on a UNIX® workstation, the command syntax and output might differ, depending on your version of UNIX.

Formatting conventions

The following table lists different character formats used in this guide to set off special information.

Formatting convention	Type of information
Italic type	◆ Words or characters that require special attention. ◆ Placeholders for information you must supply. For example, if the guide requires you to enter the `fctest` *adaptername* command, you enter the characters "fctest" followed by the actual name of the adapter. ◆ Book titles in cross-references.
`Monospaced` font	◆ Command and daemon names. ◆ Information displayed on the system console or other computer monitors. ◆ The contents of files.
`Bold monospaced` font	Words or characters you type. What you type is always shown in lowercase letters, unless your program is case-sensitive and uppercase letters are necessary for it to work properly.

Keyboard conventions

This guide uses capitalization and some abbreviations to refer to the keys on the keyboard. The keys on your keyboard might not be labeled exactly as they are in this guide.

What is in this guide…	What it means…
hyphen (-)	Used to separate individual keys. For example, Ctrl-D means holding down the Ctrl key while pressing the D key.
Enter	Used to refer to the key that generates a carriage return; the key is named Return on some keyboards.
type	Used to mean pressing one or more keys on the keyboard.
enter	Used to mean pressing one or more keys and then pressing the Enter key.

Special messages

This guide contains special messages that are described as follows:

Note

A note contains important information that helps you install or operate the system efficiently.

Caution

A caution contains instructions that you must follow to avoid damage to the equipment, a system crash, or loss of data.

WARNING

A warning contains instructions that you must follow to avoid personal injury.

Finding Troubleshooting Information 1

About this chapter

This chapter discusses the following topics:

- "What this guide covers" on page 2
- "Other sources for hardware troubleshooting information" on page 3

What this guide covers

Error messages by type

This guide only covers hardware troubleshooting issues common across all platforms.

Error message type	Where this message is displayed	Where to go for information
LEDs	LEDs on various components	Chapter 2, "Interpreting LEDs," on page 5
Boot error messages	System console	Chapter 3, "Boot error messages," on page 25
POST error message	System console	Chapter 3, "POST error messages," on page 23
EMS environmental and other operational messages	LCD display or system console	Chapter 4, "Interpreting EMS and Operational Error Messages," on page 31
RLM notifications regarding the system and EMS messages about the RLM	E-mail sent to indicated e-mail address and system console	Chapter 5, "Understanding Remote LAN Module messages," on page 39

Other sources for hardware troubleshooting information

Other sources

If you do not find the troubleshooting information you need in this guide, use the following table to determine where you can find the information you need.

Platform type	Topic	Document
Filer and FAS systems	FAS3000	This guide
	FAS900	*FAS900 Hardware Service Guide* Chapter 4
	FAS250	*FAS250/270 Hardware and Service Guide* Chapters 5 and 7
	F800	*F800 Hardware Installation Guide* Chapters 6 and 7
	F87	*F87 Hardware and Service Guide* Chapter 5
	F85	*F85 Hardware and Service Guide* Chapter 6
V-Series Systems and gFiler™ gateways	V3000	This guide
	V900 V270c GF825	*gFiler Hardware Maintenance Guide* Chapter 1

Platform type	Topic	Document
Near Store® systems	R200	*R200 Hardware and Service Guide* Chapter 6
	R150	*R150 Hardware and Service Guide* Chapters 5 and 8
	R100	*R100 Hardware and Service Guide* Chapters 5 and 9
NetCache® appliance	C2300/C3000	This guide
	C6200	*C6200 Hardware and Service Guide* Chapter 4
	C6100/C3100	*C6100/C3100 Hardware and Service Guide* Chapters 5 and 6
	C1200/C2100	*C1200/C2100 Hardware and Service Guide* Chapter 5
Disk shelves	DS14mk2 FC	*DS14mk2 FC Hardware Guide* Chapter 4
	DS14mk2 AT	*DS14mk2 AT Hardware Guide* Chapter 4
	FC9	*FC9 Hardware Guide* Chapter 4
Other troubleshooting topics		**Document**
Third-party hardware such as switches, routers, and tape backup devices		Applicable third-party hardware documentation
Third-party host adapters		Third-party host adapter documentation
Third-party storage subsystems		Applicable third-party storage documentation
Software-specific error messages		Applicable software documentation

Interpreting LEDs 2

About this chapter

This chapter describes the basic startup sequence and interpreting LEDs on your system for basic monitoring of the system.

Types of LEDs

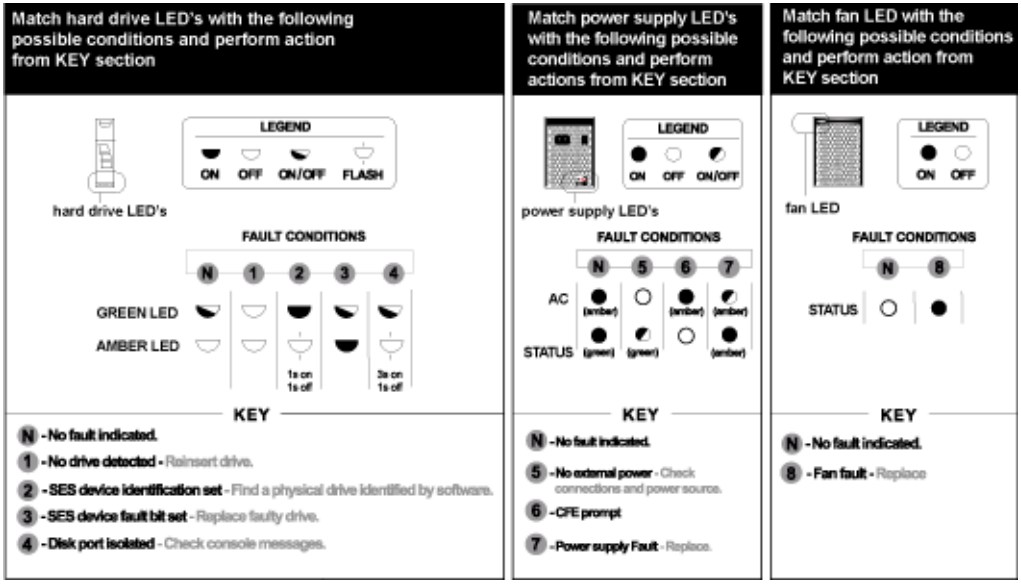
Two sets of LEDs provide you with basic information about how your system is running. These sets give high-level device status at a glance, along with network activity:

- LEDs visible on the front of your appliance with the bezel in place
- Front Panel
- LEDs visible on the back of your appliance

Using cheat sheets for quick reference

Your system is shipped with a cheat sheet located at the bottom of the chassis.

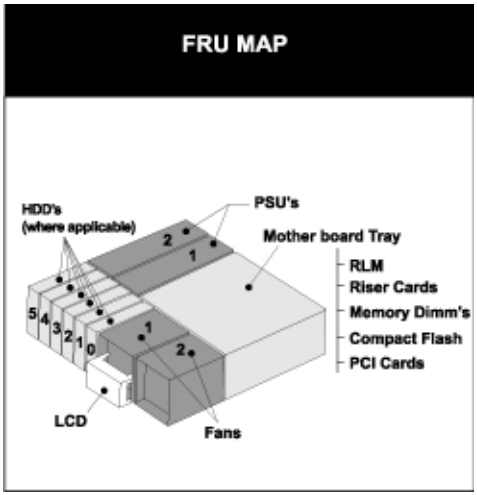
Check LEDs: Check all system LEDs to determine whether any components are not functioning properly. The following illustration is a replica of the part of the cheat sheet that shows LED locations and explanations.



FRU Map: Use the FRU map to identify Field-Replaceable Units in your system.

Note

FRU procedures are documented in flyers shipped with the component. You can also go to the Hardware Information Library for FRU documentation at http://now.netapp.com.



For detailed information

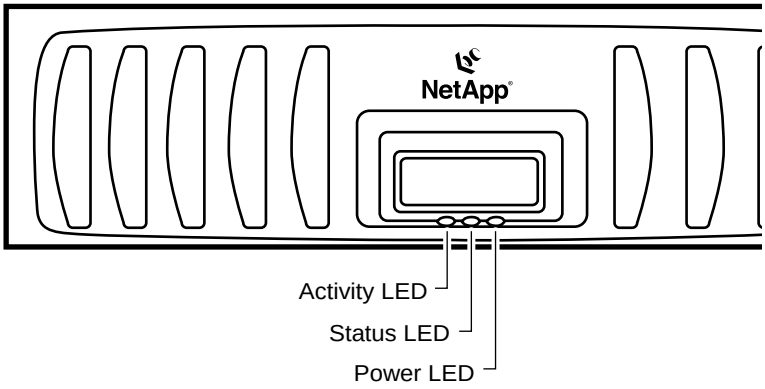
For detailed information about the LEDs, see the following sections:

- "Front panel LEDs" on page 7
- "Fibre Channel Port LEDs" on page 10
- "GbE NIC LEDs" on page 12
- "NVRAM5 adapter LEDs" on page 15
- "FAS3000 Onboard LEDs" on page 9
- "FAS3000 power supply LEDs" on page 18

Front panel LEDs

Location of the LEDs

Front panel subassembly LEDs are visible from the front of your appliance.



What the LEDs mean

The following table describes what the control panel subassembly LEDs mean.

LED label	Status indicator	Description
Activity	Green	The system is operating and is active.
	Blinking	The system is actively processing data.
	Off	No activity is detected.
Status	Green	The system is operating normally.
	Amber	The system halted or a fault occurred. The fault is displayed in the LCD. **Note** This LED remains lit during boot, while the operating system loads.

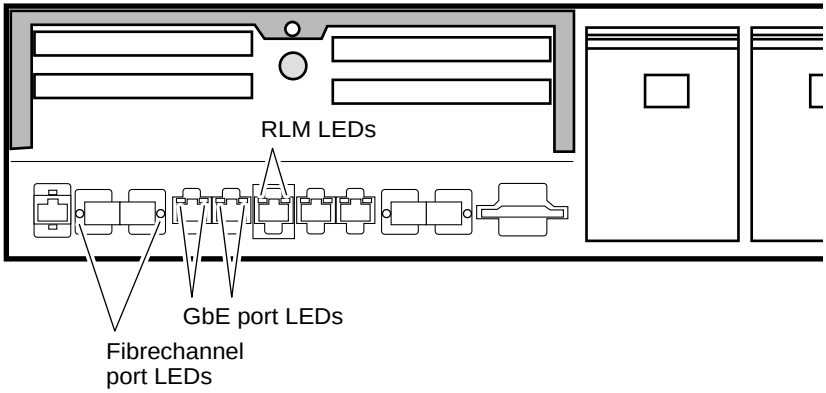
LED label	Status indicator	Description
Power	Green	The system is receiving power.
	Off	The system is not receiving power.

FAS3000 Onboard LEDs

Location of LEDs

The following illustration shows the location of the following onboard port LEDs:

- Fibre Channel port LEDs
- GbE port LEDs
- RLM LEDs



What the LEDS mean

The following table explains what the LEDs for your onboard ports mean.

LED type	Status indicator	Description
LNK	On	A valid network connection is established.
	Off	There is no network connection present.
ACT	On	There is data activity.
	Off	There is no network activity present.

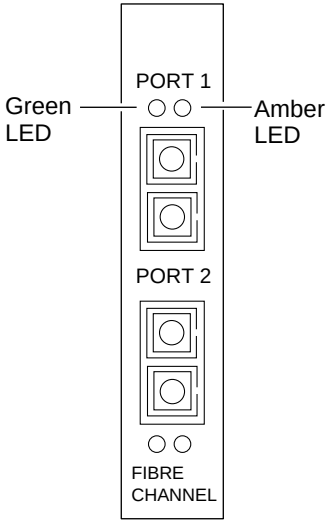
Fibre Channel Port LEDs

Location of the LEDs

Your FAS3000series has onboard Fibre Channel (FC) ports on the back of the chassis. The LEDs are located on each side of the onboard FC port on the back of your appliance.

The dual-port Fibre Channel Host Bus Adapter (HBA) can be used in two modes: Initiator and Target. The LEDs on both cards are the same color and in the same location, but the Status and Activity indications are different.

The following illustration shows the LED locations for a dual-port Fibre Channel HBA.



What the LEDs mean

The following table describes the LEDs on your appliance onboard ports and the dual-port Fibre Channel HBA.

Green	Amber	Description
On	On	Power
Off	Flashing	Loss of synch

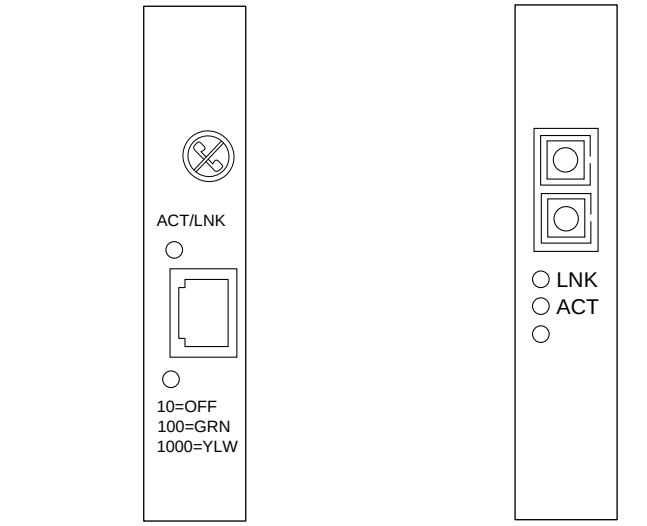
Green	Amber	Description
Off	On	Signal acquired
On	Off	Ready
Flashing	Flashing	Adapter firmware error

GbE NIC LEDs

Location of the LEDs for single port GbE NICs

Your FAS3000 series has onboard Ethernet ports on the back of the chassis. The LEDs are on the corners above each onboard Ethernet port.

The following illustration shows the location of LEDs for both the copper and fiber single port GbE NICs.

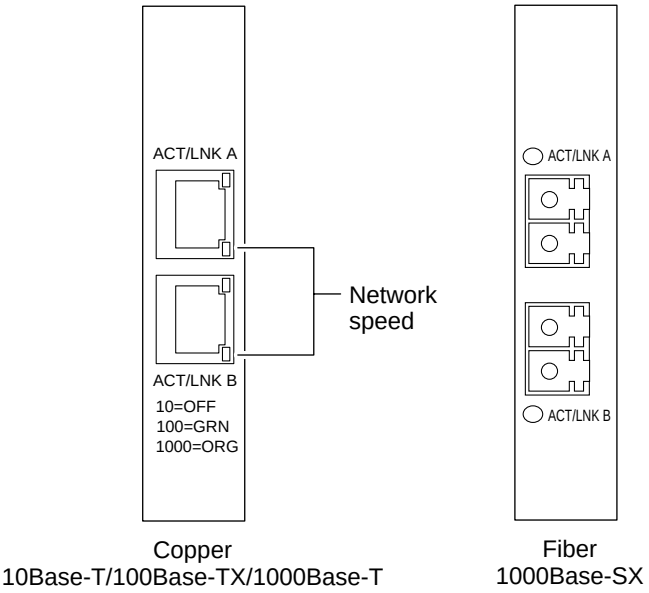


Copper
10Base-T/100Base-TX/1000Base-T

Fiber
1000Base-SX

Location of LEDS on multiport GbE NICs

The following illustration shows the location of LEDs for both the copper and fiber dual-port GbE NICs.



What the copper GbE NIC LEDs mean

The following table describes the LEDs on your multiport GbE NIC.

Note

The LEDs on the quad-port copper GbE NIC are the same as those on the dual-port copper GbE NIC.

LED type	Status indicator	Description
ACT/LNK	Green	A valid network connection is established.
	Blinking green	There is data activity.
	Off	There is no network connection present.

LED type	Status indicator	Description
10=OFF	Off	Data transmits at 10 Mbps.
100=GRN	Green	Data transmits at 100 Mbps.
1000=YLW or 1000=ORG	Yellow (single-port) Orange (multiport)	Data transmits at 1000 Mbps.

What the fiber GbE NIC LEDs mean

The following table explains what the LEDs on the fiber GbE NIC mean.

LED type	Status indicator	Description
LNK	On	A valid network connection is established.
	Off	There is no network connection present.
ACT	On	There is data activity.
	Off	There is no network activity present.

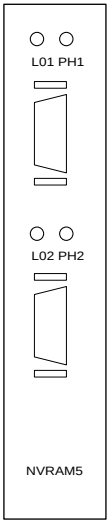
NVRAM5 adapter LEDs

About NVRAM5

The NVRAM5 adapter is also the cluster interconnect adapter when your appliance is in a clustered configuration. The NVRAM5 adapter is supported in the FAS3000 series cluster configurations except MetroCluster.

Location of LEDs

The following illustration shows the LED locations for your NVRAM5 adapter. There are two sets of LEDs by each port that operate when you use NVRAM5 as a cluster interconnect adapter. There is also an internal red LED that you can see through the faceplate.



What the LEDs mean

The following table describes the LEDs for an NVRAM5 adapter.

LED type	Indicator	Status	Description
Internal	Red	Blinking	There is valid data in the NVRAM5. **Caution** This might occur if your system did not shut down properly, as in the case of a power failure or panic. The data is replayed when the system boots up again.
PH1	Green	On	The physical connection is working.
		Off	No physical connection.
LO1	Yellow	On	The logical connection is working.
		Off	No logical connection.

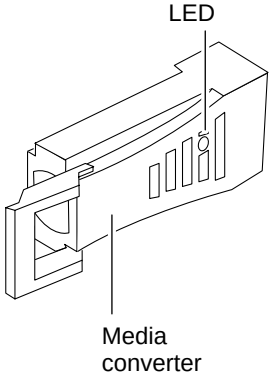
NVRAM5 media converter LEDs

About the media converter

The media converter enables you to use fiber cabling to cable your appliances in a clustered configuration.

Location of LEDs

The following illustration shows the LED locations for your NVRAM5 media converter.



Media converter LEDs

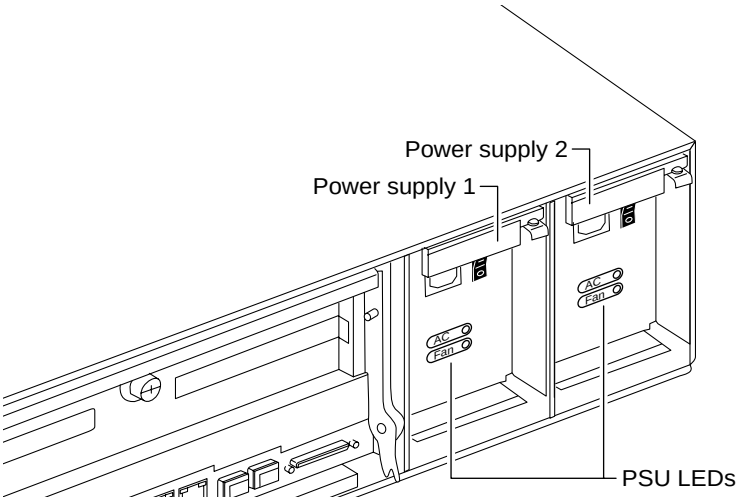
The following table describes the LEDs for an NVRAM5 media converter.

Indicator	Status	Description
Green	On	Normal operation.
Green/Amber	On	Power is present but link is down.
Green	Flickering or off	Power is present but link is down.

FAS3000 power supply LEDs

Location of LEDs

The following illustrations shows the location of the LEDs on your appliance power supplies (PSUs).



What the LEDs on your AC power supply mean

The following table explains what the LEDs on your appliance power supplies mean.

LED status	Description
Green	The AC power source is good and is powering the system.
Amber	The power supply failed.
Off	There is no power to this power supply.

Startup Error Messages 3

About this chapter

This chapter lists error messages you might encounter during the boot process.

Topics in this chapter

This chapter discusses the following topics:

- "Types of startup error messages" on page 20
- "POST error messages" on page 23
- "Boot error messages" on page 25

Types of startup error messages

Startup sequence

When you apply power to the your appliance, it verifies the hardware that is in the system, loads the operating system, and displays two types of startup informational and error messages on the system console:

- Power-On Self-Test (POST) messages
- Boot messages

CFE messages

CFE messages occur when an error occurs when the CFE runs through its Power On Self Test (POST). This happens before the Data ONTAP software is loaded.

POST messages

POST is a series of tests run from the motherboard PROM. These tests check the hardware on the motherboard and differ depending on your system configuration. The following series of messages are examples of POST messages displayed on the console.

Header:

```
CFE version 2.0.0 based on Broadcom CFE: 1.0.40

Copyright (C) 2000,2001,2002,2003 Broadcom Corporation.

Portions Copyright (c) 2002-2005 Network Appliance, Inc.

CPU type 0xF29: 2800MHz

Total memory: 0x80000000 bytes (2048MB)

Starting AUTOBOOT press any key to abort...

Loading....

Entry at...

Starting program...

Press CTRL-C for special boot menu
```

Note

Your appliance LCD displays only the POST messages without the preceding header.

Boot messages

After the boot is successfully completed, your appliance loads the operating system.

The following message is an example of the boot message that appears on the system console of a FAS3000 storage system at first boot.

Note

The exact boot messages that appear on your system console depend on your system configuration.

```
NetApp Release 7.0.1X19: Sun Apr 10 03:04:35 PDT 2005

Copyright (c) 1992-2005 Network Appliance, Inc.

Starting boot on Wed Apr 13 15:30:51 GMT 2005

NetApp Release 7.0.1: Sun Apr 10 03:04:35 PDT 2005

System ID: xxxxxxxxxx

System Serial Number: xxxxxx

System Rev: X0

NetApp Release 7.0.1X19: Sun Apr 10 03:04:35 PDT 2005

        System ID: 0101165550

        System Serial Number: 1045937

        System Rev: B0

        slot 0: System Board

                Processors: 2

                Memory Size: 2048 MB

        Remote LAN Module Status: Online

        slot 0: Dual 10/100/1000 Ethernet Controller VI

e0a MAC Address: 00:a0:98:02:44:5a (auto-1000t-fd-up)

e0b MAC Address: 00:a0:98:02:44:5b (auto-unknown-cfg_down)

e0c MAC Address: 00:a0:98:02:44:58 (auto-unknown-cfg_down)

e0d MAC Address: 00:a0:98:02:44:59 (auto-unknown-cfg_down)

        slot 0: FC Host Adapter 0a

                3 Disks:             204.0GB
```

```
                1 shelf with LRC

        slot 0: FC Host Adapter 0b

        slot 0: FC Host Adapter 0c

        slot 0: FC Host Adapter 0d

        slot 0: SCSI Host Adapter 0e

        slot 0: NetApp ATA/IDE Adapter 0f (0x000001f0)

                0f.0 245MB

        slot 1: NVRAM

                Memory Size: 512 MB

Please enter the new hostname []:
```

Types of startup error messages

You might encounter two groups of startup error messages during the boot process:

- POST error messages
- Boot error messages

Both error message types are displayed on the system console, and an e-mail notification is sent out by your remote management card, if it is configured to do so.

For detailed information

For a detailed list of the startup error messages, see the following sections:

- “POST error messages” on page 23
- “Boot error messages” on page 25

POST error messages

POST error messages

The following table describes POST error messages that might appear on the system console if your appliance encounters errors while CFE initiates the hardware.

Note

Always power cycle your appliance when you receive any of the following errors. If the system repeats the error message, follow the corrective action for that error message.

Error message or code	Description	Corrective action
Memory init failure: Data segment does not compare at XXXX	XXXX denotes memory address. The CFE failed to initialize the system memory properly because there is a mismatch between the Compact Flash and the DRAM.	**1.** Make sure that the DIMM is supported. **2.** Make sure that the DIMM is seated properly. **3.** Replace the DIMM if the problem persists.
Unsupported system bus speed 0xXXXX defaulting to 1000Mhz	The CFE detects an unsupported DIMM.	**1.** Make sure that the DIMM is seated properly. **2.** Replace the DIMM if the problem still persists.
No Memory found	The CFE cannot detect the system DIMMs.	**1.** Make sure that the DIMM is seated properly and power cycle **2.** Replace the DIMM if the problem persists
Abort Autoboot–POST Failure(s): MEMORY	The memory test failed.	**1.** Make sure that DIMMs are seated properly, then power cycle. **2.** Replace the DIMM if the problem still persists.

Error message or code	Description	Corrective action
Abort Autoboot–POST Failure(s): RTC, RTC_IO	The CFE cannot read the real-time clock (RTC_IO) or the RTC date is invalid (RTC).	**1.** Use set date and the set time command to set the time. **2.** Make sure that the RTC battery is still good.
Abort Autoboot–POST Failure(s): CPU	At least one CPU fails to startup properly.	**1.** Power cycle the system to see whether the problem still persists. **2.** Replace the motherboard tray if the problem persists.
Abort Autoboot–POST Failure(s): UCODE	At least one CPU fails to load the microcode.	**1.** Power cycle your system to see whether the problem still persists. **2.** Replace the motherboard tray if the problem persists.
Invalid FRU EEPROM Checksum	The system back plane or motherboard EEPROM is corrupted.	Call technical support
Autoboot of primary image aborted *Autoboot of backup image aborted*	Autoboot is stopped due to a key being pressed during the autoboot process.	Power cycle the system and avoid pressing any keys during the autoboot process.
Autoboot of Back up image failed Autoboot of primary image failed	The kernel could not be found on the CompactFlash.	**1.** Check the Compact Flash connection. **2.** Make sure the Compact Flash content is valid; if it is not, replace the CompactFlash. **3.** Follow the netboot procedure to download a new kernel.

Boot error messages

When boot error messages appear

Boot error messages might appear after the hardware passes all POSTs and your appliance begins to load the operating system.

Boot error messages

The following table describes the error messages that might appear on the LCD if your appliance encounters errors while starting up.

Boot error message	Explanation	Corrective action
**Boot device err*	A CompactFlash card could not be found to boot from.	Insert a valid CompactFlash card.
Cannot initialize labels	When the system tries to create a new file system, it cannot initialize the disk labels.	Usually, you do not need to create and initialize a file system; do so only after consulting technical support.
Cannot read labels	When your appliance tries to initialize a new file system, it has a problem reading the disk labels it wrote to the disks. This problem can be because the system failed to read the disk size, or the written disk labels were invalid	Usually, you do not need to create and initialize a file system; do so only after consulting technical support.
Configuration exceeds max PCI space	The memory space for mapping PCI adapters has been exhausted, because either ◆ There are too many PCI adapters in the system ◆ An adapter is demanding too many resources	Verify that all expansion adapters in your appliance are supported. Contact technical support for help. Have a list ready of all expansion adapters installed in your appliance.
Dirty shutdown in degraded mode	The file system is inconsistent because you did not shut down the system cleanly when it was in degraded mode.	Contact technical support for instructions about repairing the file system.

Boot error message	Explanation	Corrective action
DIMM slot # has correctable ECC errors.	The specified DIMM slot has correctable ECC errors.	Run diagnostics on your DIMMs. If the problem persists, replace the specified DIMM.
Disk label processing failed	Your appliance detects that the disk is not in the correct drive bay.	Make sure that the disk is in the correct bay.
Drive %s.%d not supported	*%s*—The disk number; *%d*—The disk ID number. The system detects an unsupported disk drive.	1. Remove the drive immediately or the system drops down to the PROM monitor within 30 seconds. 2. Check the System Configuration Guide at http://now.netapp.com to verify support for your disk drive.
Error detection detected too many errors to analyze at once	This message occurs when other error messages occur at the same time.	See the other error messages and their respective corrective actions. If the problem persists, contact technical support.
FC-AL loop down, adapter %d	The system cannot detect the FC-AL loop or adapter.	1. Identify the adapter by entering the following command: `storage show adapter` 2. Turn off the power on your appliance and verify that the adapter is properly seated in the expansion slot. 3. Verify that all Fibre Channel cables are connected.

Boot error message	Explanation	Corrective action
File system may be scrambled	One of the following errors causes the file system to be inconsistent:	
	◆ An unclean shutdown when your appliance is in degraded mode and when NVRAM is not working.	Contact NetApp technical support to learn how to start the system from a system boot diskette and repair the file system.
	◆ The number of disks detected in the disk array is different from the number of disks recorded in the disk labels. The system cannot start when more than one disk is missing.	Make sure that all disks on the system are properly installed in the disk shelves.
	◆ The system encounters a read error while reconstructing parity.	Contact NetApp technical support for help.
	◆ A disk failed at the same time the system crashed.	Contact NetApp technical support to learn how to repair the file system.
Halted disk firmware too old	The disk firmware is an old version.	Update the disk firmware by entering the following command: `disk_fw_update`
Halted: Illegal configuration	Incorrect cluster configuration.	1. Check the console for details. 2. Verify that all cables are correctly connected.
Invalid PCI card slot %d	*%d*—The expansion slot number. The system detects a adapter that is not supported by Network Appliance.	Replace the unsupported adapter with an adapter that is included in the System Configuration Guide at http://now.netapp.com.
No disks	The system cannot detect any FC-AL disks.	Verify that all disks are properly seated in the drive bays.
No disk controllers	The system cannot detect any FC-AL disk controllers.	Turn off your appliance power and verify that all NICs are properly seated in the appropriate expansion slots.

Boot error message	Explanation	Corrective action
No /etc/rc	The /etc/rc file is corrupted.	1. At the hostname> prompt, enter **`setup`**. 2. As the system prompts for system configuration information, use the information you recorded in your appliance configuration information worksheet in the *Getting Started Guide*. For more information about your appliance setup program, see the appropriate system administration guide.
No /etc/rc, running setup	The system cannot find the /etc/rc file and automatically starts `setup`.	As the system prompts for system configuration information, use the information you recorded in your appliance configuration information worksheet in the *Getting Started Guide*. For more information about your appliance `setup` program, see the appropriate system administration guide.
No network interfaces	The system cannot detect any network interfaces.	1. Turn off the system and verify that all NICs are seated properly in the appropriate expansion slots. 2. Run diagnostics to check the onboard Ethernet port. If the problem persists, contact NetApp technical support.

Boot error message	Explanation	Corrective action
NVRAM: wrong pci slot	The system cannot detect the NVRAM adapter.	◆ For a stand-alone FAS3000 series system, make sure that the NVRAM adapter is in slot 1. ◆ For a clustered FAS3000 series system, make sure that the NVRAM adapter is in slot 2. **Note** The C2300/C3300 does not support NVRAM5.
No NVRAM present	The system cannot detect the NVRAM adapter.	Make sure that the NVRAM adapter is securely installed in the appropriate expansion slot.
NVRAM #n downrev	*n*—The serial number of the NVRAM adapter. The NVRAM adapter is an early revision that cannot be used with the system.	Check the console for information about which revision of the NVRAM adapter is required. Replace the NVRAM adapter.
Panic: DIMM slot #n has uncorrectable ECC errors. Replaces these DIMMS.	The specified DIMM has uncorrectable ECC errors.	Replace the specified DIMM.
This platform is not supported on this release. Please consult the release notes. *Please downgrade to a supported release!* *Shutting down: EOL platform*	This platform is not supported on this release. Please consult the release notes for your software.	You must downgrade your software version to a compatible release. Verify that you have the correct URL for software download.
Too many errors in too short time	The error detection system is experiencing problems. This message occurs when other error messages occur at the same time.	See the other error messages and their respective corrective actions. If the problem persists, call technical support.

Boot error message	Explanation	Corrective action
Warning: system serial number is not available. System backplane is not programmed.	The backplane of your system does not have the correct system serial number.	Report the problem to technical support so that your appliance can be replaced.
Warning: Motherboard Revision not available. Motherboard is not programmed.	The system motherboard is not programmed with the correct revision.	Replace the motherboard.
Warning: Motherboard Serial Number not available. Motherboard is not programmed	The system motherboard is not programmed with the correct serial number.	Replace the motherboard.
**Watchdog error*	An error occurred during the testing of the watchdog timer.	Replace the motherboard.
**Watchdog failed*	Your appliance watchdog reset hardware, used to reset your appliance from a system hang condition, is not functioning properly.	Replace the motherboard.

Interpreting EMS and Operational Error Messages 4

About this chapter This chapter lists error messages you might encounter during normal operation.

Environmental EMS messages

When Environmental EMS messages appear

Environmental EMS messages appear on the LCD display and in Auto-support (ASUP) messages if your appliance encounters extremes in its operational environment.

Environmental EMS messages

The following table describes the environmental EMS messages and their corrective actions.

LCD Display	ASUP message and LED behavior	Event description	Corrective action	SNMP TRAP ID
Power supply degraded	*Chassis Power Shutdown: PS#* FRU LED: Amber	There is an AC problem with one of the power supplies. The system will shutdown in two minutes.	**1.** Check that the power supply is seated properly in its bay and that all power cords are connected. **2.** Power-cycle your system and run diagnostics on the identified power supply. **3.** If the problem persists, replace the identified power supply	#392: Chassis power supply is degraded
Power supply degraded	*Chassis Power Shutdown: 3.3 V is in critical high state current voltage is 3572 mV on XXXX at* [time stamp].	The system is above the high voltage threshold. The system shuts down immediately.	**1.** Power-cycle the system and run diagnostics on the motherboard. **2.** If the problem persists, replace the motherboard.	None

LCD Display	ASUP message and LED behavior	Event description	Corrective action	SNMP TRAP ID
Power supply degraded	*Chassis Power Degraded: 3.3V is in warn high state current voltage is 3273 mV on XXXX at* [time stamp].	The system is operating above the high-voltage threshold.	**1.** Power-cycle the system and run diagnostics on the motherboard. **2.** If the problem persists, replace the motherboard.	#403: Chassis power is degraded
Power supply degraded	*Chassis power shutdown: 3.3V is in warn low state current voltage is 3273 mV on XXXX at* [time stamp].	The system is operating below the low-voltage threshold. The system shuts down immediately.	**1.** Power-cycle the system and run diagnostics on the motherboard. **2.** If the problem persists, replace the motherboard.	#403: Chassis power is degraded
Power supply degraded	*Chassis power shutdown: 3.3V is in warn low state current voltage is 3273 mV on XXXX at* [time stamp].	The system is operating below the low-voltage threshold. The system shuts down immediately.	**1.** Power-cycle the system and run diagnostics on the motherboard. **2.** If the problem persists, replace the motherboard.	None
Temperature exceeds limits	*Chassis over temperature shutdown on XXXX at* [time stamp].	The system is operating above the high-temperature threshold. The system shuts down immediately.	**1.** Make sure that the system has proper ventilation. **2.** Power-cycle the system and run diagnostics on the system.	#371: Chassis temperature is too hot

LCD Display	ASUP message and LED behavior	Event description	Corrective action	SNMP TRAP ID
Temperature exceeds limits	*Chassis over temperature on XXXX at* [time stamp].	The system is operating above the high-temperature threshold.	**1.** Make sure that the system has proper ventilation. **2.** Power-cycle the system and run diagnostics on the system.	#371: Chassis temperature is too hot
Temperature exceeds limits	*Chassis under temperature on XXXX at* [time stamp].	The system is operating below the low-temperature threshold	**1.** Raise the ambient temperature around the appliance. **2.** Power-cycle the system and run diagnostics on the system.	#372: Chassis temperature is too cold
Temperature exceeds limits	*Chassis under temperature shutdown on XXXX at* [time stamp].	The system is operating below the low-temperature threshold	**1.** Check that the system has proper ventilation. You might need to raise the ambient temperature around the appliance. **2.** Power cycle the system and run diagnostics on the system.	#372: Chassis temperature is too cold
Temperature exceeds limits	*Chassis over temperature shutdown on XXXX at* [time stamp].	The system is operating above the high-temperature threshold. The system shuts down immediately.	**1.** Make sure that the system has proper ventilation **2.** Power cycle the system and run diagnostics on the system.	#371: Chassis temperature is too hot

LCD Display	ASUP message and LED behavior	Event description	Corrective action	SNMP TRAP ID
Temperature exceeds limits	*Chassis over temperature on XXXX at* [time stamp].	The system is operating above the high-temperature threshold.	1. Make sure that the system has proper ventilation. 2. Power-cycle the system and run diagnostics on the system.	#371: Chassis temperature is too hot
Fans stopped; replace them	*Chassis fan FRU failed: current speed is 4272 RPM, on* [times stamp]. FRU LED: Green if problem is PSU; off if problem is fan.	A system fan failed.	Check the LEDs on the fans and the power supply. ◆ If both fan LEDs are green, run diagnostics on the power supplies. ◆ If the fan LED is off, replace the fan.	#412 Chassis fan is degraded
Fans stopped; replace them	*Chassis fan FRU failed: current speed is 4272 RPM, on* [times stamp]. FRU LED: Amber	A system fan failed.	Check the LEDs on the fans and the power supply. ◆ If both fan LEDs are green, run diagnostics on the power supplies. ◆ If the fan LED is off, replace the fan.	#412 Chassis fan is degraded
Fans stopped; replace them	*Multiple fan failure on XXXX at* [time stamp]. FRU LED: Amber	Both system fans failed. The system shuts down immediately.	1. Replace both fans. 2. Power-cycle the system and run diagnostics on the system.	#6 Emergency shutdown

Note

Degraded power might be caused by bad power supplies, bad wall power, or bad components on the motherboard. If spare power supplies are available, try replacing them to see whether that alleviates the problem.

Operational Error Messages

When operational error messages appear

These error messages might appear on the system console or LCD when the system is operating, when it is halted, or when it is restarting because of system problems.

Operational error messages

The following table describes operational error messages that might appear on the LCD if your appliance encounters errors while starting up or during operation.

Error message	Explanation	Fatal?	Corrective action
Disk n is broken	*n*—The RAID group disk number. The solution depends on whether you have a hot spare in the system.	No	See the appropriate system administration guide for information about how to locate a disk based on the RAID group disk number and how to replace a faulty disk.
Dumping core	The system is dumping core after a system crash.	Yes	Write down the system crash message on the system console and report the problem to NetApp technical support.
Disk hung during swap	A disk error occurred as you were hot-swapping a disk.	Yes	**1.** Disconnect the disk from the power supply by opening the latch and pulling it half-way out. **2.** Wait 15 seconds to allow all disks to spin down. **3.** Reinstall the disk. **4.** Restart the system by entering the following command: `boot`

Error message	Explanation	Fatal?	Corrective action
Error dumping core	The system cannot dump core during a system crash and restarts without dumping core.	Yes	Report the problem to NetApp technical support.
Panicking	The system is crashing. If the system does not hang while crashing, the message `Dumping core` appears.	Yes	Report the problem to NetApp technical support.

Understanding Remote LAN Module messages 5

What the RLM does

The Remote LAN Module (RLM) is installed in FAS3000 series and C2300/C3000 NetCache appliance systems to provide remote platform management capabilities, including remote access, monitoring, troubleshooting, logging and alerting features. The RLM extends AutoSupport capabilities by sending alerts or “down system” notification through an AutoSupport Message when the system goes down, regardless of whether the system can send AutoSupport messages.

RLM-generated AutoSupport messages

These messages include the following information:

- Subject line—A system notification from the RLM of the system, listing the system condition or event that caused the AutoSupport message and the log level.
- In the message body—The RLM configuration and version information, the system ID, serial number, model number, and host name
- In the zipped attachments—The System Event Logs, the system sensor state as determined by the RLM, and console logs. (Console logs can be committed by setting the autosupport.content option to minimal.)

Typical RLM-generated AutoSupport messages occur in the following conditions:

- The system reboots unexpectedly
- The System stops communicating with the RLM
- A watchdog reset occurs
- The system is power-cycled
- Firmware POST errors occur
- A user-initiated AutoSupport message occurs

RLM e-mail Notifications

RLM e-mail notifications are sent to configured recipients designated by the AutoSupport feature. The e-mail notifications have the title “System Notification from the RLM of <hostname>”, followed by the message type.

RLM generated messages

Use the following table to look up messages sent by the RLM and the appropriate corrective actions.

RLM message	Explanation	Action
RLM heartbeat stopped	The system software cannot see the RLM.	**1.** Connect to the RLM CLI to check whether the RLM is operational. **2.** Contact technical support if the problem persists.
Reboot warning	The RLM detects an abnormal system reboot.	If this was a manually triggered or expected reboot, no action is necessary. **1.** Check the status of the appliance and determine the cause of the reboot. **2.** Contact technical support if the appliance fails to reboot.
Heartbeat loss warning	The RLM detects the system is offline, possibly because the system has stopped serving data.	If this system shutdown was manually triggered, no action is necessary. **1.** Check the status of your system and verify that the appliance and disk shelves are operational. **2.** Contact technical support if the problem persists.
Reboot (power loss) critical	The RLM detects that the appliance has lost AC power.	If you switched off the appliance before you received the notification, no action is necessary. Restore power to the appliance.
Reboot (watchdog reset) warning	The RLM detects a watchdog reset error.	**1.** Check the system to verify that it is operational. **2.** If your system is operational, run diagnostics on your entire system. **3.** Contact technical support if the appliance is not serving data.

RLM message	Explanation	Action
System boot failed (POST failed)	The RLM detects that during POST a system error occurred and the system software cannot be booted.	**1.** Run diagnostics on your system. **2.** Contact technical support if running diagnostics does not detect any faulty components.
User_triggered (system power cycle)	A user is initiating a system power-cycle the through the RLM.	No action is necessary.
User_triggered (system power on)	A user is powering on the appliance through the RLM.	No action is necessary.
User_triggered (system power off)	A user is powering off the appliance through the RLM	No action is necessary.
User_triggered (system nmi)	A user is initiating a system core dump (nmi) through the RLM.	No action is necessary.
User_triggered (system reset)	A user is resetting the system through the RLM.	No action is necessary.
User triggered (RLM test)	The RLM received the RLM test command, which tests the RLM configuration.	No action is necessary.

EMS messages about the RLM

The following messages are EMS events sent to your console regarding the status of your RLM.

Name	Description	Corrective action
rlm.driver.hourly.stats	An error occurred while the system was trying to get hourly statistics from the RLM	**1.** Issue the `rlm status` command at the Data ONTAP prompt to check whether the RLM is online. **2.** If the RLM is operational and this message persists, issue the `rlm reboot` command at the data ONTAP prompts to reboot the RLM.
rlm.driver.mailhost	RLM setup verifies that a mailhost specified in options autosupport. mailhost can be reached. In this case, the RLM setup could not connect to the specified mailhost.	**1.** Verify the current value of the autosupport.mailhost using the `options autosupport.mailhost` command. If the autosupport.mailhost is not correct, set it to the correct value using the command `options autosupport.mailhost` *`mailhost-name`*. **2.** If *mailhost name* in the autosupport.mailhost is correct, there might be an incorrect entry corresponding to this mailhost in the /etc/hosts file. Verify and correct the associated IP address for this mailhost stored in /etc/hosts file. You can do this by mounting the root volume of your appliance on an administrative host and editing the /etc/hosts file under the root volume. You can also run the `setup` command again with correct IP address for mailhost.

Name	Description	Corrective action
rlm.driver.network.failure	There was a failure during the network configuration of the RLM. The RLM could not be assigned a DHCP or fixed IP address.	**1.** Check whether a network cable is correctly plugged into the RLM network port. **2.** Check the link status LED on the RLM. **3.** The RLM supports a 10/100 Ethernet network in auto negotiation mode. The network that the RLM is connected to needs to support auto negotiation to 10/100 speed or be running at one of those speeds for the RLM network connectivity to work.
rlm.firmware.update.failed	There was an error updating the RLM's firmware.	**1.** The `software install` command needs to be run with correct parameters before running the `rlm update` command. Run the following command to download the RLM firmware image before running the `rlm update` command: `software install http://pathto/RLM_FW.zip -f' c` **2.** Issue the `rlm status` command at the Data ONTAP prompt to check whether the RLM is still operational. **3.** Retry the RLM firmware update. **4.** If the failure persists, then contact technical support.

Name	Description	Corrective action
rlm.heartbeat.bootFromBackup	This event occurs when the RLM has been rebooted from its backup firmware by the appliance to restore RLM availability. When the appliance stops receiving heartbeat notifications from the RLM, the RLM is considered unavailable. To restore availability, the appliance first attempts to reboot the RLM from the RLM's primary firmware. If that fails, the appliance attempts to reboot the RLM from its backup firmware. If the reboot from backup firmware restores availability, (heartbeat notifications are received) this message is generated.	Update RLM firmware.
rlm.heartbeat.resumed	This event occurs when the appliance detects resumption of RLM heartbeat notifications indicating that the RLM is now available. The earlier issue indicated by the rlm.heartbeat.stopped event has been resolved.	No action is needed; this message is user-generated.

Name	Description	Corrective action
rlm.heartbeat.stopped	This event occurs when the appliance has not received an expected heartbeat message from the RLM. The RLM and the appliance exchange heartbeat messages so that they can detect when one or the other is unavailable.	**1.** Run diagnostics on the RLM. **2.** Run diagnostics on your system. **3.** If the problem persists, contact technical support.
rlm.orftp.failed	A communication error occurred while sending or receiving information from the RLM.	**1.** Issue the `rlm status` command at the Data ONTAP prompt to check whether the RLM is operational. **2.** If the RLM is operational and this message persists, issue the `rlm reboot` command at the Data ONTAP prompt to reboot the RLM. **3.** If this message persists after the RLM has been rebooted, contact technical support.
rlm.userlist.update.failed	There was an error while updating user information for the RLM. When user information is updated on Data ONTAP, the RLM is also updated with the new changes. This enables users to login to the RLM.	**1.** Issue the `rlm status` command at the Data ONTAP prompt to check whether the RLM is operational. **2.** If the RLM is operational and this message persists, issue the `rlm reboot` command at the Data ONTAP prompt to reboot the RLM. **3.** Retry the operation that caused the error message. **4.** If this message persists after the RLM is rebooted, contact technical support.

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