IBM System Storage N series
Platform Monitoring Guide

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Table of Contents

Preface

About this guide

This guide describes hardware platform error messages generated by storage systems and basic methods of troubleshooting hardware problems.

Audience

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

Supported features

IBM® System Storage™ N series storage systems are driven by NetApp® Data ONTAP® software. Some features described in the product software documentation are neither offered nor supported by IBM. Please contact your local IBM representative or reseller for further details. Information about supported features can also be found at the following Web site:

www.ibm.com/storage/support/nas/

A listing of currently available N series products and features can be found at the following Web site:

www.ibm.com/storage/nas/

Getting information, help, and service

If you need help, service, or technical assistance or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. This section contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your IBM N series product, and whom to call for service, if it is necessary.

Before you call

Before you call, make sure that you have taken these steps to try to solve the problem yourself:

- Check all cables to make sure that they are connected properly.
- Check the power switches to make sure that the system is turned on.
- Use the troubleshooting information in your system documentation and use the diagnostic tools that come with your system.

Using the documentation

Information about N series hardware products is available in printed documents and a documentation CD that comes with your system. The same documentation is available as PDF files on the IBM NAS support Web site:

www.ibm.com/storage/support/nas/

Data ONTAP software publications are available as PDF files on the IBM NAS support Web site:

www.ibm.com/storage/support/nas/

Web sites

IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates.

- For NAS product information, go to the following Web site:
  www.ibm.com/storage/nas/
- For NAS support information, go to the following Web site:
  www.ibm.com/storage/support/nas/
- For AutoSupport information, go to the following Web site:
  www.ibm.com/storage/support/nas/
- For the latest version of publications, go to the following Web site:
  www.ibm.com/storage/support/nas/

Accessing online technical support

For online Technical Support for your IBM N series product, visit the following Web site:

www.ibm.com/storage/support/nas/

Hardware service and support

You can receive hardware service through IBM Integrated Technology Services. Visit the following Web site for support telephone numbers:

www.ibm.com/planetwide/

Supported servers and operating systems

IBM N series products attach to many servers and many operating systems. To determine the latest supported attachments, follow the link to the Interoperability Matrices from the following Web site:

www.ibm.com/storage/support/nas/

Firmware updates

As with all devices, it is recommended that you run the latest level of firmware, which can be downloaded by visiting the following Web site:

www.ibm.com/storage/support/nas/

Verify that the latest level of firmware is installed on your machine before contacting IBM for technical support. See the *Data ONTAP Upgrade Guide* for your version of Data ONTAP for more information on updating firmware.

Command conventions

You can enter storage system commands on the system console or from any client that can obtain access to the system 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.

Attention
An attention notice contains instructions that you must follow to avoid a system crash, loss of data, or damage to the equipment.

Caution
A caution notice warns you of conditions or procedures that can cause personal injury that is neither lethal or nor extremely hazardous.

Danger
A danger notice warns you of conditions or procedures that can result in death or severe personal injury.

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- Form number (for example, GC26-1234-02)
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Finding troubleshooting information 1

About this chapter

This chapter discusses the following topics:

What this guide covers

Error messages by type

This guide covers hardware troubleshooting issues common to all platforms. The systems alert you to problems by generating error messages. Error messages are displayed in different places, depending on the type of message. The following table lists information about the different types of messages generated by the system.

Error message type	Where this message is displayed	Where to go for information
Boot error messages	System console	Chapter 3, "Boot error messages," on page 54
CFE or BIOS error messages	System console	Chapter 3, "POST error messages," on page 42
LEDs	LEDs on various components	Chapter 2, "Interpreting LEDs," on page 5
EMS environmental and other operational messages	LCD display or system console	Chapter 4, "Interpreting EMS and operational error messages," on page 61
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 127
BMC notifications regarding the system and EMS messages about the BMC	E-mail sent to indicated e-mail addresses and system console	Chapter 6, "Understanding BMC messages" on page 143

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
N series storage systems	N7000 series N5000 series N3600/N3300	This guide
	N3700	*N3700 Hardware and Service Guide*
IBM N series gateways	N7000 series gateways N5000 series gateways	This guide
Exapnsion units (Disk shelves)	EXN2000 and EXN4000	*IBM N series EXN2000 Storage Expansion Unit Hardware and Service Guide* *IBM N series EXN4000 Storage Expansion Unit Hardware and Service Guide*
	EXN1000	*IBM N series EXN1000 Storage Expansion Unit Hardware and Service Guide*
Third-party hardware	Switches, routers, storage subsystems, and tape backup devices	Applicable third-party hardware documentation

Interpreting LEDs 2

About this chapter

This chapter describes the interpretation of LEDs for basic monitoring of your system.

For detailed information

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

Platform-specific LED information

Types of platform-specific 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 storage system with the bezel in place
- LEDs visible on the back of your storage system

N3300 and N33600 systems

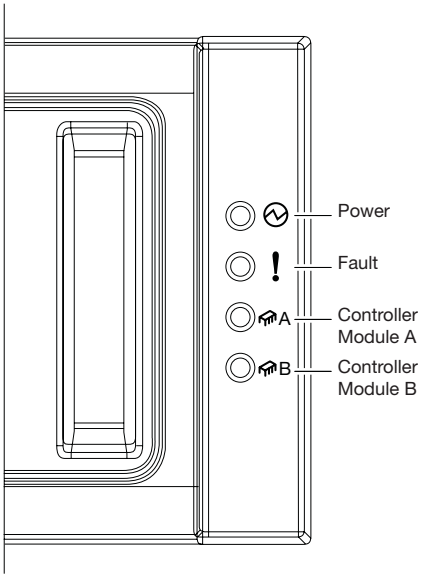
About this section

This section provides LED information specific to the following platforms:

- N3300 storage system
- N3600 storage system

LEDs visible from the front

Location of the LEDs: The following illustration shows the LEDs on the front panel of N3300 and N3600 storage systems.



What the LEDs mean: The following table explains what the front panel subassembly LEDs mean.

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

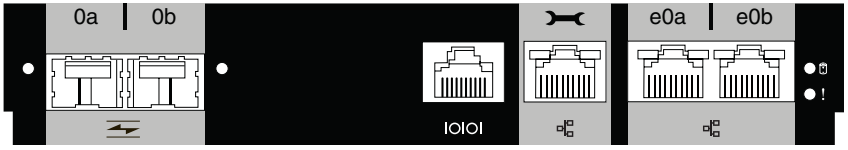
LED label	Status indicator	Description
Fault	Amber	The system halted or a fault occurred in the chassis. The error might be in a PSU, fan, controller module, or internal disk. The LED also is lit when there is a FRU failure, Data ONTAP® is not running on a controller module, or the system is in Maintenance mode.
	Off	The system is operating normally.
A/B (controller A or B)	Green	The controller is operating and is active.
	Blinking	This LED blinks in proportion to activity; the greater the activity, the more frequently the LED blinks. When activity is absent or very low, the LED does not blink.
	Off	No activity is detected.

LEDs visible from the back

Location of the LEDs: The following LEDs are on the rear panels of N3300 and N3600 systems:

- Fibre Channel port LEDs
- Remote management port LEDs
- Ethernet port LEDs
- Nonvolatile memory (NVMEM) LED
- Controller module fault LED

The following illustration shows the location of rear-panel LEDs on an N3600 storage system.



The rear-panel LEDs on an N3300 storage system are the same; however, the placement of some labels differs.

What the LEDs mean: The following table explains what your system's rear-panel LEDs mean.

Icon	Port type	LED type	Status indicator	Description
	Fibre Channel	LNK	Green	Link is established and communication is happening.
			Off	No link is established.
	Remote management	LNK (Left)	Green	A valid network connection is established.
			Off	There is no network connection present.
		ACT (Right)	Amber	There is data activity.
			Off	There is no network activity present.
	Ethernet	LNK (Left)	Green	A valid network connection is established.
			Off	There is no network connection present.
		ACT (Right)	Amber	There is data activity.
			Off	There is no network activity present.
	NVMEM	Battery	Blinking green	NVMEM is in battery-backed standby mode.
			Off (power on)	The system is running normally, and NVMEM is armed if Data ONTAP is running.
			Off (power off)	The system is shut down, NVMEM is not armed, and the battery is not enabled.
	Controller module fault	ACT	Amber	Controller is starting up, Data ONTAP is initializing, the controller is in Maintenance mode, or a controller module fault is detected.
			Off	Controller module is functioning properly.

Admonitions about NVMEM status

Several actions should not be performed on either the N3300 or N3600 or storage system if the NVMEM status LED is blinking or if NVMEM is armed (being protected).

Attention

Do not replace DIMMs or any other system hardware when the NVMEM status LED is blinking. Doing so might cause you to lose data. Always flush NVMEM contents to disk by entering a `halt` command at the system prompt before replacing the hardware.

If you replace DIMMs, be sure to follow the proper procedure.

Attention

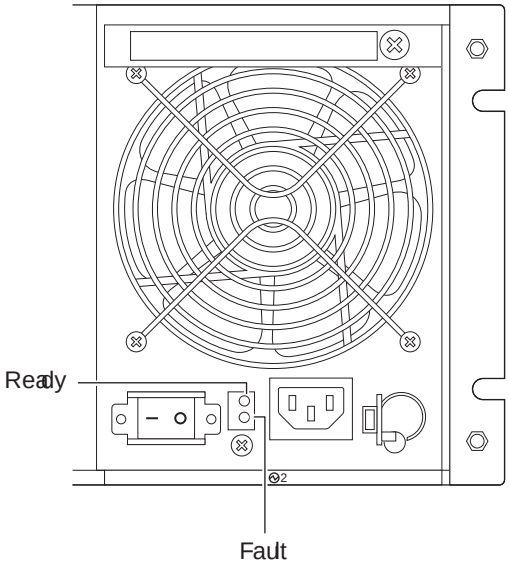
To protect critical data in NVMEM, you cannot update BIOS or BMC firmware when NVMEM is in use. Before updating firmware, ensure that NVMEM no longer contains critical data by performing a `halt` command to cleanly shut down Data ONTAP. When the system reboots to the `LOADER>` prompt, you can update your firmware.

Power supply LEDs

Location of the LEDs: The following illustration shows the location of the power supply LEDs, which are visible from the back of the system.

Note

The following illustration shows an N3600 power supply. The position of power supply LEDs on the N3300 is different, but the LEDs are functionally identical.



What the LEDs mean: The following table explains what the LEDs on the power supply mean.

LED name	LED color	Description
Ready	Green	The power supply is functioning correctly.
Fault	Amber	The power supply is not functioning properly and needs service. See the system console for any applicable error messages.

LED behavior and onboard drive failures

If an internal disk drive fails or is disabled, the fault light on the front of an N3300 or N3600 storage system turns on. When you remove the faulty or disabled disk drive, the fault light on the front of the system turns off.

The failure of disk drives in expansion disk shelves does not affect the fault light on the front of the system.

N5000 series storage systems and N5000 series gateways

About this section

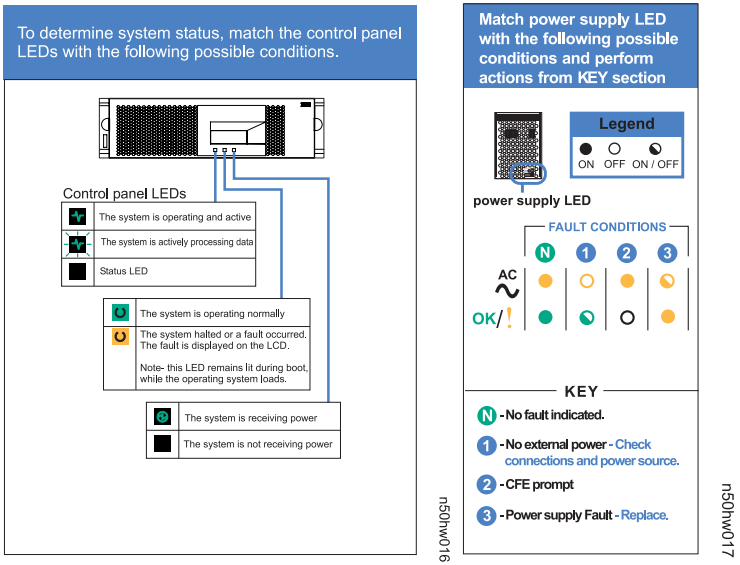
This section provides LED information specific to the following platforms:

- N5000 series storage systems
- N5000 series gateways

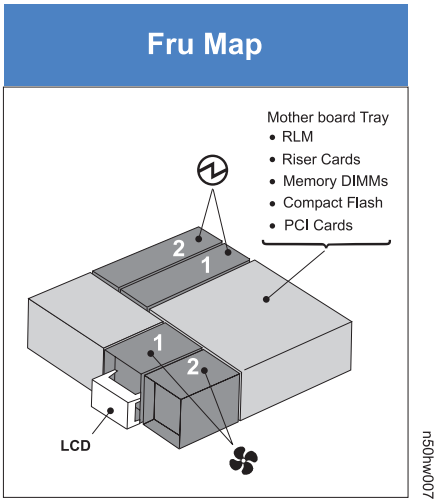
Using quick reference sheets

Your system might be shipped with a model-specific quick reference sheet located at the bottom of the chassis.

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

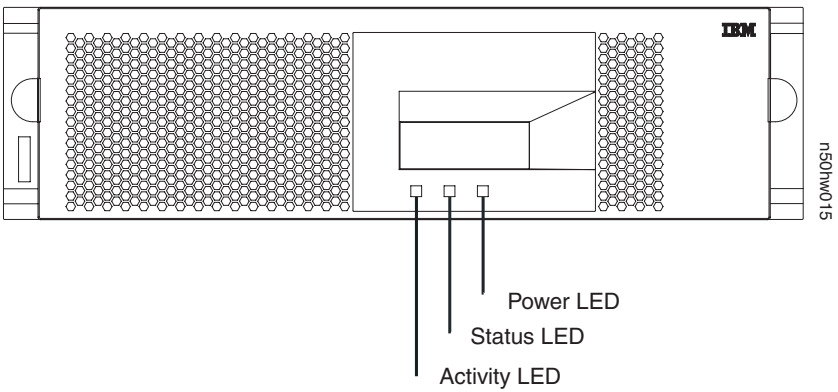


FRU Map: Use the FRU map on the reference sheet to identify field-replaceable units in your system.



LEDs visible from the front

Location of the LEDs: The following illustration shows the LEDs on the front panel subassembly.



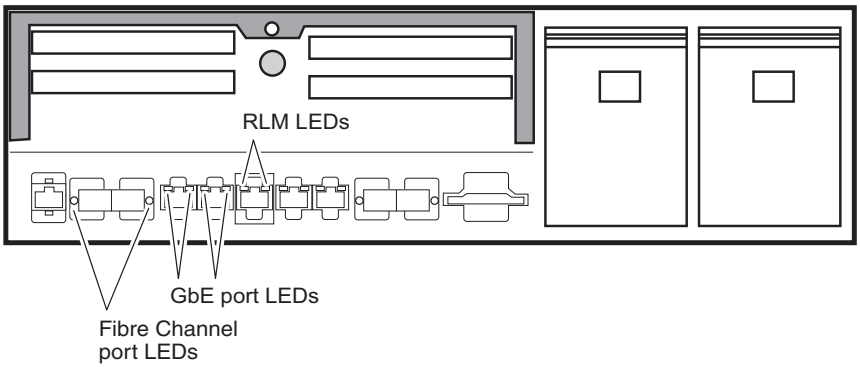
What the LEDs mean: The following table explains what the front panel subassembly LEDs mean.

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.
Power	Green	The system is receiving power.
	Off	The system is not receiving power.

LEDs visible from the back

Location of the LEDs: The following illustration shows the location of the following onboard port LEDs on the system backplane:

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

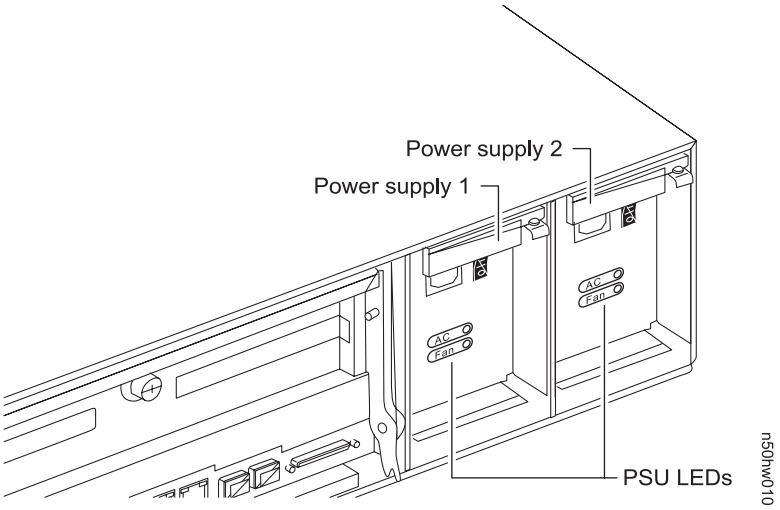


What the LEDs mean: The following table explains what the LEDs for your onboard ports mean.

Port type	LED type	Status indicator	Description
Fibre Channel	LNK	Off	No link with the Fibre Channel is established.
		Green	A link is established.
GbE and RLM	LNK	On	A valid network connection is established.
		Off	There is no network connection.
	ACT	On	There is data activity.
		Off	There is no network activity present.

Power supply LEDs

Location of the LEDs: The following illustration shows the location of the power supply LEDs on your system backplane.



What the LEDs mean: The following table explains what the LEDs on the power supplies mean.

LED label	Status indicator	Description
AC	Amber	No fault is indicated.
OK (or Status)	Green	
AC	Off	There is no external power; check the connections and the power source.
OK (or Status)	Off	
AC	Amber	◆ (N5200 and N5500 systems and N5200 and N5500 gateways) Common Firmware Environment (CFE) prompt. ◆ (N5300 and N5600 storage systems and N5300 and N5600 gateways) The system displays the `LOADER>` prompt because it has not booted Data ONTAP.
OK (or Status)	Off	

LED label	Status indicator	Description
AC	Flashing amber	There is a power supply fault; replace the power supply.
OK (or Status)	Amber	

N7000 series storage systems and N7000 series gateways

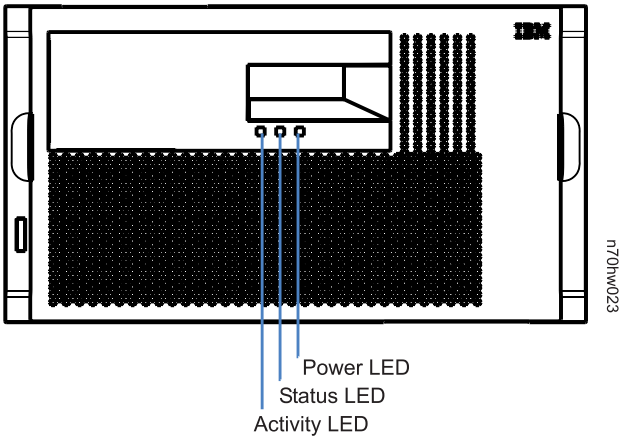
About this section

This section provides LED information specific to the following platforms:

- N7000 series storage systems
- N7000 series gateways

LEDs visible from the front

Location of the LEDs: The following illustration shows the LEDs on the front panel subassembly.



What the LEDs mean: The following table explains what the front panel subassembly LEDs mean.

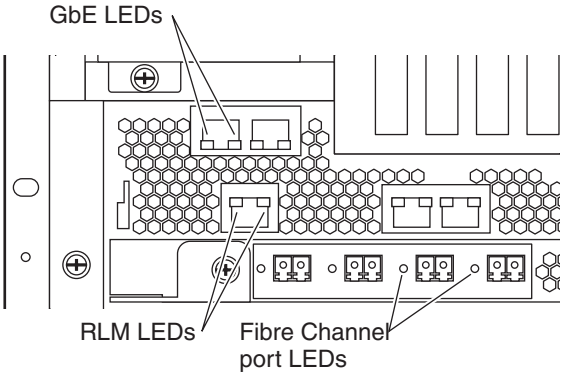
LED label	Status indicator	Description
Activity	Green	The system is operating and is active.
	Blinking	The system is actively processing data.
	Off	No activity is detected.

LED label	Status indicator	Description
Status	Green	The system is operating normally.
	Amber	The system halted or a fault occurred. The fault is displayed in the LCD. **Attention** This LED remains lit during boot, while the operating system loads.
Power	Green	The system is receiving power.
	Off	The system is not receiving power.

LEDs visible from the back

Location of the LEDs: The following illustration shows the location of the following onboard port LEDs on the system backplane:

- Fibre Channel port LEDs
- GBE
- RLM LEDs

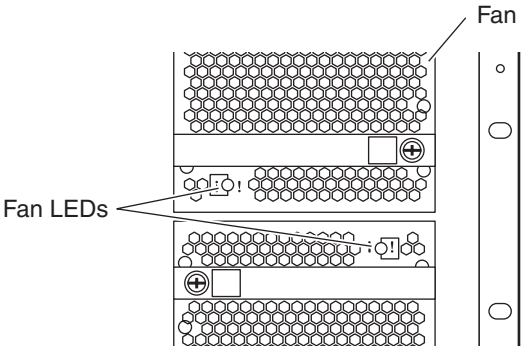


What the LEDs mean: The following table explains what the LEDs for your onboard ports mean.

Port type	LED type	Status indicator	Description
Fibre Channel	LNK (Green)	Off	No link with the Fibre Channel is established.
		Blinking (N7600 and N7800 systems and N7600 and N7800 gateways)	A link is established and communication is happening.
		Solid (N7700 and N7900 systems and N7700 and N7900 gateways)	
GbE and RLM	LNK	On	A valid network connection is established.
		Off	There is no network connection.
	ACT	On	There is data activity.
		Off	There is no network activity present.

Fan LEDs

Location of the LEDs: The following illustration shows the location of the fan LEDs, which you can see when you remove the bezel.

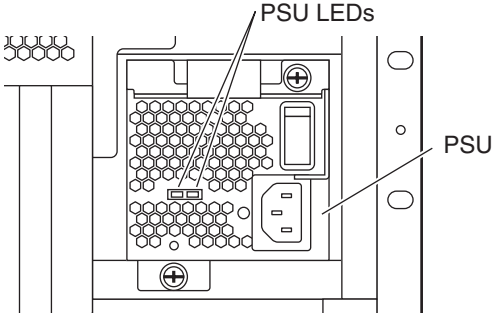


What the LEDs mean: The following table explains what the LEDs on the fans mean.

LED status	Description
Orange blinking	The fan failed.
Off	There is no power to the system, or the fan is operational.

Power supply LEDs

Location of the LEDs: The following illustration shows the location of the power supply LEDs on your system backplane.



What the LEDs mean: The following table explains what the LEDs on the power supplies mean.

Amber (indicates AC input)	Green (indicates DC output)	Description
On	On	The AC power source is good and is powering the system.
On	Off	There is AC power present, but the power supply is not operational.
On	Blinking	There is AC power present but the power supply is not enabled.
Off	Off	There is insufficient power to the system.

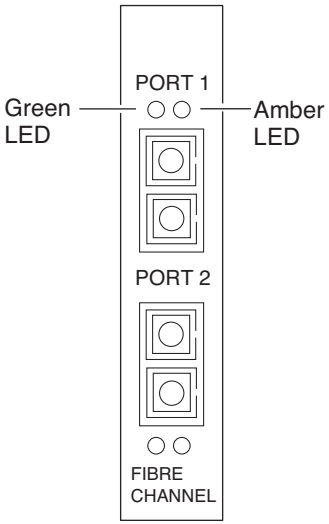
Host bus adapter LEDs

HBA types

Storage systems might have Fibre Channel or iSCSI host bus adapters (HBAs) installed and configured on them.

Dual-port Fibre Channel HBA LEDs

Location of the LEDs: The following illustration shows the LED locations on a dual-port Fibre Channel HBA.



What the LEDs mean: The following table explains what the LEDs on a dual-port Fibre Channel HBA mean.

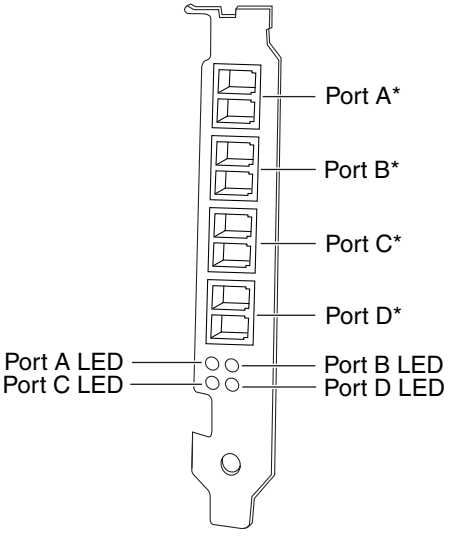
Green	Amber	Description
On	On	Power is on.
Off	Flashing	Sync is lost.
Off	On	Signal is acquired.
On	Off	Ready.

Green	Amber	Description
Flashing	Off	4 seconds solid followed by one flash: 1-Gb link speed. 4 seconds solid green link followed by two flashes: 2-Gb link speed.
Flashing	Flashing	Adapter firmware error has been detected.

Quad-port, 4-Gb, Fibre Channel HBA LEDs

There are two versions of the quad-port, 4-Gb Fibre Channel HBA. One version has four LEDs, and the other has 12 LEDs. Both HBAs function identically but provide slightly different feedback through the LEDs.

(Four-LED version) Location of the LEDs: The following illustration shows the location of LEDs on a quad-port, 4-Gb, Fibre Channel HBA.

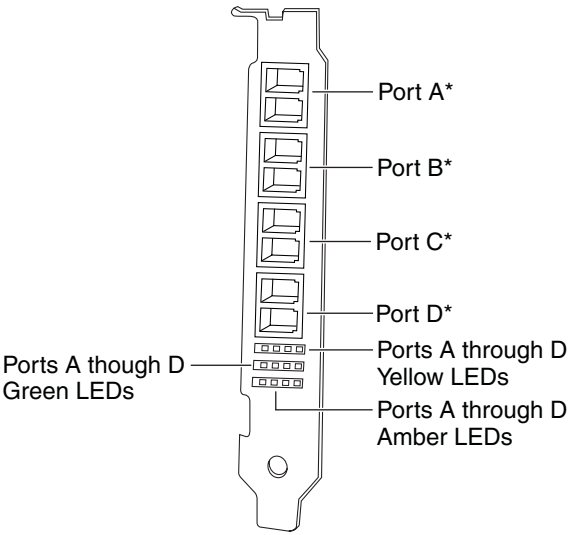


* Ports in this drawing are labeled as identified by Data ONTAP software.

(Four-LED version) What the LEDs mean: The following table explains what the LEDs on a quad-port, 4-Gb, Fibre Channel HBA mean.

Led label	Status indicator	Description
By port letter	White	There is a loss of sync or no link.
	Blinking white	There is a fault.
	Amber	1-Gbps link is established.
	Blinking amber	1-Gbps data transfer is taking place.
	Green	2-Gbps link is established.
	Blinking green	2-Gbps data transfer is taking place.
	Blue	4-Gbps link is established.
	Blinking blue	4-Gbps data transfer is taking place.

(12-LED version) Location of the LEDs: The following illustration shows the location of LEDs on a quad-port, 4-Gb, Fibre Channel HBA.



* Ports in this drawing are labeled as identified by Data ONTAP software.

(12-LED version) What the LEDs mean: The following table explains what the LEDs on a quad-port, 4-Gb, Fibre Channel HBA mean.

Yellow LEDs	Green LEDs	Amber LEDs	Description
Off			Power is off.
On			Power is on (before firmware initialization).
Flashing			Power is on (after firmware initialization).
All LEDs alternately flashing			A firmware error is detected.
Off	Off	On	1-Gbps link is established.
Off	Off	Flashing	1-Gbps data transfer is taking place.
Off	On	Off	2-Gbps link is established.
Off	Flashing	Off	2-Gbps data transfer is taking place.
On	Off	Off	4-Gbps link is established.
Flashing	Off	Off	4-Gbps data transfer is taking place.

Cabling and support rules: The quad-port, 4-Gb, Fibre Channel HBA supports all IBM storage expansion units, subject to current loop mixing restrictions, as well as third-party Fibre Channel tape devices and libraries. You can mix Fibre Channel disk shelves and Fibre Channel tape devices on the same HBA. You must cable them by port pairs of A&B and C&D.

The following are not supported by the HBA or do not support this HBA:

- Fabric-attached MetroCluster configurations
- IBM N series gateways
- HBA target mode

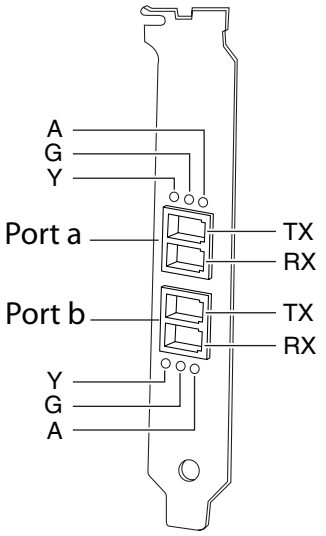
The following table shows possible cabling combinations by port and device.

Ports A&B	Ports C&D
Disk shelves	Disk shelves
Disk shelves	Tape/library devices
Tape/library devices	Disk shelves

Ports A&B	Ports C&D
Tape/library devices	Tape/library devices

Dual-port, 4-Gb, target mode, Fibre Channel HBA LEDs

Location of the LEDs: The following illustration shows the location of LEDs on a dual-port, 4-Gb, target mode Fibre Channel HBA.



What the LEDs mean: The following table explains what the LEDs on the HBA mean.

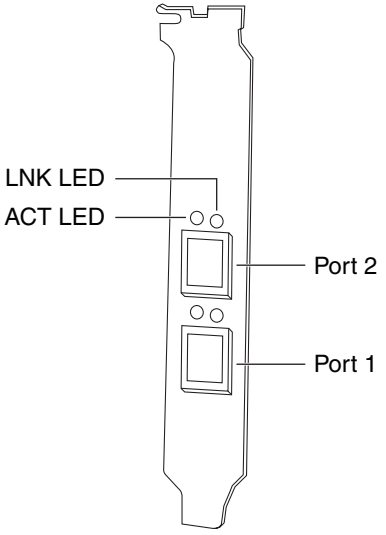
Yellow	Green	Amber	Description
Off	Off	Off	Power is off.
On	On	On	Power is on, before firmware initialization.
Flashing	Flashing	Flashing	Power is on, after firmware initialization.
LEDs flashing alternately			A firmware error is detected.
Off	Off	On/ Flashing	1-Gbps link/I/O is established.

Yellow	Green	Amber	Description
Off	On/ Flashing	Off	2-Gbps link/I/O is established.
On/Flashing	Off	Off	4-Gbps link/I/O is established.
Flashing	Off	Flashing	Beacon.

iSCSI target HBA LEDs

There are two types of iSCSI target HBAs: Fibre Channel and copper.

(Fibre Channel) Location of the LEDs: The following illustration shows the location of LEDs on a Fibre Channel iSCSI target HBA.

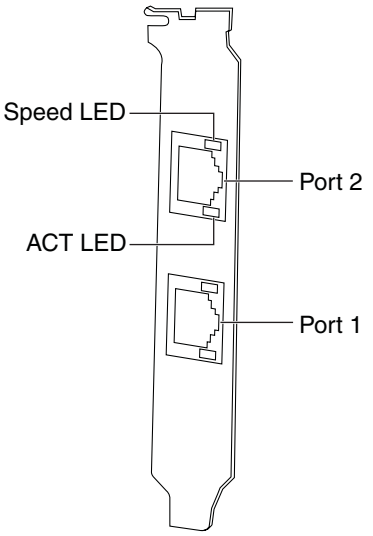


(Fibre Channel) What the LEDs mean: The following table explains what the LEDs on a Fibre Channel iSCSI target HBA mean.

LED label	Status indicator	Description
LNK	Yellow	The HBA is on and connected to the network.
	Off	The HBA is not connected to the network.

LED label	Status indicator	Description
ACT	Green	A connection is established.
	Blinking green	There is data activity.

(Copper) Location of the LEDs: The following illustration shows the location of LEDs on a copper iSCSI target HBA.



(Copper) What the LEDs mean: The following table explains what the LEDs on a copper iSCSI target HBA mean.

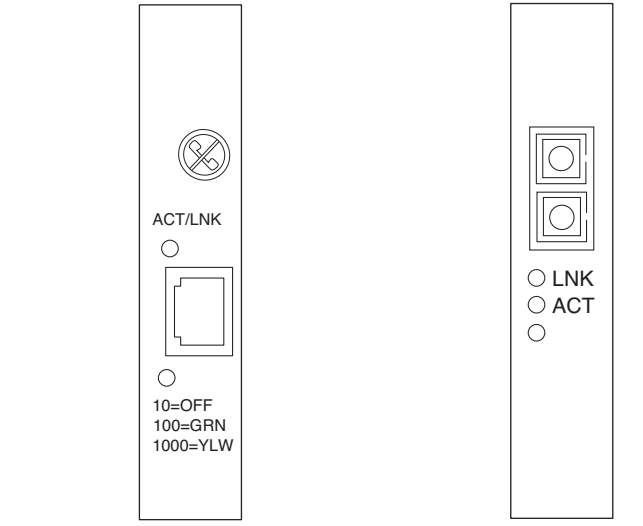
LED Label	Status Indicator	Description
Speed	Green	The HBA is running at 1 Gbps.
	Off	The HBA is not running at 1 Gbps.
ACT	Amber	A connection is established.
	Blinking amber	There is data activity.

GbE NIC LEDs

GbE NICs LEDs

Your system might have Ethernet network interface cards (NICs) in it. The LEDs on the cards are similar to the onboard Ethernet ports in that they give the status and activity of the Ethernet connection. The NICs might also identify transfer speeds.

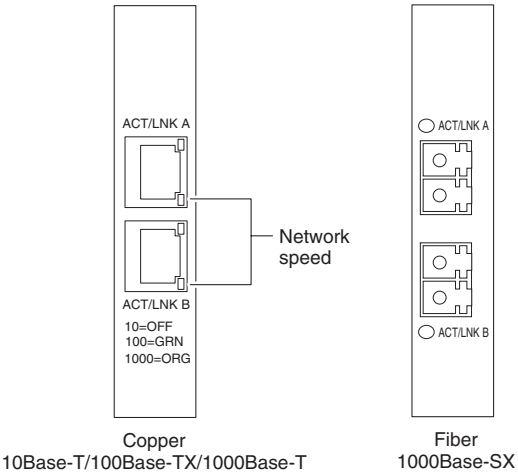
Location of the single-port GbE NIC LEDs: The following illustration shows the location of LEDs on the copper and fiber single-port GbE NICs.



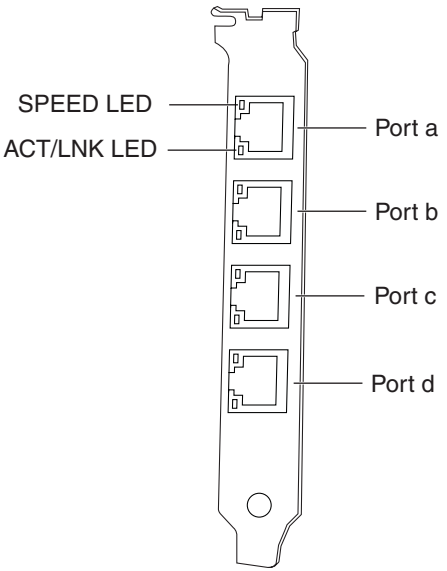
Copper
10Base-T/100Base-TX/1000Base-T

Fiber
1000Base-SX

Location of the multiport GbE NIC LEDs: The following illustration shows the location of LEDs on the copper and fiber dual-port GbE NICs.



The following illustrations show the location of LEDs on the copper quad-port GbE NIC.



What the copper GbE NIC LEDs mean: The following table explains what the LEDs on a multiport GbE NIC mean.

Attention

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 or blinking amber	There is data activity.
	Off	There is no network connection.
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.

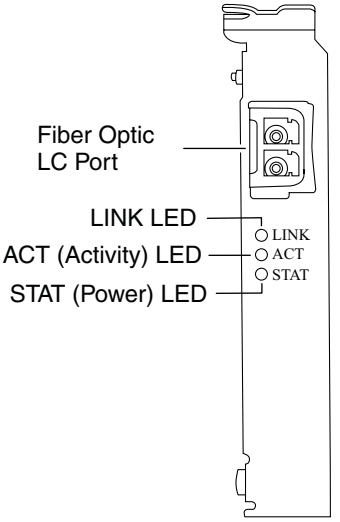
What the fiber GbE NIC LEDs mean: The following table explains what the LEDs on the fiber GbE NIC mean.

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

TCP offload engine NIC LEDs

Single-port TOE NIC LEDs

Location of the LEDs: The single-port TCP offload engine (TOE) is a 10GBase-SR fiber optic NIC. The following illustration shows the location of LEDs on this NIC.

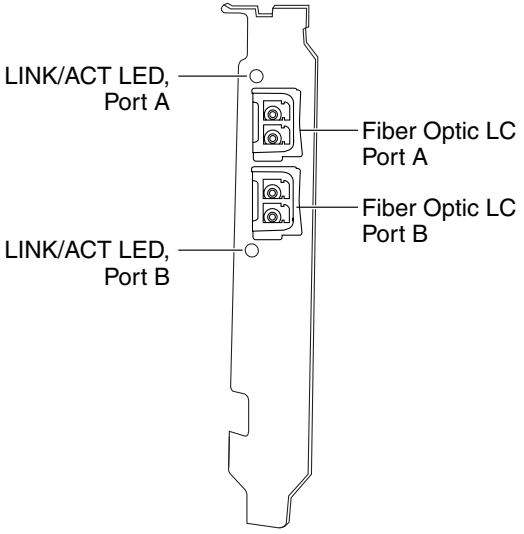


What the LEDs mean: The following table explains what the LEDs on the single-port TOE NIC mean.

LED label	Status indicator	Description
ACT/LNK	Green	A valid network connection is established.
	Blinking green	There is data activity.
	Off	There is no network connection.
STAT	Red	The NIC is receiving power and is on.
	Off	The operating system has booted.

Dual-port TOE NIC LEDs, 10GBase-SR

Location of the LEDs: This 10-Gb TOE NIC is a 10GBase-SR fiber optic NIC. The following illustration shows the location of LEDs on this NIC.

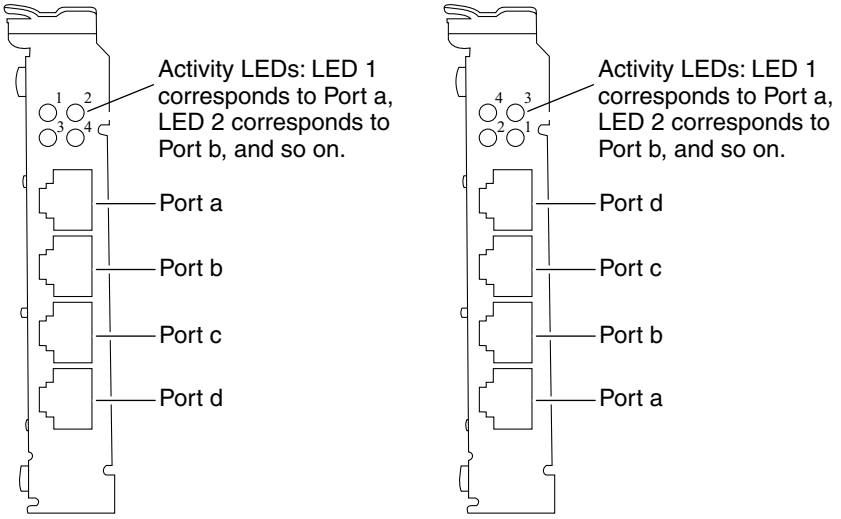


What the LEDs mean: The following table explains what the LEDs on this dual-port TOE NIC mean.

LED label	Status indicator	Description
LINK/ACT	Green	A valid network connection is established.
	Blinking amber	There is data activity.
	Off	There is no network connection present.

Quad-port TOE NIC

Location of the LEDs: The quad-port TOE NIC is a 1000Base-T copper NIC. It uses an RJ-45 connector. The following illustration shows the location of LEDs on this NIC.



What the LEDs mean: The following table explains what the LEDs on the quad-port TOE NIC mean.

LED Label	Status Indicator	Description
Labeled by port number	Yellow	Data transmits at 1 Gbps.
	Green	Data transmits at 10/100 Mbps.
	Blinking	There is data activity.

NVRAM5 and NVRAM6 adapter LEDs

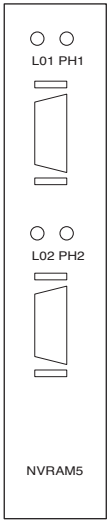
About NVRAM5 and NVRAM6

The NVRAM5 and NVRAM6 adapters are also the interconnect adapters when your system is in an active/active (clustered) configuration except with MetroCluster. The following table displays which systems support which adapter.

Adapter	Systems
NVRAM5	N5200 and N5500 storage systems and N5200 and N5500 gateways
NVRAM6	◆ N5300 and N5600 storage systems and N5300 and N5600 gateways ◆ N7000 series systems and N7000 series gateways

Location of LEDs

The following illustration shows the LED locations on an NVRAM5 or an NVRAM6 adapter. There are two sets of LEDs by each port that operate when you use the adapter as an interconnect adapter in an active/active configuration. There is also an internal red LED that you can see through the faceplate.



What the LEDs mean

The following table explains what the LEDs on an NVRAM5 or NVRAM6 adapter mean.

LED type	Indicator	Status	Description
Internal	Red	Blinking	There is valid data in the NVRAM5 or NVRAM6. **Attention** 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 exists.
LO1	Yellow	On	The logical connection is working.
		Off	No logical connection exists.

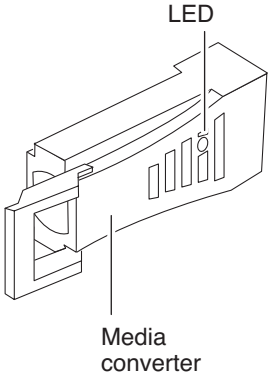
NVRAM5 and NVRAM6 media converter LEDs

About the media converter

The media converter enables you to use fiber cabling to cable your storage systems in an active/active (clustered) configuration.

Location of LEDs

The following illustration shows the location of the LED on an NVRAM5 or an NVRAM6 media converter.



Media converter LEDs

The following table explains what the LED on an NVRAM5 or an NVRAM6 media converter means.

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.

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

Startup sequence

When you apply power to your storage system, 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 and LOADER messages

CFE and LOADER messages occur when an error occurs when the CFE and LOADER run through the 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. POST messages appear on the system console.

Note

Your storage system LCD, where applicable, displays only the POST messages without a header.

Boot messages

Note

After the boot is successfully completed, your storage system loads the operating system. The exact boot messages that appear on your system console depend on your system configuration.

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 subsystem, 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 42
- “Boot error messages” on page 54

POST error messages

POST error messages

The following section describes POST error messages specific to the following platforms:

- N7000 series storage systems and N7000 series gateway systems
- N5300 and N5600 storage systems and N5300 and N5600 gateway systems
- N5200 and N5500 storage systems and N5200 and N5500 gateway systems

N5300 and N5600 systems, N5300 and N5600 gateways, N7000 series storage systems, and N7000 series gateways

POST error messages

The following table describes POST error messages that might appear on the system console if your system encounters errors while the BIOS and boot loader initiate the hardware.

Attention

Always power-cycle your system 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
0200: Failure Fixed Disk	A disk error occurred.	Complete the following steps to determine whether the CompactFlash card is bad. **1.** Enter the following command at the `LOADER>` prompt: **`boot_diag`** **2.** Select the `cf-card` test. If the test shows that the CompactFlash card is bad, replace it. If the CompactFlash card is good, replace the motherboard.

Error message or code	Description	Corrective action
0230: System RAM Failed at offset: *0231: Shadow RAM failed at offset* *0232: Extended RAM failed at address line* *Multiple-bit ECC error occurred* *Bad DIMM found in slot #*	The BIOS cannot initialize the system memory or a DIMM has failed.	Check the DIMMs and replace any bad ones by completing the following steps: **1.** Make sure that each DIMM is seated properly, then power-cycle the system. **2.** If the problem persists, run the diagnostics to determine which DIMMs failed. Enter the following command at the `LOADER>` prompt: **`boot_diag`** **3.** Select the following test: `mem` Replace the failed DIMMs.
023E: Node Memory Interleaving disabled	A bad DIMM was detected, which causes BIOS to disable Node Interleaving.	
None on console. Problem may be reported in the Remote LAN Module (RLM) system event log (SEL) with the code 037h or in the SMBIOS SEL with the error code 237h.	There is not enough memory to accommodate SMBIOS structure.	Perform one of the following steps: ◆ Remove some adapters from PCI slots ◆ Check the DIMMs and replace any bad ones. Follow the procedure described in the corrective action for the preceding errors messages.

Error message or code	Description	Corrective action

*0241: Agent Read Timeou*t	Timeout occurs when BIOS tries to read or write information through System Management Bus (SMBUS) or Inter-Integrated Circuit (I2C).	Run the Agent diagnostic test.
		1. Enter the following command at the `LOADER>` prompt:
		`boot_diag`
		2. Select and run the following tests:
		`agent`
		`2`
		`6`
		3. Select and run the following tests:
		`mb`
		`2`
		`8`

Error message or code	Description	Corrective action

0242: Invalid FRU information	The information from the field-replaceable unit's (FRU's) Electrically Erasable Programmable Read-Only Memory (EEPROM) is invalid.	**1.** Enter the following command at the `LOADER>` prompt:
		`boot_diag`
		2. To determine the FRU involved, select the following tests:
		`mb`
		`74`
		3. Check whether the FRU's model name, serial number, part number, and revision are correct in one of the following ways:
		❖ Visually inspect the FRU.
		❖ Look for error messages indicating that the FRU information is invalid or could not be read.
		4. Contact technical support if you suspect a misprogrammed FRU.

0250: System battery is dead–Replace and run SETUP	The real-time clock (RTC) battery is dead.	**1.** Reboot the system. **2.** If the problem persists, replace the RTC battery **3.** Reset the RTC.
0251: System CMOS checksum bad–Default configuration used	CMOS checksum is bad, possibly because the system was reset during BIOS boot or because of a dead real-time clock (RTC) battery.	**1.** Reboot the system. **2.** If the problem persists, replace the RTC battery. **3.** Reset the RTC.

Error message or code	Description	Corrective action
0253: Clear CMOS jumper detected–Please remove for normal operation (N7000 series storage systems and N7000 series gateways only)	The clear CMOS jumper is installed on the main board.	Remove the clear CMOS jumper and reset the system.
0260: System timer error	The system clock is not ticking.	Replace the HT1000 chip.
0280: Previous boot incomplete–Default configuration used	The previous boot was incomplete, and the default configuration was used.	Reboot the system.
02C2: No valid Boot Loader in System Flash–Non Fatal	No valid boot loader is found in system flash memory while the option to Halt For Invalid Boot Loader is disabled in setup. As the result, the system still can boot from CompactFlash if it has a valid boot loader.	Enter the `update_flash` command two times to place a good boot loader in the system flash.

Error message or code	Description	Corrective action
02C3: No valid Boot Loader in System Flash–Fatal	No valid boot loader is found in system flash memory while the option to Halt For Invalid Boot Loader is enabled in setup. As the result, the system halts. Users should take corrective action.	Place a valid version of the boot loader in the system flash by completing either of the following series of steps: **1.** Boot from the backup boot image. **2.** Enter the `update_flash` command. or **1.** Enter setup and disable boot from system flash. **2.** Save the setting. **3.** Reboot to the `LOADER>` prompt, and then enter the `update_flash` command two times.
02F9: FGPA jumper detected–Please remove for normal operation (N7000 series storage systems and N7000 gateways only)	The FPGA jumper was installed on the motherboard.	**1.** Remove the FPGA jumper. **2.** Reboot the system.

Error message or code	Description	Corrective action

02FA: Watchdog Timer Reboot (PciInit)	The watchdog times out while BIOS is doing PCI initialization.	**1.** Power-cycle the system a few times or reset the system through the Remote LAN Module (RLM).
		2. If the problem persists, check the PCI interface. At the `LOADER>` prompt, enter the following command:
		`boot_diags`
		3. Select the following tests:
		`mb`
		`4`
		`71`
		4. Replace the motherboard if the diagnostics show a problem.

02FB: Watchdog Timer Reboot (MemTest) (N7000 series storage systems and N7000 gateways only)	The watchdog times out while BIOS is testing the extended memory.	**1.** Power-cycle the system a few times or reset the system through the Remote LAN Module (RLM).
		2. If the problem persists, check the memory interface. At the `LOADER>` prompt, enter the following command:
		`boot_diags`
		3. Select the following tests:
		`mem`
		`1`
		4. Replace the DIMMs if the diagnostics show a problem.
		5. Replace the motherboard if the problem persists.

Error message or code	Description	Corrective action
02FC: LDTStop Reboot (HTLinkInit)	The watchdog times out while BIOS is setting up the HT link speed.	**1.** Power-cycle the system a few times or reset the system through the Remote LAN Module (RLM). **2.** If the problem persists, replace the motherboard.

POST error messages

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

Attention

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

Note

There is an LED next to each DIMM on the motherboard. When a DIMM fails, the LED lights help you find the failed DIMM.

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.	**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 persists.
No Memory found	The CFE cannot detect the system DIMMs.	**1.** Make sure that the DIMM is seated properly and power-cycle your storage system. **2.** Replace the DIMM if the problem persists.

Error message or code	Description	Corrective action
Abort Autoboot–POST Failure(s): MEMORY	The memory test failed.	**1.** Make sure that DIMMs are seated properly, then power-cycle your storage system. **2.** Replace the DIMM if the problem persists.
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 the `set date` and the `set time` command to set the date and time. **2.** Make sure that the RTC battery is still good.
Abort Autoboot–POST Failure(s): CPU	At least one CPU fails to start up properly.	**1.** Power-cycle the system to see whether the problem 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 persists. **2.** Replace the motherboard tray if the problem persists.
Invalid FRU EEPROM Checksum	The system backplane 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.

Error message or code	Description	Corrective action
Autoboot of Back up image failed Autoboot of primary image failed	The kernel could not be found on the CompactFlash card.	**1.** Check the CompactFlash card connection. **2.** Make sure that the CompactFlash card content is valid; if it is not, replace the CompactFlash card. **3.** Follow the netboot procedure on your CompactFlash card documentation 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 storage system begins to load the operating system.

Boot error messages

The following table describes the error messages that might appear on the LCD if your storage system 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 storage system 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 storage system are supported. Contact technical support for help. Have a list ready of all expansion adapters installed in your storage system.
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 storage system 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 appropriate hardware and service guide 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 storage system 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 storage system is in degraded mode and when NVRAM is not working.	Contact technical support.
	◆ 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 technical support for help.
	◆ A disk failed at the same time the system crashed.	Contact 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 active/active (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.	Replace the unsupported adapter with an adapter that is included in the appropriate hardware and service guide.
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 storage system 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 storage system configuration information worksheet. For more information about your storage system 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 storage system configuration information worksheet. For more information about your storage system `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 technical support.
NVRAM: wrong pci slot	The system cannot detect the NVRAM adapter.	◆ For a stand-alone N5200 or N5500 system, make sure that the NVRAM adapter is in slot 1. ◆ For a N5200 or N5500 series system in active/active (clustered) configuration, make sure that the NVRAM adapter is in slot 2.

Boot error message	Explanation	Corrective action
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. Replace 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.
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 storage system can be replaced.

Boot error message	Explanation	Corrective action
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 storage system watchdog reset hardware, used to reset your storage system 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.

Topics in this chapter

This chapter discusses the following topics:

N3300 and N3600 system AutoSupport error messages

When AutoSupport error messages appear

The following table describes the AutoSupport error messages that might appear on the N3300 and N3600 storage system console.

Attention

When you remove a power supply on an N3300 or N3600 storage system, you have two minutes to replace it to prevent possible damage to the controller modules. If you do not replace the power supply within two minutes, the controller modules shut down.

Attention

After you remove and replace the NVMEM battery or a DIMM on an N3300 or N3600 storage system, you need to manually reset the date and time on the controller module after Data ONTAP finishes booting. If your system is in an active/active configuration, you need to reset the date and time on both controller modules.

If you replace a DIMM, you must follow the proper procedure.

Error message or code	Description	Corrective action
BATTERY LOW	The NVMEM battery is low. The smart battery automatically begins charging. If the battery is not fully charged after 24 hours, the controller module will shut down.	**1.** Allow the battery time to charge. **2.** Replace the battery. **3.** If this message persists, call technical support.
BATTERY OVER TEMPERATURE	Battery is over-temperature.	**1.** Allow the system to cool gradually. **2.** If this error persists, replace the battery pack.

Error message or code	Description	Corrective action
BMC HEARTBEAT STOPPED	This message occurs when Data ONTAP loses communication with the baseboard management controller (BMC) despite resetting the BMC multiple times during repeated attempts to restore communication. The BMC monitors the processor module environment and the NVMEM battery condition. Without BMC communication, Data ONTAP cannot detect environmental errors such as over-temperature or under-voltage failure or NVMEM battery failure. Also, Data ONTAP cannot boot without a working BMC. Typically, this error indicates a hardware failure of the BMC residing on the controller module.	Replace the controller module.
CHASSIS FAN FAIL	A fan failed (stopped spinning).	Check LEDs on the power supplies. ◆ If neither of the PSU amber fault LEDs are illuminated, run diagnostics on the power supplies. ◆ If the PSU amber fault LED is illuminated, return the power supply unit as directed by your system service provider.

Error message or code	Description	Corrective action
CHASSIS FAN FRU DEGRADED	A chassis fan is degraded.	Check LEDs on the power supplies. ◆ If neither of the PSU amber fault LEDs are illuminated, run diagnostics on the power supplies. ◆ If the PSU amber fault LED is illuminated, replace the power supply unit.
CHASSIS FAN FRU FAILED	A fan is degraded and might need replacing.	Check LEDs on the power supplies. ◆ If neither of the PSU amber fault LEDs are illuminated, run diagnostics on the power supplies. ◆ If the PSU amber fault LED is illuminated, replace the power supply unit.
CHASSIS FAN FRU REMOVED	A power supply unit has been removed.	Replace the power supply unit.
CHASSIS OVER TEMPERATURE	The chassis temperature is too warm. The environment in which the system is functioning should be evaluated.	**1.** Check the environment temperature. **2.** Check the system for adequate air flow to and around the system. **3.** Check the system to ensure the power supply fans are running. **4.** If this message persists, call technical support.
CHASSIS OVER TEMPERATURE SHUTDOWN	The chassis temperature is too hot. Data ONTAP will automatically shut down and power off the controller modules to prevent damaging them.	

Error message or code	Description	Corrective action
CHASSIS POWER DEGRADED	There is a possible bad power supply, bad wall power, or failed components in the controller module.	**1.** Replace the identified power supply unit. **2.** If this message persists, call technical support.
CHASSIS POWER SHUTDOWN	A power supply failed. The voltage sensors for system power exceed critical levels.	
CHASSIS POWER SUPPLIES MISMATCH	An unsupported power supply has been detected.	
CHASSIS POWER SUPPLY: Incompatible external power source	Check the power supply source. It should be the same type (voltage and current type) as required by power supplies in the system.	**1.** Connect the system to the proper power source. **2.** Replace the identified power supply. **3.** If this message persists, call technical support.
CHASSIS POWER SUPPLY DEGRADED	A power supply is not functioning properly.	**1.** Replace the identified power supply. **2.** If this message persists, call technical support.
CHASSIS POWER SUPPLY FAIL	A power supply failed.	
CHASSIS POWER SUPPLY OK	A previously reported issue has been corrected and the power supply is now fully functional.	N/A
CHASSIS POWER SUPPLY OFF: PS%d	The system reports that the identified power supply is off.	Turn on the identified power supply.
CHASSIS POWER SUPPLY REMOVED	A power supply was removed.	Insert the missing power supply.
CHASSIS POWER SUPPLY %d REMOVED: System will be shutdown in %d minutes	A power supply was removed or is not functioning properly.	**1.** Replace the identified power supply. **2.** If this message persists, call technical support.

Error message or code	Description	Corrective action
CHASSIS UNDER TEMPERATURE	The chassis temperature is too cool.	1. Check the environment temperature. Raise it as needed. 2. If this message persists, call technical support.
CHASSIS UNDER TEMPERATURE SHUTDOWN	The chassis temperature is too cold. The controller module will shut down in 60 seconds.	
DISK PORT FAIL	A disk failure occurred. The disk was failed electronically, disabling it on one or possibly both ports.	Replace the disabled disk drive.
ENCLOSURE SERVICES ACCESS ERROR	Data ONTAP cannot communicate with the enclosure services process.	1. Check the cabling between the disk shelf and the system. Recable as needed. 2. If this message persists, call technical support.
HOST PORT FAIL	One of the host ports was disabled because of excessive errors on that port.	Replace the controller module to which the disabled host port belongs.
MULTIPLE CHASSIS FAN FAILED: System will shut down in %d minutes	More than one chassis fan failed.	Replace the power supply units.
MULTIPLE FAN FAILURE	Multiple fans failed.	Return the power supply units as directed by your system service provider.
NVMEM_VOLTAGE_ TOO_HIGH	The NVMEM supply voltage is excessively high.	1. Correct any environmental or battery problems. 2. If the problem continues, replace the controller module.
NVMEM_VOLTAGE_ TOO_LOW	The NVMEM supply voltage is excessively low.	1. Correct any environmental or battery problems. 2. If the problem continues, replace the controller module.

Error message or code	Description	Corrective action
POSSIBLE BAD RAM	DIMMs might not be properly seated or might be faulty. The controller module hardware still automatically corrects any correctable ECC errors but does not report them.	**1.** Check the DIMMs and reseat them, as needed. **2.** Replace one or more of the DIMMs. **3.** Replace the controller module. **4.** If this message persists, call technical support.
POWER_SUPPLY_FAIL	A power supply failed and the system is shutting down.	**1.** Replace the identified power supply. **2.** If this message persists, call technical support.
PS #1(2) Failed POWER_SUPPLY_ DEGRADE	Partial redundant power supply (RPS) failure occurred. One of the two power supplies stopped functioning.	
SHELF COOLING UNIT FAILED	A disk shelf fan failed or is failing.	Check LEDs on the fans and power supply. ◆ If both fan LEDs are green, run diagnostics on the power supplies. ◆ If the fan LED is off, return the power supply unit as directed by your system service provider.
SHELF_FAULT	A disk shelf error has occurred.	Contact technical support.
SHELF OVER TEMPERATURE	A disk shelf has a critical over temperature condition.	**1.** Check the environment temperature. **2.** Check the system for adequate air flow to and around the system. Correct as needed. **3.** Check the system to ensure the power supply fans are running. **4.** If this message persists, call technical support.

Error message or code	Description	Corrective action
SHELF POWER INTERRUPTED	A disk shelf has a critical power failure condition.	**1.** Replace the identified power supply. **2.** If this message persists, call technical support.
SHELF POWER SUPPLY WARNING	A disk shelf has a power supply failure warning condition.	
SYSTEM CONFIGURATION ERROR (SYSTEM_ CONFIGURATION_CRITICAL_ERROR)	◆ Card in slot {#} (device type/ID) is not supported. ◆ Card (name) card in slot (#) is not supported on model (name). ◆ Card (name) card in slot (#) must be in one of these slots: (#,#?). ◆ There are more than (#) instances of the (name) card. ◆ The (#) (name) card should be slot (#), not slot (#).	**1.** Replace the card with one that is supported by the system. See the appropriate hardware and service guide for supported cards. **2.** If this message persists, call technical support.
SYSTEM CONFIGURATION WARNING	An incorrect system hardware configuration or internal error was detected.	See the SYSCONFIG-C section of the AutoSupport message or run `sysconfig -c` at the console.

EMS error messages

When EMS error messages appear

The Event Management System (EMS) collects event data from various parts of the Data ONTAP kernel and displays information about those events in AutoSupport (ASUP) messages.

EMS error messages

The following table describes EMS error messages and their corrective actions.

ASUP message	Event description	Corrective action	SNMP trap ID
ds.sas.config.warning -- WARNING	This message occurs when the system detects a configuration problem on the shelf I/O module.	**1.** Reseat the disk shelf I/O module. **2.** If that does not fix the problem, replace the disk shelf I/O module.	N/A
ds.sas.crc.err -- DEBUG	This message occurs when a Serial Attached SCSI (SAS) CRC error is detected.	N/A	N/A

ASUP message	Event description	Corrective action	SNMP trap ID
ds.sas.drivephy.disableErr -- ERR	This message occurs when a PHY on a Serial Attached SCSI (SAS) I/O module is disabled because of one of the following reasons: ◆ Manually bypassed ◆ Exceeded loss of double word synchronization threshold ◆ Exceeded running disparity threshold transmitter fault ◆ Exceeded CRC error threshold ◆ Exceeded invalid double word threshold ◆ Exceeded physical layer device (PHY) reset problem threshold ◆ Exceeded broadcast change threshold ◆ Mirroring disabled on the other I/O module	Replace the disabled disk drive.	#574

ASUP message	Event description	Corrective action	SNMP trap ID
ds.sas.element.fault -- ERR	This message indicates a transport error.	**1.** Check cabling to the disk shelf. **2.** Check the status LED on the disk shelf and make sure that fault LEDs are not on. **3.** Clear any fault condition, if possible. **4.** See the quick reference card beneath the disk shelf for information about the meanings of the LEDs.	N/A
ds.sas.element.xport.error -- ERR	This message indicates a transport error.	**1.** Check cabling to the disk shelf. **2.** Check the status LED on the disk shelf and make sure that fault LEDs are not on. **3.** Clear any fault condition, if possible. **4.** See the quick reference card beneath the disk shelf for information about the meanings of the LEDs.	N/A

ASUP message	Event description	Corrective action	SNMP trap ID
ds.sas.hostphy.disableErr -- ERR	This message occurs when a host physical layer device (PHY) on a Serial Attached SCSI (SAS) I/O module is disabled because of one of the following reasons: ◆ Manually bypassed ◆ Exceeded loss of double word synchronization threshold ◆ Exceeded running disparity threshold Transmitter fault ◆ Exceeded CRC error threshold ◆ Exceeded invalid double word threshold ◆ Exceeded PHY reset problem threshold ◆ Exceeded broadcast change threshold ◆ Mirroring disabled on the other I/O module	Replace the disk shelf module to which the host PHY belongs.	N/A
ds.sas.invalid.word -- DEBUG	This message occurs when a Serial Attached SCSI (SAS) word error is detected in a SAS primitive. These errors can be caused by the disk drive, the cable, the HBA, or the shelf I/O module.	The SAS specification allows for a certain bit error rate so that these errors can occur. There is nothing to be alarmed about if these individual errors show up occasionally.	N/A

ASUP message	Event description	Corrective action	SNMP trap ID
ds.sas.loss.dword -- DEBUG	This message occurs when a Serial Attached SCSI (SAS) loss of double word synchronization error is detected in a SAS primitive.	N/A	N/A
ds.sas.multPhys.disableErr -- ERR	This message occurs when physical layer devices (PHYs) are disabled on multiple disk drives in a Serial Attached SCSI (SAS) disk shelf.	1. Check whether the problems on the PHYs are valid. 2. If multiple physical layer devices PHYs are disabled at the same time, replace the disk shelf module.	N/A
ds.sas.phyRstProb -- DEBUG	This message occurs when a Serial Attached SCSI (SAS) physical layer device (PHY) reset error is detected in a SAS primitive.	N/A	N/A
ds.sas.running.disparity -- DEBUG	This message occurs when a Serial Attached SCSI (SAS) running disparity error is detected in a SAS primitive. These errors are caused when the number of logical 1s and 0s are too much out of sync.	N/A	N/A

ASUP message	Event description	Corrective action	SNMP trap ID
ds.sas.ses.disableErr -- NODE_ERROR	This message occurs when a virtual SCSI Enclosure Services (SES) physical layer device (PHY) on a Serial Attached SCSI (SAS) I/O module is disabled due to one of the following reasons: ◆ Manually bypassed ◆ Exceeded loss of double word synchronization threshold ◆ Exceeded running disparity threshold Transmitter fault ◆ Exceeded CRC error threshold ◆ Exceeded invalid double word threshold ◆ Exceeded PHY reset problem threshold ◆ Exceeded broadcast change threshold	Replace the shelf module to which the concerned SES PHY belongs.	N/A

ASUP message	Event description	Corrective action	SNMP trap ID
ds.sas.xfer.element.fault -- ERR	This message indicates that an element had a fault during an I/O request. It might be because of a transient condition in link connectivity.	**1.** Check cabling to the shelf. **2.** Check the status LED on the shelf, and make sure that fault LEDs are not on. **3.** Clear any fault condition, if possible. **4.** See the quick reference card beneath the shelf for information about the meanings of the LEDs.	N/A
ds.sas.xfer.export.error -- ERR	This message indicates a transport error during an I/O request. It might be due to a transient condition in link activity.	**1.** Check cabling to the shelf. **2.** Check the status LED on the shelf, and make sure that the fault LEDs are not on. **3.** Clear any fault condition, if possible. **4.** See the quick reference card beneath the shelf for information about the meanings of the LEDs.	N/A

ASUP message	Event description	Corrective action	SNMP trap ID
ds.sas.xfer.not.sent -- ERR	This message indicates that an I/O transfer could not be sent. It might be because of a transient condition in link connectivity.	1. Check cabling to the shelf. 2. Check the status LED on the shelf, and make sure that fault LEDs are not on. 3. Clear any fault condition, if possible. 4. See the quick reference card beneath the shelf for information about the meanings of the LEDs.	N/A
ds.sas.xfer.unknown.error -- ERR	This message indicates that an unknown error occurred during an I/O request.	N/A	N/A
sas.adapter.bad -- ALERT	This message occurs when the Serial Attached SCSI (SAS) adapter fails to initialize.	1. Reseat the adapter. 2. If reseating the adapter failed to help, replace the adapter.	N/A
sas.adapter.bootarg.option -- INFO	The Serial Attached SCSI (SAS) adapter driver is setting an option based on the setting of a bootarg/environment variable.	None.	N/A
sas.adapter.debug -- INFO	This message occurs during the Serial Attached SCSI (SAS) adapter driver debug event.	None.	N/A

ASUP message	Event description	Corrective action	SNMP trap ID
sas.adapter.exception -- WARNING	This message occurs when the Serial Attached SCSI (SAS) adapter driver encounters an error with the adapter. The adapter is reset to recover.	None.	N/A
sas.adapter.failed -- ERR	This message occurs when the Serial Attached SCSI (SAS) adapter driver cannot recover the adapter after resetting it multiple times. The adapter is put offline.	**1.** If the adapter is in use, check the cabling. **2.** If connected to disk shelves, check the seating of IOM cards and disks. **3.** If the problem persists, try replacing the adapter. **4.** If the issue is still not resolved, contact technical support.	N/A
sas.adapter.firmware.download -- INFO	This message occurs when firmware is being updated on the Serial Attached SCSI (SAS) adapter.	None.	N/A
sas.adapter.firmware.fault -- WARNING	This message occurs when a firmware fault is detected on the Serial Attached SCSI (SAS) adapter and it is being reset to recover.	None.	N/A
sas.adapter.firmware.update.failed -- CRIT	This message occurs when firmware on the Serial Attached SCSI (SAS) adapter cannot be updated.	Replace the adapter as soon as possible. The SAS adapter driver attempts to continue using the adapter without updating the firmware image.	N/A

ASUP message	Event description	Corrective action	SNMP trap ID
sas.adapter.not.ready -- ERR	This message occurs when the Serial Attached SCSI (SAS) adapter does not become ready after being reset.	The SAS adapter driver automatically attempts to recover from this error. If the error keeps occurring, the adapter might need to be replaced.	N/A
sas.adapter.offline -- INFO	This message indicates the name of the associated Serial Attached SCSI (SAS) host bus adapter (HBA).	None.	N/A
sas.adapter.offlining -- INFO	This message occurs when the Serial Attached SCSI (SAS) adapter is going offline after all outstanding I/O requests have finished.	None.	N/A
sas.adapter.online -- INFO	This message indicates that the Serial Attached SCSI (SAS) adapter is now online.	None.	N/A
sas.adapter.online.failed -- ERR	This message indicates the name of the associated Serial Attached SCSI (SAS) host bus adapter (HBA).	1. If the HBA is in use, check the cabling. 2. If the HBA is connected to disk shelves, check the seating of IOM cards.	N/A
sas.adapter.onlining -- INFO	This message indicates that the Serial Attached SCSI (SAS) adapter is in the process of going online.	None.	N/A

ASUP message	Event description	Corrective action	SNMP trap ID
sas.adapter.reset -- INFO	This message occurs when the Data ONTAP Serial Attached SCSI (SAS) driver is resetting the specified host bus adapter (HBA). This can occur during normal error handling or by user request.	None.	N/A
sas.adapter.unexpected. status -- WARNING	This message occurs when the Serial Attached SCSI (SAS) adapter returns an unexpected status and is reset to recover.	None.	N/A
sas.config.mixed.detected -- WARNING	The Serial Attached SCSI (SAS) adapter is connected to both SAS and Serial ATA (SATA) drives in the same domain.	The SAS adapter is supposed to connect only to SAS drives or only to SATA drives. This message reports the number of SAS and SATA drives connected to this domain. When you see this message, make sure that the SAS adapter is connected only to SAS drives or to SATA drives.	N/A
sas.device.invalid.wwn -- ERR	This message occurs when the Serial Attached SCSI (SAS) device responds with an invalid worldwide name.	Power-cycling the device might allow it to recover from this problem.	N/A

ASUP message	Event description	Corrective action	SNMP trap ID
sas.device.quiesce -- INFO	This message indicates that at least one command to the specified device has not completed in the normally expected time. In this case, the driver stops sending additional commands to the device until all outstanding commands have had an opportunity to be completed. This condition is automatically handled by the Data ONTAP Serial Attached SCSI (SAS) driver.	This condition by itself does not mean that the target device is problematic. High workloads might cause link saturation leading to device contention for the bus. Transport issues might also cause link throughput to decrease, thereby causing I/Os to take longer than normal. If you see this message only on occasion, no action is required. The system handles the condition automatically.	N/A
sas.device.resetting -- WARNING	This message indicates device level error recovery has escalated to resetting the device. It is usually seen in association with error conditions such as device level timeouts or transmission errors. This message reports the recovery action taken by the Data ONTAP Serial Attached SCSI (SAS) driver when evaluating associated device- or link-related error conditions.	None.	N/A

ASUP message	Event description	Corrective action	SNMP trap ID
sas.device.timeout -- ERR	This message occurs when not all outstanding commands to the specified device were completed within the allotted time. As part of the standard error handling sequence managed by the Data ONTAP Serial Attached SCSI (SAS) driver, all commands to the device are aborted and reissued.	Device level timeouts are a common indication of a SAS link stability problem. In some cases, the link is operating normally and the specified device is having trouble processing I/O requests in a timely manner. In such cases, the specified device should be evaluated for possible replacement. Quite often the problem results from the partial failure of a component involved in the SAS transport. Common things to check include the following: ◆ Complete seating of drive carriers in enclosure bays ◆ Properly secured cable connections ◆ IOM seating ◆ Crimped or otherwise damaged cables	N/A
sas.initialization.failed -- ERR	This message occurs when the Serial Attached SCSI (SAS) adapter fails to initialize the link and appears to be unattached or disconnected.	**1.** If the adapter is in use, check the cabling. **2.** If the adapter is connected to disk shelves, check the seating of IOM cards.	N/A

ASUP message	Event description	Corrective action	SNMP trap ID
sas.link.error -- ERR	This message occurs when the Serial Attached SCSI (SAS) adapter cannot recover the link and is going offline.	**1.** If the adapter is in use, check the cabling. **2.** If the adapter is connected to disk shelves, check the seating of IOM cards and disks. **3.** If this does not resolve the issue, contact technical support.	N/A
sasmon.adapter.phy.event -- DEBUG	This message occurs when a serial attached SCSI (SAS) transceiver (PHY) attached to a SAS host bus adapter (HBA) experiences a transient error. These errors are observed on a received double word (dword) or when resetting a PHY. Types of these errors are disparity errors, invalid dword errors, PHY reset problem errors, loss of dword synchronization errors, and PHY change events. The SAS specification allows for a certain bit error rate so that these errors can occur under normal operating conditions. There is no cause for concern if these individual errors show up occasionally.	None.	N/A

ASUP message	Event description	Corrective action	SNMP trap ID
sasmon.adapter.phy.disable -- ERR	This message occurs when a serial attached SCSI (SAS) transceiver (PHY) attached to a SAS host bus adapter (HBA) is disabled due to one of the following reasons: ◆ Exceeded loss of double word synchronization error threshold ◆ Exceeded running disparity error threshold ◆ Exceeded invalid double word error threshold ◆ Exceeded PHY reset problem threshold ◆ Exceeded broadcast change threshold	**1.** If the adapter is in use, check the cabling. **2.** If the adapter is connected to the disk shelves, check the seating of the IOM cards. **3.** If that does not fix the problem, contact technical support.	N/A
sasmon.disable.module -- INFO	This message occurs when the Data ONTAP module responsible for monitoring the serial attached SCSI (SAS) domain's transient errors is disabled due to the environment variable `disable-sasmon?` being set to `true`.	Set the environment variable `disable-sasmon?` to `false` to enable this monitor module.	N/A

Environmental EMS error messages

When environmental EMS error messages appear

Environmental EMS messages appear on the LCD display and in AutoSupport (ASUP) messages if your system encounters extremes in its operational environment.

Environmental EMS error 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 degraded: PS#* *FRU LED: Amber*	This message occurs when there is a problem with one of the power supplies.	**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

LCD display	ASUP message and LED behavior	Event description	Corrective action	SNMP trap ID
Power supply degraded	*Chassis Power Supply: PS# removed system will shutdown in 2 minutes* *FRU LED: Amber*	This message occurs when the power supply unit is removed from the system. The system will shut down unless the power supply is replaced.	Your action depends on whether the power supply is present. ◆ If the power supply is not inserted, insert it. ◆ If the power supply is inserted, power-cycle your system and run diagnostics on the identified power supply. If the problem persists, replace the identified power supply.	#501: Chassis power supply is degraded
Power supply degraded	*Chassis Power Shutdown: Chassis Power Supply Fail: PS#*	This message occurs when the system is in a warning state. The system shuts down immediately.	Your action depends on whether the power supply is present. ◆ If the power supply is not inserted, insert it. ◆ If the power supply is inserted, power-cycle your system and run diagnostics on the identified power supply. If the problem persists, replace the identified power supply.	#392: Chassis power supply is degraded

LCD display	ASUP message and LED behavior	Event description	Corrective action	SNMP trap ID
Power supply degraded	*Chassis Power Fail: PS#*	This message occurs when the power supply fails.	Your action depends on whether the power supply is present. ◆ If the power supply is not inserted, insert it. ◆ If the power supply is inserted, power-cycle your system and run diagnostics on the identified power supply. If the problem persists, replace the identified power supply.	#6: Chassis power is degraded
Power supply degraded	*Multiple fan failure*	The message occurs when multiple fans fail. The system shuts down immediately.	Your action depends on whether the power supply is present. ◆ If the power supply is not inserted, insert it. ◆ If the power supply is inserted, power-cycle your system and run diagnostics on the identified power supply. If the problem persists, replace the identified power supply.	#6: Chassis power is degraded

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].*	This message occurs when the system is operating above the high-voltage threshold.	Your action depends on whether the power supply is present. ◆ If the power supply is not inserted, insert it. ◆ If the power supply is inserted, power-cycle your system and run diagnostics on the identified power supply. If the problem persists, replace the identified power supply	#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].*	This message occurs when the system is operating below the low-voltage threshold. The system shuts down immediately.	Your action depends on whether the power supply is present. ◆ If the power supply is not inserted, insert it. ◆ If the power supply is inserted, power-cycle your system and run diagnostics on the identified power supply. If the problem persists, replace the identified power supply.	#403: Chassis power is degraded

LCD display	ASUP message and LED behavior	Event description	Corrective action	SNMP trap ID
Power supply degraded	*Chassis power supply fail: PS#*	This message occurs when the system is operating below the low-voltage threshold. The system shuts down immediately.	Your action depends on whether the power supply is present. ◆ If the power supply is not inserted, insert it. ◆ If the power supply is inserted, power-cycle your system and run diagnostics on the identified power supply. If the problem persists, replace the identified power supply.	N/A
Power supply degraded	*Multiple power supply fans failed: system will shutdown in 2 minutes.*	This message occurs when multiple power supplies and fans have failed. The system shuts down in two minutes if this condition is uncorrected.		#521: Chassis power is degraded
Power supply degraded	*Chassis power supply off: PS#*	This message occurs when one or more chassis power supplies are turned off.		#395
Temperature exceeds limits	*Chassis over temperature shutdown on XXXX at [time stamp].*	This message occurs when 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
Temperature exceeds limits	*Chassis over temperature on XXXX at [time stamp].*	This message occurs when 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.	#372: Chassis temperature is too hot

LCD display	ASUP message and LED behavior	Event description	Corrective action	SNMP trap ID
Temperature exceeds limits	*Chassis under temperature on XXXX at [time stamp].*	This message occurs when the system is operating below the low-temperature threshold.	**1.** Raise the ambient temperature around the system. **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].*	This message occurs when 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 system. **2.** Power-cycle the system and run diagnostics on the system.	#371: Chassis temperature is too cold
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.*	This message occurs when a system fan fails.	Check LEDs on the fans and power supply. ◆ If both fan LEDs are green, run diagnostics on the power supplies. ◆ If the fan LED is off, replace the fan.	#414: Chassis fan is degraded

LCD display	ASUP message and LED behavior	Event description	Corrective action	SNMP trap ID
Fans stopped; replace them	*Fan: # is spinning below tolerable speed replace immediately to avoid overheating*	This message occurs when one or more chassis fans is spinning too slowly.	Check LEDs on the fans. ◆ If both fan LEDs are green, run diagnostics on the motherboard ◆ If the fan LED is off, replace the fan.	#415: Chassis fan is degraded
Fans stopped; replace them	*Multiple fan failure on XXXX at* [time stamp]. *FRU LED: Amber*	This message occurs when both system fans fail. The system shuts down immediately.	**1.** Replace both fans. **2.** Power-cycle and run diagnostics on the system.	#6 Emergency shutdown
Fans stopped; replace them	*Multiple chassis fans have failed system will shutdown in 2 minutes*.	This message occurs during a multiple chassis fan failure. The system shuts down in two minutes if this condition is uncorrected.	**1.** Replace both fans. **2.** Power-cycle and run diagnostics on the system.	#511: Chassis fan is degraded
N/A	*monitor.chassisFan. ok -- NOTICE*	This message occurs when the chassis fans are OK.	N/A	#366 Chassis FRU is OK
N/A	*monitor.chassisFan. removed -- ALERT*	This message occurs when a chassis fan is removed.	Replace the fan unit.	#363 Chassis FRU is removed

LCD display	ASUP message and LED behavior	Event description	Corrective action	SNMP trap ID
N/A	*monitor.chassisFan. slow -- ALERT*	This message occurs when a chassis fan is spinning too slowly.	Replace the fan unit.	#365 Chassis FRU contains at least one fan spinning slowly
N/A	*monitor.chassisFan. stop -- ALERT*	This message occurs when a chassis fan is stopped.	Replace the fan unit.	#364 Chassis FRU contains at least one stopped fan
N/A	*monitor.chassis Power.degraded -- NOTICE*	This message indicates that a power supply is degraded.	1. If spare power supplies are available, try replacing them to see whether that alleviates the problem. 2. Otherwise, contact technical support for further instruction.	#403 Chassis power is degraded
N/A	*monitor.chassis Power.ok -- NOTICE*	This messages indicates that the motherboard power is OK.	N/A	#406 Normal operation
N/A	*monitor.chassis PowerSupplies.ok -- INFO*	This message indicates that all power supplies are OK.	N/A	#396 Normal operation

LCD display	ASUP message and LED behavior	Event description	Corrective action	SNMP trap ID
N/A	*monitor.chassis PowerSupply. degraded -- NOTICE*	This message indicates that a power supply is degraded.	A replacement power supply might be required. Contact technical support for further instruction.	#392 Chassis power supply is degraded
N/A	*monitor.chassis PowerSupply. notPresent -- NOTICE*	This message indicates that a power supply is not present.	Replace the power supply.	#394 Power supply not present
N/A	*monitor.chassis PowerSupply.off -- NOTICE*	This message indicates that a power supply is turned off.	Turn on the power supply.	#395 Power supply not present
N/A	*monitor.chassis Temperature.cool -- ALERT*	This message occurs when the chassis temperature is too cool.	Raise the temperature around the storage system.	#372 Chassis temperature is too cool
N/A	*monitor.chassis Temperature.ok -- NOTICE*	This message occurs when the chassis temperature is normal.	N/A	#376 Normal operation
N/A	*monitor.chassis Temperature.warm -- ALERT*	This message occurs when the chassis temperature is too warm.	Check to see whether air conditioning units are needed, or whether they are functioning properly.	#372 Chassis temperature is too warm

LCD display	ASUP message and LED behavior	Event description	Corrective action	SNMP trap ID
N/A	*monitor.cpuFan. degraded -- NOTICE*	This message indicates that a CPU fan is degraded.	1. Replace the identified fan. 2. Power-cycle the system and run diagnostics on the system.	#383 A CPU fan is not operating properly
N/A	*monitor.cpuFan. failed -- NOTICE*	This message indicates that a CPU fan is degraded.	1. Replace the identified fan. 2. Power-cycle the system and run diagnostics on the system.	#381
N/A	*monitor.cpuFan.ok -- INFO*	This message indicates that a CPU fan is OK.	N/A	#386 Normal operation
N/A	*monitor.shutdown. chassisOverTemp -- CRIT*	This message occurs just before shutdown, indicating that the chassis temperature is too hot.	Check to see if air conditioning units are needed, or whether they are functioning properly.	#371 Chassis temperature is too hot
N/A	*monitor.shutdown. chassisUnderTemp -- CRIT*	This message occurs just before shutdown, indicating that the chassis temperature becomes too cold.	Raise the temperature around the storage system.	#371 Chassis temperature is too cold

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.

SES EMS error messages

The following table describes the environmental SCSI Enclosure Services (SES) EMS messages and their corrective actions.

Error message	Description	Corrective action
ses.access.noEnclServ -- NODE_ERROR	This message occurs when SCSI Enclosure Services (SES) in the storage system cannot establish contact with the enclosure monitoring process in any disk shelf on the channel. Some disk shelves require that disks be installed and functioning in particular shelf bays.	**1.** In disk shelves that require certain disk placement, verify that disks are installed in the indicated bays: EXN2000 unit: bays 0 and/or 1 **Note** SCSI-based shelves, Serial Attached SCSI (SAS) shelves, and EXN1000 unit shelves do not rely on disk placement for SES. SES in the storage system tries periodically to reestablish contact with the disk shelf. **2.** If disks are placed correctly but the error persists for more than an hour, halt the storage system, power-cycle the disk shelf, and reboot. **3.** If the error persists, then SES hardware (for example, VEM or IOM) might need to be replaced. In SCSI-based shelves, replace the shelf.

Error message	Description	Corrective action
ses.access.noMoreValidPaths -- NODE_ERROR	This message occurs when SCSI Enclosure Services (SES) in the storage system loses access to the enclosure monitoring process in the disk shelf. Some disk shelves require that disks be installed and functioning in particular shelf bays.	**1.** In disk shelves that require certain disk placement, verify that disks are installed in the indicated bays: EXN2000 unit: bays 0 and/or 1 **Note** SCSI-based shelves, Serial Attached SCSI (SAS) shelves, and EXN1000 unit shelves do not rely on disk placement for SES. SES in the storage system tries periodically to reestablish contact with the disk shelf. **2.** If disks are placed correctly, but the error persists for more than an hour, halt the storage system, power-cycle the disk shelf, and reboot. **3.** If the error persists, then SES hardware (for example, VEM or IOM) might need to be replaced. In SCSI-based shelves, replace the shelf.

Error message	Description	Corrective action
ses.access.noShelfSES -- NODE_ERROR	This message occurs when SCSI Enclosure Services (SES) in the storage system cannot establish contact with the SES process in the indicated disk shelf. Some disk shelves require that disks be installed and functioning in particular disk shelf bays.	**1.** In disk shelves that require certain disk placement, verify that disks are installed in the indicated bays: EXN2000 unit: bays 0 and/or 1 **Note** SCSI-based shelves, Serial Attached SCSI (SAS) shelves, and EXN1000 unit shelves do not rely on disk placement for SES. SES in the storage system tries periodically to reestablish contact with the disk shelf. **2.** If disks are placed correctly but the error persists for more than an hour, halt the storage system, power-cycle the disk shelf, and reboot. **3.** If the error persists, then SES hardware (for example, VEM or IOM) might need to be replaced. In SCSI-based shelves, replace the shelf.

Error message	Description	Corrective action
ses.access.sesUnavailable -- NODE_ERROR	This message occurs when SCSI Enclosure Services (SES) in the storage system cannot establish contact with the enclosure monitoring process in one or more disk shelves on the channel. Some disk shelves require that disks be installed and functioning in particular disk shelf bays.	**1.** In disk shelves that require certain disk placement, verify that disks are installed in the indicated bays: EXN2000 unit: bays 0 and/or 1 **Note** SCSI-based shelves, Serial Attached SCSI (SAS) shelves, and EXN1000 unit shelves do not rely on disk placement for SES. SES in the storage system tries periodically to reestablish contact with the disk shelf. **2.** If disks are placed correctly but the error persists for more than an hour, halt the storage system, power-cycle the disk shelf, and reboot. **3.** If the error persists, then SES hardware (for example, VEM or IOM) might need to be replaced. In SCSI-based shelves, replace the shelf.
ses.badShareStorageConfigErr -- NODE_ERROR	This message occurs when a disk shelf module that is not supported in a SharedStorage system is detected in a SharedStorage system.	Replace the unsupported module with one that is supported, such as an ESH, ESH2, or AT-FCX module.

Error message	Description	Corrective action
ses.bridge.fw.getFailWarn -- WARNING	This message occurs when the bridge firmware revision cannot be obtained.	Check the connection to the bank of Maxtor drives.
ses.bridge.fw.mmErr -- SVC_ERROR	This message occurs when the bridge firmware revision is inconsistent.	Check the firmware revision number and make sure that they are consistent. You might have to update the firmware.
ses.channel.rescanInitiated -- INFO	This message identifies the name of the adapter port or switch port being rescanned; for example, “7a” or “myswitch:5”.	None.
ses.config.drivePopError -- WARNING	This message occurs when the channel has more disk drives on it than are allowed. Systems using synchronous mirroring allow more disk drives per channel than other systems.	Your action depends on whether you intend to use synchronous mirroring. ◆ If you intend to use synchronous mirroring, make sure that the license is installed. ◆ If you do not intend to use synchronous mirroring, reduce the number of disk drives on the channel to no more than the maximum allowed.
ses.config.IllegalEsh270 -- NODE_ERROR	This message occurs when Data ONTAP detects one or more ESH disk shelf modules in a disk shelf that is attached to a N3700. This is not a supported configuration.	Replace the ESH modules with ESH2 modules.

Error message	Description	Corrective action
ses.config.shelfMixError -- NODE_ERROR	This message occurs when the channel has a mixture of ATA and Fibre Channel disk shelves; this is not a supported configuration.	Mixed-mode operation of ATA and Fibre Channel disks on the system is only supported on separate loops. Move all Fibre Channel-based disk shelves to one loop and place all Fibre Channel-to-ATA-based disk shelves on another loop.
ses.config.shelfPopError -- NODE_ERROR	This message occurs when the channel has more shelves on it than are allowed.	Reduce the number of disk shelves on the channel to the number specified.
ses.disk.configOk -- INFO	This message occurs when there are no longer any drives in an N3600 system's slots between 20 and 23.	None.
ses.disk.illegalConfigWarn -- WARNING	This message occurs when disk drives are inserted into the bottom row of an N3600 system. Disk drives are not supported in those slots.	None.
ses.disk.pctl.timeout -- DEBUG	This message occurs when a `power control` request submitted to the specified SCSI Enclosure Services (SES) module is not completed within 60 seconds.	Normally, there is no corrective action required for this error because the timeout might be due to a transient error. However, if you see this message frequently, there might be an issue with the I/O module in the shelf, which might need to be replaced.
ses.download.powerCycling Channel -- INFO	This message occurs when the power-cycling channel event is issued after a disk shelf firmware download to disk shelves that require a power-cycle to activate the new code.	None.

Error message	Description	Corrective action
ses.download.shelfToReboot -- INFO	This message occurs after the completion of shelf firmware transfer to the EXN1000 disk shelf. At this point, the disk shelf requires about another five minutes to transfer the new firmware to its nonvolatile program memory, whereupon it reboots to begin to execute the new firmware. During this reboot, a Fibre Channel loop reinitialization occurs, temporarily interrupting the loop.	None.
ses.download.suspendIOFor PowerCycle -- INFO	This message occurs when the suspending I/O event signals that the storage subsystem is temporarily stopping I/O to disks while one or more disk shelves have their power cycled after a download, if required by the disk shelf design.	None.

Error message	Description	Corrective action
ses.drive.PossShelfAddr -- WARNING	This message occurs in conjunction with the message `ses.drive.shelfAddr.mm` when there are devices that have apparently taken a wrong address; the adapter shows device addresses that SCSI Enclosure Services (SES) indicates should not exist, and vice versa. This error is not a fatal condition. It means that SES cannot perform certain operations on the affected disk drives, such as setting failure LEDs, because it is not certain which disk shelf the affected disk drive is in.	**1.** If the problem is throughout the disk shelf, replace the disk shelf. **2.** If the error is only one disk drive per disk shelf, the drive might have taken an incorrect address at power-on. **3.** Arrange to make this disk drive a spare, and then reseat it to cause it to take its address again. **4.** If the problem persists, insert a different spare disk drive into the slot. If the error then clears, replace the original disk drive. **5.** If the problem persists, there is a hardware problem with the individual disk bay. Replace the disk shelf.

Error message	Description	Corrective action
ses.drive.shelfAddr.mm -- NODE_ERROR	This message occurs when there is a mismatch between the position of the drives detected by the disk shelf and the address of the drives detected by the Fibre Channel loop or SCSI bus. This error indicates that a disk drive took an address other than what the disk shelf should have provided, or that SCSI Enclosure Services (SES) in a disk shelf cannot be contacted for address information, or that a disk drive unexpectedly does not participate in device discovery on the loop or bus. If the message `EMS_ses_drive_possShelfAddr` subsequently appears, follow the corrective actions in that message. In this condition, the SES process in the system might be unable to perform certain operations on the disk, such as setting failure LEDs or detecting disk swaps.	**1.** If this occurs to multiple disk drives on the same loop, check the I/O modules at the back of the disk shelves on that loop for errors. **2.** In disk shelves that require certain disk placement, verify that disks are installed in the indicated bays: EXN2000 unit: bays 0 and/or 1 **Note** SCSI-based disk shelves and EXN1000 unit disk shelves do not rely on disk placement for SES.

Error message	Description	Corrective action
ses.exceptionShelfLog -- INFO	This message occurs when an I/O module encounters an exception condition.	1. Check the system logs to see whether any disk errors recently occurred. 2. Pull an AutoSupport message file that contains the latest copy of the shelflog information from each disk shelf. 3. Try to correlate the date and time from the errors in the message file with the date and time of events in the shelflog file.
ses.extendedShelfLog -- DEBUG	This message occurs when a disk encounters an error and the system requests that additional log information be obtained from both modules in the disk shelf reporting the error to aid in debugging problems.	1. Check the system logs to see whether any disk errors recently occurred. 2. Pull an AutoSupport message file that contains the latest copy of the shelflog information from each disk shelf. 3. Try to correlate the date and time from the errors in the message file with the date and time of events in the shelflog file.
ses.fw.emptyFile -- WARNING	This message occurs when a firmware file is found to be empty during a disk shelf firmware update.	Obtain the correct firmware file and place it in the etc/shelf_fw directory. You can download the firmware file from www.ibm.com/storage/support/nas/.

Error message	Description	Corrective action
ses.fw.resourceNotAvailable -- ERR	This message occurs when there is not enough contiguous memory available to download disk shelf firmware.	1. Reduce the amount of system activities before performing a manual disk shelf firmware update. 2. If the disk shelf firmware update fails again, reboot the storage system.
ses.giveback.restartAfter -- INFO	This message occurs when SCSI Enclosure Services (SES) is restarted after giveback.	None.
ses.giveback.wait -- INFO	This message occurs when SCSI Enclosure Services (SES) information is not available because the system is waiting for giveback.	None.
ses.remote.configPageError -- INFO	This message occurs when a request to another system in a SharedStorage configuration fails. This request was for a specific disk shelf's SCSI Enclosure Services (SES) configuration page.	Contact technical support.
ses.remote.elemDescPageError -- INFO	This message occurs when a request to another system in a SharedStorage configuration fails. This request was for the element descriptor pages that the other system has local access to.	Contact technical support.
ses.remote.faultLedError -- INFO	This message occurs when a request to another system to have it set the fault LED of a disk drive on a disk shelf fails.	Contact technical support.

Error message	Description	Corrective action
ses.remote.flashLedError -- INFO	This message occurs when a request to another system to have it flash the LED of a disk drive on a disk shelf fails.	Contact technical support.
ses.remote.shelfListError -- INFO	This message occurs when a request to another system in a SharedStorage configuration fails. This request was for a list of the disk shelves that the other system has local access to.	Contact technical support.
ses.remote.statPageError -- INFO	This message occurs when a request to another system in a SharedStorage configuration fails. This request was for the SCSI Enclosure Services (SES) status pages that the other system has local access to.	Contact technical support.

Error message	Description	Corrective action
ses.shelf.changedID -- WARNING	This message occurs on a SAS disk shelf when the disk shelf ID changes after power is applied to the disk shelf.	**1.** Verify that the disk shelf ID displayed in this message is the same as the disk shelf ID shown on the disk shelf. **2.** If they are different, perform one of the following steps: ◆ If the disk shelf ID displayed in this message is the one you want, reset the disk shelf ID on the thumbwheel to match it. ◆ If you want the new disk shelf ID instead of the disk shelf ID displayed in the message, verify that the disk shelf ID you want does not conflict with other disk shelves in the domain. **3.** Power-cycle the disk shelf chassis. You can wait to perform this procedure until your next maintenance window. **4.** If the warning persists on both disk shelf modules after you complete the procedure, replace the disk shelf chassis. If it persists on only one disk shelf module, replace the disk shelf module.

Error message	Description	Corrective action
ses.shelf.ctrlFailErr -- SVC_ERROR	This message occurs when the adapter and loop ID of the SCSI Enclosure Services (SES) target for which the SES has control fail.	1. Check the LEDs on the disk shelf and the disk shelf modules on the back of the disk shelf to see whether there are any abnormalities. If the modules appear to be problematic, replace the applicable module. 2. If the SES target is a disk drive, check to see whether the disk drive failed. If it failed, replace the disk drive.
ses.shelf.em.ctrlFailErr -- SVC_ERROR	This message occurs when SCSI Enclosure Services (SES) control to the internal disk drives of a system fails.	Enter **`environment shelf`** to see whether that disk shelf is still being actively monitored. If the `environment shelf` command indicates a failure, there is a hardware failure in the system's internal disk shelf.

Error message	Description	Corrective action
ses.shelf.IdBasedAddr -- WARNING	This message occurs on a SAS disk shelf when the SAS addresses of the devices are based on the disk shelf ID instead of the disk shelf backplane serial number. This indicates problems communicating with the disk shelf backplane.	**1.** Reseat the master disk shelf module, as indicated by the output of the `environment shelf` command. **2.** If the problem persists, reseat the slave disk shelf module. **3.** If the problem persists, find the new master disk shelf module and replace it. **4.** If the problem persists, replace the other disk shelf module. **5.** If the problem persists, replace the disk shelf enclosure.
ses.shelf.invalNum -- WARNING	This message occurs when Data ONTAP detects that a Serial Attached SCSI shelf connected to the system has an invalid shelf number.	**1.** Power-cycle the shelf. **2.** If the problem persists, replace the shelf modules. **3.** If the problem persists, replace the shelf.
ses.shelf.mmErr -- NODE_FAULT	This message occurs when there is a disk shelf that is not supported by the platform it was booted on.	**1.** Check whether a newer version of Data ONTAP would solve the problem. **2.** If it can’t, power off the system, remove the offending disk shelf, and then reboot.

Error message	Description	Corrective action
ses.shelf.OSmmErr -- SVC_ERROR	This message occurs when there are incompatible Data ONTAP versions in a SharedStorage configuration that would cause SCSI Enclosure Services (SES) not to function properly.	Update the system that has an earlier Data ONTAP version to match the one that has the latest Data ONTAP version.
ses.shelf.powercycle.done -- INFO	This message occurs when a disk shelf power-cycle finishes.	None.
ses.shelf.powercycle.start -- INFO	This message occurs when a disk shelf is power-cycled and SCSI Enclosure Services (SES) needs to wait for it to finish.	None.
ses.shelf.sameNumReassign -- WARNING	This message occurs when Data ONTAP detects more than one Serial Attached SCSI (SAS) disk shelf connected to the same adapter with the same shelf number.	1. Change the shelf number on the shelf to one that does not conflict with other shelves attached to the same adapter. Halt the system and reboot the shelf. 2. If the problem persists, contact technical support.
ses.shelf.unsupportedErr -- SVC_FAULT	This message occurs when there is a disk shelf that is not supported by Data ONTAP.	Check whether this disk shelf is supported by a newer version of Data ONTAP. If it is, upgrade to the appropriate version.
ses.startTempOwnership -- DEBUG	This message occurs when SCSI Enclosure Services (SES) is starting temporary ownership acquisition of disks owned by other nodes. This involves removing the disk reservations while the SES operations are in progress.	Contact technical support.

Error message	Description	Corrective action
ses.status.ATFCXError -- NODE_ERROR	This message occurs when the reporting disk shelf detects an error in the indicated AT-FCX module. The module might not be able to perform I/O to disks within the disk shelf.	**1.** Verify that the AT-FCX module is fully seated and secured. **2.** If the problem persists, replace the AT-FCX module.
ses.status.ATFCXInfo -- INFO	This message occurs when a previously reported error in the AT-FCX module is corrected, or the system reports other information that does not necessarily require customer action.	None.
ses.status.currentError -- NODE_ERROR	This message occurs when a critical condition is detected in the indicated storage shelf current sensor. The shelf might be able to continue operation.	**1.** Verify that the power supply and the AC line are supplying power. **2.** Monitor the power grid for abnormalities. **3.** Replace the power supply. **4.** If the problem persists, contact technical support.
ses.status.currentInfo -- INFO	This message occurs when an error or warning condition previously reported by or about the disk shelf current sensor is corrected, or the system reports other information about the current in the disk shelf that does not necessarily require customer action.	None.

Error message	Description	Corrective action
ses.status.currentWarning -- WARNING	This message occurs when a warning condition is detected in the indicated storage shelf current sensor. The shelf might be able to continue operation.	1. Verify that the power supply and the AC line are supplying power. 2. Monitor the power grid for abnormalities. 3. Replace the power supply. 4. If the problem persists, contact technical support.
ses.status.displayError -- NODE_ERROR	This message occurs when the SCSI Enclosure Services (SES) module in the disk shelf detects an error in the disk shelf display panel. The disk shelf might be unable to provide correct addresses to its disks.	1. If possible, verify that the connection between the disk shelf and the display is secure. 2. Verify that the SES module or modules are fully seated; replacing them might solve the problem. 3. If the problem persists, the SES module that detected the warning condition might be faulty. 4. If the problem persists after the module or modules are replaced, replace the disk shelf. 5. If the problem persists, contact technical support.
ses.status.displayInfo -- INFO	This message occurs when a previous condition in the display panel is corrected.	None.

Error message	Description	Corrective action
ses.status.displayWarning -- WARNING	This message occurs when the SCSI Enclosure Services (SES) module detects a warning condition for the disk shelf display panel. The disk shelf might be unable to provide correct addresses to its disks.	**1.** If possible, verify that the connection between the disk shelf and the display is secure. **2.** Verify that the SES module or modules are fully seated; replacing them might solve the problem. **3.** If the problem persists, the SES module that detected the warning condition might be faulty. **4.** If the problem persists after the module or modules are replaced, replace the disk shelf. **5.** If the problem persists, contact technical support.
ses.status.driveError -- NODE_ERROR	This message occurs when a critical condition is detected for the disk drive in the shelf. The drive might fail.	**1.** Make sure that the drive is not running on a degraded volume. If it is, then add as many spares as necessary into the system, up to the specified level. **2.** After the volume is no longer in degraded mode, replace the drive that is failing.
ses.status.driveOk -- INFO	This message occurs when a disk drive that was previously experiencing problem returns to normal operation.	None.

Error message	Description	Corrective action
ses.status.driveWarning -- NODE_ERROR	This message occurs when a non-critical condition is detected for the disk drive in the shelf. The drive might fail.	1. Make sure that the drive is not running on a degraded volume. If it is, then add as many spares as necessary into the system, up to the specified level. 2. After the volume is no longer in degraded mode, replace the drive that is failing.
ses.status.electronicsError -- NODE_ERROR	This message occurs when a failure has been detected in the module that provides disk SCSI Enclosure Services (SES) monitoring capability.	Replace the module. In some disk shelf types, this function is integrated into the Fibre Channel, SCSI, or Serial Attached SCSI (SAS) interface modules.
ses.status.electronicsInfo -- INFO	This message occurs when a problem previously reported about the disk shelf SCSI Enclosure Services (SES) electronics is corrected or when other information about the enclosure electronics that does not necessarily require customer action is reported.	None.
ses.status.electronicsWarn -- WARNING	This message occurs when a non-fatal condition is detected in the module that provides disk SCSI Enclosure Services (SES) monitoring capability.	Replace the module. In some disk shelf types, this function is integrated into the Fibre Channel, SCSI, or Serial Attached SCSI (SAS) interface modules.
ses.status.ESHPctlStatus -- DEBUG	This message occurs when a change in the `power control` status is detected in the indicated disk shelf.	None.

Error message	Description	Corrective action
ses.status.fanError -- NODE_ERROR	This message occurs when the indicated disk shelf cooling fan or fan module fails, and the shelf or its components are not receiving required cooling airflow.	**1.** Verify that the fan module is fully seated and secured. (The fan is integrated into the power supply module in some disk shelves.) **2.** If the problem persists, replace the fan module. **3.** If the problem persists, contact technical support.
ses.status.fanInfo -- INFO	This message occurs when a condition previously reported about the disk shelf cooling fan or fan module is corrected or when other information about the fans that does not necessarily require customer action is reported.	None.
ses.status.fanWarning -- WARNING	This message occurs when a disk shelf cooling fan is not operating to specification, or a component of a fan module has stopped functioning. The disk shelf components continue to receive cooling airflow but might eventually reach temperatures that are out of specification.	**1.** Verify that the fan module is fully seated and secured. (The fan is integrated into the power supply module in some disk shelves.) **2.** If the problem persists, replace the fan module. **3.** If the problem persists, contact technical support.
ses.status.ModuleError -- NODE_ERROR	This message occurs when the reporting disk shelf detects an error in the indicated disk shelf module.	**1.** Verify that the shelf module is fully seated and secure. **2.** If the problem persists, replace the disk shelf module.

Error message	Description	Corrective action
ses.status.ModuleInfo -- INFO	This message occurs when a previously reported error in the shelf module is corrected or when other information that does not necessarily require customer action is reported.	None.
ses.status.ModuleWarn -- WARNING	This message occurs when the reporting disk shelf detects a warning in the indicated disk shelf module.	1. Verify that the shelf module is fully seated and secure. 2. If the problem persists, replace the disk shelf module.
ses.status.psError -- NODE_ERROR	This message occurs when a critical condition is detected in the indicated storage shelf power supply. The power supply might fail.	1. Verify that power input to the shelf is correct. If separate events of this type are reported simultaneously, the common power distribution point might be at fault. 2. If the shelf is in a cabinet, verify that the power distribution unit is ON and functioning properly. Make sure that the shelf power cords are fully inserted and secured, the supply is fully seated and secured, and the supply is switched ON. 3. Verify that power supply fans, if any, are functioning. If the problem persists, replace the power supply. 4. If the problem persists, contact technical support.

Error message	Description	Corrective action
ses.status.psInfo -- INFO	This message occurs when a condition previously reported about the disk shelf power supply is corrected or when other information about the power supply that does not necessarily require customer action is reported.	None.
ses.status.psWarning -- WARNING	This message occurs when a warning condition is detected in the indicated storage shelf power supply. The power supply might be able to continue operation.	**1.** Verify that the disk shelf is receiving power. If separate events of this type are reported simultaneously, the common power distribution point might be at fault. **2.** If the disk shelf is in a cabinet, verify that the power distribution unit status is ON and functioning properly. Make sure that the disk shelf power cords are fully inserted and secured, the power supply is fully seated and secured, and the power supply is switched on. **3.** If the problem persists, replace the power supply. **4.** If the problem persists, contact technical support.

Error message	Description	Corrective action
ses.status.temperatureError	This message occurs when the indicated disk shelf temperature sensor reports a temperature that exceeds the specifications for the disk shelf or its components.	1. Verify that the ambient temperature where the shelf is installed is within equipment specifications using the `environment shelf [adapter]` command, and that airflow clearances are maintained. 2. If the same disk shelf also reports fan or fan module failures, correct that problem now. If the problem is reported by the ambient temperature sensor (located on the operator panel), verify that the connection between the disk shelf and the panel is secure, if possible. 3. If the problem persists, and if the shelf has multiple temperature sensors of which only one exhibits the problem, replace the module that contains the sensor that reports the error. If the problem persists, contact technical support for assistance. **Note** You can display temperature thresholds for each shelf through the `environment shelf` command.

Error message	Description	Corrective action
ses.status.temperatureInfo -- INFO	This message occurs when an error or warning condition previously reported by or about the disk shelf temperature sensor is corrected or when other information about the temperature in the disk shelf that does not necessarily require customer action is reported.	None.
ses.status.temperatureWarning -- WARNING	This message occurs when the indicated disk shelf temperature sensor reports a temperature that is close to exceeding the specifications for the disk shelf or its components.	1. Verify that the ambient temperature where the disk shelf is installed is within equipment specifications by using the `environment shelf [adapter]` command, and that airflow clearances are maintained. 2. If this disk shelf also reports fan or fan module errors or warnings, correct those problems now. 3. If the problem persists, and the shelf has multiple temperature sensors and only one of them exhibits the problem, replace the module that contains the sensor. 4. If the problem persists, contact technical support. **Note** Temperature thresholds for each shelf can be displayed through the `environment shelf` command.

Error message	Description	Corrective action
ses.status.upsError -- NODE_ERROR	This message occurs when the disk shelf detects a failure in the uninterruptible power supply (UPS) attached to it. This might occur, for example, if power to the UPS is lost.	**1.** Restore power to the UPS. **2.** Verify that the connection from the UPS to the disk shelf is in place and secured and that the UPS is enabled. **3.** If the problem persists, contact technical support.
ses.status.upsInfo -- INFO	This message occurs when a condition previously reported about the UPS attached to the disk shelf is corrected or when other information about the UPS that does not necessarily require customer action is reported.	None.
ses.status.upsWarning -- WARNING	This message occurs when the disk shelf detects a warning condition in the UPS attached to it. This might occur, for example, if power to the UPS is lost.	**1.** Restore power to the UPS. **2.** Verify that the connection from the UPS to the disk shelf is in place and secured and that the UPS is enabled. **3.** If the problem persists, contact technical support.
ses.status.volError -- NODE_ERROR	This message occurs when a critical condition is detected in the indicated disk storage shelf voltage sensor. The shelf might be able to continue operation.	**1.** Verify that the power supply and the AC line are supplying power. **2.** Monitor the power grid for abnormalities. **3.** Replace the power supply. **4.** If the problem persists, contact technical support.

Error message	Description	Corrective action
ses.status.volInfo -- INFO	This message occurs when an error or warning condition previously reported by or about the disk shelf voltage sensor is corrected, or the system reports other information about the voltage in the disk shelf that does not necessarily require customer action.	None.
ses.status.volWarning -- WARNING	This message occurs when a warning condition is detected in the indicated storage shelf voltage sensor. The shelf might be able to continue operation.	**1.** Verify that the power supply and the AC line are supplying power. **2.** Monitor the power grid for abnormalities. **3.** Replace the power supply. **4.** If the problem persists, contact technical support.
ses.system.em.mmErr -- NODE_FAULT	This message occurs when Data ONTAP does not support this system with internal disk drives.	Check whether this system is currently supported. If it is, upgrade to the appropriate Data ONTAP version.
ses.tempOwnershipDone -- DEBUG	This message occurs when SCSI Enclosure Services (SES) completes temporary ownership acquisition.	Contact technical support.
sfu.adapterSuspendIO -- INFO	This message occurs during a disk shelf firmware update on a disk shelf that cannot perform I/O while updating firmware. Typically, the shelves involved are bridge-based as opposed to ESH-based.	None.

Error message	Description	Corrective action
sfu.ctrllerElmntsPerShelf -- INFO	This message occurs when a disk shelf firmware download determines the number of controller elements per shelf that can be downloaded.	None.
sfu.downloadCtrllerBridge -- INFO	This message occurs when a disk shelf firmware download starts on a particular disk shelf.	None.
sfu.downloadError -- ERR	This message occurs when a disk shelf firmware update fails to successfully download firmware to a disk shelf or shelves in the system.	Contact technical support.
sfu.downloadStarted -- INFO	This message occurs when a disk shelf firmware update starts to download disk shelf firmware.	None.
sfu.downloadSuccess -- INFO	This message occurs when disk shelf firmware is updated successfully.	None.
sfu.downloadSummary -- INFO	This message occurs when a disk shelf firmware update is completed successfully.	None.
sfu.downloadSummaryErrors -- ERR	This message occurs when a disk shelf firmware update is completed without successfully downloading to all shelves it attempted.	Issue the `storage download shelf` command again.
sfu.downloadingController -- INFO	This message occurs when a disk shelf firmware download starts on a particular disk shelf.	None.

Error message	Description	Corrective action
sfu.FCDownloadFailed -- ERR	This message occurs when a disk shelf firmware update fails to download shelf firmware to a Fibre Channel or an ATA shelf successfully.	Contact technical support.
sfu.firmwareDownrev -- WARNING	This message occurs when disk shelf firmware is downrev and therefore cannot be updated automatically.	Contact technical support.
sfu.firmwareUpToDate -- INFO	This message occurs when a disk shelf firmware update is requested but the system determines that all shelves are already updated already to the latest version of firmware available.	None.
sfu.partnerInaccessible -- ERR	This message occurs in an active/active (cluster) configuration in which communication between partner nodes cannot be established.	**1.** Verify that the active/active configuration interconnect is operational. **2.** Retry the `storage download shelf` command.
sfu.partnerNotResponding -- ERR	This message occurs when in an active/active (cluster) configuration in which one node does not respond to firmware download requests from another node. In this case, the other node cannot download disk shelf firmware.	**1.** Verify that theactive/active configuration interconnect is up and running on both nodes of the configuration and then attempt to redownload the disk shelf firmware, using the `storage download shelf` command.

Error message	Description	Corrective action
sfu.partnerRefusedUpdate -- ERR	This message occurs in an active/active (cluster) configuration in which one node refuses firmware download requests from its partner node. In this case, the partner node cannot download disk shelf firmware.	1. Verify that both the partners are running the same version of Data ONTAP and that the active/active configuration interconnect is up and running on all nodes of the configuration. 2. Attempt the `storage download shelf` command again.
sfu.partnerUpdateComplete -- INFO	This message occurs in an active/active (cluster) configuration in which a partner downloads disk shelf firmware and the download is completed. At this point, this notification is sent and SCSI Enclosure Services (SES) are resumed by the partner.	None.
sfu.partnerUpdateTimeout -- INFO	This message occurs in an active/active (cluster) configuration in which a partner downloads disk shelf firmware but the download times out. At this point, this notification is sent and SCSI Enclosure Services (SES) are resumed by the partner.	1. Verify that the active/active configuration interconnect is operational. 2. Retry the `storage download shelf` command.
sfu.rebootRequest -- INFO	This message occurs when the disk shelf firmware update is completed. The disk shelf reboots to run the new code.	None.

Error message	Description	Corrective action
sfu.rebootRequestFailure -- ERR	This message occurs when an attempt to issue a reboot request after downloading shelf firmware fails, indicating a software error.	Reboot the storage system, if possible, and try the firmware update again.
sfu.resumeDiskIO -- INFO	This message occurs when a disk shelf firmware update is completed and disk I/O is resumed.	None.
sfu.SASDownloadFailed -- ERR	This message occurs when a disk shelf firmware update fails to download shelf firmware to a shelf successfully.	Contact technical support.
sfu.suspendDiskIO -- INFO	This message occurs when a disk shelf firmware update is started and disk I/O is suspended.	None.
sfu.suspendSES -- INFO	This message occurs when a disk shelf firmware update is requested in an active/active (cluster) configuration environment. In this case, one partner node updates the firmware on the disk shelf module while the other partner node temporarily disables SCSI Enclosure Services (SES) while the firmware update is in process.	None.
sfu.statusCheckFailure -- ERR	This message occurs when the `storage download shelf` command encounters a failure while attempting to read the status of the firmware update in progress.	Retry the `storage download shelf` command.

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 system 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 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 halfway 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 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 technical support.
FC-AL LINK_FAILURE	Fibre Channel arbitrated loop has link failures.	No	Report the problem to technical support.
FC-AL RECOVERABLE ERRORS	Fibre Channel arbitrated loop has been determined to be unreliable. The link errors are recoverable in the sense that the system is still up and running	No	Report the problem to technical support.
RMC Alert: Boot Error	RMC card sent a `DOWN APPLIANCE` message. Causes might be a down storage system, a boot error, or an OFN POST error.	Yes	Harness script filters them and creates a case. Contact technical support.
RMC Alert: Down Appliance	RMC card sent a `DOWN APPLIANCE` message. Causes might be a down storage system, a boot error, or an OFN POST error.	Yes	Harness script filters them and creates a case. Contact technical support.
RMC Alert: OFW POST Error	RMC card sent a `DOWN APPLIANCE` message. Causes might be a down storage system, a boot error, or an OFN POST error.	Yes	Harness script filters them and creates a case. Contact technical support.

Understanding Remote LAN Module messages 5

What the RLM does

The Remote LAN Module (RLM) provides remote platform management capabilities on the following platforms:

- N5000 series storage systems
- N5000 series gateways
- N7000 series storage systems
- N7000 series gateways

The RLM's management capabilities include 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.

How and when RLM e-mail AutoSupport messages are sent

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.

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

What RLM e-mail notifications include

RLM e-mail 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 (SELs), the system sensor state as determined by the RLM, and console logs.

RLM-generated messages

The following table describes messages sent by the RLM and the appropriate corrective actions.

RLM message	Explanation	Action
RLM heartbeat stopped	The system software cannot see the Remote LAN Module (RLM).	**1.** Connect to the RLM command-line interface (CLI) to check whether the RLM is operational. **2.** Contact technical support if the problem persists.
RLM HEARTBEAT LOSS	The Remote LAN Module (RLM) detects the loss of heartbeat from Data ONTAP. The system possibly stopped serving data.	**1.** Connect to the RLM command-line interface (CLI) to check whether the RLM is operational. **2.** Contact technical support if the problem persists.
Reboot warning	The Remote LAN Module (RLM) detects an abnormal system reboot.	If this was a manually triggered or expected reboot, no action is necessary. Otherwise, complete the following steps. **1.** Check the status of the storage system and determine the cause of the reboot. **2.** Contact technical support if the storage system fails to reboot.
Heartbeat loss warning	The Remote LAN Module (RLM) detects the system is offline, possibly because the system stopped serving data.	If this system shutdown was manually triggered, no action is necessary. Otherwise, complete the following steps. **1.** Check the status of your system and verify that the storage system and disk shelves are operational. **2.** Contact technical support if the problem persists.
Reboot (power loss) critical	The Remote LAN Module (RLM) detects that the storage system lost AC power.	If you switched off the storage system before you received the notification, no action is necessary. Otherwise, complete the following step. Restore power to the storage system.

RLM message	Explanation	Action
Reboot (watchdog reset) warning	The Remote LAN Module (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 storage system is not serving data.
System boot failed (POST failed)	The Remote LAN Module (RLM) detects that a system error occurred during the power-on self test (POST) 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 through the Remote LAN Module (RLM).	No action is necessary.
User_triggered (system power on)	A user is powering on the storage system through the Remote LAN Module (RLM).	No action is necessary.
User_triggered (system power off)	A user is powering off the storage system through the Remote LAN Module (RLM).	No action is necessary.
User_triggered (system nmi)	A user is initiating a system core dump (nmi) through the Remote LAN Module (RLM).	No action is necessary.

RLM message	Explanation	Action
User_triggered (system reset)	A user is resetting the system through the Remote LAN Module (RLM).	No action is necessary.
User triggered (RLM test)	The Remote LAN Module (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 (EMS severity = WARNING)	The system encountered an error while trying to get hourly statistics from the Remote LAN Module (RLM).	**1.** Check whether the RLM is online by entering the following command at the Data ONTAP prompt: **`rlm status`** **2.** If the RLM is operational and the problem persists, enter the following command to reboot the RLM: **`rlm reboot`**

Name	Description	Corrective action
rlm.driver.mailhost (EMS severity = WARNING)	The Remote LAN Module (RLM) could not connect to the specified mailhost.	**1.** To verify the current value of `autosupport.mailhost`, enter the following command from the Data ONTAP prompt: **`options autosupport.mailhost`** **2.** If the current value associated with the IP address for this mailhost is incorrect, correct it in either of two ways: ❖ Enter **`options autosupport.mailhost`** ***`mailhost-name`*** or ❖ Enter **`setup`** and enter the correct IP address for the mail host. **3.** If *mailhost-name* 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 by mounting the root volume of the storage system on an administrative host and editing the /etc/hosts file.

Name	Description	Corrective action
rlm.driver.network.failure (EMS severity = WARNING)	A failure occurred during the network configuration of the Remote LAN Module (RLM). The system could not assign the RLM a Dynamic Host Configuration Protocol (DHCP) or fixed IP address.	**1.** Check that 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 autonegotiation mode. The network that the RLM is connected to needs to support autonegotiation to 10/100 speed or be running at one of those speeds for the RLM network connectivity to work.

rlm.driver.timeout
(EMS severity = WARNING)
	A failure occurred during communication with the Remote LAN Module (RLM).	**1.** Check whether the RLM is online by entering the following command at the Data ONTAP prompt:
		`rlm status`
		2. If the RLM is operational and the problem persists, enter the following command to reboot the RLM:
		`rlm reboot`

Name	Description	Corrective action

rlm.firmware.update.failed
(EMS severity = SVC_ERROR)
	An error occurred during an update to the Remote LAN Module (RLM) firmware. The firmware might have failed due to the following reasons:
	◆ An incorrect RLM firmware image or a corrupted image file
	◆ A communication error while sending new firmware to the RLM
	◆ An update failure while applying new firmware at the RLM
	◆ A system reset or loss of power during an update
		1. Download the firmware image by entering the following command:
		`software install http://pathto/RLM_FW.zip -f`
		2. Make sure that the RLM is still operational by entering the following command at the system prompt:
		`rlm status`
		3. Retry updating the RLM firmware. For more information, see the section on updating RLM firmware in the *System Administration Guide*.
		4. If the failure persists, contact technical support.

rlm.firmware.upgrade.reqd (EMS severity = WARNING)	The Remote LAN Module (RLM) firmware version and the version of Data ONTAP are incompatible and cannot communicate correctly about a particular capability.	Update the firmware version of the RLM to the version recommended for your version of Data ONTAP. For more information, see the section on updating RLM firmware in the *System Administration Guide*.
rlm.firmware.version. unsupported (EMS severity = WARNING)	The firmware on the Remote LAN Module (RLM) is an unsupported version and must be upgraded.	

Name	Description	Corrective action
rlm.heartbeat.bootFromBackup (EMS severity = WARNING)	The system rebooted the Remote LAN Module (RLM) from its backup firmware to restore RLM availability. The RLM is considered unavailable when the system stops receiving heartbeat notifications from the RLM. To restore availability, the system tries to reboot the RLM from the RLM's primary firmware. If that fails, the system tries to reboot the RLM from the RLM's backup firmware. This message is generated if the reboot from backup firmware restores availability.	Update the firmware version of the RLM to the version recommended for your version of Data ONTAP. For more information, see the section on updating RLM firmware in the *System Administration Guide*.
rlm.heartbeat.resumed (EMS severity = INFO)	The storage system detected the resumption of Remote LAN Module (RLM) heartbeat notifications, indicating that the RLM is now available. The earlier issue indicated by the rlm.heartbeat.stopped message was resolved.	None needed.

Name	Description	Corrective action
rlm.heartbeat.stopped (EMS severity = WARNING)	The storage system did not receive an expected heartbeat message from the Remote LAN Module (RLM). The RLM and the storage system exchange heartbeat messages, which they use to detect when one or the other is unavailable.	**1.** Connect to the RLM command-line interface (CLI). **2.** Collect debugging information by entering the following commands: **`version`** **`config`** **`priv set advanced`** **`rlm log debug`** **`rlm log messages`** **3.** Run the RLM diagnostics. ❖ From the `LOADER>` prompt, enter **`boot_diags`**. ❖ When the diagnostics main menu appears, select **`agent`**. ❖ To test the system/agent/RLM interface, select tests **`2`** and **`6`**. **4.** See the section on troubleshooting RLM problems in the *System Administration Guide*. **5.** If the problem persists, contact technical support.

Name	Description	Corrective action
rlm.network.link.down (EMS severity = WARNING)	The Remote LAN Module (RLM) detected a link error on the RLM network port. This can happen if a network cable is not plugged into the RLM network port. It can also happen if the network that the RLM is connected to cannot run at 10/100 Mbps.	**1.** Check whether the network cable is correctly plugged into the RLM network port. **2.** Check the link status LED on the RLM. **3.** Verify that the network that the RLM is connected to supports autonegotiation to 10/100 Mbps or is running at one of those speeds; otherwise, RLM network connectivity does not work.

Name	Description	Corrective action
rlm.notConfigured (EMS severity = WARNING)	You must configure the Remote LAN Module (RLM) before it can be used. This message occurs weekly until you configure the RLM.	**1.** To configure the RLM, enter the following command from the Data ONTAP prompt: **`rlm setup`** If you need the RLM's Media Access Control (MAC) address, enter the following command: **`rlm status`** **2.** To verify the RLM network configuration, enter the following command: **`rlm status`** **3.** If the `autosupport.mailhost` and `autosupport.to` options are not already set, enter the following commands: **`options autosupport.mailhost`** ***`host`*** **`options autosupport.to`** ***`address`*** **4.** To verify that the RLM can send ASUP e-mail, enter the following command: **`rlm test autosupport`**

Name	Description	Corrective action
rlm.orftp.failed (EMS severity = WARNING)	A communication error occurred while sending or receiving information from the Remote LAN Module (RLM).	1. Check whether the RLM is operational by entering the following command at the Data ONTAP prompt: **rlm status** 2. If the RLM is operational and this error persists, enter the following command to reboot the RLM: **rlm reboot** 3. If this message persists after you reboot the RLM, contact technical support.
rlm.snmp.traps.off (EMS severity = INFO)	The advanced privilege level in Data ONTAP was used to disable the Simple Network Management Protocol (SNMP) trap feature of the Remote LAN Module (RLM). This message occurs at bootup. This message also occurs when the SNMP trap capability was disabled and a user invokes a Data ONTAP command to use the RLM to send an SNMP trap.	To enable RLM SNMP trap support, set the `rlm.snmp.traps` option to `On`.

Name	Description	Corrective action
rlm.systemDown.alert (EMS severity = ALERT)	System remote management detected a system down event. This is only a Simple Network Management Protocol (SNMP) trap that is sent out by the Remote LAN Module (RLM) firmware. The trap includes a string describing the specific event that triggered the trap. The string is structured in the following form with key=value pairs: `Remote Management Event: type={system_down|system_up|test|keep_alive}, severity={alert|warning|notice|normal|debug|info}, event={post_error|watchdog_reset|power_loss}`	**1.** Check the system to verify that it has power and is operational. **2.** If your system is operational, run diagnostics on your entire system. **3.** Contact technical support if the system is not serving data.

Name	Description	Corrective action
rlm.systemDown.notice (EMS severity = NOTICE)	System remote management detected a system down event. This is only a Simple Network Management Protocol (SNMP) trap that is sent out by the Remote LAN Module (RLM) firmware. The trap includes a string describing the specific event that triggered the trap. The string is structured in the following form with key=value pairs: `Remote Management Event: type={system_down|system_up|test|keep_alive}, severity={alert|warning|notice|normal|debug|info}, event={power_off_via_rlm|power_cycle_via_rlm|reset_via_rlm}`	1. Check the system to verify that it has power and is operational. 2. If your system is operational, run diagnostics on your entire system. 3. Consult technical support if the system is not serving data.
rlm.systemDown.warning (EMS severity = WARNING)	System remote management detected a system down event. This is only a Simple Network Management Protocol (SNMP) trap that is sent out by the Remote LAN Module (RLM) firmware. The trap includes a string describing the specific event that triggered the trap. The string is structured in the following form with key=value pairs: `Remote Management Event: type={system_down|system_up|test|keep_alive}, severity={alert|warning|notice|normal|debug|info}, event={loss_of_heartbeat}`	1. Check the system to verify that it has power and is operational. 2. If your system is operational, run diagnostics on your entire system. 3. Consult technical support if the system is not serving data.

Name	Description	Corrective action
rlm.systemPeriodic.keepAlive (EMS severity = INFO)	System remote management sent a periodic keep-alive event. This is only a Simple Network Management Protocol (SNMP) trap that is sent out by the Remote LAN Module (RLM) firmware. The trap includes a string describing the specific event that triggered the trap. The string is structured in the following form with key=value pairs: `Remote Management Event: type={system_down|system_up|test|keep_alive}, severity={alert|warning|notice|normal|debug|info}, event={periodic_message}`	None needed.
rlm.systemTest.notice (EMS severity = NOTICE)	System remote management detected a test event. This is only a Simple Network Management Protocol (SNMP) trap that is sent out by the Remote LAN Module (RLM) firmware. The trap includes a string describing the specific event that triggered the trap. The string is structured in the following form with key=value pairs: `Remote Management Event: type={system_down|system_up|test|keep_alive}, severity={alert|warning|notice|normal|debug|info}, event={test}`	None needed.

Name	Description	Corrective action

rlm.userlist.update.failed
(EMS severity = warning)
	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 log in to the RLM.	**1.** Check whether the RLM is operational by entering the following command at the Data ONTAP prompt:
		`rlm status`
		2. If the RLM is operational and this error persists, reboot the RLM by entering the following command:
		`rlm reboot`
		3. Retry the operation that caused the error message.
		4. If this message persists after you reboot the RLM, contact technical support.

Understanding BMC messages 6

What the BMC does

The Baseboard Management Controller (BMC) provides remote platform management capabilities on N3300 and N3600 storage systems. These include remote access, monitoring, troubleshooting, logging, and alerting features.

The BMC sends AutoSupport messages through its independent management interface, regardless of the state of the system.

How and when BMC AutoSupport e-mail notifications are sent

BMC e-mail notifications are sent to configured recipients designated by the AutoSupport feature. The e-mail notifications have the title “System Alert from BMC of filer *serial number*”, followed by the message type. The *serial number* is that of the controller with which the BMC is associated.

Typical BMC-generated AutoSupport messages occur under the following conditions:

- The system reboots unexpectedly
- A system reboot fails
- A user-issued action triggers an AutoSupport message

What BMC e-mail notifications include

BMC e-mail notifications include the following information:

- Subject line—A system notification from the BMC of the system, listing the system condition or event that cause the AutoSupport message and the log level.
- Message body—The IP address, netmask, and other information about the system.
- Attachments—System configuration and sensor information.

BMC-generated messages

The following table describes messages sent by the BMC and the appropriate corrective actions.

BMC message	Explanation	Corrective Action
BMC_ASUP_UNKNOWN	Unknown Baseboard Management Controller (BMC) error.	Report the problem to technical support.
REBOOT (abnormal)	An abnormal reboot occurred.	Verify that the system has returned to operation.
REBOOT (power loss)	A power failure was detected, and the system restarted. This occurs when the system is power-cycled by the external switches or in a true power loss.	Verify that the system has returned to operation.
REBOOT (watchdog reset)	The system stopped responding and was rebooted by the Baseboard Management Controller (BMC). This occurs when the BMC watchdog is triggered.	Verify that the system has returned to operation.
SYSTEM_BOOT_FAILED (POST failed)	The system failed to pass the BIOS POST. This occurs when the BIOS status sensor is in a failed or hung state.	**1.** Issue a `system reset backup` command from the Baseboard Management Controller (BMC) console, and if the system can come up to the boot loader, issue the `flash` command to update the primary BIOS firmware. **2.** If the system is still nonresponsive, contact technical support.

BMC message	Explanation	Corrective Action
SYSTEM_POWER_OFF (environment)	An environmental sensor entered a critical, nonrecoverable state, and Data ONTAP has been requested to power off the system.	Verify the environmental conditions of the system.
USER_TRIGGERED (bmc test)	A user triggered the Baseboard Management Controller (BMC) AutoSupport internal test through the BMC console, Systems Management Architecture for Server Hardware (SMASH), or Intelligent Platform Management Interface (IPMI).	Verify that the command was issued by an authorized user.
USER_TRIGGERED (system nmi)	A user requested a core dump through the Baseboard Management Controller (BMC) console, Systems Management Architecture for Server Hardware (SMASH), or Intelligent Platform Management Interface (IPMI).	Verify that the command was issued by an authorized user.

BMC message	Explanation	Corrective Action
USER_TRIGGERED (system power cycle)	A user issued a power-cycle command through the Baseboard Management Controller (BMC) console, Systems Management Architecture for Server Hardware (SMASH), or Intelligent Platform Management Interface (IPMI).	Verify that the command was issued by an authorized user.
USER_TRIGGERED (system power off)	A user issued a power off command through the Baseboard Management Controller (BMC) console, Systems Management Architecture for Server Hardware (SMASH), or Intelligent Platform Management Interface (IPMI).	Verify that the command was issued by an authorized user.
USER_TRIGGERED (system power soft-off)	A user issued a power soft-off command through the Baseboard Management Controller (BMC) console, Systems Management Architecture for Server Hardware (SMASH), or Intelligent Platform Management Interface (IPMI).	Verify that the command was issued by an authorized user.

BMC message	Explanation	Corrective Action
USER_TRIGGERED (system power on)	A user issued a power on command through the Baseboard Management Controller (BMC) console, Systems Management Architecture for Server Hardware (SMASH), or Intelligent Platform Management Interface (IPMI).	Verify that the command was issued by an authorized user.
USER_TRIGGERED (system reset)	A user issued a reset command through the Baseboard Management Controller (BMC) console, Systems Management Architecture for Server Hardware (SMASH), or Intelligent Platform Management Interface (IPMI).	Verify that the command was issued by an authorized user.

EMS messages about the BMC

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

Note

After you remove and replace the NVMEM battery or a DIMM on an N3300 or N3600 storage system, you need to manually resetthe date and time on the controller module after Data ONTAP finishes booting. If your system is in an active/active configuration, you need to reset the date and time on both controller modules.

Name	Description	Corrective action
bmc.asup.crit	This message occurs when the Baseboard Management Controller (BMC) sends an AutoSupport message of a CRITICAL priority.	The action you take depends on whether the operating environment for the system, storage, or associated cabling has changed. ◆ If the operating environment has changed, shut down and power off the system until the environment is restored to normal operations. ◆ If the operating environment has not changed, check for previous errors and warnings. Also check for hardware statistics from Fibre Channel, SCSI, disk drives, other communications mechanisms, and previous administrative activities.
bmc.asup.error	This message occurs when the Baseboard Management Controller (BMC) fails to construct the necessary attachments of an AutoSupport message.	This message indicates an internal error with the BMC's AutoSupport processing. Contact technical support.

Name	Description	Corrective action
bmc.asup.init	This message occurs when the Baseboard Management Controller (BMC) fails to initialize its AutoSupport subsystem due to a lack of resources.	This message indicates an internal error with the BMC's AutoSupport processing. Contact technical support.
bmc.asup.queue	This message occurs when the Baseboard Management Controller (BMC) has too many outstanding AutoSupport messages and no longer has enough resources to service them.	This message might indicate an issue with your AutoSupport configuration. **1.** Ensure that your system is configured to use the correct AutoSupport Simple Mail Transfer Protocol (SMTP) mail host, and that the mail host is properly configured to handle AutoSupport messages originating from the BMC. **2.** For additional help, contact technical support.
bmc.asup.send	This message occurs when the Baseboard Management Controller (BMC) sends an AutoSupport message.	**1.** Follow the corrective action recommended for the AutoSupport message that was sent. **2.** For additional help, contact technical support.

Name	Description	Corrective action
bmc.asup.smtp	This message occurs when the Baseboard Management Controller (BMC) fails to contact the mailhost when attempting to send an AutoSupport message.	This message indicates an issue with your AutoSupport configuration. **1.** Ensure that your system is configured to use the correct AutoSupport Simple Mail Transfer Protocol (SMTP) mail host and that the mail host is properly configured to handle AutoSupport messages originating from the BMC. **2.** For additional help, contact technical support.
bmc.batt.id	This message occurs when the Baseboard Management Controller (BMC) cannot read the part number information stored in the battery configuration firmware.	Contact technical support for the current procedure to determine whether the battery failed.
bmc.batt.invalid	This message occurs when the Baseboard Management Controller (BMC) determines that the battery installed is not the correct model for your system.	Contact technical support to request the appropriate replacement battery for your model of system.
bmc.batt.mfg	This message occurs when the Baseboard Management Controller (BMC) cannot read the manufacturer information stored in the battery configuration firmware.	Contact technical support for the current procedure to determine whether the battery failed.

Name	Description	Corrective action
bmc.batt.rev	This message occurs when the Baseboard Management Controller (BMC) cannot read the revision code stored in the battery configuration firmware.	Contact technical support for the current procedure to determine whether the battery failed.
bmc.batt.seal	This message occurs when the Baseboard Management Controller (BMC) cannot seal the battery's configuration information after a battery upgrade.	Contact technical support for the current procedure to determine whether the battery failed.
bmc.batt.unknown	This message occurs when the Baseboard Management Controller (BMC) determines that the installed battery is not a recognized part that is approved for use in your system.	Contact technical support to request the appropriate replacement battery for your model of system.
bmc.batt.unseal	This message occurs when the Baseboard Management Controller (BMC) cannot unseal the battery's configuration information to determine whether the battery firmware requires an upgrade.	Contact technical support for the current procedure to determine whether the battery failed.
bmc.batt.upgrade.busy	This message occurs when the Baseboard Management Controller (BMC) determines that the battery configuration firmware requires an upgrade, but that the BMC is too busy to perform the upgrade.	It is normal to get this message one time after a BMC upgrade. However, if this message is issued more than once, it indicates a problem with your system. Contact technical support for the current procedure to determine whether your system needs to be replaced.

Name	Description	Corrective action
bmc.batt.upgrade.failed	This message occurs when the Baseboard Management Controller (BMC) cannot upgrade the battery configuration firmware to the latest revision.	In most cases, this error does not impact the functionality of your system, but replacing the battery might be advised at your next maintenance window. Contact technical support for the current procedure to determine whether the battery needs to be replaced.
bmc.batt.upgrade.failure	This message occurs when the Baseboard Management Controller (BMC) generates it for every configuration item in the battery configuration firmware that could not be updated during a battery upgrade.	**1.** Remove and reinsert the controller module. In most cases, this forces the BMC to reattempt and successfully upgrade the battery. **2.** If you see this message more than once, contact technical support for the current procedure to determine whether the battery needs to be replaced.
bmc.batt.upgrade	This message occurs when the Baseboard Management Controller (BMC) generates it before an upgrade of the battery's configuration firmware to indicate to the user the present and new revisions of battery configuration.	None.
bmc.batt.upgrade.ok	This message occurs when the entire battery upgrade process is complete.	None.

Name	Description	Corrective action
bmc.batt.upgrade.power-off	This message occurs in the rare event where the Baseboard Management Controller (BMC) cannot turn on system power, and the battery has not been checked to determine whether it requires a configuration upgrade.	1. Remove and reinsert the controller module. 2. If you continue to see this message, contact technical support for the current procedure to determine whether the controller module needs to be replaced.
bmc.batt.upgrade.voltagelow	This message occurs when the Baseboard Management Controller (BMC) generates it because the battery is discharged to below 6.0V and the battery requires a configuration firmware update.	This message is printed every 10 minutes until the battery is recharged. If you continue to see this message after one hour, contact technical support for the current procedure to determine whether the battery needs to be replaced.
bmc.batt.voltage	This message occurs in the rare event where the Baseboard Management Controller (BMC) determines that the battery configuration firmware requires an update and the battery is successfully prepared for the update, but the BMC cannot read the battery voltage sensor.	Contact technical support for the current procedure to determine whether the battery needs to be replaced.

Name	Description	Corrective action
bmc.config.asup.off	This message occurs in the rare event that the Baseboard Management Controller (BMC) detects corruption in the BMC's internal cached copy of the AutoSupport mail host and/or configured destinations. AutoSupport messages from the BMC are disabled until the system boots.	Boot the system to ensure that the BMC's cache of the AutoSupport configuration is correct.
bmc.config.corrupted	This message occurs in the rare event that the Baseboard Management Controller (BMC) internal configuration is corrupted and is being reset to defaults. Notably, the Secure Shell (SSH) service on the BMC LAN interface is disabled until the system boots.	**1.** Boot the system. Upon boot, the SSH host keys for the BMC are regenerated. The previous host keys for the BMC are no longer valid and cannot be used for logins. **2.** Contact technical support to determine whether your system needs maintenance.
bmc.config.default	This message occurs in the rare event that the Baseboard Management Controller (BMC) internal configuration is corrupted and is being reset to defaults. Notably, the Secure Shell (SSH) service on the BMC LAN interface is disabled until the system boots.	**1.** Boot the system. Upon boot, the SSH host keys for the BMC are regenerated. The previous host keys for the BMC are no longer valid and cannot be used for logins. **2.** Contact technical support to determine whether your system needs maintenance.

Name	Description	Corrective action
bmc.config.default.pef.filter	This message occurs in the rare event that the Baseboard Management Controller (BMC) internal configuration is corrupted and is being reset to defaults. Notably, the BMC's Platform Event Filter (PEF) tables are being cleared to factory defaults.	Most users need to take no action. However, if you want to use custom Intelligent Platform Management Interface (IPMI) PEF tables, you need to reenable the BMC IPMI LAN interface, and reload any custom PEF tables that might be defined for your site.
bmc.config.default.pef.policy	This message occurs in the rare event that the Baseboard Management Controller (BMC) internal configuration is corrupted and is being reset to defaults. Notably, the BMC's Platform Event Filter (PEF) tables are being cleared to factory defaults.	Most users need to take no action. However, if you want to use custom Intelligent Platform Management Interface (IPMI) PEF tables, you need to reenable the BMC IPMI LAN interface, and reload any custom PEF tables that might be defined for your site.
bmc.config.fru.systemserial	This message occurs when the Baseboard Management Controller (BMC) detects an invalid System Serial Number field in the system’s Field-Replaceable Unit (FRU) configuration area.	Contact technical support to determine the maintenance procedure for your system.
bmc.config.mac.error	This message occurs when the Baseboard Management Controller (BMC) Ethernet MAC identifier is invalid.	Contact technical support to determine the corrective procedure for your system.
bmc.config.net.error	This message occurs when the Baseboard Management Controller (BMC) cannot start networking support on the BMC LAN interface.	Contact technical support to determine the corrective procedure for your system.

Name	Description	Corrective action
bmc.config.upgrade	This message occurs when the Baseboard Management Controller (BMC) internal configuration defaults are updated.	None.
bmc.power.on.auto	This message occurs when, upon power up, the Baseboard Management Controller (BMC) detects that the system was previously soft powered-off.	None.
bmc.reset.ext	This message occurs when the Baseboard Management Controller (BMC) detects that a `bmc reboot` command was issued on the system previously.	None.
bmc.reset.int	This message occurs when the Baseboard Management Controller (BMC) was reset through the BMC command sequence `ngs smash; set reboot=1; priv set diag`.	None.
bmc.reset.power	This message occurs when the Baseboard Management Controller (BMC) detects a system power up, or after the BMC is upgraded.	None.
bmc.reset.repair	This message occurs when the Baseboard Management Controller (BMC) detects and corrects an internal BMC error.	If you receive this message frequently, contact technical support to determine the corrective procedure for your system.

Name	Description	Corrective action
bmc.reset.unknown	This message occurs when the Baseboard Management Controller (BMC) cannot determine why it was reset.	This message usually indicates a BMC internal error. Contact technical support to determine the corrective procedure for your system.
bmc.sensor.batt.charger.off	This message occurs when the Baseboard Management Controller (BMC) detects that the battery charger cannot be disabled for the hourly battery load test.	Contact technical support to determine the corrective procedure for your system.
bmc.sensor.batt.charger.on	This message occurs when the Baseboard Management Controller (BMC) cannot reenable the battery charger after the hourly battery load test.	Contact technical support to determine the corrective procedure for your system.
bmc.sensor.batt.time.run.invalid	This message occurs when the Baseboard Management Controller (BMC) detects that the battery's calculated run time differs substantially from the battery's run-time sensor.	None.
bmc.ssh.key.missing	This message occurs when the Baseboard Management Controller (BMC) detects that the Secure Shell (SSH) host keys for the BMC are corrupted or missing.	Reboot the system. The boot sequence regenerates the host key and makes the BMC SSH service available again.

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Platform Monitoring Guide

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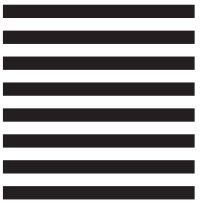

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