



## **disk events**

### **ONTAP 9.15.1 EMS reference**

NetApp  
June 10, 2024

# Table of Contents

- disk events ..... 1
  - disk.adaptererror events ..... 1
  - disk.bdfu events ..... 1
  - disk.capacity events ..... 2
  - disk.checksum events ..... 2
  - disk.cksum events ..... 3
  - disk.ddr events ..... 3
  - disk.diagnostic events ..... 7
  - disk.duplicate events ..... 7
  - disk.dynamicqual events ..... 8
  - disk.encrypt events ..... 10
  - disk.encryptaccesserr events ..... 11
  - disk.encryptaccessfwerr events ..... 12
  - disk.encryptcmdfailed events ..... 12
  - disk.encryptfipspassphnosync events ..... 13
  - disk.encryptgetmsidfailed events ..... 13
  - disk.encryptnosupport events ..... 14
  - disk.encryptprotdiff events ..... 14
  - disk.encryptsupportreqd events ..... 15
  - disk.eos events ..... 15
  - disk.exceed events ..... 16
  - disk.fail events ..... 16
  - disk.failmsg events ..... 17
  - disk.fakereassignsuccess events ..... 17
  - disk.fli events ..... 18
  - disk.fw events ..... 19
  - disk.healthtrigger events ..... 20
  - disk.init events ..... 20
  - disk.iomediumerror events ..... 26
  - disk.ioassignfailed events ..... 26
  - disk.ioassignsuccess events ..... 27
  - disk.iocoverederror events ..... 27
  - disk.lipstormdetect events ..... 29
  - disk.lostwritedetected events ..... 30
  - disk.lun events ..... 30
  - disk.maint events ..... 32
  - disk.max events ..... 33
  - disk.min events ..... 34
  - disk.outofservice events ..... 34
  - disk.pardisknotsuppmcc events ..... 34
  - disk.partition events ..... 35
  - disk.partner events ..... 35
  - disk.readreservationfailed events ..... 36

disk.releasefailed events	37
disk.reservedelay events	38
disk.reserveerror events	38
disk.reservefailed events	39
disk.rewritedatafailed events	39
disk.sanit events	40
disk.selectiontimeout events	44
disk.senseerror events	44
disk.senseinfontotvalid events	45
disk.setarraylqd events	45
disk.sizegrew events	45
disk.sizeshrank events	46
disk.spindleerror events	46
disk.stalledtoolong events	47
disk.timeout events	48
disk.toomanynvmespindles events	49
disk.toomanypartitioneddisk events	49
disk.toomanyreassignments events	49
disk.toomanyspindles events	50
disk.uid events	50
disk.unabletorewritedata events	51
disk.vendorspecificcode events	51
disk.writeverifyerror events	52

# disk events

## disk.adaptererror events

### disk.adapterError

#### Severity

ALERT

#### Description

This message occurs when an adapter error is detected.

#### Corrective Action

(None).

#### Syslog Message

Disk %s: unexpected adapter error 0x%x

#### Parameters

**diskName** (STRING): Name of the device.

**error** (INHEX): Adapter status.

## disk.bdfu events

### disk.bdfu.suspended

#### Severity

ERROR

#### Description

This message occurs when the background drive firmware update process fails to unlock SAS NetApp® Storage Encryption (NSE) drives in FIPS-compliance mode. The FIPS-certified SAS NSE drives must be unlocked with a valid authentication key before firmware can be downloaded to them. If the number of failed unlock attempts reaches a certain threshold, the drives will be locked out, leading to permanent loss of data in certain conditions. The system will automatically suspend the background drive firmware update for 12 hours, after which it is reenabled.

#### Corrective Action

Contact NetApp technical support for assistance with restoring valid authentication keys on the drive.

#### Syslog Message

Background drive firmware update is suspended because FIPS NSE drives cannot be unlocked. Reason: %s.

#### Parameters

**suspend\_reason** (STRING): Reason for the drive unlock failure.

# disk.capacity events

## disk.capacity.changed

### Severity

NOTICE

### Description

This message occurs when a media size change is reported for the underlying storage device. The new size and previous size are measured in 4096-byte blocks.

### Corrective Action

(None).

### Syslog Message

A storage device reported a size change for device "%s". New size: %llu, previous size: %llu (4096-byte blocks).

### Parameters

**diskName** (STRING): Name of the disk.

**new\_size** (LONGINT): The new size measured in 4096-byte blocks.

**previous\_size** (LONGINT): The previous size measured in 4096-byte blocks.

# disk.checksum events

## disk.checksum.offlineAdapter

### Severity

ALERT

### Description

This message occurs when multiple errors are detected during checksum verification. The adapter is taken offline.

### Corrective Action

Replace the adapter. Contact Contact NetApp technical support. for assistance with a Return Material Authorization.

### Syslog Message

Adapter %s taken offline due to checksum verification failure on multiple disks. Keep the adapter offline and contact Contact NetApp technical support. for assistance.

### Parameters

**adapterName** (STRING): Name of the adapter.

## disk.checksum.verifyFailed

### Severity

ALERT

## Description

This message occurs when disk checksum verify fails.

## Corrective Action

(None).

## Syslog Message

Disk level checksum verification failed on WRITE VERIFY: Disk %s, Block #%llu: Volume %s, FileId %d, Block #%llu

## Parameters

**diskName** (STRING): Name of the device.

**bno** (LONGINT): block id

**vol** (STRING): Volume name.

**fileid** (INT): File ID.

**block** (LONGINT): File block ID.

# disk.cksum events

## disk.cksum.bno.verifyFailed

### Severity

ALERT

### Description

This message occurs when the system detects a block number mismatch during disk checksum verification. The expected Virtual Block Number (VBN)/Disk Block Number (DBN) is not the same as the stored VBN/DBN from the checksum entry, indicating that the block is read from the wrong location.

### Corrective Action

(None).

### Syslog Message

Block number mismatch on WRITE VERIFY: Disk %s, expected\_dbn = %u, stored\_dbn = %u, expected\_vbn = %llu, stored\_vbn = %llu, Volume %s, FileId %d, Block #%llu.

### Parameters

**diskName** (STRING): Name of the device.

**expected\_dbn** (INT): Expected physical disk block number.

**stored\_dbn** (INT): Physical disk block number stored in the checksum entry.

**expected\_vbn** (LONGINT): Expected volume block number.

**stored\_vbn** (LONGINT): Volume block number stored in the checksum entry.

**vol** (STRING): Volume name.

**fileid** (INT): File ID.

**block** (LONGINT): File block ID.

# disk.ddr events

## **disk.ldr.dqp.out.of.date**

### **Severity**

NOTICE

### **Description**

This message occurs when the Dynamic Drive Recognition (DDR) Scanner detects a disk that is not part of its qualification table.

### **Corrective Action**

Check your support provider's web site or knowledgebase for more information about downloading and installing an updated Disk Qualification Package (DQP) file.

### **Syslog Message**

The DDR Scanner has detected that the latest DQP is not present on this system.

### **Parameters**

(None).

## **disk.ldr.invalid.azcs.capacity**

### **Severity**

ERROR

### **Description**

This event is generated when the DDR Scanner detects a capacity value that does not match with the alias string associated with it.

### **Corrective Action**

(None).

### **Syslog Message**

The DDR Scanner has detected an invalid AZCS alias capacity on disk %s

### **Parameters**

**diskname** (STRING): Name of the disk.

**capacity\_value** (LONGINT): The value of the invalid capacity

## **disk.ldr.invalid.bcs.capacity**

### **Severity**

ERROR

### **Description**

This event is generated when the DDR Scanner detects a capacity value that does not match with the alias string associated with it.

### **Corrective Action**

(None).

## Syslog Message

The DDR Scanner has detected an invalid BCS alias capacity on disk %s

## Parameters

**diskname** (STRING): Name of the disk.

**capacity\_value** (LONGINT): The value of the invalid capacity

## disk.ddr.scanner.ddr.failure

### Severity

NOTICE

### Description

This event is issued when a the ddr scanner has failed to read the new DDR label it just placed on the disk.

### Corrective Action

(None).

## Syslog Message

Disk %s Shelf %s Bay %s [%s %s %s] S/N [%s] [%s]: DDR label verify Failure - DDR Error

## Parameters

**disk\_name** (STRING): The name of the disk

**shelf** (STRING): Shelf identifier where the disk is located

**bay** (STRING): Disk bay within the shelf where disk is located

**vendor** (STRING): Name of the vendor of the disk

**model** (STRING): Model string of the disk drive

**firmware\_revision** (STRING): Firmware revision of the disk

**serialno** (STRING): Serial number of the disk

**ddr\_error** (STRING): DDR Error string which has been parsed

## disk.ddr.scanner.label.done

### Severity

NOTICE

### Description

This event is issued when a the ddr scanner has completed has completed scanning a disk successfully

### Corrective Action

(None).

## Syslog Message

Disk %s Shelf %s Bay %s [%s %s %s] S/N [%s] : DDR label write complete

## Parameters

**disk\_name** (STRING): The name of the disk

**shelf** (STRING): Shelf identifier where the disk is located

**bay** (STRING): Disk bay within the shelf where disk is located

**vendor** (STRING): Name of the vendor of the disk

**model** (STRING): Model string of the disk drive



**firmware\_revision** (STRING): Firmware revision of the disk  
**serialno** (STRING): Serial number of the disk

## **disk.ddr.scanner.verify.failure**

### **Severity**

NOTICE

### **Description**

This event is issued when a the ddr scanner has failed to read the new DDR label it just placed on the disk.

### **Corrective Action**

(None).

### **Syslog Message**

Disk %s Shelf %s Bay %s [%s %s %s] S/N [%s] : DDR label verify Failure

### **Parameters**

**disk\_name** (STRING): The name of the disk  
**shelf** (STRING): Shelf identifier where the disk is located  
**bay** (STRING): Disk bay within the shelf where disk is located  
**vendor** (STRING): Name of the vendor of the disk  
**model** (STRING): Model string of the disk drive  
**firmware\_revision** (STRING): Firmware revision of the disk  
**serialno** (STRING): Serial number of the disk

## **disk.ddr.scanner.write.failure**

### **Severity**

NOTICE

### **Description**

This event is issued when a the ddr scanner has failed to write a new DDR label to the disk

### **Corrective Action**

(None).

### **Syslog Message**

Disk %s Shelf %s Bay %s [%s %s %s] S/N [%s] : DDR label write Failure

### **Parameters**

**disk\_name** (STRING): The name of the disk  
**shelf** (STRING): Shelf identifier where the disk is located  
**bay** (STRING): Disk bay within the shelf where disk is located  
**vendor** (STRING): Name of the vendor of the disk  
**model** (STRING): Model string of the disk drive  
**firmware\_revision** (STRING): Firmware revision of the disk  
**serialno** (STRING): Serial number of the disk

## disk.ldr.unable.add.disk

### Severity

ALERT

### Description

This event is generated when the DDR Scanner is unable to re-add a disk to the filer after trying for 2 minutes. This means there are no more spare disk\_Cbs in the filer.

### Corrective Action

(None).

### Syslog Message

The filer has not freed a disk\_Cb for over 2 minutes for %s.

### Parameters

**diskuid** (STRING): The unique identifier of the disk

## disk.diagnostic events

### disk.diagnostic.logs.saved

### Severity

NOTICE

### Description

This message occurs when ONTAP retrieves the diagnostic logs from the disk. The logs are saved at /etc/logs/drive\_failure\_logs/.

### Corrective Action

(None).

### Syslog Message

Diagnostic logs retrieved for disk "%s".

### Parameters

**diskName** (STRING): Name of the disk.

## disk.duplicate events

### disk.duplicate.name

### Severity

ERROR

### Description

This message occurs when duplicate disk names are detected. This can be caused by corruption of the disk's shelf id or bay number or failure to determine the stack id. There is no known impact to functional systems, but failure to correct this error may result in operations taken on the wrong disk and ambiguity where the disks are referenced.

## Corrective Action

If any disk reports a shelf id or bay number not corresponding to its physical location, choose one of the following options: 1. Perform a takeover and giveback of the affected systems. 2. Remove the disk for at least 20 seconds, and then reinsert it. Note: If the disk is part of an aggregate, this option will result in a degraded RAID group and disk reconstruction will be initiated. Otherwise: 1. Verify cabling. 2. Contact NetApp technical support.

## Syslog Message

Multiple disks detected with the same name %s. Disks: %s (%s).

## Parameters

**disk\_name** (STRING): Name of the disks.

**disk\_uid\_list** (STRING): UIDs of disks with the same name.

**disk\_serialno\_list** (STRING): Serial numbers of disks with the same name.

# disk.dynamicqual events

## disk.dynamicqual.fail.parse

### Severity

ERROR

### Description

This message occurs when dynamic device qualification fails due to an invalid `/etc/qual_devices` file. The system is unable to properly recognize disk drives or fully enable all resiliency and performance features.

### Corrective Action

For further information about correcting the problem, search the knowledgebase of the NetApp technical support web site for the "[disk.dynamicqual.fail.parse]" keyword. Request an updated `qual_devices` file from NetApp.

### Syslog Message

Device qualification information file (`/etc/qual_devices`) is invalid. The following error, "%s" has been detected. For further information about correcting the problem, search the knowledgebase of the NetApp technical support web site for the "[disk.dynamicqual.fail.parse]" keyword.

### Parameters

**errorstring** (STRING): Error string for parsing error in `/etc/qual_devices` file.

## disk.dynamicqual.failure.cleared

### Severity

NOTICE

### Description

This message occurs when a previous dynamic device qualification error has been corrected.

### Corrective Action

(None).

## Syslog Message

Device qualification failure condition has been corrected. All devices have been qualified.

## Parameters

(None).

## disk.dynamicqual.failure.invalidFile

### Severity

ALERT

### Description

This message occurs when dynamic device qualification fails due to an invalid /etc/qual\_devices file.

### Corrective Action

See the qual\_devices man page for information about updating device qualification data. Request an updated qual\_devices file from NetApp.

## Syslog Message

Device qualification information file (/etc/qual\_devices) is invalid. See the qual\_devices man page for corrective action. This problem must be corrected within %d hour(s) to avoid a forced system shutdown. The following disk(s) remain unqualified: %s.

## Parameters

**time** (INT): Time until forced shutdown.  
**disklist** (STRING): List of disks that are still not qualified.

## disk.dynamicqual.failure.missingFile

### Severity

ALERT

### Description

This message occurs when dynamic device qualification fails with a missing qualification file.

### Corrective Action

See the qual\_devices man page for information about updating device qualification data. Request a qual\_devices file from NetApp.

## Syslog Message

Device Qualification information file (/etc/qual\_devices) is missing. See the qual\_devices man page for corrective action. This problem must be corrected within %d hour(s) to avoid a forced system shutdown. The following disk(s) remain unqualified: %s.

## Parameters

**time** (INT): Time until forced shutdown.  
**disklist** (STRING): List of disks that are still not qualified.

## disk.dynamicqual.failure.occurred

**Severity**

ALERT

**Description**

This message occurs when dynamic device qualification fails with an unknown error.

**Corrective Action**

See the `qual_devices` man page for information about updating device qualification data.

**Syslog Message**

Device qualification failure occurred. See the `qual_devices` man page for corrective action. This problem must be corrected within %d hour(s) to avoid a forced system shutdown. The following disk(s) remain unqualified: %s.

**Parameters**

**time** (INT): Time until forced shutdown.

**disklist** (STRING): List of disks that are still not qualified.

**disk.dynamicqual.failure.shutdown****Severity**

EMERGENCY

**Description**

This message occurs when one or more disks are not recognized by Data ONTAP®. This can result in a forced system shutdown if the offending disks are not removed or recognized properly within the allowed window of time.

**Corrective Action**

Download the latest Drive Qualification Package (DQP) from NetApp technical support, and then install it on your system.

**Syslog Message**

Device qualification failure has not been corrected for the past %d hour(s). The following disk(s) remain unqualified: %s. System is SHUTTING DOWN.

**Parameters**

**time** (INT): Time until forced shutdown.

**disklist** (STRING): List of disks that are still not qualified.

**disk.encrypt events****disk.encrypt.destroy.complete****Severity**

INFORMATIONAL

**Description**

This message occurs when the disk encrypt destroy operation is completed.

### **Corrective Action**

(None).

### **Syslog Message**

Disk %s [S/N %s] has completed encrypt destroy.

### **Parameters**

**diskName** (STRING): Name of the device.

**serialno** (STRING): Serial number of the device.

## **disk.encrypt.revert.complete**

### **Severity**

NOTICE

### **Description**

This message occurs when the disk encrypt revert operation is completed.

### **Corrective Action**

(None).

### **Syslog Message**

Disk %s [S/N %s] has completed encrypt revert.

### **Parameters**

**diskName** (STRING): Name of the device.

**serialno** (STRING): Serial number of the device.

## **disk.encryptaccesserr events**

### **disk.encryptAccessErr**

### **Severity**

ERROR

### **Description**

This message occurs when a disk reports a data protection error, and ONTAP® cannot restore permission to access the data through storage encryption methods.

### **Corrective Action**

If the disk is known to be an encrypting disk, then ONTAP might not have the correct storage encryption passphrase for this device. If possible, import the proper passphrase. If the passphrase cannot be recovered, or if the disk is not an encrypting disk, then all data on the disk is permanently inaccessible. You can return an encrypting disk to service as a spare through the use of the 'disk encrypt sanitize' command. If the device cannot be recovered, then it must be removed from the system.

### **Syslog Message**

Unable to restore data access on encrypting disk %s; status %s (0x%x).

## Parameters

**diskName** (STRING): Name of the disk.  
**status\_string** (STRING): Status code description.  
**status** (INT): Status code from the SCSI driver.

# disk.encryptaccessfwerr events

## disk.encryptAccessFWErr

### Severity

ERROR

### Description

This message occurs when a disk reports a SCSI data protection error on an attempt to download firmware and ONTAP® cannot restore permission to access the firmware through storage encryption methods.

### Corrective Action

If the disk is known to be an encrypting disk, then ONTAP might not have the correct storage encryption passphrase for this device. If possible, import the proper passphrase. If the passphrase cannot be recovered, or if the disk is not an encrypting disk, then the firmware cannot be downloaded. If the device cannot be recovered, then it must be removed from the system.

### Syslog Message

Unable to restore firmware download access on encrypting disk %s; status %s (0x%x).

## Parameters

**diskName** (STRING): Name of the disk.  
**status\_string** (STRING): Status code description from the SCSI driver.  
**status** (INT): Status code from the SCSI driver.

# disk.encryptcmdfailed events

## disk.encryptCmdFailed

### Severity

ERROR

### Description

This message occurs when the indicated "storage encryption disk" command fails on an encrypting disk that supports storage encryption methods.

### Corrective Action

Verify that storage encryption key servers, if required, are available and functioning, or that expected on-board keys are present.

### Syslog Message

Encrypting disk %s failed disk encrypt %s command with error status %s (0x%x).

## Parameters

**disk** (STRING): Name of the disk.  
**command** (STRING): Storage encryption disk command.  
**error\_string** (STRING): Error status code description.  
**error** (INT): Error status code.

# disk.encryptfipspassphnosync events

## disk.encryptFIPSPassphNoSync

### Severity

NOTICE

### Description

This message occurs when a system with NetApp® Storage Encryption (NSE) enabled detects that the authentication keys (AKs, or passphrases) for the internal FIPS-compliance authorities in a FIPS-certified drive are inconsistent. This can occur when a previous attempt to modify the FIPS-compliance passphrases failed.

### Corrective Action

Use the "security key-manager" commands to display the available AKs from external KMIP key-management servers or onboard key management (OKM). Use the "storage encryption disk modify -fips -key-id" command to assign the desired AK to the FIPS-compliance authorities in the drive. If the condition persists, either replace the drive, or use the "storage encryption disk revert-to-original-state" command to reset the drive to its original condition. Warning: This command also removes all user data from the drive.

### Syslog Message

The FIPS-compliance authorities for NSE drive %s have inconsistent authentication keys (AKs).

### Parameters

**diskName** (STRING): Name of the drive.

# disk.encryptgetmsidfailed events

## disk.encryptGetMSIDFailed

### Severity

NOTICE

### Description

This message occurs when an encrypting disk reports a SCSI data protection error, but Data ONTAP® cannot obtain the Manufacturer's Secure ID (MSID) that is mandatory on disks that support storage encryption methods. Some conditions can cause this error temporarily.

### Corrective Action

If the error persists, replace the disk or remove it from the system.

### Syslog Message

Unable to obtain MSID from disk %s; status "%s" (0x%x).



## Parameters

**diskName** (STRING): Name of the disk.

**status\_string** (STRING): Status code description from the SCSI driver.

**status** (INT): Status code from the SCSI driver.

# disk.encryptnosupport events

## disk.encryptNoSupport

### Severity

ALERT

### Description

This message occurs when ONTAP® software detects one or more FIPS-certified self-encrypting drives, but the environment variable 'bootarg.storageencryption.support' is not present or is set to "false" to indicate that FIPS-certified drives are not supported.

### Corrective Action

Remove all FIPS-certified drives.

### Syslog Message

Detected FIPS-certified encrypting drive %s, but FIPS drives are not supported on this node. %d of %d disks checked are FIPS-certified.

## Parameters

**disk** (STRING): Name of a FIPS-certified drive.

**FIPS\_disks** (INT): Number of FIPS-certified drives detected.

**disk\_count** (INT): Total number of drives checked. For a high-availability pair, this might be fewer than the total number of drives.

# disk.encryptprotdiff events

## disk.encryptProtDiff

### Severity

NOTICE

### Description

This message occurs when self-encrypting drives have different settings of data-at-rest protections; that is, some are protected, having a nondefault Data Key ID, and some are not, having one of the default Data Key IDs. Best protection is provided when all encrypting drives are protected, including spares that might be assigned automatically to an aggregate.

### Corrective Action

Use the "storage encryption disk show -protection-mode !data" command to display the drives that are not protected; use the "storage encryption disk show -protection-mode data" command to show the drives that are protected. Use the "storage encryption disk modify -data-key-id" command to set the Data Key ID to a nondefault value.

## Syslog Message

Self-encrypting drives on the system have dissimilar data protection settings.

## Parameters

(None).

# disk.encryptsupportreqd events

## disk.encryptSupportReqd

### Severity

ALERT

### Description

This message occurs when ONTAP® software detects one or more nonencrypting drives or non-FIPS-certified self-encrypting drives (SEDs), but the environment variable 'bootarg.storageencryption.support' is set to "true" to indicate that all drives must be FIPS-certified.

### Corrective Action

Remove all non-FIPS-certified SEDs and standard drives.

## Syslog Message

Detected nonencrypting drive or non-FIPS-certified drive %s, but only FIPS-certified drives are supported on this node. %d of %d drives checked are FIPS-certified.

## Parameters

**disk** (STRING): Name of a drive that is not FIPS-certified.

**encrypting\_disks** (INT): Number of FIPS-certified drives detected.

**disk\_count** (INT): Total number of drives checked. For a high-availability pair, this might be fewer than the total number of drives.

# disk.eos events

## disk.EOS.OS.error

### Severity

ALERT

### Description

This message occurs when a disk is detected that is not supported in this version of Data ONTAP® or later

### Corrective Action

Remove the disk and replace it with a disk that is supported.

## Syslog Message

%s support ended in version of %s. Current version is %s.

## Parameters

**disk\_information** (STRING): Disk information.

**EOS\_OS\_version** (STRING): Latest version of Data ONTAP supported by the disk.

**cur\_OS\_version** (STRING): Current version of Data ONTAP.

## disk.exceed events

### disk.exceed.cmd.completeTime

#### Severity

INFORMATIONAL

#### Description

This event is generated during disk qualification testing when READ/WRITE I/O requests exceed their expected maximum completion time.

#### Corrective Action

(None).

#### Syslog Message

Disk %s has exceeded %d ms limit — required %llu ms to complete command %s.

#### Parameters

**diskName** (STRING): Name of the disk.

**timeLimit** (INT): Time limit to complete command.

**timeTaken** (LONGINT): Time taken to complete command.

**commandSTR** (STRING): Disk qualification command in string.

## disk.fail events

### disk.fail.ssdstats

#### Severity

INFORMATIONAL

#### Description

This message occurs when a disk is marked failed, is being sanitized, or has entered Maintenance Center.

#### Corrective Action

(None).

#### Syslog Message

Disk %s (%s) failed with rated life used %, percent spare blocks %, spare blocks %s.

#### Parameters

**diskName** (STRING): Name of the disk.

**serialno** (STRING): Serial number.

**ratedLife** (STRING): Rated life used.

**percentSpare** (STRING): Percent spare blocks consumed.

**spareBlks** (STRING): Spare blocks consumed limit.

# disk.failmsg events

## disk.failmsg

### Deprecated

Deprecated as of ONTAP 9.5 - replaced by disk.outOfService.

### Severity

NOTICE

### Description

This message occurs when a drive is marked failed, is being sanitized, or has entered Maintenance Center.

### Corrective Action

(None).

### Syslog Message

Disk %s (%s)%s. %d %s

### Parameters

**diskName** (STRING): Name of the drive.

**serialno** (STRING): Serial number.

**reason** (STRING): Reason for the failure.

**powerOnTime** (INTEX): Time, in minutes, that the drive was powered on when the failure occurred.

**disk\_information** (STRING): Formatted information about the disk. This includes the disk's vendor, model, firmware revision, and serial number.

# disk.fakereassignsuccess events

## disk.fakereassignSuccess

### Severity

NOTICE

### Description

This message occurs when a fake reassign is detected on a disk and the sector verify succeeds.

### Corrective Action

(None).

### Syslog Message

disk %s: A fake reassign was issued on sector %llu for disk %s. Disable with boot arg disable-disk-fake-reassign? true.

### Parameters

**diskName** (STRING): Name of the disk.

**sector** (LONGINT): Sector where the error was detected.

**disk\_information** (STRING): Formatted information about the disk. This includes the disk's vendor, model, firmware revision, and serial number.

# disk.fli events

## disk.fli.abort.ioSent

### Severity

NOTICE

### Description

This message occurs when an I/O operation below the SCSI layer is aborted because a Foreign LUN Import (FLI) abort message was issued.

### Corrective Action

(None).

### Syslog Message

An I/O with the opcode %s has been aborted on disk %s.

### Parameters

**opcode** (STRING): Opcode that specifies the operation that was aborted.

**diskName** (STRING): Name of the disk.

## disk.fli.abort.ioUnSent

### Severity

NOTICE

### Description

This message occurs when an I/O operation in the disk class layer is aborted because a Foreign LUN Import (FLI) abort message was issued.

### Corrective Action

(None).

### Syslog Message

An I/O with the block count %llu starting at offset %llu has been aborted on disk %s.

### Parameters

**blockCount** (LONGINT): Number of blocks that this I/O operation spans.

**offset** (LONGINT): Start of the I/O operation.

**diskName** (STRING): Name of the disk.

## disk.fli.tmf.complete

### Severity

NOTICE

### Description

This message occurs when a Foreign LUN Import (FLI) message (abort or LUN reset) is completed.

## Corrective Action

(None).

## Syslog Message

Foreign LUN Import (FLI) message: %s completed on disk %s with status %d.

## Parameters

**msgType** (STRING): Specifies which type of FLI message: either abort or LUN reset.

**diskName** (STRING): Name of the disk to which this FLI message was sent.

**returnStatus** (INT): Completion status of the FLI message.

# disk.fw events

## disk.fw.autodownrev

### Severity

INFORMATIONAL

### Description

This message occurs when the system detects disks with firmware that is not up-to-date. The background firmware update program will update the firmware automatically if the correct firmware files are in place.

### Corrective Action

Download the correct firmware file onto the system. Check your support provider's web site or knowledgebase for more information about obtaining the latest disk firmware.

### Syslog Message

%d disks have downrev firmware. They will be updated automatically using background disk firmware update if the correct firmware files are in place.

### Parameters

**driveCount** (INT): Number of disks that need to have updated firmware.

## disk.fw.downrevWarning

### Severity

ERROR

### Description

This message occurs when the system detects disks with firmware that is not up-to-date.

### Corrective Action

Download and install the latest disk firmware file. Check your support provider's web site or knowledgebase for more information about obtaining the latest disk firmware.

### Syslog Message

%d disks have downrev firmware that you need to update.

### Parameters

**driveCount** (INT): Number of disks that need to have updated firmware.

# disk.healthtrigger events

## disk.healthTrigger

### Severity

NOTICE

### Description

This message occurs when the disk returns a health trigger event.

### Corrective Action

No action is required because this message is informational only. If the disk is having problems processing I/O, an error will be returned.

### Syslog Message

Disk %s received NHT health trigger (0x%x 0x%x 0x%x 0x%x)

### Parameters

**diskName** (STRING): Name of the device.  
**sense\_key** (INTHEX): SCSI sense key.  
**sense\_code** (INTHEX): SCSI sense code.  
**qualifier** (INTHEX): SCSI sense code qualifier.  
**fru\_failed** (INTHEX): SCSI FRU code.

# disk.init events

## disk.init.badSectorSize

### Severity

ERROR

### Description

This message occurs when a disk reports a sector size that does not match the drive qualification table.

### Corrective Action

Replace the disk.

### Syslog Message

Disk %s has an unexpected sector size (%d bytes) and cannot be used.

### Parameters

**diskName** (STRING): Name of the disk.  
**sector\_size** (INT): Invalid sector size.

## disk.init.err.capacityFlash

### Severity

ERROR

## Description

This message occurs when a capacity-optimized flash solid-state drive (SSD) is detected by a node that does not support this type of SSD.

## Corrective Action

Remove the disk from the system.

## Syslog Message

Disk %s cannot be used on a node that does not support capacity-optimized flash.

## Parameters

**diskName** (STRING): Name of the disk.

## disk.init.err.flashOptimized

### Severity

ERROR

### Description

This message occurs when a hard disk drive (HDD) is detected by a node configured with the All-Flash Optimized personality. With this personality, only solid-state drives (SSD) can be used.

### Corrective Action

Remove the disk from the system.

### Syslog Message

Disk %s cannot be used on a node configured as All-Flash Optimized.

### Parameters

**diskName** (STRING): Name of the disk.

## disk.init.err.unsupp.shelf

### Severity

ERROR

### Description

This message occurs when an unsupported NVMe solid-state drive (SSD) is discovered in an external NVMe shelf. This NVMe SSD is only supported as an internal drive on the A800 system.

### Corrective Action

Remove the drive from the external NVMe shelf.

### Syslog Message

Drive %s cannot be used in an external NVMe shelf.

### Parameters

**disk\_name** (STRING): Name of the SSD.

**disk\_information** (STRING): Formatted information about the SSD. This includes the drive's vendor, model, firmware revision, and serial number.



## **disk.init.err.unsupported**

### **Severity**

ERROR

### **Description**

This message occurs when an unsupported disk is detected on a node.

### **Corrective Action**

Remove the disk from the system.

### **Syslog Message**

Disk %s is not recognized as a supported disk and cannot be used on this node.

### **Parameters**

**diskName** (STRING): Name of the disk.

## **disk.init.err.zns**

### **Severity**

ERROR

### **Description**

This message occurs when a zoned namespace solid-state drive (SSD-ZNS) is detected by a node that does not support this type of SSD.

### **Corrective Action**

Remove the disk from the system.

### **Syslog Message**

Disk "%s" cannot be used on a node that does not support SSD-ZNS disks.

### **Parameters**

**diskName** (STRING): Name of the disk.

## **disk.init.error.capacity**

### **Severity**

ERROR

### **Description**

This message occurs when a disk reports an unexpected capacity.

### **Corrective Action**

Replace the disk.

### **Syslog Message**

Disk %s has an unexpected capacity (%llu sectors) and cannot be used. Replace it.

### **Parameters**

**diskName** (STRING): Name of the disk.

**lastSector** (LONGINT): Last sector of the disk.  
**productID** (STRING): Product name of the disk.

## disk.init.error.serialno

### Severity

ERROR

### Description

This message occurs when the inquiry command does not return a valid serial number or device ID for the device. The device is failed during initialization.

### Corrective Action

Replace the disk.

### Syslog Message

Serial number or device ID not available for %s.

### Parameters

**disk\_name** (STRING): Disk name.  
**page\_code** (INT): Page code that was sent.  
**error\_pcode** (INT): Page code received in error.

## disk.init.failure.error

### Severity

ERROR

### Description

This message occurs when a drive fails initialization. For NVMe drives, the returned error information is translated into the SCSI equivalent.

### Corrective Action

Replace the drive.

### Syslog Message

Drive %s failed initialization due to error %d, sense code(%x %x %x %x).

### Parameters

**diskName** (STRING): Name of the drive.  
**errorCode** (INT): Internal E\_SCSI return code.  
**sense\_key** (INTHEX): Sense key.  
**sense\_code** (INTHEX): Additional sense code.  
**qualifier** (INTHEX): Additional sense code qualifier.  
**fru\_failed** (INTHEX): FRU code.

## disk.init.failure.spinup

### Severity

ERROR

**Description**

This message occurs when a disk cannot spin up during initialization. The disk is marked as failed and is not used.

**Corrective Action**

Removed the disk from the system.

**Syslog Message**

Disk %s has failed to spin up and cannot be used. Replace it with a new drive.

**Parameters**

**diskName** (STRING): Name of the disk.

**disk.init.failureBytes****Severity**

ERROR

**Description**

This message occurs when the system discovers a previously failed disk. The system will not use the disk and it should be replaced.

**Corrective Action**

Replace the failed disk.

**Syslog Message**

Failed disk %s detected during disk initialization.

**Parameters**

**diskName** (STRING): Name of the disk.

**disk.init.invalidDDR****Severity**

INFORMATIONAL

**Description**

This message occurs when a disk contains a Dynamic Drive Recognition (DDR) label entry that is not for this disk. The system rewrites the DDR label with proper values.

**Corrective Action**

(None).

**Syslog Message**

Disk %s has an invalid DDR entry. DDR label will be corrected and rewritten automatically.

**Parameters**

**diskName** (STRING): Name of the disk.

**vendorID** (STRING): Vendor name of the disk.

**productID** (STRING): Product name of the disk.

## disk.init.protype.incompat

### Severity

ERROR

### Description

This message occurs when a hard disk drive (HDD) has a protection type enabled that is not supported. Protection type is a disk option that determines how information is physically saved on the disk.

### Corrective Action

Remove the disk from the system.

### Syslog Message

Disk %s has protection type %x enabled and cannot be used. %s

### Parameters

**diskName** (STRING): Name of the disk.

**protType** (INHEX): Value indicating the version of the enabled protection type.

**disk\_information** (STRING): Formatted information about the disk. This includes the disk's vendor, model, firmware revision, and serial number.

## disk.init.recognizedDDR

### Severity

INFORMATIONAL

### Description

This message occurs when a Dynamic Drive Recognition (DDR) label on a drive with dynamically qualified data is properly updated with aliased data.

### Corrective Action

(None).

### Syslog Message

Disk %s has been updated with the proper drive name alias. The DDR label will be rewritten automatically.

### Parameters

**diskName** (STRING): Name of the disk.

**vendorID** (STRING): Vendor name of the disk.

**productID** (STRING): Product name of the disk.

## disk.init.unknownDisk

### Severity

ERROR

### Description

This message occurs when a unique identifier cannot be created for a disk due to internal disk problems.

### Corrective Action

The disk needs to be replaced, remove it from the system.

## Syslog Message

Unable to identify disk %s.

## Parameters

**diskName** (STRING): Name of the disk.

# disk.iomediumerror events

## disk.ioMediumError

### Severity

NOTICE

### Description

This message occurs when the drive reports a medium error.

### Corrective Action

(None).

## Syslog Message

Medium error on disk %s: op %s sector %llu %s - %s %s (%x %x %x %x) (%d) %s

## Parameters

**diskName** (STRING): Name of the disk.

**op** (STRING): I/O operation being performed.

**sector** (LONGINT): Sector where the error was detected.

**senseInfo** (STRING): Sense data.

**sCode** (STRING): Sector code.

**disk\_info** (STRING): Static description of events on the disk.

**sense\_key** (INTHEX): Actual sense key.

**sense\_code** (INTHEX): Actual sense code.

**qualifier** (INTHEX): Actual sense code qualifier.

**fru\_failed** (INTHEX): Actual FRU code.

**CTime** (INT): Time, in milliseconds, from when the command was first issued until this I/O operation completed.

**disk\_information** (STRING): Formatted information about the disk. This includes the disk's vendor, model, firmware revision, and serial number.

# disk.ioReassignfailed events

## disk.ioReassignFailed

### Severity

ALERT

### Description

This message occurs when a disk reports a medium error and the sector reassignment fails. The system will fail the disk after possible recovery of retrievable disk data.

### Corrective Action

Replace the disk when the system indicates that you should remove it in subsequent logged events.

### Syslog Message

disk %s: sector %llu failed to be reassigned (%d). %s

### Parameters

**diskName** (STRING): Name of the disk.

**sector** (LONGINT): Sector where the error was detected.

**ETime** (INT): Time, in milliseconds, from when the command was first issued until this I/O operation failed.

**disk\_information** (STRING): Formatted information about the disk. This includes the disk's vendor, model, firmware revision, and serial number.

## disk.ioReassignsuccess events

### disk.ioReassignSuccess

#### Severity

NOTICE

#### Description

This message occurs when a medium error is detected on a disk and the sector reassignment succeeds.

#### Corrective Action

(None).

#### Syslog Message

disk %s: sector %llu was reassigned (%d). %s

#### Parameters

**diskName** (STRING): Name of the disk.

**sector** (LONGINT): Sector where the error was detected.

**CTime** (INT): Time, in milliseconds, from when the command was first issued until this I/O operation completed.

**disk\_information** (STRING): Formatted information about the disk. This includes the disk's vendor, model, firmware revision, and serial number.

## disk.ioRecoverederror events

### disk.ioRecoveredError.pfa

#### Severity

ERROR

#### Description

This message occurs when a disk determines that it will fail shortly. This occurs when a threshold internal to the disk indicates that a failure is imminent.

## Corrective Action

To avoid an uncontrolled failure, replace the disk as soon as possible. If the disk is a member of a RAID volume, the disk will be failed by RAID when this error occurs on a RAID I/O and the RAID group is not in degraded mode.

## Syslog Message

Recovered error predictive failure alert on disk %s: op %s sector %llu %s - %s (%x %x %x %x)

## Parameters

**diskName** (STRING): Name of the disk.

**op** (STRING): I/O operation being performed.

**sector** (LONGINT): Sector where the error was detected.

**senseInfo** (STRING): Sense data.

**disk\_info** (STRING): Static description of events on the disk.

**sense\_key** (INTHEX): Actual sense key.

**sense\_code** (INTHEX): Actual sense code.

**qualifier** (INTHEX): Actual sense code qualifier.

**fru\_failed** (INTHEX): Actual FRU code.

**disk\_information** (STRING): Formatted information about the disk. This includes the disk's vendor, model, firmware revision, and serial number.

## disk.ioRecoveredError.reassign

### Severity

NOTICE

### Description

This message occurs when a disk automatically reassigns a sector on a disk.

### Corrective Action

(None).

### Syslog Message

Recovered error on disk %s: op %s sector %llu %s - %s (%x %x %x %x) %s

### Parameters

**diskName** (STRING): Name of the disk.

**op** (STRING): I/O operation being performed.

**sector** (LONGINT): Sector where the error was detected.

**senseInfo** (STRING): Sense data.

**disk\_info** (STRING): Static description of events on the disk.

**sense\_key** (INTHEX): Actual sense key.

**sense\_code** (INTHEX): Actual sense code.

**qualifier** (INTHEX): Actual sense code qualifier.

**fru\_failed** (INTHEX): Actual FRU code.

**disk\_information** (STRING): Formatted information about the disk. This includes the disk's vendor, model, firmware revision, and serial number.

## disk.ioRecoveredError.retry

**Severity**

INFORMATIONAL

**Description**

This message occurs when a recovered error is detected on a disk.

**Corrective Action**

(None).

**Syslog Message**

Recovered error on disk %s: op %s sector %llu %s - %s (%x %x %x %x) (%d) %s

**Parameters**

**diskName** (STRING): Name of the disk.

**op** (STRING): I/O operation being performed.

**sector** (LONGINT): Sector where the error was detected.

**senseInfo** (STRING): Sense data.

**disk\_info** (STRING): Static description of events on the disk.

**sense\_key** (INTHEX): Actual sense key.

**sense\_code** (INTHEX): Actual sense code.

**qualifier** (INTHEX): Actual sense code qualifier.

**fru\_failed** (INTHEX): Actual FRU code.

**ETime** (INT): Time, in milliseconds, from when the command was first issued until this I/O operation failed.

**disk\_information** (STRING): Formatted information about the disk. This includes the disk's vendor, model, firmware revision, and serial number.

## disk.lipstormdetect events

### disk.lipStormDetect

**Severity**

NOTICE

**Description**

This message occurs when a Fibre Channel disk detects a large number of Loop Initialization Procedure requests (a LIP storm) and has reset itself.

**Corrective Action**

None required. If this happens a second time, the disk will be failed.

**Syslog Message**

shm: disk %s reports a LIP storm reset. %s. Error %x/%x/%x/%x.

**Parameters**

**diskName** (STRING): Name of the disk (host adapter, loop ID).

**disk\_info** (STRING): Static description of events on the disk.

**sense\_key** (INT): Actual sense key.

**sense\_code** (INT): Actual sense code.

**qualifier** (INT): Actual sense code qualifier.

**fru\_failed** (INT): Actual FRU code.



# disk.lostwritedetected events

## disk.lostwriteDetected

### Severity

ERROR

### Description

This message occurs when the system detects a lost write.

### Corrective Action

(None).

### Syslog Message

Disk level lost write detected on WRITE VERIFY: Disk %s, Block #%%llu: Volume %s, Fileid %d, Block #%%llu: Expected 0x%x, Recomputed as 0x%x.

### Parameters

**diskName** (STRING): Name of the device.

**bno** (LONGINT): Block ID.

**vol** (STRING): Volume name.

**fileid** (INT): File ID.

**block** (LONGINT): File block ID.

**cksum** (INTHEX): Expected checksum.

**cksum2** (INTHEX): Computed checksum.

# disk.lun events

## disk.lun.allMemoryAvailable

### Severity

NOTICE

### Description

This message occurs to confirm that enough memory is present to successfully allocate command blocks for all of the disks in the system and for additional LUNS.

### Corrective Action

(None).

### Syslog Message

disk\_init :Allocated all memory required for array LUNs.

### Parameters

(None).

## disk.lun.outOfMemory

### Severity

NOTICE

## Description

This message occurs when the system cannot allocate the additional memory for LUNs.

## Corrective Action

(None).

## Syslog Message

disk\_init: Unable to allocate memory for array LUN commands on %s.

## Parameters

**diskName** (STRING): Name of the device that could not allocate memory.

## disk.lun.sizeTooLarge

### Severity

ALERT

## Description

This message occurs when an array LUN on an external RAID storage subsystem or a virtual disk is too large to be used as storage by the controller.

## Corrective Action

Reduce this array LUN size, or re-create the virtual disk within the parameter limit.

## Syslog Message

Array LUN or virtual disk %s is too large (%s bytes) and cannot be used. The maximum permissible array LUN or virtual disk size is %s. Reduce this array LUN size by %lld bytes, or re-create the virtual disk within the parameter limit (%lld %d byte blocks).

## Parameters

**diskName** (STRING): Name of the array LUN or virtual disk that is too large.

**lunSize** (STRING): Size, expressed in bytes, of the array LUN or virtual disk that is too large.

**maxSize** (STRING): Maximum permissible array LUN or virtual disk size, expressed in bytes.

**byteDiff** (LONGINT): Difference, expressed in bytes, between the array LUN or virtual disk size and the maximum size Data ONTAP® supports.

**blockDiff** (LONGINT): Difference, expressed in blocks, between the array LUN or virtual disk size and the maximum size Data ONTAP supports.

**blockSize** (INT): Block size of the array LUN or virtual disk.

## disk.lun.sizeTooSmall

### Severity

ALERT

## Description

This message occurs when an array LUN on an external RAID storage subsystem or a virtual disk is too small to be used as storage by the controller.

## Corrective Action

Delete the array LUN or virtual disk and re-create it within the parameter limit.

## Syslog Message

LUN or virtual disk %s is too small (%s bytes) and cannot be used. The minimum permissible LUN or virtual disk size is %s. Increase this LUN or virtual disk size by %lld bytes (%lld %d byte blocks).

## Parameters

**diskName** (STRING): Name of the LUN or virtual disk that is too small.

**lunSize** (STRING): Size, in bytes, of the LUN or virtual disk that is too small.

**minSize** (STRING): Minimum permissible LUN or virtual disk size, expressed in bytes.

**byteDiff** (LONGINT): Difference, in bytes, between the LUN or virtual disk size and the minimum size Data ONTAP® supports.

**blockDiff** (LONGINT): Difference, in blocks, between the LUN or virtual disk size and the minimum size Data ONTAP supports.

**blockSize** (INT): Block size of the LUN or virtual disk.

## disk.lun.unsupportedBlkSize

### Severity

ALERT

### Description

This message occurs when an array logical unit (LUN) on the external RAID storage subsystem reports an unsupported block size.

### Corrective Action

Reformat the array LUN with a supported block size.

## Syslog Message

disk\_init: Array LUN %s reports a block size of %u bytes and it cannot be used. Reformat the array LUN with a supported block size.

## Parameters

**diskName** (STRING): Name of the array LUN with the unsupported block size.

**sector\_size** (INT): Unsupported block size.

## disk.maint events

### disk.maint.test.end

### Severity

NOTICE

### Description

This message occurs when maintenance testing has completed.

### Corrective Action

(None).

## Syslog Message

Disk %s Model [%s] S/N [%s] has completed maintenance testing with status %d (0x%x,0x%x,0x%x,0x%x).

## Parameters

**disk\_name** (STRING): Name of the disk.

**productID** (STRING): Product name of the disk.

**serialno** (STRING): Serial number of the disk.

**status** (INT): Maintenance test completion status where 0 represents successful completion of the test.

**fa0** (INTHEX): Failure byte 0.

**fa1** (INTHEX): Failure byte 1.

**fa2** (INTHEX): Failure byte 2.

**fa3** (INTHEX): Failure byte 3.

## disk.maint.test.start

### Severity

NOTICE

### Description

This message occurs when maintenance testing begins on a disk.

### Corrective Action

(None).

### Syslog Message

Disk %s Model [%s] S/N [%s] has started maintenance testing.

## Parameters

**disk\_name** (STRING): Name of the disk.

**productID** (STRING): Product name of the disk.

**serialno** (STRING): Serial number of the disk.

## disk.max events

## disk.max.partitions

### Severity

ERROR

### Description

This message occurs when ONTAP® software cannot partition a disk because the system already has the maximum number of partitioned disks.

### Corrective Action

Contact Contact NetApp technical support. for assistance.

### Syslog Message

Disk %s cannot be partitioned as the system already has %d partitioned disks.

## Parameters

**diskName** (STRING): Name of the disk.

**maxPartitionLimit** (INT): Maximum number of disks which can be partitioned.

# disk.min events

## disk.min.OS.error

### Severity

ERROR

### Description

This message occurs when a disk is detected that is not supported in this version of Data ONTAP®.

### Corrective Action

Remove the disk and replace it with a disk that is supported, or upgrade the kernel to the required version.

### Syslog Message

%s is not supported because it requires a minimum kernel version of %s. Current version is %s.

### Parameters

**disk\_information** (STRING): Disk information.

**min\_OS\_version** (STRING): Disk's minimum supported Data ONTAP version.

**cur\_OS\_version** (STRING): Current version of the Data ONTAP.

# disk.outofservice events

## disk.outOfService

### Severity

NOTICE

### Description

This message occurs when a drive is removed from service because it has been marked failed, is being sanitized, or has entered Maintenance Center.

### Corrective Action

(None).

### Syslog Message

Drive %s (%s)%s. Power-On Hours: %s, GList Count: %d, Drive Info: %s.

### Parameters

**diskName** (STRING): Name of the drive.

**serialno** (STRING): Serial number of the drive.

**reason** (STRING): Reason for removal from service.

**powerOnHours** (STRING): Time, in hours, that the drive was powered on when the failure occurred.

**glistEntries** (INT): Number of grown defect list entries.

**disk\_information** (STRING): Formatted information about the drive. This includes the drive's vendor, model, firmware revision, and serial number.

# disk.partdisknotsuppmcc events

## disk.partDiskNotSuppMCC

### Severity

NOTICE

### Description

This message occurs when a partitioned disk is found in a MetroCluster™ configuration.

### Corrective Action

Remove the partitioned disk, because it is not supported in a MetroCluster configuration.

### Syslog Message

Ignoring disk %s because partitioned disks are not supported in a MetroCluster™ configuration.

### Parameters

**diskName** (STRING): Name of the disk.

## disk.partition events

### disk.partition.exceeded

### Severity

ERROR

### Description

This message occurs when the disk partition layout contains more partitions than are supported by the system.

### Corrective Action

Fix the unsupported disk partition layout by using the 'disk unpartition' command to make the disk a spare disk.

### Syslog Message

Disk %s has %d partitions, which exceeds the maximum of %d partitions.

### Parameters

**disk\_name** (STRING): Name of the disk.

**partition\_count** (INT): Number of partitions on the disk.

**max\_partition\_count** (INT): Maximum number of partitions supported per disk.

## disk.partner events

### disk.partner.encrRevertDone

### Severity

NOTICE

### Description

This message occurs when a node receives notice that a partner node has completed a disk encrypt revert operation.

**Corrective Action**

(None).

**Syslog Message**

The partner has completed reverting drive %s to its original state.

**Parameters**

**diskName** (STRING): Name of the device.

**disk.partner.encrRevertStart****Severity**

NOTICE

**Description**

This message occurs when a node receives notice that a partner node has started a disk encrypt revert operation.

**Corrective Action**

(None).

**Syslog Message**

The partner has started reverting drive %s to its original state.

**Parameters**

**diskName** (STRING): Name of the device.

**disk.partner.sanitizeStart****Severity**

INFORMATIONAL

**Description**

This message occurs when a message is received from the partner for a disk sanitize start.

**Corrective Action**

(None).

**Syslog Message**

The partner has started a disk sanitize on %s.

**Parameters**

**diskName** (STRING): Name of the disk.

**disk.readreservationfailed events****disk.readReservationFailed****Severity**

ERROR

## Description

This message occurs when a SCSI (Small Computer System Interface) read reservation fails.

## Corrective Action

This is not a problem if seen occasionally. If this message is seen repeatedly, or is blocking access to a LUN for longer than 10 minutes, open a support case to investigate the underlying cause.

## Syslog Message

Disk read reservation failed on %s CDB %s - %s (%x %x %x)

## Parameters

**diskName** (STRING): Name of the device.

**cdb** (STRING): CDB (Command Descriptor Block) containnig the I/O operation being performed.

**sSenseKey** (STRING): Sense key value.

**iSenseKey** (INTHEX): Actual sense key.

**iASC** (INTHEX): SCSI Additional Sense Code.

**iASCQ** (INTHEX): SCSI Additional Sense Code Qualifier.

**sm** (STRING): SCSI Persistent Reservation state machine.

**state** (INT): SCSI Persistent Reservation state machine step.

**out\_status\_flags** (INTHEX): Status flag contains bits describing which of the following status values are valid.

**ha\_status** (INTHEX): Value returned by the host adapter driver describing completion status of I/O request execution at the transport or physical link layer.

**target\_status** (INTHEX): Value returned by the target describing completion status of I/O request.

**target\_rsp\_code** (INTHEX): Target response code.

# disk.releasefailed events

## disk.releaseFailed

### Severity

ERROR

### Description

This message occurs when a SCSI release reservation fails.

### Corrective Action

This is not a problem if seen occasionally. If this message is seen repeatedly, or is blocking access to a LUN for longer than 10 minutes, open a support case to investigate the underlying cause.

### Syslog Message

Disk release failed on %s CDB %s - %s (%x %x %x)

### Parameters

**diskName** (STRING): Name of the device.

**cdb** (STRING): CDB (Command Descriptor Block) containing the I/O operation being performed.

**sSenseKey** (STRING): Sense key value.

**iSenseKey** (INTHEX): Actual sense key.

**iASC** (INTHEX): SCSI Additional Sense Code.

**iASCQ** (INTHEX): SCSI Additional Sense Code Qualifier.

**sm** (STRING): SCSI Persistent Reservation state machine.

**state** (INT): SCSI Persistent Reservation state machine step.



**out\_status\_flags** (INTEX): Status flag contains bits describing which of the following status values are valid.

**ha\_status** (INTEX): Value returned by the host adapter driver describing completion status of I/O request execution at the transport or physical link layer.

**target\_status** (INTEX): Value returned by the target describing completion status of I/O request.

**target\_rsp\_code** (INTEX): Target response code.

## disk.reservedelay events

### disk.reserveDelay

#### Severity

NOTICE

#### Description

This message occurs when a SCSI reservation command has a longer latency than expected during takeover. This delay could cause a system outage in which case the disk should be removed to prevent further problems. .

#### Corrective Action

If you see this message before an outage on takeover, remove the specified disk.

#### Syslog Message

The disk reservation command sent to %s has taken longer than expected: %d msec during takeover.

#### Parameters

**diskName** (STRING): Name of the device.

**elapsed\_time** (INT): Number of milliseconds for the command to complete.

## disk.reserveerror events

### disk.reserveError

#### Severity

NOTICE

#### Description

This message occurs when a SCSI reservation is requested for a disk or LUN that is no longer seen.

#### Corrective Action

A disk or LUN might have been removed from the storage subsystem or the path to a disk or LUN has been lost. Verify that all paths to the disk or LUN are visible to the appliance using the storage show disk -p command.

#### Syslog Message

disk\_reserve: %s was not found: CDB %s - %s (%x %x %x)

#### Parameters

**diskName** (STRING): Name of the device.

**cdb** (STRING): CDB (Command Descriptor Block) containing the I/O operation being performed.

**sSenseKey** (STRING): Sense key string.

**iSenseKey** (INTHEX): Sense key value.

**iASC** (INTHEX): SCSI Additional Sense Code.

**iASCQ** (INTHEX): SCSI Additional Sense Code Qualifier.

**sm** (STRING): SCSI Persistent Reservation state machine.

**state** (INT): SCSI Persistent Reservation state machine step.

**out\_status\_flags** (INTHEX): Status flag containing bits describing which of the following status values are valid.

**ha\_status** (INTHEX): Value returned by the host adapter driver describing completion status of I/O request execution at the transport or physical link layer.

**target\_status** (INTHEX): Value returned by the target describing completion status of I/O request.

**target\_rsp\_code** (INTHEX): Target response code.

## disk.reservefailed events

### disk.reserveFailed

#### Severity

ERROR

#### Description

This message occurs when a SCSI reservation fails.

#### Corrective Action

This is not a problem if seen occasionally. If this message is seen repeatedly, or is blocking access to a LUN for longer than 10 minutes, contact NetApp technical support to open a support case to investigate the underlying cause.

#### Syslog Message

Disk reservation failed on %s CDB %s - %s (%x %x %x)

#### Parameters

**diskName** (STRING): Name of the device.

**cdb** (STRING): CDB (Command Descriptor Block) containing the I/O operation being performed.

**sSenseKey** (STRING): Sense key string.

**iSenseKey** (INTHEX): Actual sense key.

**iASC** (INTHEX): SCSI Additional Sense Code.

**iASCQ** (INTHEX): SCSI Additional Sense Code Qualifier.

**sm** (STRING): SCSI Persistent Reservation state machine.

**state** (INT): SCSI Persistent Reservation state machine step.

**out\_status\_flags** (INTHEX): Status flag containing bits describing which of the following status values are valid.

**ha\_status** (INTHEX): Value returned by the host adapter driver describing completion status of I/O request execution at the transport or physical link layer.

**target\_status** (INTHEX): Value returned by the target describing completion status of I/O request.

**target\_rsp\_code** (INTHEX): This is the target response code

## disk.rewritedatafailed events

### disk.rewriteDataFailed

**Severity**

ALERT

**Description**

This message occurs when the system encounters an error and cannot rewrite data that was difficult to read on ATA drives.

**Corrective Action**

(None).

**Syslog Message**

Unable to rewrite %s on disk %s.

**Parameters**

**command** (STRING): SCSI command that reported a problem.

**diskName** (STRING): Name of the device.

## disk.sanit events

### disk.sanit.complete

**Severity**

INFORMATIONAL

**Description**

This message occurs when disk sanitization has been completed.

**Corrective Action**

(None).

**Syslog Message**

Disk %s [S/N %s] has completed sanitization.

**Parameters**

**diskName** (STRING): Name of the device.

**serialno** (STRING): Serial number of the device.

### disk.sanit.error

**Severity**

ERROR

**Description**

This message occurs when a disk returns an error during sanitization.

**Corrective Action**

Verify that the drive is capable of sanitization. See the ONTAP® Physical Storage Management Guide <https://library.netapp.com/ecmdocs/ECMP12458210/html/GUID-1DC1DEC2-AAB3-483E-805D-82E722023AA6.html> for more information.

## Syslog Message

Disk %s has received an error %d (0%hx/0%hx/0%hx/0%hx) during sanitization.

## Parameters

**diskName** (STRING): Name of the disk.  
**scsi\_error** (INT): SCSI error code.  
**sense\_key** (INT): Actual sense key.  
**sense\_code** (INT): Actual sense code.  
**qualifier** (INT): Actual sense code qualifier.  
**fru\_failed** (INT): Actual FRU code.

## disk.sanit.formatComplete

### Severity

INFORMATIONAL

### Description

This message occurs when the disk sanitization format phase is complete.

### Corrective Action

(None).

## Syslog Message

Disk sanitization format complete for disk %s [S/N %s], begin pattern writes.

## Parameters

**diskName** (STRING): Name of the device.  
**serialno** (STRING): Serial number of the device.

## disk.sanit.formatError

### Severity

ERROR

### Description

This message occurs when disk sanitization formatting fails.

### Corrective Action

(None).

## Syslog Message

Disk %s has received an error %d (0%hx/0%hx/0%hx) during the formatting of the drive. Format will be retried within fifteen minutes.

## Parameters

**diskName** (STRING): Name of the device.  
**status** (INT): Error code.  
**sense\_key** (INTHEX): Actual sense key.  
**sense\_code** (INTHEX): Actual sense code.  
**qualifier** (INTHEX): Actual sense code qualifier.

## disk.sanit.formatFailed

### Severity

ERROR

### Description

This message occurs when disk sanitization reformatting has been retried unsuccessfully the maximum number of times.

### Corrective Action

Disk sanitization reformatting attempts have been unsuccessful. To make the disk usable, it must be reformatted. You can do this in maintenance mode with the SCSI "format" command.

### Syslog Message

Disk sanitization reformat has failed for disk %s.

### Parameters

**diskName** (STRING): Name of the device.

## disk.sanit.patternDone

### Severity

INFORMATIONAL

### Description

This message occurs when disk sanitization has completed a cycle of a pattern write.

### Corrective Action

(None).

### Syslog Message

Disk %s [S/N %s] cycle %d pattern write of 0x%02x completed in %02d:%02d:%02d.

### Parameters

**diskName** (STRING): Name of the device.

**serialno** (STRING): Serial number of the device.

**cycle** (INT): Sanitization cycle.

**pattern** (INT): Pattern byte.

**hours** (INT): Time in hours.

**minutes** (INT): Time in minutes.

**seconds** (INT): Time in seconds.

## disk.sanit.randomPatternDone

### Severity

INFORMATIONAL

### Description

This message occurs when disk sanitization has completed a cycle of random data write.

## Corrective Action

(None).

## Syslog Message

Disk %s [S/N %s] cycle %d pattern write of random data completed in %02d:%02d:%02d.

## Parameters

**diskName** (STRING): Name of the device.  
**serialno** (STRING): Serial number of the device.  
**cycle** (INT): Sanitization cycle.  
**hours** (INT): Time in hours.  
**minutes** (INT): Time in minutes.  
**seconds** (INT): Time in seconds.

## disk.sanit.reformatComplete

### Severity

INFORMATIONAL

### Description

This message occurs when disk sanitization reformatting is complete.

### Corrective Action

(None).

### Syslog Message

Disk %s has been successfully reformatted. To sanitize disk, restart the disk sanitize command. To bypass format, use -s option.

### Parameters

**diskName** (STRING): Name of the device.

## disk.sanit.sanitComplete

### Severity

INFORMATIONAL

### Description

This message occurs when the SCSI sanitize command phase of a 'disk sanitize' command is complete, and the data pattern write phase begins.

### Corrective Action

(None).

### Syslog Message

Sanitization phase of the 'disk sanitize' command was completed for disk %s [S/N %s]. Pattern writes have begun.

### Parameters

**diskName** (STRING): Name of the device.  
**serialno** (STRING): Serial number of the device.

# disk.selectiontimeout events

## disk.selectionTimeout

### Severity

ERROR

### Description

This message occurs when a selection timeout is received.

### Corrective Action

(None).

### Syslog Message

Disk %s: selection timeout

### Parameters

**diskName** (STRING): Name of the device.

# disk.senseerror events

## disk.senseError

### Severity

ERROR

### Description

This message occurs when the drive reports an error.

### Corrective Action

Check the event log for related error messages and corrective actions.

### Syslog Message

Disk %s: op %s sector %llu %s - %s (%X %X %X %X)

### Parameters

**diskName** (STRING): Name of the disk.

**op** (STRING): I/O operation being performed.

**sector** (LONGINT): Sector where the error was detected.

**senseInfo** (STRING): Sense data.

**sCode** (STRING): Sector code.

**sense\_key** (INTHEX): SCSI sense key.

**sense\_code** (INTHEX): SCSI sense code.

**qualifier** (INTHEX): SCSI sense code qualifier.

**fru\_failed** (INTHEX): SCSI FRU code.

**disk\_information** (STRING): Formatted information about the disk. This includes the disk's vendor, model, firmware revision, and serial number.

## disk.senseinfoinvalid events

### disk.senseInfoNotValid

**Severity**

ERROR

**Description**

This message occurs when invalid sense information is returned.

**Corrective Action**

(None).

**Syslog Message**

Disk %s: sense data information field is not valid.

**Parameters**

**diskName** (STRING): Name of the device.

## disk.setarraylqd events

### disk.setArrayLQD

**Severity**

INFORMATIONAL

**Description**

This message occurs when you set the LUN queue depth for all the LUNs of an array.

**Corrective Action**

(None).

**Syslog Message**

All the LUNs on array '%s' have a LUN queue depth value set to %d.

**Parameters**

**arrayName** (STRING): Name of the array.

**lqd** (INT): LUN queue depth value.

## disk.sizegrew events

### disk.sizeGrew

**Severity**

NOTICE

**Description**

This message occurs when the controller detects an increase in the capacity of a virtual disk.



## Corrective Action

(None).

## Syslog Message

Size of virtual disk %s has been changed from %s to %s, an increase of %lld bytes (%lld %d-byte blocks).

## Parameters

**diskName** (STRING): Name of the virtual disk that has an increased capacity.

**Size** (STRING): Original size of the virtual disk in bytes.

**NewSize** (STRING): Current size of the virtual disk in bytes.

**byteDiff** (LONGINT): Difference in bytes between the original size and the current size of the virtual disk.

**blockDiff** (LONGINT): Difference in blocks between the original size and the current size of the virtual disk.

**blockSize** (INT): Block size in bytes of the virtual disk.

# disk.sizeshrank events

## disk.sizeShrank

### Severity

NOTICE

### Description

This message occurs when the controller detects a decrease in the capacity of a virtual disk.

### Corrective Action

(None).

### Syslog Message

Size of virtual disk %s has changed from %s to %s, a decrease of %lld bytes (%lld %d-byte blocks).

### Parameters

**diskName** (STRING): Name of the virtual disk that has a decreased capacity.

**Size** (STRING): Original size of the virtual disk in bytes.

**NewSize** (STRING): Current size of the virtual disk in bytes.

**byteDiff** (LONGINT): Difference in bytes between the original size and the current size of the virtual disk.

**blockDiff** (LONGINT): Difference in blocks between the original size and the current size of the virtual disk.

**blockSize** (INT): Block size in bytes of the virtual disk.

# disk.spindleerror events

## disk.spindleError.detect

### Severity

ERROR

### Description

This message occurs when a disk returns a spindle detect error. The disk will be recommended for failure.

## Corrective Action

Disk firmware has detected spindle motor problems. The disk will be recommended for failure. If the disk is a member of a RAID volume, it will be failed by RAID when this error occurs on a RAID I/O and the raid group is not in degraded mode.

## Syslog Message

Disk %s has reported a spindle detect error: (%x %x %x %x)

## Parameters

**diskName** (STRING): Name of the disk.  
**sense\_key** (INTHEX): Actual sense key  
**sense\_code** (INTHEX): Actual sense code.  
**qualifier** (INTHEX): Actual sense code qualifier.  
**fru\_failed** (INTHEX): Actual FRU code.

## disk.spindleError.notice

### Severity

INFORMATIONAL

### Description

This message occurs when a disk returns a spindle detect error.

### Corrective Action

Disk firmware has detected spindle motor problems. The option to recommend the drive for failure is not set, so the disk will not be automatically recommended for failure.

### Syslog Message

(None).

### Parameters

**diskName** (STRING): Name of the disk.  
**sense\_key** (INT): Actual sense key.  
**sense\_code** (INT): Actual sense code.  
**qualifier** (INT): Actual sense code qualifier.  
**fru\_failed** (INT): Actual FRU code.

## disk.stalledtoolong events

### disk.stalledTooLong

#### Severity

ERROR

#### Description

This message occurs when a disk has been stalled too long.

#### Corrective Action

(None).

## Syslog Message

I/O for disk %s has been suspended %d times for %d seconds.

## Parameters

**diskName** (STRING): Name of the device.

**count** (INT): Count of times suspended.

**error** (INT): Time suspended.

# disk.timeout.events

## disk.timeout.flush.end

### Severity

NOTICE

### Description

This message occurs when the disk driver stops flushing aggressive timeout I/Os.

### Corrective Action

(None).

## Syslog Message

Aggressive timeout flush ended on disk %s S/N %s.

## Parameters

**disk\_name** (STRING): Name of the disk.

**serial\_num** (STRING): Serial number of the disk.

## disk.timeout.flush.start

### Severity

NOTICE

### Description

This message occurs when an I/O operation is taking longer than expected and aggressive timeout I/Os are flushed from the disk driver.

### Corrective Action

(None).

## Syslog Message

Aggressive timeout flush started on disk %s S/N %s. Details: %s.

## Parameters

**disk\_name** (STRING): Name of the disk.

**serial\_num** (STRING): Serial number of the disk.

**details** (STRING): Additional information.

# disk.toomanynvmespindles events

## disk.tooManyNvmeSpindles

### Severity

ALERT

### Description

This message occurs when Data ONTAP® finds more NVMe disks present on a platform than the platform actually supports. Additional disks above the support number are ignored. Correct this issue before rebooting the system.

### Corrective Action

Too many NVMe disks have been installed. Reconfigure the system to the maximum number of NVMe disks supported.

### Syslog Message

Reached the maximum number of NVMe disks that are supported on this system of %d NVMe disks. All additional NVMe disks will be ignored. This problem must be resolved before the system is rebooted.

### Parameters

**maxSpindle** (INT): Maximum number of NVMe disks supported on this platform.

# disk.toomanypartitioneddisk events

## disk.tooManyPartitionedDisks

### Severity

ALERT

### Description

This message occurs when Data ONTAP® finds more partitioned disks present on a platform than the platform supports. The system ignores any partitioned disks above the limit, and they will be unusable.

### Corrective Action

Too many partitioned disks have been installed. Reconfigure the system to the maximum number of partitioned disks supported.

### Syslog Message

Ignoring partitioned disk %s because the maximum limit of %d partitioned disks supported on this system has been reached.

### Parameters

**diskName** (STRING): Name of the disk.

**maxPartitionedDisks** (INT): Maximum number of partitioned disks supported on this platform.

# disk.toomanyreassignments events

## disk.tooManyReassignments

### Severity

NOTICE

### Description

This message occurs when a reassignment fails due to table overflow.

### Corrective Action

(None).

### Syslog Message

Disk %s: sector %llu was NOT reassigned, too many reassignments.

### Parameters

**diskName** (STRING): Name of the device.

**error** (LONGINT): Bad sector.

## disk.toomanyspindles events

### disk.tooManySpindles

### Severity

ALERT

### Description

This message occurs when Data ONTAP® finds more disks present on a platform than the platform actually supports. Additional disks above the support number are ignored. Correct this issue before rebooting the system.

### Corrective Action

Too many disks have been installed. Reconfigure the system to the maximum number of disks supported.

### Syslog Message

Found %d disks, but maximum of %d disks are supported on this system. All additional disks will be ignored. This problem must be resolved before the system is rebooted.

### Parameters

**actualSpindle** (INT): Actual number of disks configured.

**maxSpindle** (INT): Maximum number of disks supported on this platform.

## disk.uid events

### disk.uid.changed

### Severity

NOTICE

## Description

This message occurs when a SCSI (Small Computer System Interface) INQUIRY command done during a disk drive initialization sequence finds different data in the INQUIRY response for page 0x83. The unique id (UID) derived from this information has changed unexpectedly.

## Corrective Action

Locate the failed disk drive by looking for a disk drive whose amber LED fault light is lit. Replace the disk drive.

## Syslog Message

Disk %s has unexpectedly changed its unique ID. vendor:%s product:%s serial\_number:%s

## Parameters

**diskName** (STRING): Name of the disk that had the UID change.  
**disk\_vendor\_id** (STRING): Vendor name of the disk that had the UID change.  
**disk\_product\_id** (STRING): Product name of the disk that had the UID change.  
**disk\_serialno** (STRING): Serial number of the disk that had the UID change.

# disk.unabletorewritedata events

## disk.unableToRewriteData

### Severity

INFORMATIONAL

### Description

This message occurs when Data ONTAP® receives too many errors reading from a particular location on an ATA disk drive, but its attempt to rewrite the data to the disk drive fails.

### Corrective Action

(None).

### Syslog Message

Difficulty reading disk drive %s with the command %s; could not rewrite the data.

### Parameters

**diskName** (STRING): Name of the disk drive with the problem.  
**command** (STRING): SCSI command that reported a problem.

# disk.vendorspecificcode events

## disk.vendorSpecificCode

### Severity

ERROR

### Description

This message occurs when a disk returns a vendor-specific error.

## Corrective Action

Replace the disk.

## Syslog Message

Drive %s has failed with a vendor specific error: class 0x%x segment 0x%x sense\_key 0x%x info 0x%x 0x%x 0x%x 0x%x length 0x%x resv\_1 0x%x sense\_code %d sense\_code\_qualifier %d fru\_failed 0x%x flags 0x%x field\_pointer 0x%x.

## Parameters

**diskName** (STRING): Name of the disk.  
**class** (INTECH): Sense class.  
**segment** (INTECH): Segment.  
**sense\_key** (INTECH): Actual sense key.  
**info0** (INTECH): Vendor-specific information[0].  
**info1** (INTECH): Vendor-specific information[1].  
**info2** (INTECH): Vendor-specific information[2].  
**info3** (INTECH): Vendor-specific information[3].  
**len** (INTECH): Length.  
**resv** (INTECH): Resv field.  
**sense\_code** (INT): Actual sense code.  
**qualifier** (INT): Actual sense code qualifier.  
**fru\_failed** (INTECH): Actual FRU code.  
**flags** (INTECH): Flags of the error.  
**field\_ptr** (INTECH): Sense field pointer.

# disk.writeverifyerror events

## disk.writeVerifyError

### Severity

ERROR

### Description

This message occurs when a write verify error occurs.

### Corrective Action

(None).

### Syslog Message

WRITE VERIFY on disk %s received an unexpected status %d.

### Parameters

**diskName** (STRING): Name of the device.  
**error** (INT): Returned error code

## Copyright information

Copyright © 2024 NetApp, Inc. All Rights Reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP “AS IS” AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

LIMITED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (b)(3) of the Rights in Technical Data -Noncommercial Items at DFARS 252.227-7013 (FEB 2014) and FAR 52.227-19 (DEC 2007).

Data contained herein pertains to a commercial product and/or commercial service (as defined in FAR 2.101) and is proprietary to NetApp, Inc. All NetApp technical data and computer software provided under this Agreement is commercial in nature and developed solely at private expense. The U.S. Government has a non-exclusive, non-transferrable, nonsublicensable, worldwide, limited irrevocable license to use the Data only in connection with and in support of the U.S. Government contract under which the Data was delivered. Except as provided herein, the Data may not be used, disclosed, reproduced, modified, performed, or displayed without the prior written approval of NetApp, Inc. United States Government license rights for the Department of Defense are limited to those rights identified in DFARS clause 252.227-7015(b) (FEB 2014).

## Trademark information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.