Dell FluidFS Version 5.0 Release Notes

The Dell NAS appliances leverage the **Dell Fluid File System** (FluidFS) and the **Dell Storage Center SAN** to provide file storage to clients using the SMB, NFS, or FTP protocols. FluidFS version 5.0 introduces new features and enhancements, and fixes issues that were present in the previous release.

Revision History

Document number: 680-115-001

Revision	Date	Description
A	January 2016	Initial release of FluidFS v5.0
B	March 2016	Release of FluidFS v5.0.100128
C	April 2016	Release of FluidFS v5.0.200081
D	July 2016	Release of FluidFS v5.0.300109
E	August 2016	Updated feature descriptions
F	September 2016	Release of FluidFS v5.0.400014

Contents

FluidFS Version 5.0 Compatibility Requirements

Make sure that the following requirements are met prior to using FluidFS version 5.0.

Table 1. FluidFS Version 5.0 Compatibility Requirements

Component	Requirement
Supported update paths from previous versions of FluidFS	For the supported update paths to FluidFS version 5.0, see the *Dell Fluid File System Version 5.0 Support Matrix* available from dell.com/support.
Storage Center OS	Up to eight Storage Centers running version 6.5.x or later. 📝 **NOTE:** Storage Center OS version 6.6.1 or later is required to support 4 PB across two or more Storage Centers.
Dell Storage Manager	Dell Storage Manager 2015 R3.1 or later 📝 **NOTE:** Dell recommends updating to the latest supported Dell Storage Manager version before updating the FluidFS software.
Supported platforms	FS8600

Related Publications

The publications listed in the following sections comprise the core Dell FluidFS documentation set. These publications are sorted by target audience.

Documents for Dell Customers

- *Dell FluidFS Version 5.0 Administrator's Guide* – Provides information about using the Dell Storage Manager software to manage FS appliances, and provides information about FS appliance monitoring and troubleshooting.
- *Dell FluidFS Version 5.0 CLI Reference Guide* – Provides information about the FS command-line interface.
- *Dell FluidFS Version 5.0 Firmware Update Guide* – Provides information about updating the FluidFS software from version 4.0 to 5.0 and from v5.0 service packs.
- *Dell Storage Manager Installation Guide* – Provides information about installing and configuring the Dell Storage Manager Data Collector and Dell Storage Manager Client.
- *Dell Storage Manager Administrator's Guide* – Describes how to use the Dell Storage Manager software to manage Storage Center and FS8600 appliances.
- *Dell Storage Manager Release Notes* – Provides information about Dell Storage Manager releases, including new features and enhancements, open issues, and resolved issues.

Documents for Dell Installers and Certified Business Partners

- *Dell FluidFS Version 5.0 FS8600 Appliance Pre-Deployment Requirements* – Provides a checklist that assists in preparing to deploy an FS8600 appliance before a Dell installer or certified business partner arrives onsite to perform an FS8600 appliance installation.
- *Dell FluidFS Version 5.0 FS8600 Appliance Deployment Guide* – Provides information about deploying an FS8600 appliance, including cabling the appliance to one or more Storage Centers and the network, and deploying the appliance using the Dell Storage Manager software.

- *Dell FS8600 Appliance Service Guide* — Provides information about FS8600 appliance hardware, system component replacement, and system troubleshooting.
- *Dell NAS Appliance SFP+ Replacement Procedure* — Provides information about replacing SFP+ transceivers on an inactive system.
- *Dell FluidFS FS8600 Appliance 1Gb to 10Gb Upgrade Procedure* — Provides information about upgrading a Fibre Channel FS8600 appliance from 1Gb Ethernet client connectivity to 10Gb Ethernet client connectivity.

FluidFS Version 5.0.400014

Version **5.0.400014** contains fixed issues, shown on Page 7.

FluidFS Version 5.0.300109

Version **5.0.300109** contains fixed issues, shown on Page 7.

FluidFS Version 5.0.100128 New Features and Enhancements

Version 5.0.100128 introduced the following new features and enhancements.

Dedicated FluidFS Replay Profile

For FluidFS deployments, Dell Storage Manager creates a dedicated FluidFS replay that is automatically assigned to FluidFS LUNs (volumes on the Storage Center). The profile setting defaults to Daily, and the retention policy is to delete after 25 hours. This feature will take effect only during an initial installation of FluidFS v5.0.100128. You cannot activate this feature if you are updating the firmware to v5.0.100128.

Automatic ACL to UNIX Word 777 Mapping

When files with Windows ACLs are displayed from NFS clients, the FluidFS mapping algorithm shows a translated UNIX access mode. Perfect translation is not possible, so a heuristic method is used to translate from the Windows ACL to the 12 bits of the UNIX word. However, when some special SIDs are used inside ACL (for example, creator-owner ACE), the mapping can be inaccurate. For some applications, NFS clients must see the exact mapping or a mapping for more permissive access. Otherwise, the NFS applications might not perform denied operations.

This release adds an option that causes all objects with SMB ACLs to be presented with UNIX Word 777 from NFS clients (for display only). This option, which is disabled by default, can be configured under NAS Volume settings.

NOTE: Actual data-access checks in FluidFS are still made against the original security ACLs.

This feature applies only to NAS volumes with Windows or mixed security style (for files with Windows ACLs).

NDMP Exclude Paths and Patterns Using FluidFS

Configuring DMA clients with data-exclusion patterns might not work with some backup vendors such as BackupExec and Netbackup. FluidFS v5.0.100128 adds options for handling exclude paths and patterns, which will be skipped when executing NDMP backup on the NAS volume.

This option can be configured at the NAS volume level, and is available under NAS Volume settings.

FluidFS Version 5.0 New Features and Enhancements

Version 5.0.002821 introduces the following features and enhancements. For more information and detailed instructions about using these features, refer to the *Dell FluidFS Version 5.0 FS8600 Appliance Administrator's Guide*.

Scalability

- **Global namespace** – Also referred to as *redirection folders*, simplifies access to unstructured data spread across multiple NAS systems by providing a single SMB or NFS mount point for the clients.

  One or more redirection folders can be created on a FluidFS share and/or export to point clients to other shares and/or exports residing internally or externally to a FluidFS system. In this way, users need to know only one location to access their files, which could reside on one or more NAS devices on the LAN or WAN. By using FluidFS redirection folders, access to tens of petabytes of data can be from one global namespace for both SMB and NFS clients.

  NOTE:
  - Global namespace can be used only if all of the NAS servers support SMBv2 or NFSv4 or later.
  - Redirection folders are not supported for OSX SMB access, due to lack of support in OSX for wide links.
  - Redirection folders are not supported in SMBv1 or NFSv3.
  - NDMP backs up the redirection folder only. It does not back up the data to which the folder is redirecting.
  - Following wide links (the SMB implementation of redirection folders) is disabled by default on Windows clients, and can be enabled with an AD GPO or locally with the **fsutil** command. The command **fsutil behavior query SymLinkEvaluation** will show whether wide links are enabled.

Extended Protocol Support

- **File Transfer Protocol (FTP)** – FluidFS v5 supports anonymous FTP as a data-access protocol, in addition to SMB and NFS. The NAS administrator can set the FTP landing directory to a NAS volume directory, allowing anonymous access to data for users. Note that in FluidFS v4, FTP was used by NAS administrators only to collect and transfer NAS diagnostics and service-pack files from and to the NAS system.
- **Microsoft BranchCache** – Allows branch cache hosts to cache files and retrieve the file data from the server only if the hash (that is, the file) has changed. The main benefit of this feature is to enhance performance over a slow WAN. The NAS administrator can enable or disable this functionality for each share (it is disabled by default).

NOTE:

- – The feature must be enabled on both sides (server and client).
- – The feature applies to files of sizes between 64 KB and 256 MB.

- **SMBv2 sparse files** – Adds support for SMBv2 sparse files. When sparse file functionality is enabled and the application uses the functionality, the system does not allocate hard disk drive space to a file except in regions where it contains nonzero data. When a write operation is attempted where a large amount of the data in the buffer is zeros, the zeros are not written to the file. Instead, the file system creates an internal list containing the locations of the zeros in the file, and this list is used during all read operations. When a read operation is performed in areas of the file where zeros were located, the file system returns the appropriate number of zeros in the buffer allocated for the read operation. In this way, maintenance of the sparse file is transparent to all processes that access it, and is more efficient than compression in this case.

    NOTE:

    - – Sparse files are not supported when using SMBv1.
    - – NDMP does not support sparse files. NDMP backs up and restores files with zeros instead of converting them to sparse files.

- **SMBv2 symbolic links** – Adds support for SMB symbolic links using the Windows command **mklink**. A symbolic link is a special type of file that contains a reference to another file or directory in the form of an absolute or relative path and that affects path-name resolution. Symbolic links operate transparently for most operations: Programs that read or write to files named by a symbolic link behave as if they were operating directly on the target file. The link contains a text string that is automatically interpreted and followed by the operating system as a path to another file or directory.

    Local file-system symbolic links are available in NTFS starting with Windows Vista and Windows Server 2008, but the symbolic links over SMB are available only with SMBv2.

    NOTE:

    - – NDMP backs up the link only. It does not back up the data to which the link is redirecting.
    - – Following wide links (the SMB implementation of redirection folders) is disabled by default on Windows clients, and can be enabled with an AD GPO or locally with the **fsutil** command. The command **fsutil behavior query SymLinkEvaluation** will show whether the wide links are enabled.

Data Protection

- **Third-party auditing software support (includes auditing for SMB and NFS)** – When enabled, notifies the administrator when both systemwide file-access auditing configuration is enabled and the file operation matches any active (enabled) preconfigured file-access notification policy for the volume. Auditing events are generated after permissions check for the file operation and before the actual execution of the operation.

    - – Quest Change Auditor – Enables auditing of the SMB protocol only, starting with this release.

- **Two-way NDMP backup (Direct NDMP)** – Enables directly attaching FC tape to the FC switch used by FluidFS, and not through a DMA server. The backup data is transferred directly across Fibre Channel to the attached backup target without traveling across the LAN. Only the backup *control* data travels across the LAN from the NDMP client with backup software.

    NOTE:

    - – iSCSI solutions do not support this feature.
    - – Direct connection to a single controller is not supported.

- **NDMP include/exclude path** – Adds the ability to include or exclude certain paths for NDMP backup and restore operations. When you define a backup using DMA, you can select specific directories from the virtual NAS volume to include in, or exclude from, NDMP backup jobs.

- **Optimize NAS volume for use as VMware vSphere datastore** – When enabled, FluidFS snapshots on NAS volumes containing VMs will take VM snapshots, to ensure the VM is always in a consistent state.

Access Control

- **Microsoft group policy support** – Group Policy and Group Policy Objects (GPO) are a Microsoft framework and set of protocols integrated into Windows clients and servers. GPOs enable central management of administrative policies. FluidFS v5 supports the file system security GPO that allows Active Directory administrators to centrally set DACLs, SACLs, and ownership on specific files and directories residing in NAS volumes.

  NOTE: This feature is supported on NTFS or mixed security style volumes only.

- **Ability to set DACL, SACL, owner of SMB shares from Dell Storage Manager** – Administrators can configure ACLs and ownership of SMB shares using Dell Storage Manager, without the need to log in to the specific share. Prior to FluidFS v5, administrators could control those actions only by accessing the shares or using MMC.

- **Ability to restrict access to .snapshots folder and "previous versions"** – Allows the administrator to limit user access to snapshots through the .snapshot hidden folder and through the "previous version" operation. This feature is configurable for each NAS volume.

- **Ability to set NTFS-style volumes to ignore UNIX/NFS set permission operations** – Sets FluidFS to ignore UNIX/NFS metadata modification requests (such as chmod, chown, chgrp). FluidFS will "ignore" these types of operations on NTFS-style NAS volumes, and not return any errors to the NFS client.

- **Set hidden attribute on files with a dot prefix via SMB** – Allows the administrator to select whether dot files should be shown to SMB clients by FluidFS.

- **Configure LDAP port** – Allows the administrator to configure and use an LDAP port other than the default known port, when configuring LDAP for external User Database use.

Improved Manageability and Flexibility

- **Replication throttling** – Allows the administrator to control client network bandwidth used by replication jobs. For example, lowering bandwidth usage during working hours and increasing bandwidth consumption during off-hours.

- **Single-port replication** – File replication in FluidFS v5 now uses only a single-port communication for all involved components, in contrast to older FluidFS versions that required the use of several TCP ports.

  NOTE:
    - The single-port infrastructure supports communication over IPv4 and IPv6 ports.
    - Either one of the following ports can be configured: 10560, 3260
    - All other unused ports can be closed after updating to FluidFS v5.

- **PowerShell API** – Customer-facing API for controlling day-to-day FluidFS operations.

- **REST API** – Customer-facing REST APIs provide the ability to manage FluidFS via URL paths. REST API uses HTTP requests and responses with the standard GET, PUT, POST, and DELETE methods.

- **Manage local users and groups of FluidFS from MMC** – Manages local users and groups using the Microsoft Management Console (MMC) with the Local Users and Groups snap-in. To gain administrative access to the cluster, log in to Windows as a member of Domain Admins or as a member of the Administrators group on the cluster.

- **FluidFS VAAI plugin** – Allows the NAS administrator to disable or enable VAAI plugin accessibility (enabled by default) for security enhancement.

- **Email notification** – The FluidFS email notification feature enables you to set a more granular level of email notifications by selecting a specific category or severity. FluidFS users are encouraged to use FluidFS email notification instead of the default Dell Storage Manager email notification.

- **vApp cloning support using Dell Storage Manager and the CLI** – FluidFS v4 had the ability to clone virtual machines serving as datastores, on a FluidFS NAS volume. FluidFS v5 includes the ability to also clone a complete vApp, which is a set of VM machines and their configurations set.
- **NTLM authentication is no longer required** – In FluidFS v4, the administrator had the ability to define whether to use the cluster name or controller name as the NetBIOS server name in the NTLM SSP authentication context (for compatibility with Active Directory domain controllers with the MS15-027 security update installed). FluidFS v5 introduces an automatic detection of the Micosoft patch and automatic configuration of the appropriate FluidFS behavior.

Fixed Issues in FluidFS Version 5.0.400014

This following issues were fixed in FluidFS v5.0.400014.

Table 2. Fixed Issues in FluidFS Version 5.0.400014

Area	Description
System Functionality	When an excessive number (over 200) of ACLs were used, the system response was slow and sometimes disconnected.
NAS Volumes, Shares, and Exports	The FTP client could not append to files on an SMB share when using a Windows 2012 FTP server.
NAS Volumes, Shares, and Exports	Closing a session with multiple lease references led to a controller reboot.

Fixed Issues in FluidFS Version 5.0.300109

This following issues were fixed in FluidFS v5.0.300109.

Table 3. Fixed Issues in FluidFS Version 5.0.300109

Area	Description
System Functionality	Backup user password could not be changed if it contained an apostrophe.
System Functionality	A firmware update from v5.0.002821 to v5.0.200081 sometimes failed with `Rollback @ 0%`.
System Functionality	If a FluidFS update was uploaded and a node detach or attach was performed before the actual update completed, the update process failed with `Rollback @ 0%`.
System Functionality	FluidFS queries the parent domain for global catalog entries. FluidFS did not query the domain controller it was joined to. If the parent domain global catalog list was empty, or the domain controllers were down, users or groups in trusted domains were not found.
System Functionality	When the client switch blocked untagged traffic, an internal connectivity test triggered the following false positive alert: `node0.eth0 cannot reach node1.eth0 in vlan 0`.
System Functionality	SNMP (**now**) key of current throughput was unavailable.
NAS Volumes, Shares, and Exports	A 30-second delay occurred while displaying cloned volumes in Dell Storage Manager.
NAS Volumes, Shares, and Exports	SMB service interruptions occurred under specific and heavy workloads.

Area	Description
Data Protection	If the Antivirus feature was enabled, MAC OSX clients experienced higher latency than Windows clients when accessing files.
Data Protection	NDMP did not store files with alternate data streams (ADS) properly.
Data Protection	Upon completion of NDMP backups, performance degradation sometimes occurred when automatic snapshots that were created for the backup were deleted.

Fixed Issues in FluidFS Version 5.0.200081

This following issues were fixed in FluidFS v5.0.200081.

Table 4. Fixed Issues in FluidFS Version 5.0.200081

Area	Description
System Functionality	Following a firmware update to v5.0.100128, intensive access to access-based enumeration (ABE)-enabled shares was intermittent.
System Functionality	Following a firmware update to v5.0.x, in rare cases, Windows Explorer might display some files or directories as type `symlink`.
System Functionality	Intensive browsing of directories containing a large number of files and access-based enumeration (ABE- enabled) shares resulted in the following event: `The system has high memory consumption...`
System Functionality	In rare workload cases, the add-appliance procedure might have caused slower response times.
System Functionality	Configuring a default gateway on the Admin network triggered false `no connection to default gateway` alerts.
System Functionality	Users logging in to Dell Storage Manager using Active Directory accounts saw `java null pointer` errors.
System Functionality	For systems configured with an MTU of 1500, FluidFS falsely reported jumbo packet loss on the client network.
System Functionality	Updating the firmware from v5.0.002821 to v5.0.100128 using Dell Storage Manager might have failed with `Internal hard error` if users right-clicked on **FluidFS cluster** and then selected **Look for Software Upgrade**.
System Functionality	Dell Storage Manager incorrectly reported that the internal network was unavailable when using FluidFS v5 iSCSI systems.
System Functionality	Under heavy SMB login workload, local swap resources were exhausted, and eventually caused one or more FluidFS controllers to reboot.
NAS Volumes, Shares, and Exports	When using Dell Storage Manager, disabling permission inheritance on SMB shares was not persistent. Users had to disable permission inheritance again.
NAS Volumes, Shares, and Exports	NFS v4 access control list (ACL) inheritance did not work properly on subfolders created from the SMB protocol on UNIX volumes.
Data Protection	NDMP backup procedure might have stalled if the files contained alternative data streams (ADS).

Fixed Issues in FluidFS Version 5.0.100128

This following issues were fixed in FluidFS v5.0.100128.

Table 5. Fixed Issues in FluidFS Version 5.0.100128

Area	Description
System Functionality	Compellent Integration Tools for VMware (CITV 3.1) did not support FluidFS v5.
System Functionality	Updating firmware to FluidFS v5 on a 3- or 4-appliance system sometimes failed due to a timeout issue.
System Functionality	After an update to FluidFS v5, the Dell Storage Manager client repeatedly displayed a `Cannot open zip file` message.
System Functionality	Migration tools such as Robocopy running on Windows 8 clients could not copy SACL ACEs to FluidFS.
System Functionality	FluidFS incorrectly reported an old Apache version, which caused vulnerability scanners to automatically issue many vulnerabilities. Most of these vulnerabilities were false positives.
System Functionality	Configuring the NTP sever for an IPv6 address failed.
System Functionality	An uploaded service pack did not appear immediately in the service pack list.
System Functionality	After a firmware update to FluidFS v5, Dell Storage Manager falsely presented the DNS server as down.
System Functionality	Installing the FluidFS v5 VAAI plugin failed with the following error: `Could not find a trusted signer.`
System Functionality	During a firmware update to FluidFS v5 using Dell Storage Manager, the message `Error sending request to FluidFS` was sometimes displayed. Closing the error display returned to the update procedure and the update completed successfully.
System Functionality	FluidFS falsely reported that it was unable to reach the default gateway when the gateway was on a tagged VLAN.
NAS Volumes, Shares, and Exports	When the number of SMB3 clients reached the system limits, resource starvation occurred. This starvation resulted in a controller reboot.
NAS Volumes, Shares, and Exports	Files that were renamed using different-case letters could not be accessed with NFSv4.
NAS Volumes, Shares, and Exports	SMB lease break notification was not issued when encryption was set.
NAS Volumes, Shares, and Exports	When files with NTFS ACLs were displayed using NFS, a heuristic mapping algorithm was applied to return the UNIX permissions. If the

Area	Description
	ACL contained the creator-owner SID, overrestrictive permissions were returned, potentially preventing an otherwise valid access attempt.
Data Protection	Dell Storage Manager displayed an incorrect snapshot retention period.
Data Protection	NDMP snapshots had constant names that sometimes caused sequential backup sessions to fail.
Data Protection	When creating a replication partnership using Dell Storage Manager, the peer system was accessed using the subnet through which Dell Storage Manager was connected. Accessing the peer storage in this way might be incorrect in some cases.

Fixed Issues in FluidFS Version 5.0

This following issues were fixed in FluidFS v5.0:
Table 6. Fixed Issues in FluidFS Version 5.0

Area	Description
System Functionality	Dell Storage Manager showed system, appliance, or controller as faulty (red icon) during battery calibration.
System Functionality	The rear-cache and rear-power LEDs sometimes blinked amber after a clean controller boot or reboot instead of being green.
System Functionality	Swapping primary and secondary FluidFS system names (for example, during failover process) caused Dell Storage Manager to swap the WWN definitions of primary and DR systems, which caused data to be unavailable on both systems.
System Functionality	When the NAS pool was filled up to 99%, Dell Storage Manager failed to manage the FS8600 system.
Account Management and Authentication	When searching open files using a search filter, the search was case-sensitive.
Networking	LDAP BindDN names entered with keywords (CN, OU, DC) in uppercase failed, but entering the same BindDN name in lowercase succeeded.
NAS Volumes, Shares, and Exports	Creating file names using -*- (for example, -abc-) in some cases collided with the internal name-mangling mechanism and failed.
NAS Volumes, Shares, and Exports	The SACL and audit events for a rename operation did not contain the target name (only the volume name).
NAS Volumes, Shares, and Exports	When NFSv3 or NFSv4 client created a directory inside a directory that had the creator-owner ACE, an owner-ACE was not created. No issue occurred when this directory was created from an SMB client.
NAS Volumes, Shares, and Exports	NFSv4 clients sometimes displayed inconsistent permission bits for files with Windows ACL.
NAS Volumes, Shares, and Exports	When Windows or NTFS file permissions were displayed on an NFS client, the owner bits (rwx) reflected the owner-ACE, but not the creator-owner ACE, if present.

Area	Description
NAS Volumes, Shares, and Exports	SMB client, usually a scanner, failed to open a file in SMB1 compatibility mode.
Data Protection	When restoring a long list (thousands) of files from an NDMP backup (and not the whole volume) — for example, by selecting a "fat" folder and unchecking a few files — the restore operation sometimes failed.

Limitations in FluidFS Version 5.0

The following limitations exist in FluidFS v5.0.

Table 7. Limitations in FluidFS Version 5.0

Area	Description
System Management	When you issue the **hardware NAS-appliances status <ApplianceID>** CLI command, it can take up to a minute for the information to be displayed. NIC status is not acquired directly from the operating system but from the relevant collector service agent, which has a polling interval of 60 seconds. Therefore, it is normal to have a one-minute delay in the CLI after an actual status change.
System Management	Do not use the following names. These names are reserved for internal FluidFS cluster functions: **NAS Volumes (Containers)** . .. .snapshots acl_stream cifs (or smb) int_mnt Any name starting with locker_ **NAS Snapshots** rep_* rollback current Attempts to create or modify reserved names will be denied.
Account Management and Authentication	FluidFS shows open files of SMB and NFSv4 protocols only. Open files for NFSv3 are not displayed.

Area	Description
Account Management and Authentication	If you have a cluster joined to Active Directory and NIS domains, the Domain drop-down list displays the UNIX and Windows user names in different windows.
NAS Volumes, Shares, and Exports	If you enter a value as a Unicode character string, fewer characters are accepted because Unicode characters take up a variable number of bytes.
Data Protection	NDMP snapshot creation fails when a NAS volume name contains spaces. Workaround: Rename the NAS volume to remove the spaces.
File System Maintenance	Attaching a v5 controller to a v4 cluster is not supported.
Maintenance	If you enter the EULA (end-user license agreement) approver name and approver title as a Unicode character string, note that fewer characters are accepted because Unicode characters take up a variable number of bytes.

Known Issues in FluidFS Version 5.0

The following known issues exist in FluidFS v5.0.

Table 8. Known Issues in FluidFS Version 5.0

Area	Description
System Functionality	The current vSphere Web Client plug-in, Compellent Integration Tools for VMware (CITV 3.0), does not support FluidFS v5 systems. A plug-in that supports FluidFS v5 is planned for an upcoming release.
System Functionality	The Dell Storage Manager client might lose connection to the Data Collector if it has been up and running for a period of time. If a connection loss occurs, the following error is generated: `Unable to obtain Jdbc connection from DataSource.` Workaround: Apply the Microsoft fix, which can be downloaded from http://support.microsoft.com/kb/2577795
System Functionality	Certain Internet Explorer versions (for example, IE 11.0.9600 running on Windows 2008 R2) cannot retrieve MIB files from the management FTP.
System Functionality	If the firmware update stalls at 0% and other management operations are not available, contact Dell Technical Support and reference KB SLN302683.
System Functionality	During a controller reboot, errors similar to `Internal hard error occurred` might display on the Dell Storage Manager client. These errors can be ignored and should not display again after all the controllers are available.
System Management	Clusterization cannot be performed if IPv6 multicast packets are not passed through the switch on the interconnect network.

Area	Description
System Management	Dell Storage Manager and CLI use opposite terminology for Lease and Oplock settings. Dell Storage Manager enables/disables the Leases and Oplocks, while the CLI enables/disables *restriction* of Leases and Oplocks.
System Management	The **Directory Quota Edit Rule** online help page is missing. If you click **Help** on that page, an error similar to `Help Not Found` is generated. See the *Dell Storage Manager Administrator's Guide*, which contains the same help information.
Troubleshooting	General diagnostics summary files larger than 200 MB might not transfer using SupportAssist and might need to be downloaded from the FluidFS cluster.

Contacting Dell

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services might not be available in your area. To contact Dell for sales, technical support, or customer service issues, go to dell.com/support.