Rev. A03
Release Date: March 2024

Release Notes for the Dell Unity™ Family

These release notes contain supplemental information about this Unity release.
Current Release Version: 5.4.0.0.5.094
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Revision history

This section provides a description of document changes.

Table 1. **Revision history**

Document revision	Date	Description
A00	February 2024	Release 5.4.0.0.5.094
A01	February 2024	Adds additional information on new features
A02	March 2024	Adds information on disable write cache feature
A03	March 2024	Clarifies Unity APL expiration
A04	February 2025	Updates firmware information

Product description

Dell Unity is targeted for midsized deployments, remote or branch offices, and cost-sensitive mixed workloads. Unity systems are designed for all-Flash, deliver the best value in the market, and are available in purpose-built (all Flash or hybrid Flash), converged deployment options (through VxBlock), and a software-defined virtual edition.

The Dell Unity Family consists of:

- Unity (purpose built): A modern midrange storage solution, engineered from the ground-up to meet market demands for Flash, affordability, and incredible simplicity. The Unity XT Family consists of 4 Hybrid Flash configurations (380/480/680/880) and 4 All Flash configurations (380F/480F/680F/880F) models.
- VxBlock (converged): Unity storage options are also available in Dell VxBlock System 1000.
- UnityVSA (virtual): The Unity Virtual Storage Appliance (VSA) allows the advanced unified storage and data management features of the Unity family to be easily deployed on VMware ESXi servers, for a 'software defined' approach. UnityVSA is available in two editions:
  - Community Edition is a free downloadable 4 TB solution recommended for non-production use.
  - Professional Edition is a licensed subscription-based offering available at capacity levels of 10 TB, 25 TB, 50 TB, and 350 TB. The subscription includes access to online support resources, EMC Secure Remote Services (ESRS), and on-call software- and systems-related support.

All three Unity, UnityVSA, and Unity-based VxBlock deployment options enjoy one architecture, one interface with consistent features and rich data services.

Unity is Redefining Storage Simplicity and Value

Here are some of the features and supporting statements that allows Unity to redefine midrange storage:

- Simple: Simplified ordering, all-inclusive software, rack-and-stack in less than 2 minutes, customer installable, a new slick HTML5 user interface, proactive assist, and CloudIQ internet-enabled monitoring.
- Modern: Unity is designed to support the latest dense Flash drives such as 3D TLC NAND with a Linux-based architecture, new Intel Haswell, Broadwell, and Skylake multicore processors, up to 440K IOPS, 2U dense configurations, scalable 64bit file system & file system shrink, unified snapshots & replication, Data-at-Rest-Encryption (D@RE), support for public and private cloud access, deep ecosystem integration with VMware (native vVols) and Microsoft, and much more.
- Affordable: Unity delivers the best midrange Flash economics with a great entry price and overall TCO. Unity All Flash configurations start under $15K and Unity Hybrid Flash configurations start under $10K. UnityVSA allows anyone to get started for free and upgrade into the supported virtual edition, a purpose-built hybrid or all-Flash system, or into converged infrastructure.
- Flexible: You can meet any storage deployment requirement with Unity from virtual to purpose-built to converged infrastructure. All deployment options support the same data unified data services (SAN/NAS and vVols) to support any workload with traditional file (file consolidation, VDI user data, home directories) as well as transactional workloads for both file and block on both all Flash and hybrid configurations (Oracle, Exchange, SQL Server, SharePoint, SAP, VMware and Microsoft Hyper-V).

Unity XT Platform (380/F, 480/F, 680/F, 880/F series)

The Unity Next Generation Platform refresh, also known as the Unity XT Series, consists of 8 hardware models, including 4 Hybrid Flash and 4 All Flash configurations—the Dell Unity 380, 380F, 480, 480F, 680, 680F, 880, and 880F. The XT series increases performance of I/O, maximizes storage efficiency features like Advanced Data Reduction with inline deduplication, and supports a 25Gb interface card.

The Unity 380(F) is based on the existing platform today for the 350F model, but with additional memory (64GBs per SP).

The Unity 480/F, 680/F, and 880/F are built on an Intel Skylake platform. For more information, see the *Unity 380/F, 480/F, 680/F, and 880/F Hardware Information Guide*.

The Unity XT series supports Advanced Data Reduction in both dynamic and traditional pools in All Flash (F) models, and All Flash pools in Hybrid models.

Unity software OE version 5.x and later supports the new x80 series models, in addition to all existing x00 and x50 series models.

Note: The Unity XT 480/F, 680/F, and 880/F are available for both high-line (200v-240v) and low-line (100v-120v) power environments, but you must select the appropriate option when ordering your system. Low-line is used in a select countries that supply 100-120V, typically through a wall outlet, while high-line is used in environments that supply 200-240V. Country-specific cables are available for plugging a Unity system directly into a wall outlet that either supplies 100-120V or 200-240V. If supplying 100-120V to a Unity XT 880/F, a step-up transformer is required.

New features

Functional area	Feature description	Summary of benefits
Hardware	7.68TB SSDs and 15.36TB SSDs are allowed in HFA systems	7.68TB and 15.36TB 1WPD SSDs can be used in Hybrid Flash Array (HFA) systems and hybrid pools. Using these SSDs decreases the cost per GB, allows larger pool capacity, and provides more flash tier space for data.
Notifications and Alerts	Hardware-related OK messages are sent home	Allows all hardware-related informational OK messages to be sent home. If a hardware issue initially connects home with an error alert and then the fault clears, these systems generate a second connecthome message stating the hardware is OK. This feature supports the following hardware types: • Disk Processor Enclosure (DPE) including battery, cooling module (fan), memory, power supply, and drives. • Storage Processor (SP), including SLICs (I/O modules), Ethernet, FC and SAS ports, and System Status Card (SSC). • Disk Array Enclosure (DAE), including LCC (Link Control Cards), and power supplies.
Notifications and Alerts	Metadata space expands automatically and sends alerts regarding limits	Automatically balances the metadata space and the storage space with every incoming write. This allows full capacity utilization and avoids performance issues.
Notifications and alerts	An alert has been provided through Unisphere so that a user can identify an issue with blocked threads	Allows you to identify an issue with blocked threads that would impact performance on the array. This gives you time to identify and correct the issue before the impact of blocked threads to system operation grows.

Functional area	Feature description	Summary of benefits
Security	New password complexity requirement has been implemented	Password length for Unisphere users has been increased to support a 64-character length alphanumeric in compliance with the latest US federal requirement OMB M-22-09. The password requirement is: • 8 to 64 characters in length • Contains at least one upper case letter • Contains at least one lower case letter • Contains at least one numeric Special characters are not required in the password.
Security	Unity APL expiration	Unity APL expires in March 2024.
Security	Disable SMB2 at the NAS server level	This option enables you to disable SMB2 at the NAS level by using the `svc_nas` service command. This protects your system from known vulnerabilites associated with the SMB2 protocol.
Serviceability	Write cache is automatically disabled	Unity systems automatically disable write cache whenever an SP enters service mode to prevent potential cache loss.
Serviceability	The RSC (Remote Secure Credentials) option in Unisphere does not appear when remote connectivity and RSC is already enabled	Users cannot disable RSC option in Unisphere once remote connectivity and RSC has been enabled.
Serviceability	Enable user-selected file transfer using the Managed File Transfer (MFT) transport channel	A new option is provided to transfer user selected files back to Dell using the Managed File Transfer (MFT) transport channel, which is one of the SupportAssist (on physical Unity) or ESRS (on UnityVSA) functionalities. Users can directly send the specified file, either a service Information file or core dump, back to Dell if SupportAssist or ESRS, whichever is applicable, is enabled. This will improve support efficiency.
Serviceability	Critical alert is provided that directs users to change the sender email address from a Unity system to match that of the user's company email domain	Helps ensure that users update the sender email address to their company domain so that the user receives Dell support and Dell receives the user's data properly.
Storage - File	Restrict SMB exports	You can configure host access to SMB shares, setting access to either Read/Write to allow the host to access the share or No Access to prevent a host from accessing an SMB share.
System Management	Set the NTP stratum higher	The NTP orphan rank can be set to the highest support stratum, allowing you to set the stratum without service intervention.
System Management	Quickly restart uDoctor and Apache	New service command options enable you to restart uDoctor and Apache without root access.
Unisphere CLI	Adds and remove hosts	Using the command line interface, you can add hosts and remove hosts from LUNs, LUN groups, VMFS datastores, vVols, and file systems.
Unisphere UI	Sort datastores by the SP owner	Enables you to see a list of SP owners on the DataStores tab. You can also sort datastores and other VMware resources by clicking the SP Owner column.

Changed features

Functional area	Feature description	Summary of benefits
Hardware	New support for drive firmware	Drive firmware version 21 is included in the 5.4 software OE bundle and can be installed at the end of the Software Upgrade wizard. For more information on the impacted drives and models for this firmware, see Knowledgebase article 000021322.

Resolved issues

This table lists the issues fixed in this release. For all issues fixed in previous releases, refer to the release notes for that specific Unity OE.

Table 2. **Resolved issues in product version**

Issue ID	**Functional area**	Description
UNITYD-69519/UNITYD-69152	Common Event Enabler	The Unity system cannot connect to a CEPA server using the Microsoft RPC protocol.
UNITYD-69517/UNITYD-65128	Connectivity - Hosts	A rare internal timing condition results in an unexpected SP reboot.
UNITYD-66961/UNITYD-66270	Connectivity - Hosts	In rare cases, a single SP might reboot when more than 2,000 LUNs or snapshots are attached to or detached from a large number of ESXi hosts in a short time span.
UNITYD-61047/60145	Connectivity - Networks	An SP may unexpectedly reboot if you use the tool "hostconfcli" to display some configurations.
UNITYD-60971/UNITYD-60790	Connectivity - Networks	If a NAS server is configured to reflect IP packets and you mount an NFSv3 share using the User Datagram Protocol (UDP), read requests larger than the MTU get no response.
UNITYD-68810/UNITYD-64088	Data mobility	If a snapshot is created on the destination side during a NAS sync replication session, it is periodically refreshed to get the NAS configuration from the source side. When the snapshot is refreshed, the system creates a new snapshot and mounts it before removing the old one. The old snapshot is not deleted when mounting the new snapshot fails.
UNITYD-66236/UNITYD-64703	Data mobility	If the management network communication is unstable, remote replication host "communication lost" alerts are reported intermittently.
UNITYD-62740/UNITYD-59364	Data mobility	After an SP reboots unexpectedly, sync replication sessions might take a few hours to return to a consistent status.
UNITYD-62194/UNITYD-61679	Data mobility	UEMCLI shows duplicated replication sessions when the configuration of the remote replication interface changes.
UNITYD-61433/UNITYD-60856	Data mobility	When the configured bandwidth increased, a small delay in replication between the time when a transfer should have started and when the transfer actually began was noticed in the Unisphere Performance Dashboard.
UNITYD-60997/UNITYD-60573	Data mobility	A replication session remained syncing when an offline user snapshot was found and did not transfer data for that offline snapshot.
UNITYD-60695/UNITYD-58578	Data protection	An SP sometimes reboots when unmounting a read-only snapshot.

Issue ID	**Functional area**	Description
UNITYD-61572/UNITYD-62741	Import	In rare situations during IMT cutover, the IMT session can hang
UNITYD-61977	Import	Unity's capacity is calculated in TiB/GiB/MiB/KiB (Base-2) but displayed as TB/GB/MB/KB (Base-10) in Unisphere.
UNITYD-61944/UNITYD-61391	Import	A filename containing emoji characters can result in an IMT import session failing to import data during incremental copy.
UNITYD-61600/UNITYD-60469	Import	If the internal IP address of the SP is used to create a FileService interface or a NetworkService interface, the SP may reboot.
UNITYD-69652	Other	The severity of the alert for receiving the uDoctor package is Info when it should Warning.
UNITYD-67797	Other	Some call home alerts might not be sent if too many call home alerts are reported at the same time.
UNITYD-61171/UNITYD-60684	Other	The customized banner does not display at the UEMCLI login after OE upgrades but does display in Unisphere.
UNITYD-60993/UNITYD-59265	Other	A storage processor reboot can occur when there are a number of failed data uploads.
UNITYD-70502/UNITYD-69003	Security	A problem with either the network or KDC server may cause an SP to reboot if Kerberos is used to change a NAS server password.
UNITYD-61483/UNITYD-61061	Security	When STIG and user account settings are enabled, the NMI button reset of the admin password fails.
UNITYD-61682/UNITYD-58860	Serviceability	A replication session cannot be resumed when session issues cause inconsistent size settings in the internal components of the destination system.
UNITYD-63537/UNITYD-62954	Software install and upgrade	After a non-disruptive upgrade to Unity OE version 5.3, a single SP might reboot due to an internal data-persistence synchronization issue.
UNITYD-70988/UNITYD-70580	Storage - Block	The Data Relocated value that is shown after you run the UEMCLI `fastvp show` command is not accurate if there is data imbalance within a RAID Group.
UNITYD-70256/UNITYD-68546	Storage – Block	An internal operation is handled incorrectly, resulting in a single SP reboot.
UNITYD-63651/UNITYD-62768	Storage - Block	After an SP unexpectedly shuts down or reboots, it might take a long time (more than 15 minutes) to fail the VDM over to the peer SP.
UNITYD-62608/UNITYD-59918	Storage - Block	In rare instances, a storage processor may reboot unexpectedly when RecoverPoint is in use. In some cases, RecoverPoint services are not restarted on the SP.
UNITYD-62310/UNITYD-61537	Storage - Block	When an SP reboots before a RAID 5 RAID Group rebuild finishes and another disk fails during the SP reboot that results in the RAID Group being in failure due to a double fault, the related LUN results in ktrace log flooding, which may lead to an SP boot-up failure.
UNITYD-72454/UNITYD-68037	Storage - File	If you are running Unity OE versions 5.2.x or 5.3.x and many user quotas are configured, an unexpected SP reboot might occur after the system has been running for a long time.
UNITYD-71876/UNITYD-61070	Storage – File	If you migrate data between two file systems using the host tool, or if the file systems are experiencing high I/O, the file systems might go offline.
UNITYD-70592/UNITYD-69893	Storage - File	Incorrect memory handling can result in an SP reboot when setting up LDAP services.

Issue ID	**Functional area**	Description
UNITYD-70557	Storage - File	You cannot enable a quota on a filesystem if the root directory currently has alternate data streams (ADS). If you find files with filenames that are prefixed with ":" in the root directory by running command "dir /r", the root directory has ADS.
UNITYD-69076/UNITYD-68948	Storage - File	The storage system might reboot during a filesystem remap operation.
UNITYD-68729/UNITYD-68330	Storage - File	A virus checker resource leak causes a file system to go offline.
UNITYD-66160/UNITYD-63136	Storage - File	Although setting up multichannel with a fail-safe networking (FSN) device succeeds, multichannel does not work.
UNITYD-64832/UNITYD-64457	Storage - File	If CIFS Kerberos is configured, an SP might reboot unexpectedly when a client sends an invalid request.
UNITYD-63767/UNITYD-61973	Storage - File	When a VDM has both LDAP and Kerberos configured, an SP reboot might occur if the LDAP reports too many errors persistently.
UNITYD-62905/UNITYD-62382	Storage – File	An NFSv4.1 client might hang and have trouble accessing the NFS server.
UNITYD-62581/UNITYD-62046	Storage - File	An SP might reboot unexpectedly if a client sends a large number of SMB2 connecting requests to the Unity system. The connecting request limit for an SMB session is 64,770.
UNITYD-62449/UNITYD-61876	Storage - File	When enabling NFS extended UNIX credential and NFSv4 delegation, you might sometimes encounter a permission issue while accessing files.
UNITYD-62321/UNITYD-61127	Storage - File	The SMB client cannot set file information with its named stream file.
UNITYD-62168/UNITYD-62017	Storage - File	An SP reboot occurs during an internal SMB processing operation.
UNITYD-61949/UNITYD-61521	Storage - File	If you are running OE version 5.x and use third-party middleware to create a file or directory whose name length exceeds 256 bytes, the SP might unexpectedly reboot due to lack of memory.
UNITYD-61748/UNITYD-61592	Storage - File	A file system recovery cannot be completed sometimes.
UNITYD-61660/UNITYD-61559	Storage - File	For the command "svc_nas -param -f nfs -l transChecksum -v", the output shows "user_action = restart NAS Server". However, the SP must be rebooted to make the change work.
UNITYD-61613/UNITYD-61400	Storage - File	Unity sometimes reboots unexpectedly when the connection to the LDAP server is not stable.
UNITYD-61560/UNITYD-61139	Storage - File	The SP might reboot when there are errors with the LDAP servers configured in the NAS server.
UNITYD-61503/UNITYD-60936	Storage - File	File systems sometimes go offline when they are almost full, and users are creating new files.
UNITYD-61482/ UNITYD-61156	Storage - File	You cannot mount an NFS export on the client.
UNITYD-65247/UNITYD-64882	Unisphere CLI (UEMCLI)	Some UEMCLI commands fail if the password contains a colon (:) character.
UNITYD-67036	Unisphere UI	After you change a password using the Unisphere preference menu, you are logged out and must log in again to continue.
UNITYD-62166/UNITYD-61820	Unisphere UI	Sometimes you cannot add an NTP server when the server has a limit on the client request rate.

Issue ID	**Functional area**	Description
UNITYD-61984/UNITYD-61671	Unisphere UI	If you sort a few columns, for example [used (%), Allocation (%)], and then hide those columns and export them, the export screen does not show an error, but the data is not exported.
UNITYD-61978	Unisphere UI	The Online Help shows TB instead of TiB.
UNITYD-61330/UNITYD-60158	Unisphere UI	Sometimes when creating a traditional pool fails, the returned error message is misleading.
UNITYD-59977/UNITYD-59328	Unisphere UI	To make the csv export functionality more secure, if these strings [,@], [,=], [,+], [,-], [,"@], [,"=], [,"+], [,"-] (not including []) are found in the csv cell value, ' (single apostrophe) will be prepended to characters @ = + - . They are changed to [,'@], [,'=], [,'+], [,'-], [,"'@], [,"'=], [,"'+], [,"'-].
UNITYD-61514/UNITYD-60783	Virtualization	Sometimes the VVOL page (STORAGE ->VMware ->Virtual Volumes) in Unisphere cannot be loaded normally.
UNITYD-61638/UNITYD-62580	*Need functional area*	An SP might reboot when parsing a deleted local user in the mapping service.

Known issues

Table 3. **Known issues in product version**

Issue ID	Functional area	Description	Workaround/Solution
869166	Common Event Enabler	When a host is configured to use CAVA for the CEPA server, there is a host IO error on SMB protocol with the following message in the logs: “Too many access from CAVA server xx.xx.xx.xx without the EMC VirusChecking privilege:>>> User credential (xx.xx.xx.xx address of the host).”	Do not use CAVA/CEPA NAS servers for regular host IO.
UNITYD-50686	Connectivity - Hosts	LED light may not be On when inserting either a 32G or 16G SFP into a 4-port 32Gb Fibre Channel I/O module slot.	Remove and reinsert the SFP card.
UNITYD-60790	Connectivity - Networks	After you mount an NFSv3 share using the User Datagram Protocol (UDP) to the NAS server, which is enabled to reflect IP packets, large IO read requests (larger than the MTU) get no response.	There are two workarounds that you can use: 1. Mount an NFSv3 file system (FS) share using TCP. 2. Mount an NFSv3 FS share using UDP, but disable the IP reflect packet feature.
UNITYD-42194	Connectivity - Networks	In rare cases, if a link aggregation or fail-safe network (FSN) link is composed of two or more ports on a 4-port 1-GbE BaseT I/O module, changing the MTU speed for the link aggregation or FSN may cause an SP reboot.	First, modify the MTU speeds of the ports on the 4-port 1-GbE BaseT I/O module to the expected values. Then, modify the MTU speed of the link aggregation or FSN.
932347/ UNITYD-5837	Connectivity - Networks	Immediately upon creation, the Fail-Safe Network (FSN) appears in a "Link Down" state. An alert similar to the following is displayed. “System XXX has experienced one or more problems that have had a minor impact” With a detailed description of	If all Ethernet ports participating in this FSN port, either directly or using Link Aggregation, are connected properly, the FSN port will automatically recover from "Link Down" state within 30 seconds or less. It is also possible that

Issue ID	Functional area	Description	Workaround/Solution
		"The system has experienced one or more minor failures. Check related alerts and fix the underlying problems."	FSN port recovery goes through "Degraded" state, for approximately 60 seconds after the FSN creation. This alert can be ignored, unless the FSN port fails to enter the "Link Up" and "Health OK" state approximately 60 seconds after creation.
UNITYD-62009/UNITYD-61636	Data mobility	A local consistency group replication session LUN member pairing is mismatched when the session is created from the GUI.	Use the "-elementPairs" option in the Unisphere UEMCLI to create a local async CG replication session after provisioning the destination consistency group.
UNITYD-54629	Data mobility	Only the SMB1 protocol is supported for a Unified VNX (VNX1 or VNX2) storage system as the source storage system in a VDM file migration.	If either the SMB2 or SMB3 protocol is used on the VNX source system, the protocol must be changed to SMB1 before performing the migration.
UNITYD-54862	Data mobility	If you use an atypical advanced replication configuration, such as using asynchronous replication inbound and synchronous replication outbound, the synchronous replication destination NAS server sometimes becomes faulted during a planned failover of asynchronous replication.	Before performing the planned failover asynchronous replication session, pause the synchronous replication session first. After the planned failover asynchronous replication session completes, resume the synchronous replication session.
UNITYD-51634	Data mobility	In MetroSync when the MetroSync Manager is configured, if the MetroSync Manager detects that the source pool is offline, it initiates an unplanned failover. Even if the unplanned failover succeeds, the source site may not be cleaned up correctly, and the subsequent failback may fail.	Delete the synchronous session and recreate it but note that a full synchronization will occur.
UNITYD-51288	Data mobility	When deleting a synchronous replication of a NAS server, if the peer SP is rebooting gracefully, the delete operation may fail.	Retry to delete the synchronous replication operation.
943734/ UNITYD-4469	Data mobility	The "Last sync time" of a replication session is updated, but "transfer remaining size" is not zero.	Wait about 2 minutes, then view the replication session details again.
906249/ UNITYD-2788	Data mobility	A request to create a replication session for VMware NFS datastore which resides in a multiprotocol NAS server will fail until the first synchronization of the associated NAS server replication session.	Synchronize the NAS server replication session at least once prior to creating a replication session for a VMware NFS datastore residing on the multiprotocol NAS server.
UNITYD-45110	Data protection	When the system is configured with a large number of replications (over 1000) and both SPs are rebooted simultaneously, one storage processor may experience an additional reboot after system comes back up.	No manual operation needed. The system will automatically recover after the reboot.
UNITYD-36280	Data protection	The snapshot schedule function failed to create a scheduled snapshot of a synchronous replication-protected file system during the session failback operation.	None.
UNITYD-31870	Data protection	The snapshot schedule timer reset (restarted from 0) after the Unity management service was rebooted, or a new resource was assigned	None.

Issue ID	Functional area	Description	Workaround/Solution
		to it. This leads to this schedule being applied to existing resources.	
981344/ UNITYD-6289	Data protection	There are three Arrays: A, B, C. The following scenario occurs: 1. Site A-B set up synchronous replication sessions. 2. Site A-C set up asynchronous replication sessions. 3. Shut down site A and do a cabinet failover on B. 4. Preserve all asynchronous replication sessions immediately on B. Some asynchronous replication sessions are not preserved. (No Error message in Site B. The asynchronous replication sessions which are not preserved will be "Lost Communication" in Site C.)	1. To prevent this issue, wait two minutes after the failover, then run the preserve operation. 2. If this issue occurs, rerun the preserve operation.
949119/ UNITYD-4769/ UNITYD-5112	Data protection	If an NDMP restore restores a file which exceeds a quota hard limit, the file will be restored as owned by the root user.	The administrator should manually increase the quota limitation for the user and correct the file ownership.
821501	Data protection	When a user runs a token-based incremental backup using Networker, a full backup is performed instead.	Add ATTEMPT_TBB=Y to Application Information while configuring the NDMP client, or change the value in the NDMP client properties.
875485	Data protection	The following error could be returned when multiple snap diff REST API requests were sent in parallel. "'{ "error": { "created": "2016-12-05T17:34:36.533Z", "errorCode": 131149826, "httpStatusCode": 503, "messages": [{ "en-US": "The system is busy. Try again later. If the problem persists, search for the error code on the support website or product forums, or contact your service provider, if available. (Error Code: 0x7d13002)" }] } }"	Reduce the number of parallel operations and try again.
917298	Data protection	NAS_A or NAS_B and related user VDMs failed to recover due to error occurs in the system VDM NAS_A or NAS_B, as seen in the Unisphere CLI or UI. After following the recommended resolution steps in the health details, the NAS servers are recovered and go into a ready state. However, the replication sessions on these system VDMs and related user VDMs will no longer be visible.	After recovery, reboot the primary SP. After the SP reboot, system NAS servers will be recovered successfully, allowing replication sessions to be recovered.

Issue ID	Functional area	Description	Workaround/Solution
17379	Hardware	In some Unity XT 480/F, 680/F, and 880/F model DPEs, the Non-maskable Interrupt (NMI) (hard reset) button is misaligned.	Press the NMI button at an angle.
UNITYD-31523	Import	When using a "UNIX" access policy, if a domain user belongs to "domain admin" or the "administrators" group, files created by the user will use "administrators" as owner, which is expected behavior for Windows. If using an NFS client to list these files, the file owner is the user. After migration, the owner of the files from the CIFS client will be the "administrator", and the owner of files from NFS client will be "2151678452". This may cause some files created by the CIFS client before migration cut over to be inaccessible by the NFS client after migration cutting over.	Change the owner to the correct user.
938977/ UNITYD-4327	Import	When creating a remote system for file import, when the SANCopy connection is created and the remote system is verified prior to starting a block import, the SANCopy host is not created, so the user cannot create a block import session.	Delete and recreate the remote system. After re-creating the remote system, the SANCopy host can be created successfully.
969495	Import	If a pool out-of-space event occurs on a destination Unity array after a file migration session cutover from VNX to Unity, it is possible that some folders and files are lost on the Unity array. Although the migration session can resume and complete after expanding the destination pool, no warning or error message will occur mentioning that data may be missing.	1. Always plan to have enough space on the destination pool before starting a migration. Extra buffer space may be needed if there might be continuous large I/O during the migration. 2. If a pool out-of-space event does occur after cutover, cancel the migration session, and start again by creating a new session.
UNITYD-65663	Notifications and alerts	If you upgrade from Unity OE version 4.3 or earlier to version 4.4, the reboot alert 301:30000 uses a lower-case parameter (spa/spb), and the reboot finish alert 301:30001 uses an upper-case parameter (SPA/SPB). This leads to parameter mismatch, and the 301:30000 alert is not deactivated automatically.	Ignore the 301:30000 alert.
952772/ UNITYD-5971	Notifications and alerts	A misleading alert “Unable to detect Ethernet port or link aggregation for the network interface N/A configured on NAS server %1.” displays during NAS server deletion, even though it completes successfully.	Ignore the erroneous alert.
999112	Notifications and alerts	The health description for Ethernet port is incorrect; it shows that this port was not in used, but in fact it was used for some file interfaces.	Bring up the ethernet port and then the health status and description will be updated.
UNITYD-71322	Other	After a primary storage process re-image operation, the UDoctor package fails to install at the selected time.	Manually delete all files under `/opt/UDoctor/udoctor_packa`

Issue ID	Functional area	Description	Workaround/Solution
			`ge/unhandled` and restart the management server.
UNITYD-71940/ UNITYD-66425	Security	After enabling KMIP, if you upgrade to a later release, disable KMIP, and then try to load the certificates, you see a "failure to upload the client certificate" error.	Run the service command `svc_restart_service restart MGMT`.
UNITYD-71262/UNITYD-71259	Serviceability	When using Config Capture, you might see more than one value for a RESTful class in the restMetrics table of the Config Capture results as well as duplicated primary key errors for the restMetrics object.	Ignore the data and errors in the restMetrics table of the Config Capture result and initiate another Config Capture.
908930	Storage - Block	Even when snap auto delete is disabled on the storage pool, the storage pool may still show a degraded state indicating it could not reach low water mark.	Use the CLI to increase the pool space low water mark in order to bring the pool back to normal state. For example: uemcli -u xxx -p xxx / stor/config/pool –id pool_97 set - snapPoolFullLWM 40
UNITYD-72579	Storage - File	Typically, when you perform a planned failover for a VDM synchronous session, the filesystem that belongs to the VDM is also failed over. Sometimes, however, some filesystems cannot failed over with the VDM sync session. In this situation, the filesystem synchronous session and the VDM synchronous session direction are not the same. After that, if you perform a planned failover again on the VDM synchronous session, the filesystem whose direction is not the same as the VDM synchronous session cannot expand in size.	1. Use the MIuCli command "MIuCli.exe ufsspacemgmtcontrol -srvc_cmd -ufsid <id> resume" to enable the filesystem expansion. 2. Perform another VDM failover to activate the filesystem expansion.
128333021/ UNITYD-52094/ UNITYD-53457	Storage - File	After upgrading to Unity OE version 5.1.x, the audit log path and size are reset to the defaults.	Change the "cifs userDefinedLogFiles" parameter to 0 and restart the VDM. Refer to Knowledge Base article 000193985 for more information.
UNITYD-51284	Storage - File	When creating many asynchronous replication sessions concurrently by using automatic scripts, the sessions may partially fail.	Delete any failed replication sessions from the destination system, and reconfigure them one at a time.
119078191 / UNITYD-48904/ UNITYD-53251	Storage - File	When adding a new interface to a NAS server, if the preferred interface has an "auto" setting, the preferred interface is not switched to the newly added one if it has same gateway availability and number of routes as the currently active preferred interface.	Either make a specific interface to be the preferred interface, or make sure the DNS servers added with the new interface are active before adding it.
20199488/ UNITYD-45132/ UNITYD-53297	Storage - File	During specific circumstances when a file system becomes full and is made Read-Only, the file cannot be deleted as expected. However, the return code from Unity system does not adhere to the RFC. There is no loss of functionality.	None.
855767/ UNITYD-1261	Storage - File	When you customize a list of CIFS Shares Access Control Entries (ACEs) by either making a REST API call, editing the share permission using the Windows MMC console, or by using the SMI-S	Ignore the value isACEEnabled=false in this case. When ACEs are properly set, they are always enabled, despite this value in the REST API attribute. A REST API request for list of ACEs will return the correct list of custom ACEs

Issue ID	Functional area	Description	Workaround/Solution
		API, isACEEnabled might erroneously indicate false.	for the share, and those ACEs will all apply. Alternatively, force a reload of the management model for the share by changing the share description, or for the whole system by restarting the management software.
942923/ UNITYD-7663	Storage - File	If you have set different user quotas on a non-multiprotocol SMB file system that you are changing to a multiprotocol file system, the Remapping File Owner process will not preserve the specific user quotas you had set previously. If the user quotas are all the same or (have default value), this issue does not occur.	After remapping users to their Unix user counterpart, re-issue the specific User Quota settings.
959208/ UNITYD-5257	Storage - File	If an LDAP user is configured before Directory Services (LDAP) is configured, and a local user account with the same name exists, the array will report that the LDAP user already exists, instead of 'not found in the LDAP database'.	Configure LDAP and reboot the SP Then, add the LDAP user (role) again. This will be allowed even if a local user with the same account name exists.
974999	Storage - File	When opening or deleting a locked file from an FLR-enabled file system on a Windows client, sometimes there are several additional log events generated in the FLR activity log.	This issue will not happen on NFS client, and it just generates some additional log events, which can be seen by administrator. Ignore these log events.
975192	Storage - File	When automatic file locking is enabled on an FLR-enabled file system, a file on an SMB share can be locked automatically. However, the file mode property might not be updated and will not indicate the file is read-only even though it is protected.	Use the FLR Toolkit to determine whether the file is automatically locked instead of the SMB client.
UNITYD-60279	SupportAssist	When upgrading from old releases to Unity OE version 5.3, the automatic conversion from integrated ESRS with proxy to the latest SupportAssist will fail if the Unity system is in a private LAN. In this configuration, Unity has no direct network connection to Dell backend services (esrs3-core.emc.com). There is a post-upgrade alert, 14:38004b (Migration from Integrated ESRS to SupportAssist failed. Configure SupportAssist manually.)	No workaround. SupportAssist needs to be configured manually to restore the connection to Dell backend services.
UNITYD-58751	SupportAssist	If SupportAssist is disabled when there is an active remote session in progress, the active remote session may remain active.	Contact your service provider to close the active session.
UNITYD-52201	System management	When trying to create or expand a traditional pool with the following conditions, the listed drive count available for a tier might be 0 due to an internal timeout error (>10mins): 1. RAID5 with maximum capacity option.	Use one of the following options to fix the issue: • Use the CLI to expand the pool. • Use either Unisphere or the CLI to create a dynamic pool

Issue ID	Functional area	Description	Workaround/Solution
		2. The disk group for this tier has 500+ free drives.	that contains some of the drives in the large disk group, reducing the free drive count in the disk group to be less than 500. Then use Unisphere to expand the original traditional pool.
896002	System management	If a Unity system uses NTP forsynchronization, when the time is adjusted to an earlier time from the current time, real-time system metrics do not appear, and the system generates “Query ID not found (0x7d1400c)" errors.	In Unisphere, navigate to another page and then return to the metrics page, or log out of Unisphere and log in again.
973979	System management	When you create a file system named \"\', the SMB share page in the GUI does not display the proper description for the shares associated with file system named \"\' and the UEMCLI does not display the proper values for the shares associated with file system named \"\'.	Do not name file system \"\".
998582/ UNITYD-7835	Unisphere UI	When there are many storage resources configured on the array, (for example, 6000 LUNs and 2000 file systems), filtering the LUNs using a keyword for the LUN name in the Unisphere UI may take over five minutes, and then show an error message if there are multiple matches (1500+ matches).	Reload the Unisphere UI, then choose a more specific keyword that matches fewer LUNs, or do not use keyword filters on large configurations.
921511/ UNITYD-3397	Unisphere UI	Unisphere returns the following message: “Your security session has expired. You will be redirected to the loginpage.”	Confirm that the Unisphere login account in use is still active has Storage Admin privileges. Be sure to close the active browser session before logging with another account.
946287/ UNITYD-4572	Unisphere UI	When logging into Unisphere as one user and then trying to log in as another user without restarting the browser, some login information is cached by the browser and this will result in afailure.	Restart the browser to log in successfully.
968227/ UNITYD-5636	Unisphere UI	In rare circumstances, when a user creates a snapshot by using the Unisphere UI, an unexpected error may occur. However, the actual snapshot creation completed successfully. The newly created snapshot will display immediately. The unexpected error occurs because the REST API failed to fetch the snapshot ID.	Ignore the error if the newly created snapshot appears.
849914	Unisphere UI	The Job Details page in Unisphere does not display the name of a LUN group after it failed to be deleted.	There is no workaround for this issue.
907158	Unisphere UI	After upgrading from a system running Unity OE 4.0 or 4.1, the Unisphere UI did not allow the NAS server SP owner to be changed	Clear browser cookies to and refresh Unisphere.

Issue ID	Functional area	Description	Workaround/Solution
995936 UNITYD-7474	Unisphere UI	Incorrect drive health information may display in the Unisphere UI if switching a SAS cable from an onboard SAS port to backend SLIC port. FBE show these drives as "OK" while Unisphere shows these drives as faulted. For example, if switching the SAS cable from SAS port 0 to backend SLIC port 0, then DAE 0_0 becomes DAE 2_0, and the related disks change from Disk 0_0_X to Disk 2_0_X . Unisphere will display these drives as faulted.	**1.** Identify the primary SP in Unisphere under Service → Service tasks. **2.** Reboot the primary SP using the "svc_shutdown -r" service command.
895052	UnityVSA	SSH is disabled after a single-Storage Processor UnityVSA upgrade.	After performing a Unity OE upgrade, re-enable SSH using Unisphere or the Unisphere service command "svc_ssh -e".
945773	UnityVSA	The following error displays on the UnityVSA: "Error : <CPU of the physical server hosting UnityVSA does not meet the CPU instruction set minimum requirement (SSE4.2 or greater) for upgrading to this release or later.> Action: Migrate the UnityVSA to a server with a CPU that supports SSE4.2 or greater, or deploy a new UnityVSA on a CPU that supports SSE4.2 or greater. Then retry the upgrade."	When upgrading the UnityVSA to Unity 4.3 or deploying a new 4.3 UnityVSA on an older server that does not support CPU instruction set SSE4.2, migrate the VSA offline to another VMware ESXi server or cluster. If the upgrade fails on the ESXi cluster and that cluster contains any servers that do not support CPU instruction set SSE4.2, modify the Enhanced vMotion Capability (EVC) settings within the VMware cluster to disallow vMotion from the newer servers that support SSE4.2 to the older servers. Remove the older servers from their cluster. Power cycle the UnityVSA and retry the upgrade.
933016	UnityVSA	The system reports an alert that the network heartbeat is questionable on the peer when the local physical network cable is broken. This occurs when: 1. UnityVSA SPA runs in the physical server #1, UnityVSA SPB runs in the physical server #2. 2. The physical network cable #1 connects the uplink #1 of server #1 and the physical switch. 3. The physical network cable #2 connects the uplink #2 of server #2 and the physical switch. 4. The physical network cable #3 connects the uplink #1 of server #1 and the physical switch. 5. The physical network cable #4 connects the uplink #2 of server #2 and the physical switch. 6. When one of the physical network cables #1 or #2 is broken or pulled out, the system reports the alert. But if you pull out cable #1, the alert would be reported on SPB. If you pull out the cable #2, the alert would be reported on SPA.	None.

Issue ID	Functional area	Description	Workaround/Solution
		7. When one of the physical network cables #3 or #4 is broken or pulled out, the system would report alert. But if you pull out cable #3, the alert would be reported on SPB. If you pull out the cable #4, the alert would be reported on SPA. This happens because the UnityVSA vNIC #1 is connected to the port group #1 and NIC #2 to the port group #2. Also, by the VMware teaming function, port group #1 has been bound to uplink #1 and port group #2 to uplink #2. It is expected that after pulling out cable #1 (the physical uplink #1 is down), the traffic going through NIC #1, port group #1, uplink #1 should be cut off. However, because of a VMware limitation, the teaming only controls the egress, but not the ingress. The traffic sent from NIC #1 is truly cut off, but the traffic from the peer's port group #1 still comes through the physical uplink #2 and is routed to the port group #1.	
801368/ 802226	UnityVSA	The storage system restarts unexpectedly with a monitor timeout or software watchdog timeout. This occurs when the system and user data share the same datastores (physical disks) and the system is overloaded with aggressive I/O workloads. For example, a system can become overloaded when the workload includes heavy sequential write block I/O mixed with random file read and write I/O.	It is recommended that user storage be on a separate data store than the system data store where UnityVSA is deployed. If that is not possible, ensure that there are no more than four virtual disks on the system data store. If user data is allocated on the system data store, it can be migrated to a different data store. See the vSphere documentation for details. For UnityVSA deployment considerations, see the *UnityVSA Installation Guide*.
809371	UnityVSA	When configuring a NAS server for replication from a Unity system to a UnityVSA system, the user can choose a storage processor on the destination, although a single-SP UnityVSA has only one storage processor (SP A). Choosing SP B and continuing to create the session results in an error.	Choose SP A when replicating to a single-SP UnityVSA.
UNITYD-44726	Virtualization	If a VMware traditional datastore is extended which does not have any host access, then host access cannot be added later.	Delete the VMware datastore and recreate it. A datastore that has never had any host access is supposed to be a clean datastore with no data.
940223 / 945505 / UNITYD-4468	Virtualization	A VM migration (using vMotion) to or from NFS3-NFS4 datastore sporadically fails when an SP is rebooted during migration.	Manually restart the vMotion migration when the SP is back online.
811020	Virtualization	When there are no datastores enabled for access to a target ESXi host during replication, the storage system iSCSI targets are not registered on the target ESXi server. When the Storage Replication Adapter (SRA) requests that the storage system enable Snaps-Only access to the target ESXi server, the operation	Manually configure iSCSI target discovery of the storage systems iSCSI addresses on the ESXi hosts.

Issue ID	Functional area	Description	Workaround/Solution
		succeeds, but rescan does not discover the snapshots.	
987324	Virtualization	With multiple VM clones from the same source VM, part of clone could fail. vCenter Server reports events similar to: Unable to access file xxx.vmdk since it is locked.	To work around the issue in ESXi 5.0 or later, increase the number of times to retry opening the disk: 1. Log in to the ESXi host with root credentials. 2. Open the /etc/vmware/config file using a text editor. 3. Add this line to the end of the file: diskLib.openRetries=xx [Where xx depends on the number of virtual machines being deployed in the vApp. VMware recommends a value between 20 and 50.] 4. Save and close the file. 5. Reboot the host for the changes to take effect.
988933	Virtualization	When using Dell Virtual Storage Integrator (VSI), VMware datastore creation fails on Unity All Flash and UnityVSA systems.	The issue is fixed in VSI 8.1. Refer to the following Knowledgebase articles for details: • UnityVSA: KB# 163429 • Unity All Flash: KB# 36884
989789	Virtualization	When a VM migration in VMware vSphere is in progress, a planned failover of the underlying synchronous replication file system on Unity at the same time may cause VM migration failure on vSphere.	Do not perform a synchronous replication planned failover on Unity while migrating a VM on VMware vSphere at the same time. If the error occurs, wait until planned failover completes and retry the VM migration in VMware vSphere.

Limitations

Learn about limitations in Unity.

Table 4. **Limitations in product version**

Limitation	First affected release	Limitation lifted
In a replication cascading topology from an asynchronous replication session to a synchronous replication session, the synchronous replication destination data integration is not integrated.	5.2.0.0.5.173	Still in effect.
Moving drives between Unity x80/F models and non-x80/F models is not supported. This ensures that the drives are qualified and configured for the correct platform and will provide optimal performance and longevity.	5.1.0.0.5.394	Still in effect.
After a failover, the UNIX and Windows names may not display immediately and could take up to 24 hours to display. You can manually refresh the username for a UID or wait until the next system refresh to see the correct names.	5.1.0.0.5.394	Still in effect.
A large thick file system (TB level) takes time to provision, even after the operation returns a success message in Unisphere. While the provisioning operation is in progress, many operations, such as	All versions	Still in effect.

Limitation	First affected release	Limitation lifted
asynchronous replication creation, cannot be run and will fail due to timing out. Operating on a newly-created thick file system after a certain amount of time is recommended. Run a query to check the status of the operation.		
When replicating VMware VMFS datastores, they are treated like Consistency Groups in that they are subject to the same replication limits as CGs (for example, the maximum number of replication sessions for CGs is 64, which also applies to VMFS datastores).	All versions	Still in effect.
Using VSI 7.4 or VSI 8.0 to create a VMFS Datastore on a Unity all Flash array or UnityVSA will fail. It is recommended to always provision VMFS datastores and vVols through the Unity Unisphere UI or CLI.	All versions	Still in effect.
VMware vSphere 6.5 is not supported on the UnityVSA 4.1.x.	4.1.0.8940590	4.2.0.9392909
When setting I/O limit policies, observe the following restrictions: • For a shared KBPS I/O limit policy, set the limit to be at least 2048 KBPS. • For a non-shared KBPS I/O limit policy, set the limit to be at least 1024 KBPS. • The IOPS I/O limit policy's minimum is 100 IOPS.	4.0.0.7329527	Still in effect.
The current Unity vVol implementation has not yet been fully certified for use with VMware Horizon View. Although it may work, it is recommended that you do not deploy VDI desktops using Unity vVol datastores. Support and issue resolution will not be available for this integration.	4.0.0.7329527	Still in effect.

Environment and system requirements

In order for your Unity Family system to function properly, ensure that your environment meets these minimal requirements.

Support matrix

Refer to the Unity Support Matrix on the support website for compatibility and interoperability information.

Screen size

The minimum resolution for using the Unisphere GUI is 1024 x 768 pixels. Smaller screens may be able to display the GUI in full screen mode.

SupportAssist and DHCP

Do not use dynamic IP addresses (DHCP) for any components of the Secure Connect Gateway servers or managed devices unless they are configured with the FQDN of the Secure Connect Gateway server.

An IP address is not needed for a SupportAssist configuration with a connection type of direct connect. If you use DHCP to assign IP addresses to any SupportAssist components (Secure Connect Gateway servers or managed devices), they must have static IP addresses. Leases for the IP addresses that those devices use cannot be set to expire. It is recommended that you assign static IP addresses to those devices you plan to have managed by SupportAssist. For a SupportAssist configuration with a connection type of connect through a gateway, FQDNs can be configured instead of IP addresses.

Software media, organization, and files

Learn about software media, organization, and files required for the Unity Family.

Required update

It is recommended that you keep your Unity Family system up to date by upgrading to the latest software version at your earliest opportunity.

Problems downloading this release

If you have difficulty downloading this release using Microsoft Internet Explorer version 7, try using a newer version of Microsoft Internet Explorer, Google Chrome, or Mozilla Firefox version 4 or greater.

Obtain and install product licenses

Before you begin:

- Register your product. This provides you instant access to easy-to-use tools to plan, install, maintain, and service your product. It also entitles you to software updates, installation tools, and more.
- Ensure that you have the following:
  - License authorization code (LAC)—The LAC is sent by email from Dell.
  - The system serial number (physical systems) or the system UUID (virtual systems).

Before you can create storage, you must install product and feature licenses on your system.

Initial Configuration

1. On the **Unisphere Licenses** page of the Initial Configuration wizard, select **Get License Online**.
2. Follow the instructions on the licensing website and download the license file locally.

   Note: Do not change the name of the license file.
3. Select **Install License** and use **Chose File** to browse to the license file you downloaded locally.
4. Select **Open**.

   The **Results** page will confirm the license was successfully installed.

Obtaining and installing additional licenses after initial configuration

1. In Unisphere, select the **Settings** icon, and then select **Software and Licenses** > **License Information**.
2. Select a product license from the list to display a description of that license.
3. To obtain a product license, select **Get License Online**.
    a. Use the link provided in the LAC email or access the product page on the support website, and download the license file locally.

    Note: Do not change the name of the license file.

    b. Transfer the license file to a computer that has access to the storage system, or connect the computer you used to obtain the license file to the same subnet of the storage system.
4. To upload a product license, select **Install License**.
    a. Review the Software License and Maintenance Agreement and select **Accept license agreement**.
    b. Locate the license file, select it, and select **Open** to install the license file on the storage system.

The license file is installed on the storage system.

For sites with restricted internet access, or for more information on obtaining your license, go to the Unity Info Hub at dell.com/unitydocs.

Unique identifier for UnityVSA

For UnityVSA, use the License Activation Key instead of the serial number or UUID as the unique identifier for setting up EMC Secure Remote Services (ESRS) and for obtaining customer support (professional editions).

Installing and enabling language packs

To install a language pack:

1. Review the considerations included in the Software Media, Organization, and Files section.
2. In Unisphere, select the **Settings** icon, and then select **Software and Licenses** > **Language Packs**.
3. Select **Obtain Language Pack Online** and enter your Support credentials when prompted.
4. Download the appropriate language pack file to your local system.
5. Return to Unisphere and select **Install Language Pack** to launch the Install Language Pack wizard.
6. Select **Choose File** and then select the language pack you want to upload.
7. Select **Next** to begin the installation of the language pack onto your system.
8. Select **Finish**.
9. Once language package installation completes, view the results and close.

To enable a language pack on your system:

1. In Unisphere, select the **My Account** icon and select **Preferences**.
2. Select the preferred language from the **Language** list.
3. Select **OK**.

Firmware

Drive firmware bundle version 21 is included in this software OE bundle. Once the software OE installation has completed, a prompt appears if updates are available. However, it is recommended to upgrade to the latest drive firmware prior to a software upgrade to help mitigate any non-disruptive upgrade issues. For a list of all drive firmware and their respective drives, refer to Knowledge Base article 000021322 (previously article 000490700).

Online disk firmware updates (ODFU) occur automatically to update the drive firmware after you update to OE version 5.4. The system runs a preupgrade health check before upgrading the drive firmware. In addition, the system automatically dials home if a firmware upgrade failure occurs.

You can manually enable or disable ODFU using the “svc_change_hw_config” service command or use that command to see the current status of the feature.

The following firmware variants are included with this release:

- If a lower revision is installed, the firmware is automatically upgraded to the revision contained in this version.
- If a higher revision is running, the firmware is not downgraded to the revision contained in this version.

Note: The common data environment (CDE) for Unity OE 5.4 is 2.38.11, the same as the CDE for Unity OE 5.3.

Enclosure Type	Firmware
3U, 15-drive DAE	2.38.11
2U, 25-drive DAE	2.38.11
3U, 80-drive DAE	2.38.11
DPE expander	2.38.11

Platform Type	BIOS	BMC Firmware	Post
2U, 25-drive DPE	60.04	25.00	34.60
2U, 12-drive DPE	60.04	25.00	34.60
2U, 25-drive DPE Unity XT 480/F, 680/F, and 880/F	66.82	25.23	52.74

Documentation

Unity Family Info Hubs

Additional relevant documentation can be obtained from the Unity Family Info Hub. Visit the Info Hub for your Unity Family product to access helpful utilities, videos, and other guides and https://www.dell.com/unitydocs.

Where to get help

The Dell Technologies Support site (https://www.dell.com/support) contains important information about products and services including drivers, installation packages, product documentation, knowledge base articles, and advisories.

A valid support contract and account might be required to access all the available information about a specific Dell Technologies product or service.

Advisories

For information on an individual technical or security advisory, go to the Online Support website and search by using the DSA number or "Dell Security Advisories" as the keyword.

You can also select an option to receive alerts for Dell Technical Advisories (DTAs) and Dell Security Advisories (DSAs) to stay informed of critical issues and prevent potential impact to your environment. Go to your account settings and preferences in Online Support, type the name of an individual product, click to select it from the list, and then click **Add Alert**. For the individual product or **All Dell Products**, enable the **DTA's** and/or **DSA's** toggle.

Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates potential for property damage, personal injury, or death.

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