



Windows Unified Host Utilities

SAN hosts and cloud clients

NetApp
January 31, 2023

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Windows Unified Host Utilities

Windows Unified Host Utilities 7.1

What Windows Host Utilities is

Windows Unified Host Utilities includes an installation program that sets the required Windows registry and Host Bus Adapter (HBA) parameters so that the Windows host correctly handles the storage system behaviors for NetApp ONTAP and E-Series platforms.

When you install the Host Utilities software, the installer sets required Windows registry and Host Bus Adapter (HBA) parameters.

The following programs and files are installed on the Windows host computer. The default directory is `C:\Program Files\NetApp\Windows Host Utilities`.

Program	Purpose
<code>emulexhba.reg</code>	Troubleshooting program; run this program only if instructed to do so by technical support personnel.
<code>\NetAppQCLI\fcconfig.exe</code>	Used by the installation program to set HBA parameters.
<code>\NetAppQCLI\fcconfig.ini</code>	Used by the installation program to set HBA parameters.
<code>\NetAppQCLI*.*</code>	Used by the installation program to set QLogic Fibre Channel HBA parameters.
<code>san_version.exe</code>	Displays the version of the Host Utilities and Fibre Channel HBAs.

Configurations supported by Host Utilities

The Host Utilities support different Windows host configurations, protocols, and Multipathing options. For more information, see [NetApp Interoperability Matrix Tool](#).

Verify your host and storage system configuration

Before you install the Host Utilities, you must verify that the Host Utilities version supports your host and storage system configuration so that the software installs correctly.

Steps

1. Check the supported configuration in the [NetApp Interoperability Matrix Tool](#).
2. Check the hotfixes required for the respective host on the [SAN host Windows documentation](#).



[Using Windows server 2022 with ONTAP](#) provides instructions on [installing Windows hotfixes](#) for Windows server 2022. Refer to the Windows documents in the Host configurations category to find the relevant hotfix information for earlier versions of Windows server.

3. Add the iSCSI or FCP license and start the target service.

The Fibre Channel and iSCSI protocols do not require licenses on E-Series storage systems using SANtricity Storage Manager.

4. Verify your cabling

See the [SAN Configuration Guide](#) for your version of ONTAP or [E-Series Hardware Cabling Guide](#) for detailed cabling and configuration information.

Configure FC HBAs and switches

Install and configure one or more supported Fibre Channel host bus adapters (HBAs) for Fibre Channel connections to the storage system.

The Windows Host Utilities installer sets the required Fibre Channel HBA settings.



Do not change HBA settings manually.

Steps

1. Install one or more supported Fibre Channel host bus adapters (HBAs) according to the instructions provided by the HBA vendor.
2. Obtain the supported HBA drivers and management utilities and install them according to the instructions provided by the HBA vendor.
3. Connect the HBAs to your Fibre Channel switches or directly to the storage system.
4. Create zones on the Fibre Channel switch according to your Fibre Channel switch documentation.
5. For ONTAP, zone the switch by WWPN. Be sure to use the WWPN of the LIFs and not of the physical ports on the storage controllers. For more information, see [SAN Configuration Guide](#).

Install the Host Utilities

The installation program installs the Host Utilities package and sets the Windows registry and HBA settings.

You must specify whether to include multipathing support when you install the Windows Unified Host Utilities software package. The installer prompts you for the following choice. You can also run a quiet (unattended) installation from a Windows command prompt.

Multipathing support

- Choose MPIO if you have more than one path from the Windows host or virtual machine to the storage system.
- Choose no MPIO only if you are using a single path to the storage system.
- The MPIO selection is not available for Windows XP and Windows Vista systems; multipath I/O is not supported on these guest operating systems.
- For Hyper-V guests, raw (pass-through) disks do not appear in the guest OS if you choose multipathing support. You can either use raw disks, or you can use MPIO, but you cannot use both in the guest OS.

Install the Host Utilities interactively

To install the Host Utilities software package interactively, you must run the Host Utilities installation program and follow the prompts.

Steps

1. Download the executable file from [NetApp Support Site](#).
2. Change to the directory from which you downloaded the executable file.
3. Run the `netapp_windows_host_utilities_7.1_x64` file and follow the instructions on the screen.
4. Reboot the Windows host when prompted.

Install the Host Utilities from a command line

- You can perform a quiet (unattended) installation of the Host Utilities by entering the appropriate commands at a Windows command prompt.
- The Host Utilities installation package must be in a path that is accessible by the Windows host.
- Follow the instructions for installing the Host Utilities interactively to obtain the installation package.
- The system automatically reboots when the installation is complete.

Steps

1. Enter the following command at a Windows command prompt:

```
msiexec /i installer.msi /quiet MULTIPATHING= {0 | 1} [INSTALLDIR=inst_path]
```

- where `installer` is the name of the `.msi` file for your CPU architecture;
- `MULTIPATHING` specifies whether MPIO support is installed. Allowed values are 0 for no, 1 for yes
- `inst_path` is the path where the Host Utilities files are installed. The default path is `C:\Program Files\NetApp\Windows Host Utilities\`.



To see the standard Microsoft Installer (MSI) options for logging and other functions, enter `msiexec /help` at a Windows command prompt. For example:
`msiexec /i install.msi /quiet /l*v <install.log> LOGVERBOSE=1`

Upgrade the Host Utilities

The new Host Utilities installation package must be in a path that is accessible by the Windows host. Follow the instructions for installing the Host Utilities interactively to obtain the installation package.

Upgrade the Host Utilities interactively

To install the Host Utilities software package interactively, you must run the Host Utilities installation program and follow the prompts.

Steps

1. Change to the directory from which you downloaded the executable file.
2. Run the executable file and follow the instructions on the screen.
3. Reboot the Windows host when prompted.
4. Check version of the host Utility after reboot:
 - a. Open **Control Panel**.
 - b. Go to **Program and features** and check the host utility version.

Upgrade the Host Utilities from command line

You can perform a quiet (unattended) installation of the new host utilities by entering the appropriate commands at a Windows command prompt.

The New Host Utilities installation package must be in a path that is accessible by the Windows host. Follow the instructions for installing the Host Utilities interactively to obtain the installation package.

Steps

1. Enter the following command at a Windows command prompt:

```
msiexec /i installer.msi /quiet MULTIPATHING= {0 | 1} [INSTALLDIR=inst_path]
```

- where `installer` is the name of the `.msi` file for your CPU architecture.
- `MULTIPATHING` specifies whether MPIO support is installed. Allowed values are 0 for no, 1 for yes
- `inst_path` is the path where the Host Utilities files are installed. The default path is `C:\Program Files\NetApp\Windows Host Utilities\`.



To see the standard Microsoft Installer (MSI) options for logging and other functions, enter `msiexec /help` at a Windows command prompt. For example:

```
msiexec /i install.msi /quiet /l*v <install.log> LOGVERBOSE=1
```

The system automatically reboots when the installation is complete.

Repair and removing Windows Host Utilities

You can use the Repair option of the Host Utilities installation program to update HBA and Windows registry settings. You can remove the Host Utilities entirely, either interactively or from the Windows command line.

Repair or remove Windows Host Utilities interactively

The Repair option updates the Windows registry and Fibre Channel HBAs with the required settings. You can also remove the Host Utilities entirely.

Steps

1. Open Windows **Programs and Features** (Windows Server 2012 R2, Windows Server 2016, Windows Server 2019).
2. Select **NetApp Windows Unified Host Utilities**.
3. Click **Change**.
4. Click **Repair** or **Remove**, as needed.
5. Follow the instructions on the screen.

Repair or remove Windows Host Utilities from command line

The Repair option updates the Windows registry and Fibre Channel HBAs with the required settings. You can also remove the Host Utilities entirely from a Windows command line.

Steps

1. Enter the following command on the Windows command line to repair Windows Host Utilities:

```
msiexec {/uninstall | /f}installer.msi [/quiet]
```

- `/uninstall` removes the Host Utilities entirely.
- `/f` repairs the installation.
- `installer.msi` is the name of the Windows Host Utilities installation program on your system.
- `/quiet` suppresses all feedback and reboots the system automatically without prompting when the command completes.

Overview of settings used by the Host Utilities

The Host Utilities require certain registry and parameter settings to ensure the Windows host correctly handles the storage system behavior.

Windows Host Utilities sets the parameters that affect how the Windows host responds to a delay or loss of data. The particular values have been selected to ensure that the Windows host correctly handles events such as the failover of one controller in the storage system to its partner controller.

Not all the values apply for the DSM for SANtricity Storage Manager; however, any overlap of values set by the Host Utilities and those set by the DSM for SANtricity Storage Manager do not result in conflicts.

Fibre Channel and iSCSI host bus adapters (HBAs) also have parameters that must be set to ensure the best performance and to successfully handle storage system events.

The installation program supplied with Windows Unified Host Utilities sets the Windows and Fibre Channel HBA parameters to the supported values.



You must manually set iSCSI HBA parameters.

The installer sets different values depending on whether you specify multipath I/O (MPIO) support when running the installation program,

You should not change these values unless technical support directs you to do so.

Registry values set by Windows Unified Host Utilities

The Windows Unified Host Utilities installer automatically sets registry values that are based on the choices that you make during installation. You should be aware of these registry values, the operating system version. The following values are set by the Windows Unified Host Utilities installer. All values are decimal unless otherwise noted. HKLM is the abbreviation for HKEY_LOCAL_MACHINE.

Registry key	Value	When set
HKLM\SYSTEM\CurrentControlSet\Services\msdsm\Parameters\DsmMaximumRetryTimeDuringStateTransition	120	When MPIO support is specified and your server is Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, or Windows Server 2016, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\msdsm\Parameters\DsmMaximumStateTransitionTime	120	When MPIO support is specified and your server is Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, or Windows Server 2016, except if Data ONTAP DSM is detected

Registry key	Value	When set
HKLM\SYSTEM\CurrentControlSet\Services\msdsm \Parameters\DsmSupportedDeviceList	"NETAPP LUN"	When MPIO support is specified
	"NETAPP LUN", "NETAPP LUN C-Mode"	When MPIO support is specified, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Control\Classes\{iSCSI_driver_GUID}\instance_ID\Parameters\IPSecConfigTimeout	60	Always, except when Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Control\Class\{iSCSI_driver_GUID}\instance_ID\Parameters\LinkDownTime	10	Always
HKLM\SYSTEM\CurrentControlSet\Services\ClusDisk \Parameters\ManageDisksOnSystemBuses	1	Always, except when Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Control\Class\{iSCSI_driver_GUID}\instance_ID\Parameters\MaxRequestHoldTime	120	When no MPIO support is selected
	30	Always, except when Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Control\MPDEV\MPIOSupportedDeviceList	"NETAPP LUN"	When MPIO support is specified
	"NETAPP LUN", "NETAPP LUN C-Mode"	When MPIO is support-specified, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\mpio \Parameters\PathRecoveryInterval	40	When your server is Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, or Windows Server 2016 only
HKLM\SYSTEM\CurrentControlSet\Services\mpio \Parameters\PathVerifyEnabled	0	When MPIO support is specified, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\msdsm \Parameters\PathVerifyEnabled	0	When MPIO support is specified, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\msdsm\Parameters\PathVerifyEnabled	0	When MPIO support is specified and your server is Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, or Windows Server 2016, except if Data ONTAP DSM is detected

Registry key	Value	When set
HKLM\SYSTEM\CurrentControlSet\Services\msiscdsm\Parameters\PathVerifyEnabled	0	When MPIO support is specified and your server is Windows Server 2003, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\vnetaapp\Parameters\PathVerifyEnabled	0	When MPIO support is specified, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\mpio\Parameters\PDORemovePeriod	130	When MPIO support is specified, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\msdsm\Parameters\PDORemovePeriod	130	When MPIO support is specified and your server is Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, or Windows Server 2016, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\msiscdsm\Parameters\PDORemovePeriod	130	When MPIO support is specified and your server is Windows Server 2003, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\vnetaapp\Parameters\PDORemovePeriod	130	When MPIO support is specified, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\mpio\Parameters\RetryCount	6	When MPIO support is specified, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\msdsm\Parameters\RetryCount	6	When MPIO support is specified and your server is Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, or Windows Server 2016, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\msiscdsm\Parameters\RetryCount	6	When MPIO support is specified and your server is Windows Server 2003, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\vnetaapp\Parameters\RetryCount	6	When MPIO support is specified, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\mpio\Parameters\RetryInterval	1	When MPIO support is specified, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\msdsm\Parameters\RetryInterval	1	When MPIO support is specified and your server is Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, or Windows Server 2016, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\vnetaapp\Parameters\RetryInterval	1	When MPIO support is specified, except if Data ONTAP DSM is detected

Registry key	Value	When set
HKLM\SYSTEM\CurrentControlSet\Services\disk\TimeOut\Value	120	When no MPIO support is selected, except if Data ONTAP DSM is detected
	60	When MPIO support is specified, except if Data ONTAP DSM is detected
HKLM\SYSTEM\CurrentControlSet\Services\mpio\Parameters\UseCustomPathRecoveryInterval	1	When your server is Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, or Windows Server 2016 only

Related information

Refer to the [Microsoft documents](#) for the registry parameter details.

FC HBA values set by Windows Host Utilities

On systems using Fibre Channel, the Host Utilities installer sets the required timeout values for Emulex and QLogic FC HBAs.

For Emulex Fibre Channel HBAs, the installer sets the following parameters when MPIO is selected:

Property type	Property value
LinkTimeOut	1
NodeTimeOut	10

For Emulex Fibre Channel HBAs, the installer sets the following parameters when MPIO is not selected:

Property type	Property value
LinkTimeOut	30
NodeTimeOut	120

For QLogic Fibre Channel HBAs, the installer sets the following parameters when MPIO is selected:

Property type	Property value
LinkDownTimeOut	1
PortDownRetryCount	10

For QLogic Fibre Channel HBAs, the installer sets the following parameters when MPIO is not selected:

Property type	Property value
LinkDownTimeOut	30
PortDownRetryCount	120



The names of the parameters might vary slightly depending on the program. For example, in the QLogic QConvergeConsole program, the parameter is displayed as `Link Down Timeout`. The Host Utilities `fcconfig.ini` file displays this parameter as either `LinkDownTimeOut` or `MpioLinkDownTimeOut`, depending on whether MPIO is specified. However, all of these names refer to the same HBA parameter.

Related information

Refer to [Emulex](#) or [QLogic](#) site to know more about the timeout parameters.

Troubleshooting

This section describes general troubleshooting techniques for Windows Host Utilities. Be sure to check the latest Release Notes for known problems and solutions.

Different areas to identify the possible interoperability problems

- To identify potential interoperability problems, you must confirm that the Host Utilities support your combination of host operating system software, host hardware, ONTAP software, and storage system hardware.
- You must check the Interoperability Matrix.
- You must verify that you have the correct iSCSI configuration.
- If iSCSI LUNs are not available after a reboot, you must verify that the target is listed as persistent on the Persistent Targets tab of the Microsoft iSCSI initiator GUI.
- If applications using the LUNs display errors on startup, you must verify that the applications are configured to depend on the iSCSI service.
- For Fibre Channel paths to storage controllers running ONTAP, you must verify that the FC switches are zoned using the WWPNs of the target LIFs, not the WWPNs of the physical ports on the node.
- You must review the [Release Notes for Windows Host Utilities](#) to check for known problems. The Release Notes include a list of known problems and limitations.
- You must review the troubleshooting information in the [SAN Administration Guide](#) for your version of ONTAP.
- You must search [Bugs Online](#) for recently discovered problems.
- In the Bug Types field under Advanced Search, you should select ISCSI - Windows and then click Go. You should repeat the search for Bug Type FCP -Windows.
- You must collect information about your system.
- Record any error messages that are displayed on the host or storage system console.
- Collect the host and storage system log files.
- Record the symptoms of the problem and any changes made to the host or storage system just before the problem appeared.
- If you are unable to resolve the problem, then you can contact NetApp technical support.

Related information

[NetApp Interoperability Matrix Tool](#)
[NetApp Documentation](#)
[NetApp Bugs Online](#)

Understand the Host Utilities changes to FC HBA driver settings

During the installation of the required Emulex or QLogic HBA drivers on an FC system, several parameters are checked and, in some cases, modified.

The Host Utilities set values for the following parameters if MS DSM for Windows MPIO is detected:

- LinkTimeOut – defines the length of time in seconds that the host port waits before resuming I/O after a physical link is down.
- NodeTimeOut – defines the length of time in seconds before the host port recognizes that a connection to the target device is down.

When troubleshooting HBA issues, check to make sure these settings have the correct values. The correct values depend on two factors:

- The HBA vendor
- Whether you are using multipathing software (MPIO)

You can correct the HBA settings by running the Repair option of the Windows Host Utilities installer.

Verify the Emulex HBA driver settings on FC systems

If you have a Fibre Channel system, you must verify the Emulex HBA driver settings. These settings must exist for each port on the HBA.

Steps

1. Open OnCommand Manager.
2. Select the appropriate HBA from the list and click the **Driver Parameters** tab.

The driver parameters appear.

3. If you are using MPIO software, ensure that you have the following driver settings:
 - LinkTimeOut - 1
 - NodeTimeOut - 10
4. If you are not using MPIO software, ensure that you have the following driver settings:
 - LinkTimeOut - 30
 - NodeTimeOut - 120

Verify the QLogic HBA driver settings on FC systems

On FC systems, you need to verify the QLogic HBA driver settings. These settings must exist for each port on the HBA.

Steps

1. Open QConvergeConsole, and then click **Connect** on the toolbar.

The Connect to Host dialog box appears.

2. Select the appropriate host from the list, and then click **Connect**.

A list of HBAs appears in the FC HBA pane.

3. Select the appropriate HBA port from the list, and then click the **Settings** tab.
4. Select **Advanced HBA Port Settings** from the **Select Settings** section.
5. If you are using MPIO software, ensure you have the following driver settings:
 - Link Down Timeout (linkdwnto) - 1
 - Port Down Retry Count (portdwnc) - 10
6. If you are not using MPIO software, ensure you have the following driver settings:
 - Link Down Timeout (linkdwnto) - 30
 - Port Down Retry Count (portdwnc) - 120

Windows Unified Host Utilities 7.1 Release Notes

This Release Notes document contains the latest information for the Windows Unified Host Utilities 7.1 release, including updates about new features, enhancements, and known issues. The document is updated when new information on using the Windows Host Utilities becomes available.

About the Windows Unified Host Utilities 7.1 release

The Windows Unified Host Utilities enable you to connect a Windows host computer to NetApp storage systems. The Windows Unified Host Utilities include an installation program that sets the required Windows registry and HBA values.

The Windows Unified Host Utilities 7.1 continues to support the following versions of Windows:

- Windows 2012
- Windows 2012R2
- Windows 2016
- Windows 2019
- Windows 2022



NetApp qualifies additional components between releases of the Host Utilities software. For the latest information about the system requirements, see the [NetApp Interoperability Matrix Tool](#).

Features in this Host Utilities release

Windows Unified Host Utilities 7.1 includes support for E-Series storage systems, support for ONTAP 9 and later versions, and enhanced iSCSI timeouts for faster failover.

Important cautions

Before deploying the latest release of Windows Host Utilities, you must read the information available to help you identify and resolve issues that might affect the operation of your systems.

For more information about an individual bug and to explore other bug-related tools, see [NetApp Bugs Online](#).

Installing the required hotfixes

To ensure a successful installation or upgrade of Windows Unified Host Utilities, you must install a specific Windows hotfix. Some hotfixes are a component of Windows updates.

Refer to the [Windows Host Utilities documentation](#) for your specific configuration hotfix requirements.

Known issues

Some unexpected and potentially undesired behaviors, as well as, in some cases, workarounds to avoid these behaviors, have been identified in this release.

Title	Description	Workaround
Running the <code>linux_gos_timeout-install.sh</code> script is no longer required on Hyper-V guests running Red Hat Enterprise Linux or SUSE Linux Enterprise Server	You are no longer required to run the <code>linux_gos_timeout-install.sh</code> script to change disk timeouts on Red Hat Enterprise Linux 5, Red Hat Enterprise Linux 6, or SUSE Linux Enterprise Server 11 Hyper-V guests because the default timeout settings are being used. The <code>linux_gos_timeout-install.sh</code> script that was included in previous versions of the Host Utilities is no longer included in the Windows Unified Host Utilities. Windows Unified Host Utilities 7.1 uses the default disk timeout settings.	NA
iSCSI sessions do not reconnect after reboot with mixed IPv4 and IPv6	In a multipath I/O (MPIO) configuration or multiple connections per session (MCS) configuration that has both IPv4 and IPv6 endpoints, some iSCSI sessions might fail to reconnect after rebooting the Windows host.	To ensure that all of your iSCSI paths return after a reboot, use either all IPv4 endpoints or all IPv6. Do not mix IPv4 and IPv6.
MCS is not supported with iSCSI software boot	When using iSCSI software boot with iSCSI multiple connections per session (MCS), the iSCSI boot leading connection cannot be protected. This can lead to disconnection from the boot LUN causing the host to crash.	Microsoft does not support MCS for iSCSI software booted hosts. Use MPIO as the high availability solution. Note that mixing MPIO and MCS is not supported.

[NetApp Bugs Online](#) provides complete information for most known issues, including suggested workarounds where possible.

About SAN Host Configuration documentation

Documentation for SAN Host Utilities is included in the [ONTAP SAN Host Configuration documentation](#). ONTAP SAN HOST configuration documentation is cumulative, covering all current SAN HOST releases. Any functional differences across releases are noted in context.

Where to find product documentation and other information

You can access documentation for all NetApp products and find other product information resources, such as technical reports and white papers on the Product Documentation page of the NetApp corporate site.

Related information

Configuring and managing your ONTAP storage system

- The [ONTAP Software Setup Guide](#) for your version of ONTAP
- The [ONTAP SAN Administration Guide](#) for your version of ONTAP
- The [ONTAP Release Notes](#) for your version of ONTAP

Configuring and managing your E-Series storage system

- The SANtricity Storage Manager Configuration and Provisioning for Windows Express Guide that is appropriate for your protocol
- The SANtricity Storage Manager Configuration and Provisioning Express Guide for your operating system, protocol, and version of SANtricity.
- The SANtricity Storage Manager Software Installation Reference specific for your version of SANtricity.
- The SANtricity Storage Manager Multipath Driver's Guide specific for your version of SANtricity.
- The SANtricity Storage Manager Release Notes for your version of SANtricity.

See the [E-Series documentation](#) to find SANtricity related documentation.

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