



Using Windows Server 2019 with ONTAP

ONTAP SAN Host

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Using Windows Server 2019 with ONTAP

Booting the OS

There are two options for booting the operating system: by using either local boot or SAN boot. For local booting, you install the OS on the local hard disk (SSD, SATA, RAID, and so on). For SAN booting, see instructions below.

SAN booting

If you opt to use SAN booting, it must be supported by your configuration. You can use the NetApp Interoperability Matrix Tool to verify that your OS, HBA, HBA firmware and the HBA boot BIOS, and ONTAP version are supported.

1. Map the SAN boot LUN to the host.
2. Verify multiple paths are available. Remember, multiple paths will only be available after the host OS is up and running on the paths.
3. Enable SAN booting in the server BIOS for the ports to which the SAN boot LUN is mapped. For information on how to enable the HBA BIOS, see your vendor-specific documentation.
4. Reboot the host to verify the boot is successful.

Installing Windows hotfixes

We suggest the use of **latest cumulative update** to be installed on the server.



Go to the [Microsoft Update Catalog 2019](#) website to obtain and install the required Windows hotfixes for your version of Windows.

1. Download hotfixes from the Microsoft support site.



Some hotfixes are not available for direct download. In these cases, you will need to request a given hotfix from Microsoft support personnel.

2. Follow the instructions provided by Microsoft to install the hotfixes.



Many hotfixes require a reboot of your Windows host, but you can opt to wait to reboot the host until *after* you install or upgrade the Host Utilities.

Installing the Windows Unified Host Utilities

The Windows Unified Host Utilities (WUHU) are a set of software programs with documentation that enables you to connect host computers to virtual disks (LUNs) on a NetApp SAN. We recommend downloading and installation of the latest Utility Kit. For WUHU configuration information and instructions, please refer to [WUHU 7.1 Documentation](#).

Multipathing

You must install MPIO software and have multipathing set up if your Windows host has more than one path to the storage system. Without MPIO software, the operating system might see each path as a separate disk, which can lead to data corruption. The MPIO software presents a single disk to the operating system for all paths, and a device-specific module (DSM) manages path failover.

On a Windows system, the two main components to any MPIO solution are a DSM and the Windows MPIO. MPIO is not supported for Windows XP or Windows Vista running in a Hyper- V virtual machine.



When you select MPIO support, the Windows Unified Host Utilities enables the included MPIO feature of Windows Server 2019.

SAN configuration

Non-ASA configuration

For non-ASA configuration there should be two groups of paths with different priorities.

The paths with the higher priorities are Active/Optimized, meaning they are serviced by the controller where the aggregate is located.

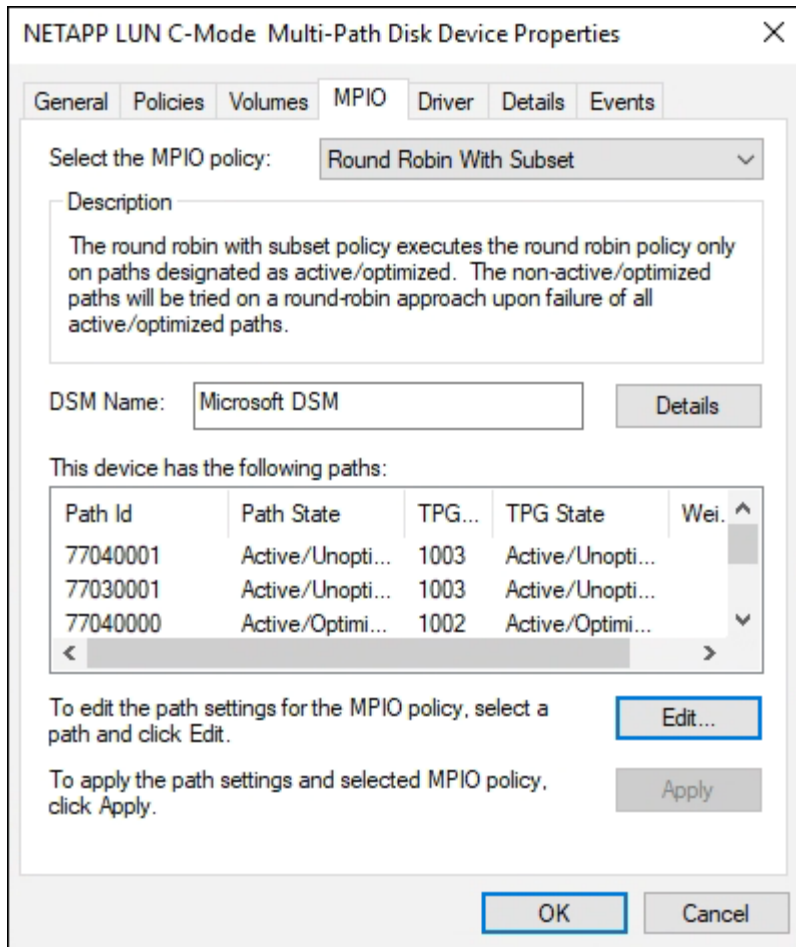
The paths with the lower priorities are active but are non-optimized because they are served from a different controller.



The non-optimized paths are only used when no optimized paths are available.

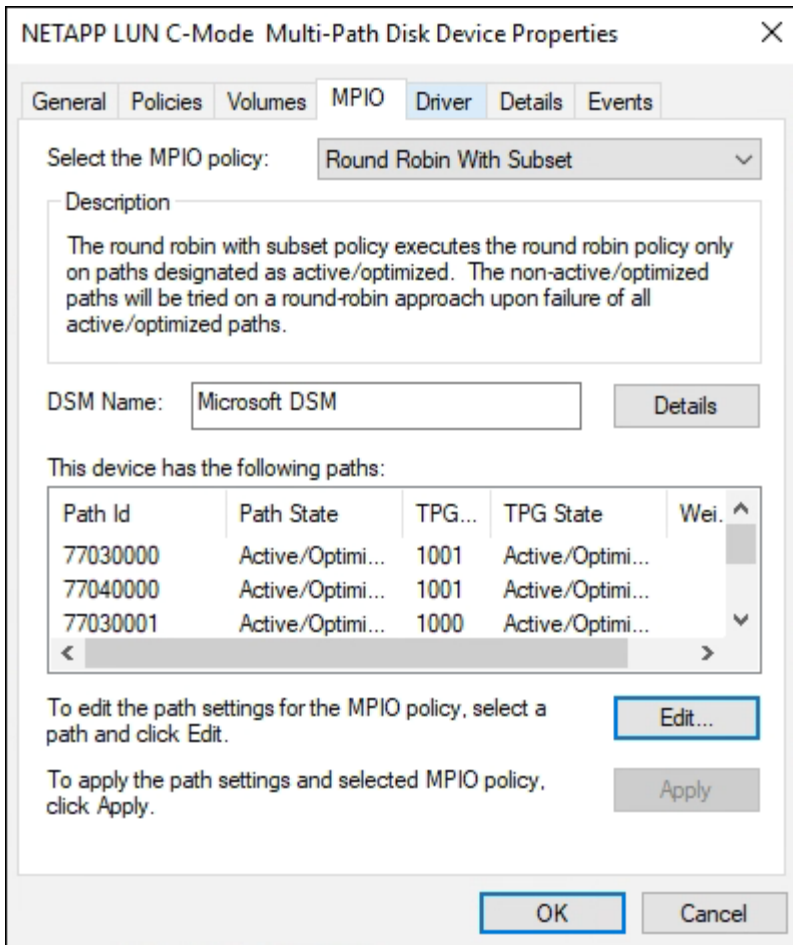
Example

The following example displays the correct output for an ONTAP LUN with two active/optimized paths and two active/non-optimized paths.



All SAN array configuration

For All SAN Array (ASA) configuration, there should be one group of paths with single priorities. All paths are active/optimized; that is, they are serviced by the controller and that the I/O is sent on all the active paths.



Do not use an excessive number of paths to a single LUN. No more than four paths should be required. More than eight paths might cause path issues during storage failures.

Recommended settings

On systems using FC, the following timeout values for Emulex and QLogic FC HBAs are required when MPIO is selected.

For Emulex Fibre Channel HBAs:

Property type	Property value
LinkTimeOut	1
NodeTimeOut	10

For QLogic Fibre Channel HBAs:

Property type	Property value
LinkDownTimeOut	1
PortDownRetryCount	10



Windows Unified Host Utility will set these values. For detailed recommended settings, refer to the [Windows 7.1 Host Utilities Installation Guide](#).

Known limitations

There are no known issues for Windows Server 2019.

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