

IBM System Storage N series



Windows Host Utilities 6.0.1 Release Notes

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Windows Host Utilities 6.0.1 Release Notes

These release notes describe new features, enhancements, and known issues for Windows Host Utilities 6.0.1.

These release notes apply to Windows Host Utilities 6.0.1. Release Notes might be updated between product releases. You should periodically check online for updated Release Notes, available on the IBM N series support web site located at:

www.ibm.com/storage/support/nseries/

Windows Host Utilities 6.0.1 Overview

The Windows Host Utilities enable you to connect a Windows host computer to N series storage systems.

The Windows Host Utilities include an installation program that sets the required Windows registry and HBA values. Starting with version 5.3, the diagnostic programs for troubleshooting problems with Windows hosts connected to N series storage systems were replaced by the nSANity program. You can obtain the nSANity program from technical support representative.

Information on finding system requirements

IBM qualifies additional components between releases of the Host Utilities software.

For the most up-to-date information on the system requirements, see the interoperability matrix, available on the IBM N series support website, which is accessed and navigated as described in “Websites” on page 27.

New features in this Host Utilities release

Windows Host Utilities 6.0.1 includes several new features and support for additional configurations.

Windows Host Utilities 6.0.1 includes the following changes from 6.0:

- Support for Windows Server 2012.

Updates to the release notes

The release notes might be updated between product releases. This section lists any updates since the original release.

August 2012 update

The Release Notes are updated with the results of new qualifications and ongoing testing.

In August 2012, the Release Notes were updated to support Windows Server 2012. The following information was added:

- A new important caution was added. See Windows Host Utilities 6.0.1 installer disables the SCSI UNMAP command on Windows Server 2012 hosts.
- New known problems and limitations were added:
 - See Virtual Fibre Channel is not supported on Windows Server 2012 hosts.
 - See `san_version` command reports the wrong QLogic driver version.
 - See “iSCSI may fail to reconnect automatically on a Windows Server 2012 host after a storage controller fault” on page 9.
 - See “iSCSI may fail to reconnect on a Windows Server 2012 host after a forced giveback on a clustered storage system running Emulex 10g and the ToE offload” on page 9.

The *Windows Host Utilities Installation and Setup Guide* and *Windows Host Utilities 6.0.1 Quick Reference Guide (7-Mode)* were also updated to support Windows Server 2012.

May 2012 update

The Release Notes are updated with the results of new qualifications and ongoing testing.

In May 2012, the Release Notes were updated with the following information:

- New important cautions were added:
 - See “iSCSI driver parameters not set for the Emulex OCe10102 CNA” on page 3.
 - See QLE8242 adapters not configured automatically.
- Links to external web pages were updated, including links to the N series support website (accessed and navigated as described in Websites).

The *Windows Host Utilities Installation and Setup Guide* was also updated to add new information.

Important cautions

Before deploying this release of Windows Host Utilities, make sure that you read the following items to identify and resolve issues that might affect the operation of your systems.

- “Windows Host Utilities 6.0.1 installer disables the SCSI UNMAP command on Windows Server 2012 hosts”
- “iSCSI driver parameters not set for the Emulex OCE10102 CNA”
- “QLE8242 CNAs not configured automatically” on page 4
- “Setting the adapter timeouts using QConvergeConsole” on page 4
- “Veritas Storage Foundation for Windows 5.1 SP1 not currently supported for FC” on page 5
- “Windows Server 2008 R2 upgrade issues” on page 5
- “Do not manually create files on Windows Server 2008 R2 CSV” on page 5
- “Windows crashes after setting Chelsio 10 Gb NIC MTU to 9000” on page 6
- “Enabling ALUA might require a Windows reboot” on page 6

Windows Host Utilities 6.0.1 installer disables the SCSI UNMAP command on Windows Server 2012 hosts

NTFS uses the SCSI UNMAP command to reclaim storage on Windows Server hosts. UNMAP will degrade performance on a Data ONTAP storage system connected to a Windows Server 2012 host if the host uses a LUN as an NTFS-formatted virtual disk.

To prevent a performance degradation, the Windows Host Utilities 6.0.1 installer disables the SCSI UNMAP command on Windows Server 2012 hosts. Use SnapDrive for Windows to manage storage efficiency in these configurations.

iSCSI driver parameters not set for the Emulex OCE10102 CNA

The Windows Host Utilities does not set the iSCSI driver parameters for the Emulex OCE10102 converged network adapter (CNA).

You need to manually set the driver parameters.

About this task

A reboot is required after you set the parameters.

Steps

1. Load the Windows Registry Editor.
2. Navigate to HKLM\SYSTEM\CurrentControlSet\services\be2iscsi\Parameters\Device \DriverParameters
3. Enter the following value for the **ldto** parameter: **1 (REG_DWORD)**
4. Enter the following value for the **eto** parameter: **10 (REG_DWORD)**
5. Reboot your Windows host.

QLE8242 CNAs not configured automatically

If you install the Windows Host Utilities on a host that includes Data ONTAP DSM for Windows MPIO version 3.4 or earlier, the Windows Host Utilities installer does not automatically configure the required settings for the QLogic QLE8242 converged network adapter (CNA).

To correct this issue, do one of the following:

- Upgrade to Data ONTAP DSM 3.5 for Windows MPIO. The DSM installer automatically configures the required settings, unless the QLE8242 driver is version 9.1.9.19 or later.

Note: The Windows Host Utilities are no longer required if the Windows host is running Data ONTAP DSM 3.5 or later. While no longer required, installing the Windows Host Utilities on the same host as the DSM is still supported.

- Configure the required settings manually.

Setting the adapter timeouts using QConvergeConsole

The adapter requires specific timeout settings that are not set by the current host software.

Before you begin

The QConvergeConsole CLI must already be installed on the Windows host computer.

1. Using the QConvergeConsole CLI, enter the following command to set the adapter LinkDownTimeout to 1:

```
gauccli -pr fc -n port_number lt 1
```

`port_number` is the number of the port on a multi-port adapter. The setting must be made to each port of a multi-port adapter.

2. Enter the following command to set the adapter PortDownRetryCount to 10:

```
gauccli -pr fc -n port_number pd 10
```

port_number is the number of the port on a multi-port adapter. The setting must be made to each port of a multi-port adapter.

Veritas Storage Foundation for Windows 5.1 SP1 not currently supported for FC

Veritas Storage Foundation for Windows 5.1 SP1 is not currently supported for Fibre Channel. You can use iSCSI paths instead.

Do not use Veritas Storage Foundation for Windows 5.1 SP1 with Fibre Channel paths to N series storage. You can instead use iSCSI paths with SP1, or use version 5.1 without SP1 if you need FC paths.

Windows Server 2008 R2 upgrade issues

Upgrades to Windows Server 2008 R2 require you to address certain issues.

Be sure to read the upgrade information provided by Microsoft. The following issues are especially important.

- Be sure to upgrade to Windows Host Utilities 6.0 before upgrading to Windows Server 2008 R2.
- If you are using the Data ONTAP DSM for Windows MPIO, be sure to upgrade to DSM 3.3.1 or later before upgrading to Windows Server 2008 R2.
- You cannot upgrade to Windows Server 2008 R2 while the host is part of a Windows cluster. Remove the host from the cluster before upgrading.
- After clustering a Windows host running Windows Server 2008 R2, run the **Repair** option of the Windows Host Utilities 6.0 installation program to set the required value of the \HKLM\Cluster\ClusSvcHangTimeout parameter. If Data ONTAP DSM for Windows MPIO is installed, run the **Repair** option of the DSM installation program instead.
- For iSCSI-booted Windows Server 2008 hosts, there is no way to upgrade to Windows Server 2008 R2. You must do a fresh installation of Windows Server 2008 R2. This is a Microsoft limitation.

Do not manually create files on Windows Server 2008 R2 CSV

Manually creating or copying files to a Windows Server 2008 R2 cluster shared volume (CSV) can corrupt the data on the volume.

The only files allowed on a CSV are the files written by the Hyper-V administrative tools. This includes any user or application data stored under the C:\ClusterStorage directory on every node.

Windows crashes after setting Chelsio 10 Gb NIC MTU to 9000

Enabling jumbo frames (MTU = 9000) on a Chelsio 10 Gb NIC can crash Windows Server 2008 R2.

Do not enable jumbo frames on the Chelsio 10 Gb NIC on Windows Server 2008 R2.

This problem has been reported to Microsoft and Chelsio, and is expected to be fixed in a future version of the Chelsio driver.

Enabling ALUA might require a Windows reboot

In some situations, you must reboot Windows after enabling ALUA on LUNs mapped to that Windows host. ALUA must be enabled when using the Microsoft DSM (msdsm) included with Windows Server 2008, Windows Server 2008 R2, and Windows Server 2012.

A reboot is required if ALUA is enabled on an igroup and the host has already discovered LUNs from that igroup. A disk rescan of the host does not set the load balance policies or the target portal group properties correctly. Rescan does not cause a stack tear down and rebuild of MPIO LUNs, so the new ALUA property is not detected.

If you enable ALUA on a new igroup and then map LUNs to that igroup, no reboot is needed.

Known problems and limitations

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

- “Virtual Fibre Channel is not supported in virtual machines on Windows Server 2012 hosts” on page 8
- “san_version command reports the wrong QLogic driver version” on page 8
- “iSCSI may fail to reconnect automatically on a Windows Server 2012 host after a storage controller fault” on page 9
- “iSCSI may fail to reconnect on a Windows Server 2012 host after a forced giveback on a clustered storage system running Emulex 10g and the ToE offload” on page 9
- “Error when installing hotfixes” on page 9
- “Oracle 10g RAC Voting Disk using Windows igroup fails with I/O error during giveback” on page 9
- “I/O errors during repeated connectivity disruptions of iSCSI connections” on page 10
- “Windows Host Utilities installer says Hotfix 972797 is required, but Hotfix installation fails” on page 10
- “Using SnapDrive for Windows with the Microsoft DSM (msdsm)” on page 10
- “Configuring pass-through disks for Windows Server 2008 R2 or Windows Server 2012 Hyper-V” on page 11
 - “Configuring a pass-through disk for a VM not yet in the cluster” on page 11
 - “Configuring a pass-through disk for a VM already in the cluster” on page 11
- “Cluster Shared Volume not accessible from one node in a Windows Server 2008 failover cluster” on page 12
- “Unable to change load balance policy to Failover using msdsm” on page 12
- “Cluster resources do not fail over to passive MSCS node” on page 13
- “Hyper-V live migration and quick migration fail after converting a CSV LUN to non-CSV” on page 13
- “Cannot add SCSI pass-through disk to SUSE Hyper-V guest using IDE controller” on page 14

- “Uninstalling SP2 from SAN-booted Windows Server 2008 prevents host from booting” on page 14
- “I/O errors running iSCSI MCS with ERL=2 on IPv6” on page 14
- “iSCSI sessions do not reconnect after reboot with mixed IPv4 and IPv6” on page 15
- “MCS is not supported with iSCSI software boot” on page 15
- “Bidirectional CHAP limitation for Itanium hosts” on page 15
- “Raw (pass-through) disks on a guest OS are not available when running MPIO on the guest” on page 15
- “Raw (pass-through) disks do not appear in Hyper-V guest OS” on page 16
- “Guest OS install on SCSI disk fails” on page 16
- “Hyper-V virtual machine files do not work on CIFS share” on page 16
- “Hyper-V guest does not boot or loses pass-through disk” on page 16
- “SUSE Hyper-V guest loses network when moved to another cluster node” on page 17
- “Configuration fails when attempting to add a virtual machine to a Failover Cluster” on page 17
- “Unable to add another virtual machine to a failover cluster” on page 18
- “Virtual machine does not work after being removed from a failover cluster” on page 18
- “Unable to SAN boot with Emulex FC HBA” on page 18
- “Microsoft iSCSI SW Initiator takes a long time to reconnect to the storage system after disruption” on page 19
- “Disabling the Microsoft iSCSI port-hopping algorithm” on page 19
- “Initiator unable to log in to storage system” on page 20
- “LUN identifier range 0-254” on page 20
- “MPIO and MCS are not supported together” on page 20
- “I/O stops when removing iSCSI connections” on page 20
- “Wait between iSCSI logout and login” on page 21

Virtual Fibre Channel is not supported in virtual machines on Windows Server 2012 hosts

Virtual Fibre Channel is not supported in virtual machines on Windows Server 2012 hosts.

san_version command reports the wrong QLogic driver version

The san_version.exe command reports the wrong QLogic driver version.

iSCSI may fail to reconnect automatically on a Windows Server 2012 host after a storage controller fault

The iSCSI initiator occasionally fails to reconnect automatically on a Windows Server 2012 host after a storage controller fault.

The workaround is to manually reconnect the initiator to the target in the iSCSI Initiator Properties dialog box.

iSCSI may fail to reconnect on a Windows Server 2012 host after a forced giveback on a clustered storage system running Emulex 10g and the ToE offload

iSCSI occasionally fails to reconnect on a Windows Server 2012 host after a forced giveback on a clustered storage system running Emulex 10g and the ToE offload.

The workaround is to disable ToE on the card.

Error when installing hotfixes

When installing required Windows hotfixes, you might get an error message saying the hotfix does not apply to your system.

Some hotfixes have a dependency on other hotfixes. Install the hotfixes in numerical order to ensure they are accepted.

Many hotfixes prompt you to reboot your system. You can wait until all hotfixes are installed before rebooting. If you are installing Windows Host Utilities immediately after the hotfixes, you can wait and reboot when prompted by the Host Utilities installation program.

Oracle 10g RAC Voting Disk using Windows igroup fails with I/O error during giveback

When using Oracle 10g RAC, you can avoid I/O errors by specifying the igroup type to which the LUNs used by Oracle are mapped as "linux".

I/O to the Oracle Voting Disk in Oracle 10g Real Application Clusters (RAC) on Windows Server 2003 times out during a storage controller giveback. I/O to the unreachable partner controller is dropped by the target if the igroup type for the LUN is windows.

If the igroup type is linux, the target returns an error instead of dropping the SCSI commands. This causes the I/O to be retried by the application (Oracle 10g) and the Voting Disk does not fail.

I/O errors during repeated connectivity disruptions of iSCSI connections

Windows hosts with fewer than four iSCSI paths to the storage system might experience I/O errors when the iSCSI connections have repeated connectivity disruptions.

Ongoing testing has identified a potential problem when a host running the iSCSI software initiator has a small number of iSCSI paths and the iSCSI connections are repeatedly disrupted. This issue has not been seen with systems that have four or more iSCSI paths.

There are two workarounds for this issue:

- Create additional iSCSI paths to the storage controllers. The best practice is to have multiple subnets using independent Ethernet switches.
- Change the value of the LinkDownTime parameter in the Windows registry. This value is set by the Host Utilities installation program based on your configuration.

The LinkDownTime parameter is set in the HKLM\SYSTEM\CurrentControlSet\Control\Class\{iSCSI_driver_GUID}\instance_ID\Parameters\LinkDownTime parameter.

Windows Host Utilities installer says Hotfix 972797 is required, but Hotfix installation fails

Some Hotfixes must be installed in a particular order. Required Hotfix 972797 must be installed before Hotfix 976748. If Hotfix 976748 is installed first, trying to install 972797 fails.

When installing the Windows Host Utilities (WHU) software, the installation program checks for certain Windows Hotfixes. The WHU installation fails if required Windows Hotfixes are missing.

The workaround to this issue is as follows:

1. Uninstall Hotfix 976748.
2. Install Hotfix 972797.
3. Reinstall Hotfix 976748.
4. Restart the Windows Host Utilities installation.

Using SnapDrive for Windows with the Microsoft DSM (msdsm)

When you use SnapDrive 6.1 for Windows or earlier with the Windows Server 2008 Microsoft DSM (msdsm), you need to manually enable ALUA for FC LUNs mapped to the Windows host.

Asymmetric logical unit access (ALUA) must be enabled when you use the Microsoft native Fibre Channel (FC) device-specific module (DSM) in Windows Server 2008 (msdsm) for FC paths. SnapDrive 6.1 for Windows and earlier does not enable ALUA for LUNs it creates. By default, ALUA is disabled.

ALUA is enabled on the igroup that LUNs are mapped. You can enable ALUA by entering the following command on the Data ONTAP console:

```
igroup set igroup_name alua yes
```

Note: Data ONTAP 7.3.0 or later software running `single_image cmode` is required to support ALUA for the msdsm.

Configuring pass-through disks for Windows Server 2008 R2 or Windows Server 2012 Hyper-V

There are two procedures for configuring pass-through disks for Windows Server 2008 R2 or Windows Server 2012 Hyper-V virtual machines in a High Availability (HA) configuration.

Select the appropriate configuration depending on whether the virtual machine already belongs to a cluster.

Configuring a pass-through disk for a VM not yet in the cluster

Use this procedure to configure a pass-through disk for a Windows 2008 R2 Hyper-V HA virtual machine (VM) if the VM is not yet added to the failover cluster.

Steps

1. Verify that the disk being added is not configured to be managed by the cluster. If it is a cluster resource, delete it from the cluster.
2. Add the disk as a pass-through disk to the VM, using Hyper-V Manager.
3. After verifying that the pass-through disk is working with the VM, shut down the VM.
4. Add the disk to the failover cluster.

The disk appears in **Available Storage** in Failover Cluster Manager.

5. Add the VM to the cluster using Failover Cluster Manager.

Configuring a pass-through disk for a VM already in the cluster

Use this procedure to configure a pass-through disk for a Windows 2008 R2 Hyper-V HA virtual machine (VM) if the VM is already added to the failover cluster.

1. In Failover Cluster Manager, verify the disk that will be the pass-through disk is listed in **Available Storage**. Take the disk offline, but do not delete from the cluster.
2. Using Failover Cluster Manager, shut down the VM to which you are adding the disk.
3. Using Hyper-V Manager, add the pass-through disk to the VM.
4. In Failover Cluster Manager, select the VM and then select **Refresh virtual machine configuration** in the **Action** pane.
The pass-through disk is added to the group that the VM is in and brought online automatically.
5. Start the VM.
The pass-through disk is available.

Cluster Shared Volume not accessible from one node in a Windows Server 2008 failover cluster

From a node in a Windows Server 2008 failover cluster, if a CSV volume is accessed, an error message "CSV Volume not accessible" is displayed.

The event log contains an error message similar to:

Cluster service failed to create a cluster identity token for Cluster Shared Volumes.

This error is caused by a configuration error such as authentication issues, the inability of the node to contact a domain controller, or the cluster IP address being incorrect. If you fix these issues, the volume should be accessible.

Unable to change load balance policy to Failover using msdsm

Using the native Microsoft DSM (msdsm), you are unable to change the load balance policy for a LUN to **Failover**.

This problem can happen when multiple paths to the LUN are **Active/Optimized**. An error message similar to the following is displayed when you attempt to change the load balance policy: The failover policy employs one active/optimized path and all other paths are active/unoptimized, standby or unavailable.

The workaround is to manually change the path state for all the paths except one to **Standby**. Then change the load balance policy to **Failover**.

Cluster resources do not fail over to passive MSCS node

When using MSCS and MPIO with the native Microsoft iSCSI DSM (msiscdsm) on Windows Server 2003, cluster resources do not fail over to the passive node. This happens when the active node is not shut down gracefully, for example, abrupt power failure.

Configure the persistent reservation key for your cluster as described in the *Microsoft iSCSI Software Initiator Version 2.X User's Guide*. This guide is stored in the default location C: \WINDOWS\iSCSI\uguide.doc when you install the initiator. It is also available from the Microsoft download page for the initiator.

Hyper-V live migration and quick migration fail after converting a CSV LUN to non-CSV

Hyper-V live migration and quick migration do not work after converting a cluster shared volume (CSV) LUN to a non-CSV LUN. You need to follow special procedures to convert a CSV to a non-CSV for successful live migration or quick migration.

When a LUN is used as a CSV, you cannot change the Windows drive letter of the virtual hard drive (VHD) to enable live migration or quick migration. Attempting live migration or quick migration with a CSV fails. If you simply remove the LUN from the CSV, the migration also fails.

Follow the special procedure for converting a CSV LUN to enable live and quick migrations.

Converting a Hyper-V CSV LUN to enable live and quick migration

Hyper-V live migration and quick migration do not work after cluster shared volume (CSV) LUNs have been converted to non-CSV. This procedure removes the LUN from the CSV and enables migration of the virtual machine.

1. Shut down the Hyper-V virtual machine (VM).
2. Export the VM configuration.

This does not copy the virtual hard drive (VHD), just the VM configuration information.

3. Delete the VM from the Windows cluster and from Hyper-V.

Note: Do not import the VM configuration until you are instructed to do so below.

4. Remove the LUN from the CSV and assign an available Windows drive letter.

5. Import the VM you exported. In the VM settings, change the VHD location to point to the drive letter you assigned to the LUN.
6. Add the VM back as an HA resource.

Cannot add SCSI pass-through disk to SUSE Hyper-V guest using IDE controller

If you add a SCSI pass-through disk using the virtual IDE controller to a Hyper-V virtual machine running SLES 10 SP2, you cannot create a filesystem on the disk.

Disk commands such as `fdisk` also fail.

The problem has been observed in both clustered and non-clustered configurations.

The workaround is to use the virtual SCSI controller for pass-through disks on SLES 10 virtual machines.

Uninstalling SP2 from SAN-booted Windows Server 2008 prevents host from booting

If you need to remove service pack 2 from a SAN-booted Windows Server 2008 host, remove MPIO first.

When SP2 is removed, the registry entries needed for successful SAN booting in an MPIO configuration are also removed. If you first remove MPIO, you can remove SP2 and still reboot the host successfully.

For more information, see the Microsoft KB article 967752, located at:

support.microsoft.com/kb/967752

I/O errors running iSCSI MCS with ERL=2 on IPv6

When using the iSCSI software initiator with multiple connections per session (MCS) in an IPv6 environment with error recovery level 2 (ERL=2), you might get I/O errors if the storage system has multiple takeovers and givebacks.

This problem has been reported on Windows Server 2003 with iSCSI Initiator 2.07.

Either use ERL=0 with MCS, or use MPIO instead of MCS for high availability if you want to use ERL=2. The error recovery level is set on the storage system using the options `iscsi.max_error_recovery_level` command.

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.

Bidirectional CHAP limitation for Itanium hosts

The Microsoft iSCSI initiator cannot create more than one session using bidirectional (mutual) CHAP on Itanium hosts.

On Windows hosts with Itanium (IA64) processors, you cannot use bidirectional (mutual) CHAP with either multipath I/O (MPIO) or multiple connections per session (MCS). The first session or connection is established successfully, but you are unable to create additional sessions or connections.

This problem is fixed in Windows Server 2008 R2.

For earlier versions of Windows, do not use CHAP on IA64 systems if you want to create more than one iSCSI session.

Raw (pass-through) disks on a guest OS are not available when running MPIO on the guest

If you run MPIO software on a guest OS (for iSCSI directly from the guest), and you also configure raw pass-through disks as SCSI physical disks from the parent, the guest is unable to use the raw disks.

This issue occurs with the Data ONTAP DSM for Windows MPIO and the Veritas DMP DSM.

When you are running MPIO on the guest, map raw drives as IDE physical disks.

Raw (pass-through) disks do not appear in Hyper-V guest OS

Raw (pass-through) disks do not appear in a Hyper-V guest OS if Windows Host Utilities is installed on the guest and multipathing support is enabled.

When you enable multipathing support for Windows Host Utilities, LUNs on N series storage systems are claimed by the Windows MPIO drivers. Raw disks that are also based on N series LUNs are not passed to MPIO, and therefore not visible in the guest OS.

You can either use multipathing in the guest OS, or you can use raw disks, but not both.

Guest OS install on SCSI disk fails

You cannot boot a Hyper-V virtual machine from a SCSI-mapped disk.

Use an IDE-mapped disk for the virtual machine boot disk.

Hyper-V virtual machine files do not work on CIFS share

You cannot use a CIFS share on the storage system to store the virtual hard disk (.vhd file) or virtual machine configuration files for a Hyper-V virtual machine.

Store the .vhd file and virtual machine configuration files on a FC or an iSCSI LUN mapped to a drive on the Hyper-V parent system.

Hyper-V guest does not boot or loses pass-through disk

If the disk numbers on the Hyper-V parent change so that they no longer match the virtual machine configuration, the guest operating system can fail to boot or the guest can lose access to a pass-through disk.

The disk number might change if you delete a LUN mapped to the parent and then reboot the parent.

You can fix the problem by modifying the virtual machine configuration to match the new disk identifiers.

SUSE Hyper-V guest loses network when moved to another cluster node

SUSE guest operating systems on Hyper-V systems lose their network connections when the guest is moved to another node in the Windows cluster.

The network loss occurs when the guest uses a dynamic MAC address for its virtual network adapters. Dynamic MAC addresses are the default setting.

The workaround is to always select a static MAC address in the virtual machine **Network Adapter** settings for SUSE guest operating systems.

This problem has been reported to Microsoft.

Configuration fails when attempting to add a virtual machine to a Failover Cluster

Adding a virtual machine to a failover cluster fails because the hidden available storage resource group belongs to a different node in the cluster.

Correcting a failed virtual machine addition

If adding a virtual machine to a failover cluster fails because the hidden available storage resource group belongs to a different node in the cluster, add the new virtual machine's disk to the correct resource group.

1. Move the disk to the proper node by using the Failover Cluster Management Console.
2. Add the disk to the proper resource group created by the Virtual Machine Resource Wizard.
3. Manually add a dependency of the Virtual Machine on the Virtual Machine Configuration files.
4. Add a dependency of the Virtual Machine Configuration Files on the Physical Disk.
5. Start the Virtual Machine Resource Group.

Ensuring virtual machines can be added to a failover cluster

To ensure new virtual machines can be added to a failover cluster, move the available storage group to the node on which you are creating and adding virtual machines.

1. On the cluster node, enter the following command at a Windows command prompt:

```
C:\cluster group "Available Storage" /move:"node_name"
```

node_name is the host name of the cluster node from which you are adding virtual machines.

Run the virtual machine wizard to create the virtual machines and then add them to the failover cluster.

Unable to add another virtual machine to a failover cluster

You can successfully add one virtual machine to a failover cluster. But attempts to add other virtual machines stored in the same LUN fail.

This problem applies only to configurations with more than one virtual machine (configuration files and boot .vhd file) stored on the same LUN.

Move all of the virtual machine resources to the same failover cluster resource group. Then add the virtual machines to the cluster. Be sure that the resources for all virtual machines are configured as dependent on the disk mapped to the LUN.

Virtual machine does not work after being removed from a failover cluster

A Hyper-V virtual machine no longer works after being removed from a failover cluster. Adding a virtual machine to a failover and then removing it from the cluster removes the virtual machine configuration.

Recreate the virtual machine reusing the original boot .vhd file.

Unable to SAN boot with Emulex FC HBA

SAN booting might fail with Emulex Fibre Channel HBAs in one of several ways.

The following symptoms might occur while SAN booting a Windows host with an Emulex Fibre Channel HBA:

- The server boots once, but does not boot on subsequent attempts. The SAN boot is performed from a storage system LUN using FC. The HBA firmware is on the support matrix and the required storeport miniport driver is installed.
- After configuring the Emulex boot BIOS and rebooting the Windows host, the Emulex boot BIOS is not installed. The message “Emulex BIOS is not installed!!!” is displayed during the POST. This prevents configuring SAN booting.

Enable the Start Unit Command option in the Emulex HBA BIOS to resolve this issue.

Microsoft iSCSI SW Initiator takes a long time to reconnect to the storage system after disruption

In a storage system configuration with multiple physical networks or multiple VLANs, the Microsoft iSCSI software Initiator can take several minutes to reconnect to the storage system.

During initial target discovery (Add Target), the Microsoft iSCSI software initiator uses the iSCSI SendTargets command to retrieve a list of IP addresses at which the target can be accessed.

In a storage system configuration with multiple physical networks or multiple VLANs, it is possible that some of the storage system's addresses are not accessible to a given host. In this situation, the SendTargets response sent by the storage system will advertise some addresses which are not accessible by that host.

When the Microsoft iSCSI initiator loses connectivity to the target (such as during storage system reboot, takeover, and giveback), the initiator attempts to reestablish connectivity to the target using the following default algorithm, which Microsoft calls “port-hopping”:

- Attempt to reconnect over the same IP address which was being used before the disruption.
- Cycle through the other IP addresses from the SendTargets response, attempting to reconnect, until connectivity is reestablished.

Each inaccessible IP address in the list can add a delay of 15-20 seconds, which is the TCP connection establishment timeout. If there are many inaccessible IP addresses in the list, it may take a long time for the iSCSI initiator to cycle through the list before successfully reconnecting to the target. If the total reconnect time exceeds the timeout configured on the host (MaxRequestHoldTime for non-MPIO, or PDORemovePeriod for MPIO), the Windows applications experience I/O errors.

This long reconnect time can be minimized by disabling the use of the Microsoft “port-hopping” algorithm by using a specific target IP address for each connection in the iSCSI Initiator.

Disabling the Microsoft iSCSI port-hopping algorithm

Disable the Microsoft iSCSI port-hopping algorithm in the iSCSI Initiator to minimize the recovery time in configurations with many iSCSI target ports.

1. Open the Microsoft iSCSI initiator applet and select the Targets tab.
2. Click **Log On**.
3. In the **Logon to target** dialog box, click **Advanced**.

4. In the **Target Portal** list, change the value from Default to one of the storage system IP addresses specified in the **Target Portals** list on the **Discovery** tab.

After a disruption occurs, the Microsoft initiator uses only the IP address specified to reconnect to the storage system and does not try other IP addresses advertised in the SendTargets response.

Note: If the specified IP address is unreachable, no failover occurs.

Initiator unable to log in to storage system

If you set an initiator node name that does not comply with the iSCSI specification, the initiator is unable to log in to the storage system. This is possible because the initiator does not enforce the node name rules, but the storage system does.

The storage system console displays the following error message: Invalid value for iSCSI text key, 'InitiatorName=node_name'.

Change the initiator node name to an iSCSI RFC-compliant name by following the rules in the Host Utilities *Installation and Setup Guide*.

LUN identifier range 0-254

The Windows operating system only recognizes LUNs with identifiers from 0 to 254, regardless of the number of LUNs mapped.

Be sure that your LUNs are mapped to identifiers in this range.

MPIO and MCS are not supported together

To create a high-availability connection between the Windows host and the storage system, you can use either multipath I/O (MPIO) or iSCSI multiple connections per session (MCS). Using both simultaneously is not supported.

Select either MPIO or MCS for high-availability.

I/O stops when removing iSCSI connections

Using iSCSI multiple connections per session (MCS), you remove connections and I/O stops. In some situations, the iSCSI initiator allows you to remove the last active connection without warning.

Do not remove the last active connection. If you need to remove an iSCSI connection, make it a standby connection, and ensure another connection is active. Then remove the standby connection.

Wait between iSCSI logout and login

If you use the iSCSI software initiator GUI to log out the last session with an iSCSI target and then immediately log back in to the target, the Windows host does not connect to the iSCSI LUNs.

Wait at least 150 seconds after logging out of the last session with an iSCSI target before logging back in.

Veritas Storage Foundation problems and limitations

This section lists known problems and limitations when using Veritas Storage Foundation with Windows hosts and N series storage.

- “N series systems not listed in DMP DSM folder in VEA GUI”
- “Extra bogus path displayed in VEA GUI”
- “Veritas DMP DSM fails to report when a path is down” on page 24
- “Dynamic disk groups are not imported after reboot in Hyper-V” on page 24
- “Veritas Storage Agent service terminates unexpectedly after mapping LUNs” on page 24
- “Microsoft DSM claims N series LUNs instead of Veritas DMP DSM” on page 24
- “Microsoft iSCSI initiator GUI shows all MPIO paths as standby for Round Robin policy” on page 25
- “Using active/active load balancing in a cluster environment” on page 25
- “Veritas Enterprise Administrator GUI does not create iSCSI sessions with the specified source-target portals” on page 25
- “VCS cluster faults after takeover-giveback or reboot operations” on page 26
- “Veritas limitations” on page 26

N series systems not listed in DMP DSM folder in VEA GUI

When using Veritas Storage Foundation 5.1 SP1 for Windows, the DMP DSM folder in the Veritas Enterprise Administrator (VEA) GUI does not list N series storage systems.

Please see the Symantec technote located at: www.symantec.com/docs/TECH154160 for a workaround to this issue.

Extra bogus path displayed in VEA GUI

When using Veritas Storage Foundation 5.1 SP1 for Windows, an extra bogus path is displayed in the Veritas Enterprise Administrator (VEA) GUI for LUNs mapped to Windows hosts.

Please see the Symantec technote located at: www.symantec.com/docs/TECH154160 for a workaround to this issue.

Veritas DMP DSM fails to report when a path is down

When using Veritas Storage Foundation 5.1 SP1 for Windows, the DMP DSM command line interface and GUI fail to report when a path is down.

Please see the Symantec technote located at: www.symantec.com/docs/TECH154160 for a workaround to this issue.

Dynamic disk groups are not imported after reboot in Hyper-V

Using Veritas Storage Foundation for Windows in a Hyper-V configuration, dynamic disk groups that reside on virtual disks attached to a SCSI controller are not automatically imported after a system reboot.

This is a known Windows problem.

The workaround is to configure the system to use the Veritas DG Delayed Import Service (VxDgDI) for dynamic disk groups.

You can also manually import the disk groups after the reboot is complete.

Veritas Storage Agent service terminates unexpectedly after mapping LUNs

On a Windows Server 2008 system, the presentation of LUNs from a storage system causes the Veritas Storage Foundation for Windows (SFW) 5.1 storage agent to terminate unexpectedly.

Symantec has provided a fix for this issue. From the Symantec website, download and install the Device Driver Installation Package 1 (DDI-1) for Veritas Storage Foundation 5.1 for Windows.

This fix is required for Veritas Storage Foundation 5.1 support.

For information about obtaining a private fix from Symantec Enterprise Technical Support, please see the Symantec technote located at: [Veritas DDI-1 package - seer.entsupport.symantec.com/docs/317825.htm](http://Veritas.DDI-1.package-seer.entsupport.symantec.com/docs/317825.htm)

Microsoft DSM claims N series LUNs instead of Veritas DMP DSM

On a Windows Server 2008 system with Veritas Storage Foundation 5.1 for Windows (SFW 5.1) installed, the Microsoft DSM claims N series LUNs instead of Veritas DMP DSM claiming the N series LUNs.

Symantec has provided a fix for this issue. From the Symantec website, download and install the Device Driver Installation Package 1 (DDI-1) for Veritas Storage Foundation 5.1 for Windows.

This fix is required for Veritas Storage Foundation 5.1 support.

Please refer the following Symantec TechNote for details on this issue:

Veritas DDI-1 package - seer.entsupport.symantec.com/docs/317825.htm

Microsoft iSCSI initiator GUI shows all MPIO paths as standby for Round Robin policy

With the Veritas DMP DSM installed, the Microsoft initiator GUI shows all MPIO paths as *Standby* for Round Robin policy.

However, in Veritas Enterprise Administrator GUI, all the paths to the MPIO devices are shown as *Active* correctly. Also, running I/O on MPIO devices utilizes all available paths. So this is not an operational issue. It's just that the Microsoft initiator GUI displays these paths as *Standby*.

Use the Veritas Enterprise Administrator GUI to view the paths.

Using active/active load balancing in a cluster environment

DSMs in a cluster environment use a default active/passive load balance settings. For DSMs to use active/active load balancing in a cluster environment (VCS or MSCS), the SCSI persistent reservation must be enabled on each cluster node.

For Veritas DMP DSM use the procedure mentioned in the section on enabling SCSI-3 PGR in the *Veritas Storage Foundation Administrator's Guide*.

When using the Veritas Storage Foundation 5.1 for Windows with N series storage, the SCSI setting in the Control Panel in the Veritas Enterprise Administrator must be set to SCSI-3 in Clustering environments (VCS or Microsoft Clustering-MSCS).

Veritas Enterprise Administrator GUI does not create iSCSI sessions with the specified source-target portals

When you log in to an iSCSI target, the Veritas Enterprise Administrator GUI does not create iSCSI sessions with the specified source-target portals.

This is a known issue of the Veritas Enterprise Administrator GUI in version 5.1.

For all iSCSI configurations like adding or discovering targets, creating iSCSI sessions, configuring MPIO, and so on, use the Microsoft iSCSI initiator GUI.

VCS cluster faults after takeover-giveback or reboot operations

VCS cluster faults after takeover-giveback or reboot operations on IBM storage controllers.

When using Veritas Storage Foundation 5.1 for Windows with IBM storage, the SCSI setting in the Control Panel in the Veritas Enterprise Administrator must be set to SCSI-3 in Clustering environments (VCS or Microsoft Clustering-MSCS). Reboot the host for the setting to take effect.

Veritas limitations

The following limitations currently apply to Veritas Storage Foundation configurations:

- Only the active/passive load balance policy is supported for Fibre Channel connections. (Active/active is supported for iSCSI.)
- The Microsoft iSCSI DSM is not supported on systems running Veritas Storage Foundation. Do not install both on the same Windows host.
- The nSANity diagnostic program does not collect information specific to Veritas configurations. Use VxExplorer tool supplied with Veritas Storage Foundation for Windows to collect Veritas-specific troubleshooting information.
- Veritas DMP ASL as a multipathing solution is not supported. For MPIO using Veritas DMP, only DMP DSM is supported.

Websites

IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. The following web pages provide N series information:

- A listing of currently available N series products and features can be found at the following web page:
www.ibm.com/storage/nas
- The IBM System Storage N series support website requires users to register in order to obtain access to N series support content on the web. To understand how the N series support web content is organized and navigated, and to access the N series support website, refer to the following publicly accessible web page:
www.ibm.com/storage/support/nseries/
This web page also provides links to AutoSupport information as well as other important N series product resources.
- IBM System Storage N series products attach to a variety of servers and operating systems. To determine the latest supported attachments, go to the IBM N series interoperability matrix at the following web page:
www.ibm.com/systems/storage/network/interophome.html
- For the latest N series hardware product documentation, including planning, installation and setup, and hardware monitoring, service and diagnostics, see the IBM N series Information Center at the following web page:
<http://publib.boulder.ibm.com/infocenter/nasinfo/nseries/index.jsp>

Where to find additional information

The following table describes documents with the most current information about host and storage system requirements and additional documentation.

If you want...	Go to...
The latest supported configurations	www.ibm.com/storage/support/nseries
Support information	The IBM N series support website at: www.ibm.com/storage/support/nseries
Configuring and managing the storage system	The following documents for your Data ONTAP release: • The <i>Data ONTAP Software Setup Guide</i> • The <i>Data ONTAP SAN Administration Guide</i> (formerly the <i>Data ONTAP Block Access Management Guide for iSCSI and FC</i>) • The <i>Data ONTAP Release Notes</i> • The <i>Data ONTAP Commands: Manual Page Reference, Volume 1</i> • The <i>Data ONTAP Commands: Manual Page Reference, Volume 2</i> • The <i>Data ONTAP Upgrade and Revert/Downgrade Guide for 7-Mode</i>
Supported Fibre Channel SAN topologies	The <i>IBM System Storage N series Fibre Channel and iSCSI Configuration Guide</i>
Verifying storage systems and environments	<i>IBM System Storage N series Introduction and Planning Guide</i> or the <i>Hardware and Service Guide</i> for your N series system.
Configuring your host for the Host Utilities	The <i>HP-UX Host Utilities Installation and Setup Guide</i> The <i>Linux Host Utilities Installation and Setup Guide</i> The <i>AIX Host Utilities Installation and Setup Guide</i> The <i>Windows Host Utilities Installation and Setup Guide</i>

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