



EMC Unity™ Family
EMC Unity™ All Flash,
EMC Unity™ Hybrid,
EMC UnityVSA™

Configuring Hosts to Access NFS File
Systems

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Additional resources

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Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



Addresses practices not related to personal injury.

Note

Presents information that is important, but not hazard-related.

Additional resources

CHAPTER 1

Setting up a host for NFS storage

The chapter contains the following topics.

- [Requirements for setting up a host](#)..... 8
- [Using network high availability](#)..... 9
- [Configuring NFS file system storage](#)..... 11
- [Any host – Configuring access to the NFS share](#)..... 11
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Requirements for setting up a host

These system and network requirements must be met before setting up a host to use Unity storage.

Before you can set up a host to use Unity storage, the following storage system and network requirements must be met.

Overview

This topic describes the purpose of this document, its intended audience, and provides a list of related documentation.

This document is part of the EMC Unity documentation set. It describes how to set up the following hosts with clients that need to access Network File System (NFS) file system storage on a Unity system with Operating Environment version 4.0 or later.

- Citrix XenServer hosts
- Linux hosts
- Solaris hosts

This document is intended for the person or persons who are responsible for setting up the hosts to access the storage.

Readers of this document should be familiar with Unity NFS file system storage and the Citrix XenServer, Linux, or Solaris operating system running on hosts with users that will access Unity NFS file system storage.

System requirements

Before configuring hosts to access the storage system, ensure that these requirements are met.

Complete the following tasks before connecting hosts to the storage system:

- Install and configure the system using the **Initial Configuration** wizard.
- Use Unisphere or the CLI to configure NAS servers or interfaces, or iSCSI or Fibre Channel (FC) LUNs, on the storage system.

Network requirements

This topic lists the network requirements for a host attaching to a Unity system.

Ensure that you meet these network requirements:

- The host (client) is in the same LAN environment as the Unity NAS server.
- If the NAS server is enabled for multiprotocol (CIFS and NFS), you have connected it to an NIS server or an LDAP server. The Unisphere online help describes how to configure Unix Directory Service (either NIS or LDAP) on the system.

Note

Users can store files on a Unity NAS server in a Network Information Service (NIS) environment, but you cannot configure a Unity NAS server as an NIS client.

Using network high availability

This topic describes how to use link aggregation for high availability configurations.

The Unity system supports link aggregations that allow up to four Ethernet ports connected to the same physical or logical switch to be combined into a single logical link. To configure link aggregation on the system, each storage processor (SP) must have the same type and number of Ethernet ports as link aggregation actually creates two link aggregations — one on each SP. This provides high availability. If one of the ports in the link aggregation fails, the system directs the network traffic to one of the other ports in the aggregation. If you add an Ethernet I/O module to each SP in the system, you can create one additional link aggregation group (LAG) on the set of ports in the I/O module.

Link aggregations

This topic describes the advantages and function of link aggregations.

Link aggregations use the Link Aggregation Control Protocol (LACP) IEEE 802.3ad standard.

Note

Link Aggregation does not apply to iSCSI interfaces.

A link aggregation appears as a single Ethernet link with these advantages:

- High availability of network paths to and from the Unity system — If one physical port in a link aggregation fails, the system does not lose connectivity.
- Possible increased overall throughput — Because multiple physical ports are bonded into one logical port with network traffic distributed between the multiple physical ports.

Although link aggregations can provide more overall bandwidth than a single port, the connection to any single client runs through one physical port and is therefore limited by the port's bandwidth. If the connection to one port fails, the switch automatically switches traffic to the remaining ports in the group. When the connection is restored, the switch automatically resumes using the port as part of the group.

On the Unity system, you can configure up to four ports in a link aggregation. When you configure a link aggregation, you are configuring two link aggregations — one on each SP. If one of the ports in an aggregation fails, the system directs network traffic to one of the other ports in the group.

Switch requirements

This topic describes switch requirements when using link aggregation.

If the Unity ports are connected to different network switches, you should configure all switch ports connected to these ports to immediately switch from blocking mode to forwarding mode and not pass through spanning tree states of listening and learning when an interface comes up. On Cisco switches, this means that you must enable the portfast capability for each switch port connected to a Unity port to guarantee that the switch forwards the Ethernet frame that the storage system generates when a physical link is enabled. You enable the portfast capability on a port-to-port basis. When enabled, the portfast variable causes the port to immediately switch from blocking to forwarding mode. Do not use portfast on switch-to-switch connections.

For link aggregation, network switches must have IEEE 802.3ad protocol support and guarantee that packets from a single TCP connection always go through the same link in a single direction.

Configuring a link aggregation

This topic describes link aggregation configuration and lists the required configuration tasks.

Note

Windows 7 and Windows Server 2003 do not provide link aggregation (NIC teaming) support. Some NIC vendors provide drivers that support NIC teaming. For more information, contact your NIC vendor. Windows Server 2008 does support NIC teaming.

For link aggregation, you have at least one 802.3ad-compliant switch, each with an available port for each switch port you want to connect to a Unity port in the aggregation.

The term NIC teaming refers to all NIC redundancy schemes, including link aggregation with 802.3ad.

For link aggregation, you need to perform two sets of configuration tasks:

- Configure a link aggregation from the switch to the Unity system
- Configure a link aggregation from the host to the switch

Configuring link aggregation from the switch to the Unity system

Learn how to configure the switch ports and join them into a link aggregation.

Procedure

1. Configure the switch ports, which are connected to the Unity system, for LACP in active mode. Refer to the documentation provided with your switch for details.
2. Join the ports into a link aggregation using Unisphere. To do this:
 - a. Select the **Settings** icon, then select **Access > Ethernet**.
 - b. Select an Ethernet port, then select **Link Aggregation > Create Link Aggregation**.
 - c. Select the ports for the link aggregation, then select **Create**.

Results

Two link aggregations are created with the same ports — one aggregation on each SP.

Configuring link aggregation from host to switch

This topic describes how to configure the switch ports and set up link aggregation from host to switch.

Procedure

1. Configure the switch ports that are connected to the Citrix XenServer, Linux, or Solaris host for link aggregation.
2. Set up link aggregation for the Citrix XenServer, Linux, or Solaris host as described in the host documentation.

Configuring NFS file system storage

This topic describes the high-level steps to configure NFS file system for the host by using Unisphere.

Procedure

1. Create NFS file system storage for the host.
2. Add the host to the system and specify its access to the file system storage.

When you specify the access, only select the network (IP) addresses for the host adapters that you want to access the file system storage.

Note

For information on performing these tasks refer to the Unisphere online help.

Any host — Configuring access to the NFS share

This topic describes the steps to configure the NFS share directory, file structure, and security.

Procedure

1. Log in as root to a host with Read/Write and allow Root access to the NFS share.
If the NFS share is not visible to the host, ensure that you are logged in to the correct domain.
2. Set up the share's directory and file structure.
3. Set up user and group permissions to the share's directories and files.

For the best security, use the most restrictive access that is acceptable, such as not allowing root access to the share and mounting the share with read only access wherever feasible.

4. For added security, change the access on the system for the host with **Read/Write, allow Root access** to the share to **Use Default Access, Read-Only** or **Read/Write**:

Note

You must be a member of the local Administrators group to change host access to a share.

- a. Open Unisphere and select **Storage > File Systems**.
- b. Select the file system with the share and click **Details**.
- c. Click the **Shares** tab.
- d. Select the share and click **Details**.
- e. Click the **Host Access** tab, and in the **Access** column for the host, select **Use Default Access, Read Only, or Read/Write**.

Citrix XenServer host — Mounting the NFS share

This topic describes mounting an NFS share from the XenCenter console.

Before you begin

You must have an NFS server installed and managed from another system because the Citrix XenServer SoftLayer does not mount the NFS repository in XenCenter.

Procedure

1. Open the XenCenter console.
2. Click **New Storage**.
3. In the **New** dialog box, select **NFS** under **Virtual disk storage**.
4. In **Name**, type a descriptive name for the Unity NFS share.
5. In **Share Name**, type *NASServer:/local_mount_point_directory* where *NASServer:/local_mount_point_directory* is the export path for the NFS share.

You can find this export path in the Unity configuration report for the file system with the share. To access this report, use Unisphere as follows:

- a. Select **Storage > File Systems**.
- b. Select the NFS file system with the share and click **Details**.
- c. Click the **Shares** tab.

If you have write access to the share, then after the share is mounted you can create directories on the share and store files in the directories.

Linux or Solaris host — Mounting the NFS share

This topic provides the steps to mount the NFS share for a Linux or Solaris host.

If you want the share to be mounted automatically every time you boot the host, add an entry for it to share in the `/etc/fstab` file. If you have write access to the share, then after the share is mounted you can create directories on the share and store files in the directories.

Procedure

1. On the host, use the mount command to mount the NFS share.
 - a. For a Linux host, use `mount -t nfs NASServer:/local_mount_point_directory`
 - b. For a Solaris host, use `mount -F nfs NASServer:/local_mount_point_directory`

where *NASServer:/local_mount_point_directory* is the export path for the NFS share.

2. You can find the export path in the configuration report for the file system with the share. To access this report, use Unisphere as follows:
 - a. Select **Storage > File System Storage**.
 - b. Select the NFS file system with the share and click **Details**.
 - c. Click **View Access Details**.

CHAPTER 2

Migrating NFS Data to Unity

This chapter contains the following topics.

- [Migration environment and limitations](#)..... 14
- [Migrating data](#)..... 14

Migration environment and limitations

This topic describes requirements and limitations for data migration.

You can migrate data to the Unity system with either a manual copy or an application-specific tool, if one is available.

If the SMB configuration that you want to migrate has any of the following, contact your Unity service provider:

- More shares than you want to migrate.
- Permissions that you do not want to manually reassign to the Unity shares.
- Any share that you want to divide between Unity shares.
- Any share that you want to combine with other shares on the same Unity share.

[Table 1 on page 14](#) outlines the environment required for data migration. [Table 2 on page 14](#) lists the characteristics of a manual copy migration.

Table 1 Environment for data migration

Component	Requirement
Unity storage	File system with share sized to accommodate the data in the share that you want to migrate and to allow for data growth
Host	Host with read access to the share containing the data to be migrated and with write access to the Unity share for the migrated data
Share	Share that you migrate in its entirety to the Unity share

Table 2 Characteristics of manual copy migration

Component	Characteristic
Permissions	May not be preserved
Downtime	Downtime is relative to the time required for: <ul style="list-style-type: none"> • Copying the share contents to the Unity share • Reconfiguring the hosts to connect to the Unity share

For both a manual copy migration and a migration with an application, the downtime is relative to the time required for:

- Copying the share contents to the Unity share
- Reconfiguring the hosts to connect to the Unity share

Migrating data

This topic lists the tasks for migrating data to a Unity share.

To migrate data to a Unity share, set up access to the share. Then migrate the data.

Setting up access to a Unity share for the NFS host

This topic lists the host-based steps to configure user access to the share and then mount the share.

Procedure

1. On the host, configure user access to the new share, as described in [Any host — Configuring access to the NFS share on page 11](#).
2. Mount the new NFS share, as described in [Linux or Solaris host — Mounting the NFS share on page 12](#).

Migrating the data with a manual copy

This topic provides the steps to manually copy data one share at a time (instead of using an application-specific tool).

A manual copy minimizes the time during which a host cannot access a share being migrated.

Procedure

1. If any clients are actively using the share, unmount these clients and any other clients that could access the data you are migrating.
2. If any clients are actively using the share, disconnect these clients and any other clients that could access the data you are migrating.
3. Use the method that you think is best for copying data from the current storage location to the new Unity share.

This method can be a tool such as `rsync`. Ensure that the method you select preserves metadata such as file attributes, timestamps, and access rights that you need to preserve.

This method can be a cut-and-paste or drag-and-drop operation. Ensure that the method you choose preserves metadata such as file attributes, timestamps, and access rights that you need to preserve.

4. When the copy operation is complete, reconnect the clients to the new share exported by the Unity system and map a drive to this share as needed.

Migrating the data with a tool

This topic describes migrating NFS data with an application-specific tool.

You can migrate data by using an application-specific tool or by manually copy the data one share at a time.

Procedure

1. Locate the NFS data migration procedure in the documentation for the application.
2. Use the application-specific migration tool to migrate the NFS data as described in the documentation for the application.

