

Dell EMC Unity™ Family

Version 4.5

VNX® Series Data Import to Dell EMC Unity™ All Flash
or Hybrid, or UnityVSA™ System User Guide

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CHAPTER 1

Introduction

This chapter addresses the following topics:

- [About this document](#).....6
- [Additional resources](#).....6
- [About import](#).....7

About this document

This document provides information that you can use to configure and manage VNX imports (migrations) on the Unity system. Along with relevant concepts and instructions to configure VNX imports using the Unisphere GUI, this document also includes information about the CLI commands that are associated with configuring VNX imports.

Note

For more information about other Unisphere features or CLI commands, refer to the *Unisphere online help* and *Unisphere Command Line Interface User Guide*.

Additional resources

As part of an improvement effort, revisions of the software and hardware are periodically released. Therefore, some functions described in this document might not be supported by all versions of the software or hardware currently in use. The product release notes provide the most up-to-date information on product features. Contact your technical support professional if a product does not function properly or does not function as described in this document.

Where to get help

Support, product, and licensing information can be obtained as follows:

Product information

For product and feature documentation or release notes, go to Unity Technical Documentation at: www.emc.com/en-us/documentation/unity-family.htm.

Troubleshooting

For information about products, software updates, licensing, and service, go to Online Support (registration required) at: <https://Support.EMC.com>. After logging in, locate the appropriate **Support by Product** page.

Technical support

For technical support and service requests, go to Online Support at: <https://Support.EMC.com>. After logging in, locate **Create a service request**. To open a service request, you must have a valid support agreement. Contact your Sales Representative for details about obtaining a valid support agreement or to answer any questions about your account.

Special notice conventions used in this document



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.

⚠ CAUTION

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

NOTICE

Addresses practices not related to personal injury.

Note

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

About import

The Import feature allows you to migrate a VDM, or a LUN or a consistency group (CG) of LUNs, with its configuration and data from an existing source VNX storage system to a target Unity storage system. This feature provides a built-in capability for NFS-only VDM imports with minimal or no disruption to clients. It also provides a built-in capability for CIFS-only VDM and block-based imports. However, cutting over of a CIFS-only VDM or a block import session can be a disruptive process.

For a block-based import, after the cutover completes, host I/O operations are switched to the target system and the import process completes automatically. For a file-based virtual data mover (VDM) import, after cutover completes, the import process does an incremental copy automatically but you must complete the import manually.

An import is always conducted from the Unity storage system. The target system makes a remote call to the VNX storage system and instigates a pull (for file-based import) or push (for block-based import) of the source storage resources to the target system.

CHAPTER 2

Import workflow

This chapter addresses the following topics:

- [Configure import](#)..... 10

Configure import

You can manually import a VDM (including all its associated file-based storage, network, and configuration information and file systems) from a VNX storage system to a Unity storage system.

VDM import operations support only:

- Import of VDM with only NFSV3 protocol enabled (VDMs with NFSV4 protocol enabled are not supported)
- Import of VDM with only CIFS protocol enabled

NOTICE

Import of a VDM with multiprotocol file systems, or with both NFS and CIFS file systems exported/shared, is not supported.

You can also import multiple concurrent block import sessions for LUNs, or Consistency Group (CG) of LUNs, from the VNX system to the Unity system.

NFS-only VDM import

The configuration and identity information that can be imported along with the data as part of an NFS-only VDM import include:

- Networking:
 - IP address configuration
 - Routing configuration
 - VLAN configuration
- Name Services:
 - DNS
 - LDAP
 - Local files
 - NIS
- NFS server identity:
 - NFS exports
- Data:
 - File systems (including quota configuration)
 - Security or permissions for NFSv3

Note

When the domain configuration is disabled for the source VDM, only the first DNS domain that is configured on the physical Data Mover which is hosting the VDM is imported. If the intended DNS domain for the source VDM is not the first one on the physical Data Mover, the wrong DNS configuration is imported. To avoid importing the wrong DNS domain, enable the Name Service configuration on the source VDM by using the `server_nsdomains` CLI command on the source VNX. Use this command to enable and set the DNS, LDAP, or NIS configuration on the source VDM to ensure proper import to the Unity system.

Source VNX VDM Servers, along with their respective file systems (UFS32-based file systems), are migrated to the new UFS64-based file systems format on the target Unity system. In addition, all file systems are migrated as Thin. File systems cannot be migrated individually, only as part of the VDM server migration.

For a file system that is used by VMware as an NFS data store, you must specify the file systems to be imported as a VMware NFS data store. Only one NFS export at file system root directory should exist on the VNX for those source file systems. Otherwise, both create session and resume session operations fail because VMware NFS data store in Unity only supports this export configuration.

The target file system is a normal file system by default. If you specify one file system to be imported as a VMware NFS data store, the target file system is VMware NFS data store, which enables virtualization specific optimization such as `asynctime`. A source file system that is specified as file level retention (FLR) enabled cannot be imported as a VMware data store file system.

All VNX systems are configured by default with the code page 8859-1 for the NFSv3 clients. This code page is used to translate the file name from 8859-1 (network format) to UTF-8 (disk format). This code page can be changed to UTF-8 or 8859-15. Code page 8859-15, which includes the most used western European characters, is an extension of the 8859-1 code page. When a VDM from a VNX system is imported to a Unity system through NFS, the Unity system browses the VNX files using a UTF-8 NFS client. This process can cause some problems with the file name when it includes non-ASCII characters. The NFS import has to browse the VNX files through an 8859-1 NFS client, to preserve the extended characters of filenames of the source VNX. All Unity systems (OE 4.2 and earlier) are configured to support only NFSv3 clients configured for UTF-8. The code page on these Unity systems cannot be changed. With Unity OE 4.3 and later, the code page of the Unity system can be changed through the `svc_nas {<NAS_server_name> | all} -param -facility vdm -modify codepage -value <value>` service command to match it with the code page used on the VNX system. Matching the code pages allows a code page translation for the file names seen from NFSv3 clients, and to reproduce the behavior of the VNX system on the Unity system.

Note

The default code page in Unity systems does not need to be changed for either NFSv4 or SMB clients. NFSv4 clients support only UTF-8 and SMB clients support only Unicode.

Prerequisites for NFS-only VDM import

Import of a VDM and its related file systems from a VNX storage system to a Unity storage system requires the following prerequisites:

- Time is synchronized between the VNX and Unity storage systems. The time difference must be within five seconds. Use the same NTP server on the VNX Data Mover that hosts the source VDM, as well as the target Unity SPs. Refer to *Configuring Time Services on VNX* for information about NTP.
- One or more pools must be created and available on the target Unity system to perform a VDM import operation. The pools that are selected should be large enough to hold the source VDM and all its file systems that are migrated.

Note

Compressed data is uncompressed and deduped data is undeduped for migration. Therefore, ensure that the target pool has enough capacity to handle these changes in data size. Check on the source VNX for the amount of space savings compression and deduplication provide for the data, then determine how much space would be required for the uncompressed and undeduped data.

- Before creating an import connection, you must configure mobility interface IP address for each SP (A and B) of the target system. (When creating an import session, you select the mobility interface IP address of either SPA or SPB to use as the target import interface. This interface is used to migrate the VNX CIFS server and file systems.)
- Before creating the VDM import session, you must do the following:
 - Create a migration interface on the source Data Mover (for IPv4, use `server_ifconfig <server_name> -create -Device <device> -name <nas_migration_interface_name> -protocol IP <ipv4> <ipnetmask> <ipgateway>`; for IPv6, use `server_ifconfig <server_name> -create -Device <device> -name <nas_migration_interface_name> -protocol IP6 <ipv6/PrefixLength>`) and attach the interface to the source VDM to be migrated (using `nas_server -vdm <vdm_name> -attach <nas_migration_interface_name>`). The interface added on the source VDM to perform migration must be named with the prefix "nas_migraton_" so that the interface can be clearly identified by the migration process. This interface is used only for the VDM import operation and must not be used as a production interface. After each VDM import session is committed, this interface can be re-used by attaching it to the next VDM, and so on.
 - Verify that the physical Data Mover on which the source VDM is located has at least one IP interface configured that is not attached to the VDM being migrated. This IP interface ensures that the source Data Mover can provide uninterrupted Name Services for the remaining file servers. If this additional interface is not present, the VDM import session fails.
 - Ensure the code page used on the target Unity system matches the code page used on the source VNX system.
- For a source VNX system with two Control Stations, the home directory of a user with the Administrator role, which is used in configuring the import connection, must exist on the primary Control Station of the VNX. For more information, see [VNX system with two Control Stations](#) on page 67.
- Before conducting a VDM import, an import connection must be created between the source VNX system and the target Unity system.

Note

If the naming services server (DNS, NIS, or LDAP) configured on the Data Mover of the source VNX cannot be connected using the network interface that is attached to the VDM to be migrated, attach another interface to the VDM. This additional interface ensures that the VDM can connect to the naming services server. Otherwise, the target NAS server cannot connect to the naming services server. If the naming services server configured on the Data Mover of the source VNX can only be connected using the network interface that is attached to the VDM to be migrated, create another network interface on the Data Mover. This additional network interface ensures that the Data Mover can connect to the naming services server. Otherwise, other clients of the Data Mover cannot connect to the naming services server.

CIFS-only VDM import

The configuration and identity information that can be imported along with the data as part of a CIFS-only VDM import include:

- Networking:
 - IP address configuration
 - Routing configuration
 - VLAN configuration
- Name Services:
 - DNS
- CIFS server identity:
 - Name
 - Active Directory (AD) account
 - CIFS shares
 - Local group
 - Local users
- VDM settings:
 - parameters
 - quota
- Data:
 - File systems
 - File security (Access Control List (ACL) preservation)
 - Timestamps (create date and last modification date are not modified during import)

Note

When the domain configuration is disabled for the source VDM, the domain name of the SMB server is used to search the corresponding DNS configuration. If the configuration cannot be found, the migration cannot start. Enable the domain configuration for the VDM by using the `server_nsdomains` CLI command. Use this command to enable and set the DNS, LDAP, or NIS configuration on the source VDM to ensure proper import to the Unity system.

Source VNX VDM Servers, along with their respective file systems (UFS32-based file systems), are migrated to the new UFS64-based file systems format on the target Unity system. In addition, all file systems are migrated as Thin and maintained as Thin on the target Unity system. File systems cannot be migrated individually, only as part of the VDM server migration.

Prerequisites for CIFS-only VDM import

Import of a CIFS-only VDM and its related file systems from a VNX storage system to a Unity storage system requires the following prerequisites:

- Time is synchronized between the VNX and Unity storage systems. The time difference must be within five seconds. Use the same NTP server on the VNX Data Mover that hosts the source VDM, as well as the target Unity SPs. Refer to *Configuring Time Services on VNX* for information about NTP.
 - One or more pools must be created and available on the target Unity system to perform a VDM import operation. The pools that are selected should be large enough to hold the source VDM and all its file systems that are migrated.
-

Note

Compressed data is uncompressed and deduped data is undeduped for migration. Therefore, ensure that the target pool has enough capacity to handle these changes in data size. Check on the source VNX for the amount of space savings compression and deduplication provide for the data, then determine how much space would be required for the uncompressed and undeduped data.

- Before creating the VDM import session, you must do the following:
 - Create a migration interface on the source Data Mover (for IPv4, use `server_ifconfig <server_name> -create -Device <device> -name <nas_migration_interface_name> -protocol IP <ipv4> <ipnetmask> <ipgateway>`; for IPv6, use `server_ifconfig <server_name> -create -Device <device> -name <nas_migration_interface_name> -protocol IP6 <ipv6/PrefixLength>`) and attach the interface to the source VDM to be migrated (using `nas_server -vdm <vdm_name> -attach <nas_migration_interface_name>`). The interface added on the source VDM to perform migration must be named with the prefix "nas_migraiton_" so that the interface can be clearly identified by the migration process. This interface is used only for the VDM import operation and must not be used as a production interface. After each VDM import session is committed, this interface can be re-used by attaching it to the next VDM, and so on.
 - Verify the following:
 - The physical Data Mover on which the source VDM is located has at least one IP interface configured that is not attached to the VDM being migrated.

This IP interface ensures that the source Data Mover can provide uninterrupted Name Services for the remaining file servers. If this additional interface is not present, the VDM import session fails.

- (For a source VDM with an AD joined CIFS server only) The migration interface has been added to the source CIFS server and has a prefix for a DNS domain that is different from the production interface. To add this interface when in a DNS zone, use the following command format:

```
server_cifs <vdm_name> -add
compname=<compname>, domain=<domainname>, interface=<nas_migration_interface>, dns=<specific_prefix.domainname>.
```

 This command creates an additional zone in the DNS server for hosting the migration IP address. This action ensures that the migration interface will not be used for production. For more information about CLI commands related to the source system, refer to the *VNX Command Line Interface Reference for File*.
- A single CIFS server is configured on the source VDM.
- C\$ share is available on the source Data Mover that hosts the VDM and is not disabled or set to Read-only. The C\$ share must be available, otherwise the import cannot start. If it was disabled or Read-only on the source, change the corresponding parameters to enable it:

```
server_param <source_server> -facility cifs -modify
admin.shareC_NotCreated -value 0
```

```
server_param <source_server> -facility cifs -modify
admin.shareC_RO -value 0
```

NOTICE

You must stop and start the service associated with the CIFS facility for changes to admin.shareC_NotCreated to take effect.

- No NFS exports are configured on the source VDM file systems.
- Local CIFS users are enabled on the source CIFS server. (For AD joined CIFS servers only) When not enabled, to enable local users on the source CIFS server use `server_cifs <vdmname> -add compname=<computername>, domain=<domainname>, local_users.` Refer to *Configuring and Managing CIFS on VNX* for more information about enabling local user support on VNX.
- A local user that is a member to the local administrator group of the source CIFS server must exist on the source CIFS server. This user must have backup and restore privileges (by default, being a member of the administrators local group would be enough). Refer to *Configuring and Managing CIFS on VNX* for information about local user and group accounts.
- Credentials, username and password, of the remote local CIFS user to use for the import.

- The extended acl feature is enabled on the source Data Mover that hosts the VDM (parameter `cifs.acl.extacl` should have bits 2, 3, and 4 set, decimal value 28). Use the following command to view the settings:

```
server_param <source_datamover> -facility cifs -info
acl.extacl
```

If necessary, use the following command to change the setting:

```
server_param <source_datamover> -facility cifs -modify
acl.extacl -value 28
```

- Unknown SID feature has been enabled on the source Data Mover that hosts the VDM (parameter `cifs.acl.mappingErrorAction` must be set to 0x0b, decimal value 11). Use the following command to view the settings:

```
server_param <source_datamover> -facility cifs -info
acl.mappingErrorAction
```

If necessary, use the following command to change the setting:

```
server_param <source_datamover> -facility cifs -modify
acl.mappingErrorAction -value 11
```

- NT security is enabled on the source. Share and Unix security level is not supported. This is in mount options of the file systems. If necessary, change the mount option of the file systems.
- The source VDM is not utf8-based.
- The source CIFS server is not a Windows NT 4.0 like CIFS server.
- DNS is configured for the windows domain in the case of a domain joined CIFS server.
- Other VDMs from the source can reach DNS and domain controller (DC) after cutover.
- DNS and DCs are reachable on the destination after cutover.
- For a source VNX system with two Control Stations, the home directory of a user with the Administrator role, which is used in configuring the import connection, must exist on the primary Control Station of the VNX. For more information, see [VNX system with two Control Stations](#) on page 67.
- Before creating an import connection, you must configure a mobility interface IP address for each SP (A and B) of the target system. (When creating an import session, you select the mobility interface IP address of either SPA or SPB to use as the target import interface. This interface is used to migrate the VNX CIFS server and file systems.)
- Before conducting a VDM import, an import connection must be created between the source VNX system and the target Unity system.
 - If the naming services server (DNS) configured on the Data Mover of the source VNX cannot be connected using the network interface that is attached to the source VDM, attach another interface to the VDM. This additional

interface ensures that the source VDM can connect to the naming services server.

- If the naming services server can only be connected using the network interface that is attached to the source VDM, create another network interface on the Data Mover. This additional network interface ensures that the Data Mover can connect to the naming services server as well as other clients of the Data Mover.

Block import

Unisphere allows you to import multiple concurrent block import sessions for either LUNs or Consistency Group (CG) of LUNs, from the VNX system to the Unity system. This limit is based on the SAN Copy limits of the source VNX system and is also based on the number of members in each CG. Block import uses the SAN Copy feature on the VNX storage system to push data to the Unity storage system. Use the VNX management IP address and VNX Admin credentials to configure a remote system connection from the target Unity system to the source VNX system. The VNX SAN Copy FC or iSCSI initiators is discovered through this connection and the Unity system is registered as a SANCopy host. Also, all block resources that are eligible for import are discovered, which includes:

- Pool LUNs, Thin LUNs, and Meta LUNs that are:
 - Not reserved LUN pool LUNs
 - Not LUNs exposed to VNX file
 - Not System LUNs
- CGs of LUNs

Before you perform an import of a LUN or CG of LUNs, the reserved LUN pool (RLP) on the source VNX system should contain at least one free LUN for each LUN planned for import. Each reserved LUN can vary in size. However, using the same size for each LUN in the pool is easier to manage because the LUNs are assigned without regard to size. That is, the first available free LUN in the global reserved LUN pool is assigned. Since you cannot control which reserved LUNs are being used for a particular import session or a VNX process such as SnapView™, incremental SAN Copy, or MirrorView/A, use a standard size for all reserved LUNs. To assist in estimating a suitable reserved LUN pool size for the storage system, consider the following:

- If you want to optimize space utilization, use the size of the smallest source LUN as the basis of the calculations. If you want to optimize the total number of source LUNs, use the size of the largest source LUN as the basis of the calculations.
- If you have a standard online transaction processing configuration (OLTP), use reserved LUNs sized at 10-20%. This size tends to be appropriate to accommodate the copy-on-first-write activity.
- If you are also using SnapView or MirrorView/A on the VNX LUN, then you may need additional RLP LUNs.

NOTICE

If free reserved LUNs are not available in the RLP, the import session enters an error state. Add space to the RLP, after which the session can resume. The additional space does not have to be as high as the number of source LUNs. The RLP LUNs get re-used once an import session completes.

For more information about the RLP and reserved LUNs, refer to the Unisphere online help on the source VNX.

Block import prerequisites

The preparation for block import (either LUN or CG of LUNs) is different than the preparation for file-based (VDM) import. Import of one or more LUNs or a CG of LUNs from a VNX storage system to a Unity storage system requires the following prerequisites:

- SAN Copy is enabled on the VNX storage system
- For FC-based import:
 - Ports zoning is configured between the VNX and Unity storage systems.
- For iSCSI-based import:
 - iSCSI interfaces are configured on both the VNX and Unity storage processors.
 - From the VNX storage system - iSCSI IP connections are configured between the source VNX SPs and target Unity SPs as pairs. For example, VNX SPA is paired to Unity SPA and VNX SPB is paired to Unity SPB. Also, verify the connection configuration.
- A reserved LUN pool (RLP) is configured with LUNs based on LUNs planned for the import. Refer to the existing VNX Unisphere online help for detailed information concerning RLP.
- Hosts are configured on the Unity storage system the same as block hosts or storage groups on the source VNX storage system from which resources are imported. If needed, you can reconfigure host access on the Unity system.

Note

Do not use ports that are used by MirrorView for either FC-based or iSCSI-based import.

Configure a VDM or block import

To configure import for block or file storage resources, use the native Import feature in Unisphere. Complete the following steps:

1. Configure the mobility (import) interfaces on each SP of the target systems.

Note

Although these interfaces are needed only for importing a VDM and its related file systems, if you use the same import connection for both file and block import sessions, the interfaces must be configured.

2. Configure an import connection.
3. Create an import session for the storage resource.

Note

The interfaces are only required for file import operations, and not for block imports.

Related concepts**About protection and mobility interfaces**

Protection and mobility interfaces may be shared network interfaces for replication-related and import data or management traffic using the virtual management port. Each storage processor (SP) must have one or more interfaces. Although import only requires one interface, the creation of an interface on both SPA and SPB is enforced.

When you create a VDM import session, the VDM-to-Unity SP interfaces are paired up. Configure these interfaces before you create an associated connection. Interfaces are needed only for the import of a VDM and its file systems.

Note

The import connection cannot use the replication (MirrorView) interfaces on the VNX.

From a replication perspective, if an interface is shared between replication and import, you must remove all import sessions to change the interface and remove both replication and import sessions before deleting the interface.

About import connections

Import requires a configured connection between the source system and target system. This connection is called an import connection. An import connection handles either a block import or a VDM and its file systems import.

On the target Unity system, connections must be defined separately for replication and import but Interfaces can be shared between replication and import. Import connections are not verified until the session is created

For block, the initiators must be pushed from the VNX (VNX1 or VNX2) source system to the Unity target system.

Note

Before creating a mobility interface or import connection for a VNX import, configure the FC zoning when an FC connection is used for block import. If the connection uses iSCSI, an iSCSI connection is required between the source VNX system to the target Unity system.

Once an import connection is created, the Unity target system automatically discovers both file and block resources on the source system.

Note

The SAN Copy Enabler must be installed on the VNX1 storage system so that block resources on the system can be discovered automatically. Otherwise, only the file resources are discovered when the import connection is created. VNX2 storage systems include the SAN Copy Enabler already installed.

About import sessions

An import session uses a configured import connection and associated interfaces to establish an end-to-end path for importing data between the source and target storage resources. The basic operations for an import session are:

1. Create
 2. Resume or Pause
 3. Cutover
 4. Commit
 5. Cancel
-

Note

For a block import session, the commit operation is performed automatically at the end of cutover.

You can cancel an import session that is in any state (with the exceptions of Canceling, Canceled, or Cutting Over) before the commit state. For a VDM (either NFS or CIFS) import session, the cancel operation rolls back the VDM and related file systems to the source VNX. The cancel operation also deletes the target file systems. If no file systems exist on the NAS server, the cancel operation deletes the NAS server. For a LUN or consistency group (CG) import session, the cancel operation deletes the SAN Copy session for each set of LUN pairs in the import session. It also disables SAN Copy access to the target LUNs and deletes the target LUNs or CG associated with the import session.

NOTICE

You cannot upgrade a Unity system when an import session is in progress or create an import session when an upgrade session is in progress.

CHAPTER 3

Considerations for import

This chapter addresses the following topics:

- [Importing VNX file systems with File Level Retention \(FLR\) enabled](#)..... 22
- [VNX port requirements for data import](#)..... 23
- [Restrictions and limitations for NFS-only VDM file import](#) 23
- [Restrictions and limitations for CIFS-only VDM file import](#) 27
- [Block import restrictions and limitations](#)..... 29

Importing VNX file systems with File Level Retention (FLR) enabled

Dell EMC Unity systems running OE version 4.5 or later support both FLR-E and FLR-C. When importing an FLR-enabled file system from a VNX system to a Dell EMC Unity system, ensure the Dell EMC Unity system is running operating environment (OE) version 4.5 or later.

NOTICE

Dell EMC Unity systems running OE 4.4 or earlier do not support FLR, and the default import setting is to not import such file systems. However, you can override the default, and those file systems will be imported as normal target file systems (UFS64) without FLR protection. This means that after cutover, locked files can be modified, moved, or deleted on the target Dell EMC Unity system, but not on the source VNX system. This can cause the two file systems to be in an inconsistent state.

Limitations related to host access and NFS datastores

After cutover, for FLR-enabled file systems that are being imported from a VNX system, the host cannot set the Retention Period to a time between the source epoch year and 2017 that translates to a future time. The epoch year on Dell EMC Unity systems is permanently set to 2017.

Note

For example, if the source epoch year is 2003, do not set the atime to a time between 2003 and 2017. This is because any time between 2003 and 2017 translates to a future time that cannot be represented by the source epoch year 2003. The host can do that after the import session commits.

When performing a VDM import of FLR-enabled file systems to a Unity system, the source VNX Data Mover must be running the DHSM service for the import to succeed. Also, if the source DHSM service authentication is set to `None`, you do not need to configure the DHSM credentials, username and password, on the Unity system for import. However, if the source DHSM service authentication is set to either `Basic` or `Digest`, you must configure those credentials at the Unity system as part of the import configuration. If DHSM is not already configured on the source file system, refer to the VNX system's Unisphere online help or the *VNX Command Line Interface Reference for File* for information about setting up the DHSM configuration on the source VNX system.

Unity systems do not support FLR on NFS datastores. Therefore, VNX FLR-enabled file systems cannot be imported to Unity as NFS datastores. They can only be imported as file system objects.

Note

If the source VNX file system is FLR-enabled, you cannot change the target resource from a file system to an NFS datastore. This action is not allowed.

Port requirements for DHSM when FLR is enabled

The default DHSM service port is 5080 on both VNX and Unity systems. However, the VNX Data Mover (the physical Data Mover that hosts the VDM that is being imported) that is configured with the DHSM service can be set to a different port than the

default. This port must match on both systems in order for the import of FLR-enabled file systems to succeed. To import FLR-enabled file systems when the source VNX Data Mover is using another port instead of the default, do one of the following before creating the file import:

- If possible, change the VNX Data Mover that is configured with the DHSM service to use the default port 5080.
- If the DHSM service port change cannot be made on the VNX system, on the Unity system use the `svc_nas` service command to change the value of the `remoteDhmsPort` parameter for the `imt` facility to reflect the same DHSM service port as that set on the VNX.

Note

Changing the value of the `remoteDhmsPort` parameter requires a reboot of the storage processors on the Unity system so that the change takes effect.

VNX port requirements for data import

To import data from a VNX system to a Unity system, the Unity system should be able to access the following ports on the VNX system:

- 22, 443, and 5989 to establish import connections
- 3205 and 3260 for iSCSI-based LUN import
- 111, 137, 138, 139, 389, 445, 464, 1020, 1021, 1234, 2049, 2400, 4647, 31491, 38914, and 49152-65535 for NFS VDM import
- 137, 138, 139, 445, and 12345 for CIFS VDM import

Note

On the VNX source system, the physical Data Mover that is configured with the DHSM service can be set to a different port than the default port 5080. This port must match on both VNX and Unity systems in order for the import of FLR-enabled file systems to succeed. To import FLR-enabled file systems, if the source VNX Data Mover is not using the default port, do one of the following before creating the file import:

- If possible, change the VNX Data Mover that is configured with the DHSM service to use the default port 5080.
- If the DHSM service port change cannot be made on the VNX system, on the Unity system use the `svc_nas` service command to change the value of the `remoteDhmsPort` parameter for the `imt` facility to reflect the same DHSM service port as that set on the VNX. This action requires a reboot of the storage processors so that the change takes effect.

For more information related to ports on the VNX system, refer to the *EMC VNX Series Security Configuration Guide for VNX*. For more information related to the `svc_nas` service command, refer to the *Unity Service Commands Technical Notes*.

Restrictions and limitations for NFS-only VDM file import

The following restrictions and limitations relate to an NFS-only VDM file migration from either a VNX1 or VNX2 storage system to a Unity storage system:

- Only Unified VNX (VNX1 and VNX2) storage systems are supported as the source storage system in a VDM file migration.
- The source VNX1 OE is 7.1.x or later or the source VNX2 OE is 8.1.x or later.
- Upgrading a Unity system when an import session is in progress is not supported.
- Creating an import session when an upgrade session is in progress is not supported.
- Unity supports a VDM import session with at most 500 file systems on the source VDM. UnityVSA supports a VDM import session with at most 32 file systems on the source VDM.
- The target pool size may be larger than the pool size of the source VDM and its migrated file systems.
 - Unity storage systems use a different file system layout than Unified VNX storage systems. Unity storage systems use UFS64 file systems while VNX storage systems use UFS32 file systems.
 - Import of dedupe settings is not supported.
 - A versioning file and fast clone are imported as a normal file. Unity systems with OE versions earlier than 4.5 do not support file level retention (FLR), and the default import setting is to not import such file systems. However, you can override the default, and those file systems will be imported as normal target file systems (UFS64). Unity systems with OE version 4.5 and later support both FLR-E and FLR-C.
- Only uxfs-type file systems are imported from the VNX1 or VNX2 source VDM. Import of non-uxfs-type file systems or file systems that are mounted on a Nested Mount File System (NMFS) file system are not supported.
- A file system whose mount path contains more than two slashes is not supported. The target system does not allow file systems with a name containing multiple slashes, for example, `/root_vdm_1/a/c`.
- Import of a file system that is a replication destination is not supported.
- Import of a checkpoint or checkpoint schedule is not supported.
- If the source replication file system is also the target file system of a VDM import session, failing over the replication session (synchronous or asynchronous) is not allowed until the import is complete.
- Restrictions that are related to Quota migration:
 - Import of group quota or inode quota settings is not supported. (The target system does not support either.)
 - Import of a tree quota whose path contains single quotation marks is not supported. (A VNX1 or VNX2 system can create it but it cannot be queried or modified.)
- A VAAI operation is not allowed on either the source or target systems during and after cutover.
 - A VAAI operation is not allowed on the target system before cutover.
 - A VAAI operation on the source system must finish before cutover.
- Limitations that are related to Host access:
 - After cutover, read access performance degrades until the related file is migrated.

- After cutover, write access performance degrades until the VDM file migration is completed.
- After cutover, a host cannot write data when the source file system is in the read-only mounted state.
- (Does not apply to Unity systems running OE 4.5 or later) Dell EMC Unity systems running OE 4.4 or earlier do not support FLR, and the default import setting is to not import such file systems. However, you can override the default, and those file systems will be imported as normal target file systems (UFS64) without FLR protection. This means that after cutover, locked files can be modified, moved, or deleted on the target Dell EMC Unity system, but not on the source VNX system. This can cause the two file systems to be in an inconsistent state.
- After cutover, for FLR file systems that are being imported from a VNX system, the host cannot set the Retention Period to a time between the source epoch year and 2017 that translates to a future time. The epoch year on Unity systems is permanently set to 2017.

Note

For example, if the source epoch year is 2003, do not set the atime to a time between 2003 and 2017. This is because any time between 2003 and 2017 translates to a future time that cannot be represented by the source epoch year 2003. The host can do that after the import session commits.

- After cutover, a host cannot access data when the target system's mobility interface cannot access the source file system, which includes the following cases:
 - The network between the source VDM file migration interface and the target mobility interface is disconnected.
 - The source VDM is not in either the loaded or mounted state.
 - The user modifies the source export, which makes the target system's mobility interface unable to access the source file system.
- Protocol restrictions:
 - Import of CIFS and multi-protocol settings and related settings is not supported. For example, CIFS server, CIFS share path and options, Kerberos key, CAVA (Common AntiVirus Agent), usermapper, and ntxmap.
 - Import of a VDM using Secure NFS, NFSv4, or pNFS is not supported.
 - Import of FTP or SFTP (File Transfer Protocol), HTTP (Hyper Text Transfer Protocol), or CEPP (Common Event Publishing Protocol) is not supported.
- Rollback restrictions and limitations:
 - After rollback, a host may need to remount the NFS file system if interfaces configurations are different between the source VDMs and the target NAS Servers.
 - Only rollback data changes to the source file systems. Rollback of any configuration changes to the NAS server/file systems on the target storage system is not supported. For example, if you add an NFS export to a file system, a rollback does not add the new NFS export to the source VNX1 or VNX2 storage system.
- Configuration restrictions and limitations:
 - Import of NTP configuration is not supported.

- Import of server parameter settings (VNX1 or VNX2 server_param settings with the exception of the IP reflect parameter) is not supported.
- Import of LDAP configuration with Kerberos authentication (CIFS server is not migrated) is not supported.
- Import of client certificates, which the LDAP server requires (persona is not supported on the Unity system), is not supported.
- Import of customized cipher list for LDAP connection (customized cipher list is not supported on the Unity system) is not supported.
- If multiple LDAP servers are configured with different port numbers that are used by the source VDM, only the server with the port number equal to the first server is migrated.
- If both NIS and LDAP are configured and taken into effect for the naming service on the source VDM, you must select one of them to take effect on the target NAS server.
- If local files are configured and taken into effect for the naming service on the source VDM, you can select whether the local files take effect on the target NAS server. The search order of the local files is always higher than NIS or LDAP on the target NAS server.
- Only enabled network interfaces on the source VDM are imported. Disabled network interfaces on the source VDM are not imported. (The target system does not allow you to enable or disable network interfaces.)
- Many of the mount options for VNX storage systems are not supported on Unity storage systems. Refer to [File system mount options mapping](#) on page 77 for information about the options that Unity supports.
- Some of the NFS export options for VNX storage systems are not supported on Unity storage systems. See [NFS export options mapping](#) on page 78 for information about the options that Unity supports.
- File Level Retention (FLR) file systems can be imported on Unity systems running OE version 4.5 or later. However, Unity systems with OE versions earlier than 4.5 do not support FLR so those file systems are imported as normal file systems (UFS64).

Note

Files can no longer be protected when they are migrated to a non-FLR file system.

- Distributed Hierarchical Storage Management (DHSM)/(Cloud Tiering Appliance (CTA) may be configured on the source VNX for archiving inactive files to secondary storage. If DHSM/CTA is configured on the source VNX system and a VDM import to Unity is run, all the files on the associated file system are recalled from the secondary storage to the source VNX. Those files are then imported to Unity as normal files (that is, no stub files are imported).
- Only limited configuration changes to the source VDM and the target NAS server are supported. Refer to [Change settings of an NFS-only VDM import](#) on page 71 for information about what changes can be made and when.
- Restoring NDMP backups:
 - The NDMP backup path on VNX is `/root_vdm_xx/FSNAME` while the same path on Unity is `/FSNAME`. If any file system of the source VNX VDM is

protected by NDMP and already backed up, then after VDM file import, those file systems cannot be restored to Unity using the original path option. A restore using the original path option fails due to an unavailable destination path. Instead, use the alternative path option.

Restrictions and limitations for CIFS-only VDM file import

The following restrictions and limitations relate to a CIFS-only VDM file migration from either a VNX1 or VNX2 storage system to a Unity storage system:

- Only Unified VNX (VNX1 and VNX2) storage systems are supported as the source storage system in a VDM file migration.
- The source VNX1 OE is 7.1.x or later or the source VNX2 OE is 8.1.x or later.
- Upgrading a Unity system when an import session is in progress is not supported.
- Creating an import session when an upgrade session is in progress is not supported.
- Unity supports a VDM import session with at most 500 file systems on the source VDM. UnityVSA supports a VDM import session with at most 32 file systems on the source VDM.
- The target pool size must be large enough to host the source VDM and its migrated file systems.
 - Unity storage systems use a different file system layout than Unified VNX storage systems. Unity storage systems use UFS64 file systems while VNX storage systems use UFS32 file systems.
 - Import of dedupe settings is not supported. During the import session, data is un-deduped and un-compressed.
 - A versioning file and fast clone are imported as a normal file. Unity systems with OE versions earlier than 4.5 do not support file level retention (FLR), and the default import setting is to not import such file systems. However, you can override the default, and those file systems will be imported as normal target file systems (UFS64). Unity systems with OE version 4.5 or later support both FLR-E and FLR-C.
- Only uxfs-type file systems are imported from the VNX1 or VNX2 source VDM. Import of non-uxfs-type file systems or file systems that are mounted on a Nested Mount File System (NMFS) file system are not supported.
- A file system whose mount path contains more than two slashes is not supported. The target system does not allow file systems with a name containing multiple slashes, for example, `/root_vdm_1/a/c`.
- Import of a file system that is a replication destination is not supported.
- Import of a checkpoint or checkpoint schedule is not supported.
- If the source replication file system is also the target file system of a VDM import session, failing over the replication session (synchronous or asynchronous) is not allowed until the import is complete.
- Restrictions that are related to Quota migration:
 - Import of group quota or inode quota settings is not supported. (The target system does not support either.)

- Import of a tree quota whose path contains single quotation marks is not supported. (A VNX1 or VNX2 system can create it but it cannot be queried or modified.)
- Limitations that are related to Host access:
 - After cutover, read access performance degrades until the related file is migrated.
 - After cutover, write access performance degrades until the VDM file migration is completed.
 - After cutover, a host cannot write data when the source file system is in the read-only mounted state.
 - (Does not apply to Unity systems running OE 4.5 or later) Dell EMC Unity systems running OE 4.4 or earlier do not support FLR, and the default import setting is to not import such file systems. However, you can override the default, and those file systems will be imported as normal target file systems (UFS64) without FLR protection. This means that after cutover, locked files can be modified, moved, or deleted on the target Dell EMC Unity system, but not on the source VNX system. This can cause the two file systems to be in an inconsistent state.
 - After cutover, for FLR file systems that are being imported from a VNX system, the host cannot set the Retention Period to a time between the source epoch year and 2017 that translates to a future time. The epoch year on Unity systems is permanently set to 2017.

Note

For example, if the source epoch year is 2003, do not set the atime to a time between 2003 and 2017. This is because any time between 2003 and 2017 translates to a future time that cannot be represented by the source epoch year 2003. The host can do that after the import session commits.

- After cutover, a host cannot access data when the target system's mobility interface cannot access the source file system, which includes the following cases:
 - The network between the source VDM file migration interface and the target mobility interface is disconnected.
 - The source VDM is not in either the loaded or mounted state.
 - The user modifies the source export, which makes the target system's mobility interface unable to access the source file system.
- Protocol restrictions:
 - Import of NFS settings and related settings is not supported. For example, LDAP, NIS, local password, group and netgroup files, mount options other than synchronous write, op locks, notify on write, and notify on access.
 - Import of FTP or SFTP (File Transfer Protocol), HTTP (Hyper Text Transfer Protocol), or CEPP (Common Event Publishing Protocol) is not supported.
- Cancel restrictions and limitations:
 - Only some configuration changes, such as the target VDM's CIFS shares, or local users along with data changes to the source file systems are rolled back to the source VDM.
- Configuration restrictions and limitations:

- Import of NTP configuration is not supported.
- Only enabled network interfaces on the source VDM are imported. Disabled network interfaces on the source VDM are not imported. (The target system does not allow you to enable or disable network interfaces.)
- File Level Retention (FLR) file systems can be imported on Unity systems running OE version 4.5 or later. However, Unity systems with OE versions earlier than 4.5 do not support FLR so those file systems are imported as normal file systems (UFS64).

Note

Files can no longer be protected when they are migrated to a non-FLR file system.

- Distributed Hierarchical Storage Management (DHSM)/(Cloud Tiering Appliance (CTA) may be configured on the source VNX for archiving inactive files to secondary storage. If DHSM/CTA is configured on the source VNX system and a VDM import to Unity is run, all the files on the associated file system are recalled from the secondary storage to the source VNX. Those files are then imported to Unity as normal files (that is, no stub files are imported).
- Only limited configuration changes to the source VDM and the target NAS server are supported during import:
 - Shares
 - Local groups
 - Local users
 - Privileges
 - Home directory
 - Distributed File System (DFS) (only pre-existing DFS shares are synchronized during a cancel operation)

Those are also the only configuration settings that are synchronized with the source if the migration is canceled.

Block import restrictions and limitations

The following restrictions and limitations relate to a block import from a VNX storage system to a Unity storage system:

Note

It is recommended that features like Snapview and MirrorView/A are stopped during import.

- The source VNX1 Block OE is 5.32.x or later or the source VNX2 Block OE is 5.33.x or later.
- You can only import from a VNX storage system to a single Unity storage system at a time. Importing from one VNX to multiple Unity storage systems at the same time is not supported.
- Deleting a SAN Copy initiator is not supported.
- Adding a SAN Copy initiator to a new or existing host is not supported.
- Deleting VNXSancopyHost is not supported.

- Adding non-import Unity LUNs to VNXSancopyHost is not supported.
- Removing host access of import LUNs from VNXSancopyHost is not supported.
- Snapshots are not allowed until the import is complete.
- Snapshot schedules are not allowed until the import is complete.
- Changes to the ReplDest property are not allowed until import is complete.
- Access to hosts other than VNXSancopyHost (initiators) is not allowed until the import is complete.
- For a LUN in an import session:
 - Do not add a LUN to a CG until the import is complete.
 - Do not remove a LUN from a CG until the import is complete.
 - Do not extend or shrink a LUN until the import is complete.
- For a CG in an import session:
 - Do not add LUNs to the CG until the import is complete.
 - Do not remove LUNs from the CG until the import is complete.
- Upgrading a Unity system when an import session is in progress is not supported.
- Creating an import session when an upgrade session is in progress is not supported.
- SAN Copy and MirrorView features cannot be configured on the same FC port as the Import feature for block on both the VNX and Unity systems.
- Avoid configuring MirrorView reserved iSCSI ports for block import iSCSI interfaces.
- Although hundreds or thousands of LUNs can be created for import, the number of LUNs importing actively is limited to the concurrent SAN Copy sync limits. The concurrent executing sessions limit is based on the VNX model:
 - For VNX5700, VNX7500, VNX7600, and VNX8000 models, the limit is 32.
 - For VNX5500 and VNX5800 models, the limit is 16.
 - For VNX5100, VNX5300, VNX5400, and VNX5600 models, the limit is 8.

Note

The SAN Copy limits on the source system can be changed. However, it is highly recommended that you configure these limits before a Remote System connection is established between the Unity and VNX systems.

CHAPTER 4

Configure import using Unisphere

This chapter addresses the following topics:

- [Configure protection and mobility interfaces](#)..... 32
- [Configure import connection](#).....33
- [Create an import session for file](#).....34
- [Manage import sessions for file](#).....36
- [Create an import session for block](#)..... 37
- [Manage import sessions for block](#)..... 39

Configure protection and mobility interfaces

Before you begin

Protection and mobility (import) interfaces can be shared between replication and import. For import, only VDM imports require interfaces. Block imports do not require interfaces.

Protection and mobility (import) interfaces are configured to support VDM imports and must be created prior to creating an import connection. A mobility interface IP address is assigned to SPA and SPB on the target Unity system. Once the mobility interface is configured, you can create the import connection between the Unity system and the VNX system. Mobility interfaces are not used for block import sessions.

Ensure the following:

- The interface port is cabled and connected to a network switch.
- Both SPs are up and running.

Obtain the following information for each Storage Processor (SP):

- IP address associated with the interface (replication or import). Although you can specify an IPv4 or IPv6-based address, ensure that you specify the same type of address for both SPs.
- IP address mask or prefix length that identifies the associated subnet.
- Gateway IP address associated with the interface.
- If applicable, the VLAN ID (between 1 and 4095) you want to associate the interface with.

Note

For the network to continue functioning properly, ensure that you set the VLAN ID only when you have configured the network switch port to support VLAN tagging of multiple VLAN IDs.

Procedure

1. Under **Protection & Mobility**, select **Interfaces**.
2. Perform one of the following actions:
 - To create an interface, select the **Add** icon. On the **Create Interface** window, specify the relevant information:
 - For asynchronous replication or import, from the **Ethernet Port** list, select an available Ethernet port.
 - For synchronous replication, from the **Ethernet Port** list, select **Sync Replication Management Port**.

Note

Do not use **Sync Replication Management Port** for asynchronous replication or import interfaces.

- To modify an interface, select the interface, and then select the **Edit** icon. On the **Interface Properties** window, specify the relevant information.
- To delete an interface, select the interface, and then select the **Delete** icon.

NOTICE

Before you delete an interface, ensure that the interface is not being used by any replication or import session.

Configure import connection

Before you begin

Once the mobility interfaces have been configured (required for file import only), you can create a single import connection between the Unity system and the source VNX system. The import connection supports either block or file import sessions. You need to enter the IP address of the source SPA or SPB and the credentials of a user with administrator privileges on the source system when you create the connection. After creating the import connection, you are ready to create your file or block import session.

Ensure the following:

- For a source VNX system with two control stations, the home directory of the sysadmin user, which is used in configuring the import connection, must exist on the primary control station of the VNX. For more information, see [VNX system with two Control Stations](#) on page 67.
- An import connection does not already exist to the source system.
- If the connection will be used for a VDM import, ensure mobility interfaces are configured on each SP of the target system.
- The relevant SP pair (source and target SPAs or source and target SPBs) are up and running.
- For block:
 - If using Fibre Channel, Zoning between VNX and Unity SP pairs is configured. Avoid using VNX MView ports or Unity Synchronous Replication ports.
 - If using iSCSI, iSCSI interface IP addresses on both SPs on the VNX and Unity systems are configured.
 - The iSCSI connection pairs between the VNX SPs and the Unity SPs are created.

Note

Highlight the system name and right click **iSCSI**, then select **Connections Between Storage Systems > Connections > Add**. Select iSCSI IP on SPA, enter the Target Portal IP address for Unity SPA, then repeat for SPB, and assign a name for the Connection.

Obtain the SP IP management address and associated user credentials that will be used to connect to the source system.

Procedure

1. Under **Protection & Mobility**, select **Import > Connections**.
2. Perform one of the following actions:
 - To create an import connection, select the **Add** icon. On the **Create Connection** window, specify the relevant information.
 - To modify an import connection, select the import connection, and then select the **Edit** icon. On the **Connection Properties** window, specify the

relevant SP (SPA or SPB) IP address, username, and password to authenticate to the SP of the source storage system.

- If new import interfaces were added, or existing import interfaces were deleted, the source system connection may become outdated. Select the relevant import connection, and then select **Verify and Update** to update the source system connection to pick up the latest import interface changes on the target and source systems.
- If new source storage resources were added, or existing source storage resources were deleted or modified after you create an import connection and before you create an import session to the source system, you need to re-discover the source storage system resources. Select the relevant import connection, and then select **Discover Import Objects** to re-discover the source system resources.
- To delete a mobility interface, select the import interface, and then select the **Delete** icon.

NOTICE

Before you delete an import connection, ensure that the state of the associated import session is either cancelled or completed.

Create an import session for file

Before you begin

Although all import sessions are listed and created from the same starting point in the UI, the steps that appear in the related wizard are based on whether the resource type for the import session is a NAS server (for NFS or CIFS (SMB)) or a LUN or consistency group (CG). This procedure is pertinent to a NAS server. To create an import session for a LUN or CG, see [Create an import session for block](#) on page 37.

Ensure that you have first created relevant mobility interfaces and import connection, and then determine the following:

- The system you want to assign as the import source system. This is based on the import connection configured on the storage system.
- The name, pool, storage provisioning, and tiering policy you want to use for the import storage resource. The system will automatically create a target storage resource as part of this process.
- The source NFS or CIFS VDM server must be configured with a separate, non-production interface, that has the prefix "nas_migration_xxx", which is used during the import session to migrate the VDM and file system data through the Unity system's mobility interface.
- Verify that the physical Data Mover on which the source VDM is located has at least one IP Interface configured that is not attached to the VDM being migrated. This ensures that the source Data Mover will be able to provide uninterrupted Name Services for the remaining file servers. The VDM import session will fail if this additional interface is not present.
- If the source VNX system is configured with the code page 8859-1 or 8859-15 for the NFSv3 clients, ensure the code page for the Unity system matches the code page being used on the VNX system. With Unity OE 4.3 and later, the code page of the Unity system can be changed through the `svc_nas` service command.


```
{<NAS_server_name> | all} -param -facility vdm -modify codepage -value <value>
```

Note

If you change settings on the source system (such as attaching an interface to the source VDM or mounting a file system to the source VDM), you need to discover these objects before starting an import session. In Unisphere under **PROTECTION & MOBILITY**, select **Import > Connections** and select the import connection and **More Actions > Discover Import Objects**.

Procedure

1. Under **Protection & Mobility**, select **Import > Sessions**.

2. To create an import session, select the **Add** icon.

The **Select Source to Import** screen of the **Create Import Session** wizard appears.

3. Select the appropriate Source System, select **NAS Server** as the Resource Type, and the VDM by name for the Resource.

Mixed NFS and CIFS import is not supported. For CIFS, the source VDM must be CIFS only (for example, no exports) and have only one CIFS server.

4. For the **Configure Target NAS Server** screen, the **NAS Server Name** is the same as the source VDM name. Select the target **Pool** to use for the NAS server, the target **SP Owner** (SPA or SPB), and the appropriate **Target Storage Pool** for the imported file systems, if different from the pool used for the NAS server. You can specify the **Target Type** as File System or VMware NFS data store (VMNFS) for each file system.
5. For the **Modify Target Production Port** screen, select the appropriate Ethernet port under the **Target Port** column. Leave **Allow comparison of Server Parameters** checked, unless you prefer to override the parameter comparison between the source VNX and the target Unity file servers.

NOTICE

Skipping the server parameters comparison could lead to a disruptive cutover during import.

Select the **Target Import Interface** from the list. For **Import File System with FileRetention Enabled**, which is applicable only to Unity systems running OE version 4.4 or earlier, keep **No** selected if you prefer not to import any file system that is using File Level Retention.

Note

If you prefer to import file systems that are configured for File Level Retention, select **Yes** to override this selection.

- For Unity systems with OE versions earlier than 4.5, File Level Retention settings themselves are not supported on the target Unity system and will not be imported.
 - For Unity systems with OE versions 4.5 and later, for the subsequent **Specify DHSM Credentials** screen, specify the user name and password to use to connect to the source DHSM HTTP server.
-

Note

If DHSM is not already configured on the source file system, refer to the VNX system's Unisphere online help or the *VNX Command Line Interface Reference for File* for information about setting up the DHSM configuration on the source VNX system.

For NFS import, once you specify the necessary information, the system will generate a summary of the import session information. Go to Step 7. For CIFS import, go to Step 6.

6. For **Specify Source CIFS Server Credentials**, specify the username and password to use to connect with the remote CIFS server. These are for the local user who is a member of the administrators local group.

Ensure the prerequisites for the source CIFS server configuration have been completed. See [Prerequisites for CIFS-only VDM import](#) on page 14.

Once you specify the necessary information, the system will generate a summary of the import session information. Go to Step 7.

7. Verify that the import session information appearing in the summary is accurate and complete.
8. Click **Finish** to create and start the import session.

The **Results** window appears and shows the progress of the creation and start of the import session.

Manage import sessions for file

An import session establishes an end-to-end path for an import operation between a source and target. The import source and target are remote to each other, so the session establishes the path that the data follows as it moves from source to target.

To set up an import session for file, see [Configure import](#).

Procedure

1. Under **Protection & Mobility**, select **Import > Sessions**.
2. Perform one of the following actions:

| Action | Description |
|-----------------------------------|--|
| Modify a session | Select a session and click the pencil (View/Edit) icon or double click a session to modify the name of the session. The file system to pool mapping and the interface to port mapping cannot be changed through Unisphere once the target resources (NAS server, file system, and interface) are created; however, the CLI does allow you to make these changes to a session's configuration before the start of import or during an initial copy failed state. |
| Pause and resume a session | Select a session and under More Actions , click Pause or Resume . Use Pause to pause an import session that is in either the Initial Copy or Incremental Copy state. Use Resume to start an import session that is in the Initialized state, or resume an import session that has been paused and is in the Initial Copy or Incremental Copy state. |
| Cutover | Select a session that is in the ready to cutover state, and under More Actions , click Cutover to cut over an import session to promote the target to production mode. <hr/> Note Client accesses are switched from the source VDM, to the target NAS Server. During the cutover of a CIFS-only VDM migration, hosts will have I/O interrupted and see a short period of data unavailability (DU). <hr/> |
| Cancel | Select a session and under More Actions , click Cancel . You can cancel an import session that is in any state (with the exceptions of Cancelling, Cancelled, Cutting Over, or Committed) before the commit state. The cancel operation rolls back the VDM and related file systems to the source VNX. <hr/> Note This operation is not transparent. The host needs to be remounted to the NFS. For CIFS, hosts will see DU (disconnection and no access) and may need to re-connect. <hr/> |
| Commit | Select a session and under More Actions , click Commit . You can commit an import session that is in the Ready to Commit state to finish the import process. |
| Download summary report | Select a session and under More Actions , click Download Summary Report . |

Create an import session for block

Before you begin

Although all import sessions are listed on and created from the same starting point in the UI, the steps that appear in the related wizard are based on whether the resource type for the import session is a NAS server or a LUN or consistency group (CG). This

procedure is pertinent to a LUN or consistency group (CG). To create an import session for a NAS server, see [Create an import session for file](#) on page 34.

Ensure that you have first configured FC zoning for the source and target systems or created an iSCSI connection between the source and target systems and, if necessary, created relevant interfaces and import connection, and then determine the following:

- The import source system, which is based on the import connection configured on the storage system.
- The name, pool, storage provisioning, and tiering policy you want to use for the import storage resource and, depending on the type of pool, whether data reduction is enabled. The system will automatically create a target storage resource as part of this process.

Note

For storage provisioning, determine whether to convert a thin LUN to a non-thin (thick) LUN, or a thick LUN to a thin LUN. Also, determine whether to enable data reduction on a thin LUN in an All-Flash pool. Data reduction is only supported on All-Flash pools.

Procedure

1. Under **Protection & Mobility**, select **Import > Sessions**.
2. To create an import session, select the **Add** icon.

The **Create Import Session** wizard appears.

3. Step through the wizard and specify the relevant information to select the source to import, configure the target LUN or CG and, if necessary, configure the host access and session throttle settings for the import session.

The name of the import session will default to

```
import_sess_<sourceResourceName>_<sourceSystemSerialNumber>_<targetSystemSerialNumber>.
```

In the Target step, the LUN or CG name is the same as the source LUN or CG name. In case of a naming conflict, the source system name will be appended with the next available number, such as 01. You should always see a suggested pool selection based on capacity unless there are no valid pools available. If necessary, the Target Name and Pool, Tiering Policy, Thin, and Data reduction of the associated LUN or LUNs can be modified.

Note

If **Thin** is not selected, **Data Reduction** cannot be selected and is disabled. If **Thin** is selected, **Data Reduction** can be selected. Data reduction is only supported on All-Flash pools.

In the Access step, select or add a host or hosts that can access the storage resource.

In the Setting step, specify whether to throttle the import transfer. Transfer throttle impacts the import speed and host latency for the related LUNs and file systems that are in use on the source and target storage systems. The default is set to throttle (checkbox is checked), which means that the session is throttled. If set to unchecked, import transfer would be unthrottled and allowed to function at the highest rate possible.

Once you specify the necessary information, the system will generate a summary of the import session information.

4. Verify that the import session information appearing in the summary is accurate and complete.
5. Click **Finish** to create and start the import session.

The **Results** window appears and shows the progress of the creation and start of the import session.

Manage import sessions for block

An import session establishes an end-to-end path for an import operation between a source and target. The data follows the path as it moves from source to target.

To set up an import session for block, see [Configure import](#).

Procedure

1. Under **Protection & Mobility**, select **Import > Sessions**.
2. Perform one of the following actions:

| Action | Description |
|-----------------------------------|---|
| Modify a session | Select a session and click the View/Edit icon or double click a session to modify the name of the session or change the configuration settings for the transfer throttle and the cutover threshold percent. |
| Pause and resume a session | Select a session and under More Actions , click Pause or Resume . Use Pause to pause an import session that is in either the Initial Copy or Incremental Copy state. Use Resume to start an import session that is in the Initialized state, or resume an import session that has been paused and is in the Initial Copy or Incremental Copy state, or when a session fails and the cause of the failure has been fixed. |
| Cutover | Select a session and under More Actions , click Cutover to cut over an import session to promote the target to production mode. |
| Cancel | Select a session and under More Actions , click Cancel . You can cancel an import session that is in any state (with the exceptions of Cancelling, Cancelled, or Cutting Over) before the commit state. The cancel operation deletes the SAN Copy session for each set of LUN pairs in the import session and disables SAN Copy access to the target LUN. It also deletes the target LUN or CG associated with the import session. |
| Commit | Disabled since a separate commit action is not needed for a block import session. This action is performed automatically at the end of cutover for a block import session. |

Configure import using Unisphere

CHAPTER 5

Configure import using the CLI

This chapter addresses the following topics:

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Create mobility interfaces

Create a mobility interface.

Format

```
/net/if create [-async] [-vlanId <value>] -type {iscsi |
replication} -port <value> -addr <value> [-netmask <value>] [-
gateway <value>]
```

Action qualifier

| Qualifier | Description |
|-----------|---|
| -async | Run the creation operation in asynchronous mode. |
| -type | Specify the interface type. Value is one of the following: <ul style="list-style-type: none"> iscsi—Interface for iSCSI storage. replication—Interface for replication-related data or management traffic. <hr/> <p>Note</p> <p>The replication type is also used to create the mobility interface which is used during a file import session.</p> <hr/> |
| -port | Specify the ID of the SP port or link aggregation that will use the interface. <hr/> <p>Note</p> <p>For systems with two SPs, a file interface is created on a pair of symmetric Ethernet ports rather than on a single specified port. Its current port is defined by NAS server SP and may differ from the specified port. For example, if the user specifies port spa_eth2, but the NAS server is on SP B, the interface is created on port spb_eth2.</p> <hr/> |
| -vlanId | Specify the virtual LAN (VLAN) ID for the interface. The interface uses the ID to accept packets that have VLAN tags. The value range is 1–4095. <hr/> <p>Note</p> <p>If no VLAN ID is specified, which is the default, packets do not have VLAN tags. The Unisphere online help provides more details about VLANs.</p> <hr/> |
| -addr | Specify the IP address for the interface. The prefix length should be appended to the IPv6 address and, if omitted, will default to 64. For IPv4 addresses, the default length is 24. The IPv4 netmask may be specified in address attribute after slash. |
| -netmask | Specify the subnet mask for the interface. |

| Qualifier | Description |
|-----------------------|--|
| | <p>Note</p> <p>This qualifier is not required if the prefix length is specified in the <code>-addr</code> attribute.</p> |
| <code>-gateway</code> | <p>Specify the gateway for the interface.</p> <p>Note</p> <p>This qualifier configures the default gateway for the specified port's SP.</p> |

Example

The following command creates a replication interface. The interface receives the ID `IF_1`:

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /net/if create -type
replication -port eth1_spb -addr 10.0.0.1 -netmask 255.255.255.0 -
gateway 10.0.0.1
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

ID = IF_1
Operation completed successfully.
```

Create remote system configurations

Configures a remote system configuration for the local system to access.

Note

For a source VNX system with two control stations, the home directory of a user with the Administrator role, which is used in configuring the import connection, must exist on the primary control station of the VNX. See [VNX system with two Control Stations](#) on page 67.

Format

```
/remote/sys create -addr <value> [-type VNX] -srcUsername
<value> {-srcPassword <value> | -srcPasswordSecure} -
dstUsername <value> {-dstPassword <value> | -dstPasswordSecure}
[-connectionType {sync | async | both}]
```

Action qualifiers

| Qualifier | Description |
|--------------------|---|
| <code>-addr</code> | Specify the network name or IP address of the remote system. |
| <code>-type</code> | Specify the remote system type. Valid values are: <ul style="list-style-type: none"> VNX |

| Qualifier | Description |
|--------------------|---|
| -srcUsername | For systems that are the source in a replication, type the username that is used to access the system. |
| -srcPassword | For systems that are the source in a replication, type the user password that is used to access the system. |
| -srcPasswordSecure | Specify the password in secure mode. Once you run the command with this qualifier, you will be asked to type the password separately. |
| -dstUsername | For systems that are the destination in a replication session or VNX in an import session, specify the username that is used to access the system. |
| -dstPassword | For systems that are the destination in a replication session or VNX in an import session, specify the user password that is used to access the system. |
| -dstPasswordSecure | Specify the password in secure mode. Once you run the command with this qualifier, you will be asked to type the password separately. |
| -connectionType | Specify this qualifier to indicate the type of replication connection. Valid values are async, sync, or both. |

Example

The following command creates a remote system configuration with these settings:

- Network address is 10.64.75.10.
- Includes access credentials for when the system is the source or destination.

The configure remote system receives the ID RS_65536:

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /remote/sys create -
addr 10.64.75.10 -type VNX -dstUsername admin1 -dstPassword
Password789!
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

ID = RS_65536
Operation completed successfully.
```

View import sessions

View details about existing import sessions for both file and block. You can filter on the session ID.

Format

```
/import/session [-id <value> | -active | -completed | -
cancelled] [-type {block | nas}] show
```

Object qualifier

| Qualifier | Description |
|------------|--|
| -id | Type the ID of the import session. |
| -active | Show only active sessions (sessions that are not completed or cancelled). |
| -completed | Show only completed sessions. |
| -cancelled | Show only cancelled sessions. |
| -type | Specifies what type of sessions to show. Valid values are : <ul style="list-style-type: none"> • block • nas |

Example

The following command displays all existing import sessions on the system:

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /import/session show
-detail
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

1:      ID              = import_1
      Name              =
import_sess_vdml_BB0050562C7D2A_FCNCH0972C330D
      Session type      = nas
      Health state      = OK (5)
      Health details    = "The component is
operating normally. No action is required."
      State              = Initialized
      Progress          = empty
      Source system     = RS_65535
      Source resource   = vdml
      Target resource   = nas_1

2:      ID              = import_2
      Name              = VNX LUN Group 1 import
      Session type      = block
      Health state      = OK (5)
      Health details    = "The component is
operating normally. No action is required."
      State              = Initial copy
      Progress          =
      Source system     = RS_65535
      Source resource   = LUNGroup1
      Target resource   = res_1
```

Create a NAS import session

Create a NAS import session.

Note

This command only creates the import session. To start the import session through the UEMCLI, you must run the `/import/session/nas set` command and specify `no` for the action qualifier `-paused`.

Prerequisites

Before creating a NAS import session, complete the following configuration tasks:

- Create interfaces on both the source and target systems for data transfer.
- Create an import connection from the source VNX to the current Unity-based target system.
- Create a target pool.
- If the source VNX system is configured with the code page 8859-1 or 8859-15 for the NFSv3 clients, ensure the code page for the Unity system matches the code page being used on the VNX system. With Unity OE 4.3 and later, the code page of the Unity system can be changed through the `svc_nas` `<NAS_server_name> | all` `-param -facility vdm -modify codepage -value <value>` service command.

Format

```
/import/session/nas create [-async] [-name <value>] -srcSys
<value> -srcRes <value> -targetResPool <value>< [-
targetImportIf <value>] [-productionIfPortPairs <value>] [-
productionIfVlanPairs <value>] -fsPoolPairs <value>] -
defaultProductionPort <value> [-srcDhsmUsername <value>] [-
srcDhsmPasswd <value>] [-srcDhsmPasswdSecure <value>][ -
unixDirectoryService {directMatch | local | nis | ldap |
localThenNis | localThenLdap | none}] [-
srcLocalCifsAdminUsername <value> {-srcLocalCifsAdminPasswd
<value>|-srcLocalCifsAdminPasswdSecure}] [-
srcFsImportedAsVMWareDatastore <value>] [-
srcFsImportedWithDataReductionEnabled <value>] [-
srcFsImportedWithAdvancedDedupEnabled <value>] [-
skipServerParamCheck]
```

Action qualifiers

| Qualifier | Description |
|----------------|---|
| -async | (Optional) Run operation in asynchronous mode. |
| -name | (Optional) Specifies the new name of the import session. Note If name is not specified, it will be generated in the pattern <code>import_sess_<srcRes>_<srcSysSerialNumber>_<targetSysSerialNum ber>[_<index>]</code> |
| -srcSys | Specifies the source (remote) system. |
| -srcRes | Specifies the source resource. |
| -targetResPool | Specifies the default storage pool to store target NAS server configuration information and file systems. |

| Qualifier | Description |
|------------------------|--|
| -targetImportIf | (Optional) Specifies the target replication interface for the import session. |
| -productionIfPortPairs | <p>(Optional) Specifies the source VDM production interfaces and target port pairs. Values are a comma separated list of mappings between source VDM production interfaces and target ports.</p> <hr/> <p>Note</p> <p>Use the following format: <code>source_interface_1:dest_port_1,source_interface_2:dest_port_2</code></p> |
| -productionIfVlanPairs | <p>(Optional) Specifies the source VDM production interface and the target VLAN pairs. Values are a comma separated list of mappings between source VDM production interfaces and target VLAN pairs.</p> <hr/> <p>Note</p> <p>Use the following format: <code>source_interface_1:1,source_interface_2:2</code></p> |
| -fsPoolPairs | <p>(Optional) Specifies the source file system IDs and target pool pairs. Values are a comma separate list of mappings between file system IDs and target pool pairs.</p> <hr/> <p>Note</p> <p>Use the format <code>sourceFsId1:destination_pool_friendlyId</code> (sourceFsId must be an existing supported source file system ID, otherwise validation fails), or <code>sourceFsId2~sourceFsId3:destination_pool_friendlyId</code> (sourceFsId2 and sourceFsId3 must be existing supported source file system IDs, the other file system IDs between sourceFsId2 and sourceFsId3 do not necessarily need to exist. The create process only takes existing source file system IDs and skips non-existent file system IDs in the range.). For example, for the input <code>12:pool_1,15~20:pool_2</code>, source file system IDs with 12, 15, and 20 must exist but source file systems with IDs starting from 16 to 19 do not need to exist.</p> |
| -defaultProductionPort | Specifies the target port where NAS server production interfaces will be created by default. |
| -srcDsmUsername | <p>Specifies the user name for authentication to DHSM service on the source Data Mover.</p> <hr/> <p>Note</p> <p>When the source VDM has FLR-E/C file systems, file import needs to connect to the DHSM service on the source Data Mover. If the DHSM service is configured with basic or digest authentication, the user name needs to be specified.</p> |
| -srcDsmPasswd | Specifies the password for authentication to the DHSM service on the source Data Mover. |
| -srcDsmPasswdSecure | <p>Specifies the password for authentication to the DHSM service on the source Data Mover in secure mode.</p> <hr/> <p>Note</p> <p>The user will be prompted to input the password and the password confirmation.</p> |

| Qualifier | Description |
|--|---|
| <code>-unixDirectoryService</code> | <p>(Optional) Specifies which Unix directory service to import. Directory service is used for querying identity information for Unix (such as UIDs, GIDs, net groups). Valid values are:</p> <ul style="list-style-type: none"> <code>directMatch</code> - Import source <code>unixDirectoryService</code> to target without any change. <code>local</code> - Use Local files (<code>passwd</code>, <code>group</code>, <code>hosts</code>, <code>netgroup</code>) for querying identity information for Unix. <code>nis</code> - Use NIS for querying identity information for Unix. <code>ldap</code> - Use LDAP for querying identity information for Unix. <code>localThinNis</code> - Use Local files and then NIS for querying identity information for Unix. <code>localThinLdap</code> - Use Local files and then LDAP for querying identity information for Unix. <code>none</code> - Do not use any of Unix directory services. |
| <code>-srcLocalCifsAdminUsername</code> | (Optional) Specifies the user name for authentication to the CIFS server on the source VDM. |
| <code>-srcLocalCifsAdminPasswd</code> | (Optional) Specifies the password for authentication to the CIFS server on the source VDM. |
| <code>-srcLocalCifsAdminPasswd Secure</code> | <p>(Optional) Specifies the password in secure mode.</p> <hr/> <p>Note</p> <p>The user is prompted to input the password and the password confirmation.</p> <hr/> |
| <code>-srcFsImportedAsVMWareDatastore</code> | <p>(Optional) Specifies what source file systems are imported as VMWare datastore file systems. Values are a comma separated list of source file system IDs with comma separated value of single file system ID or a range of file system IDs; for example, <code>sourceFsId1</code>, <code>sourceFsId2~sourceFsId3</code>. <code>sourceFsId1</code>, <code>sourceFsId2</code>, and <code>sourceFsId3</code> must be existing supported source file system IDs. The source file systems with IDs between <code>sourceFsId2</code> and <code>sourceFsId3</code> do not necessarily need to exist. The create process only takes existing source file system IDs and skips non-existent file systems in the range. For example, for input <code>13,15~20,25</code>, source file systems with ID 13, 15, 20 and 25 must exist; source file systems with IDs starting from 16 to 19 do not need to exist.</p> <hr/> <p>Note</p> <p>If a VNX file system is specified by this option, it should not contain any tree quotas or user quotas.</p> <hr/> |
| <code>-srcFsImportedWithDataReduction Enabled</code> | <p>(Optional) Specifies which source file systems are imported with data reduction enabled. Values are a comma separated list of source file system IDs with comma separated value of single file system ID or a range of file system IDs; for example, <code>sourceFsId1</code>, <code>sourceFsId2~sourceFsId3</code>. <code>sourceFsId1</code>, <code>sourceFsId2</code>, and <code>sourceFsId3</code> must be existing supported source file system IDs. The source file systems with IDs between <code>sourceFsId2</code> and <code>sourceFsId3</code> do not necessarily need to exist. The create logic only takes existing source file system IDs and skips non-existent file systems in the range. For example, for input</p> |

| Qualifier | Description |
|--|--|
| | 13,15~20,25, source file systems with ID 13,15,20 and 25 must exist; source file systems with IDs starting from 16 to 19 do not need to exist. |
| -srcFsImportedWithAdvancedDedupEnabled | (Optional) Specifies which source file systems are imported with advanced deduplication enabled. Values are a comma separated list of source file system IDs with comma separated value of single file system ID or a range of file system IDs; for example, sourceFsId1, sourceFsId2~sourceFsId3. sourceFsId1, sourceFsId2, and sourceFsId3 must be existing supported source file system IDs. The source file systems with IDs between sourceFsId2 and sourceFsId3 do not necessarily need to exist. The create logic only takes existing source file system IDs and skips non-existent file systems in the range. For example, for input 13,15~20,25, source file systems with ID 13,15,20 and 25 must exist; source file systems with IDs starting from 16 to 19 do not need to exist. |
| -skipServerParamCheck | (Optional) Specifies whether to skip server parameters check (comparison). When selected, the server parameters check is skipped. In silent mode, the check is not skipped. Import session creation compares server parameters between VNX and Unity. When import session creation fails with a Server parameter error, this option allows the creation to proceed. NOTICE Skipping the server parameters check could lead to disruptive cutover during import. |

Example

The following command creates an import session with these settings:

Note

The source VDM is a NFS-only VDM.

- Import session name is newName.
- Source storage system is RS_1.
- Source storage resource (VDM) is src_vdm_to_migrate.
- Target resource pool is pool_1.
- Target import interface is if_3.
- Source VDM production interface and target port pairs are source_interface_1:spa_iom_0_eth1 and source_interface_2:spa_iom_0_eth0.
- Source file system and target pool pairs are 100~200:pool_2 and 255:pool_3.
- Target port where NAS server production interfaces will be created is spa_iom_0_eth0.
- Migrate the direct match UNIX Directory Service.
- File systems 13, 20 through 25, and 30 are to be imported as VMWare datastore file systems.
- Skip the server parameters check.

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! import/session/nas
create -name MyName1 -srcSys RS_1 -srcRes src_vdm_to_migrate -
targetResPool pool_1 -targetImportIf if_3 -productionIfPortPairs
source_interface_1:spa_iom_0_eth1,source_interface_2:spa_iom_0_eth0 -
fsPoolPairs 100~200:pool_2,255:pool_3 -defaultProductionPort
```

```
spa_iom_0_eth0 -unixDirectoryService directMatch -
srcFsImportedAsVMwareDatastore 13,20~25,30 -skipServerParamCheck
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

Using '-skipServerParamCheck' option could lead to disruptive
cutover during migration. Do you want to continue?
yes / no: yes
ID = import_1
Operation completed successfully.
```

The following command creates an import session with these settings:

Note

The source VDM is a NFS-only VDM.

- Import session name is newName.
- Source storage system is RS_1.
- Source storage resource (VDM) is src_vdm_to_migrate.
- Target resource pool is pool_1.
- Target import interface is if_3.
- Source VDM production interface and target port pairs are source_interface_1:spa_iom_0_eth1 and source_interface_2:spa_iom_0_eth0.
- Source file system and target pool pairs are 100~200:pool_2 and 255:pool_3.
- Target port where NAS server production interfaces will be created is spa_iom_0_eth0.
- Migrate the direct match UNIX Directory Service.
- File systems 13, 20 through 25, and 30 are to be imported as VMware datastore file systems.
- File systems 14, 22, 25 through 30 are imported as thin.
- File systems 31 and 40 through 45 are imported and have data reduction applied.
- Skip the server parameters check.

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! / import/session/nas
create -name MyName -srcSys RS_1 -srcRes src_vdm_to_migrate -
targetResPool pool_1 -targetImportIf if_3 -productionIfPortPairs
source_interface_1:spa_iom_0_eth1,source_interface_2:spa_iom_0_eth0 -
fsPoolPairs 100~200:pool_2,255:pool_3 -defaultProductionPort
spa_iom_0_eth0 -unixDirectoryService directMatch -
srcFsImportedAsVMwareDatastore 13,20~25,30 -srcFsImportedAsThin
14,22,25~30 -srcFsImportedWithDataReductionEnabled 31,40~45 -
skipServerParamCheck
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

ID = import_1
Operation completed successfully.
```

The following command creates an import session with these settings:

Note

The source VDM is a CIFS-only VDM.

- Import session name is newName.
- Source storage system is RS_1.
- Source storage resource (VDM) is src_vdm_to_migrate.
- Target resource pool is pool_1.
- Target import interface is if_3.
- Source VDM production interface and target port pairs are source_interface_1:spa_iom_0_eth1 and source_interface_2:spa_iom_0_eth0.
- Source file system and target pool pairs are 100~200:pool_2 and 255:pool_3.
- Target port where NAS server production interfaces will be created is spa_iom_0_eth0.
- The user name for authentication to the CIFS server on the source VDM is cifsadmin1
- The password for authentication to the CIFS server on the source VDM is cifspassword1
- File systems 13, 20 through 25, and 30 are to be imported as VMware datastore file systems.
- File systems 14, 22, 25 through 30 are imported as thin.
- File systems 31 and 40 through 45 are imported and have data reduction applied.
- Skip the server parameters check.

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! import/session/nas
create -name MyName1 -srcSys RS_1 -srcRes src_vdm_to_migrate -
targetResPool pool_1 -targetImportIf if_3 -productionIfPortPairs
source_interface_1:spa_iom_0_eth1,source_interface_2:spa_iom_0_eth0 -
fsPoolPairs 100~200:pool_2,255:pool_3 -defaultProductionPort
spa_iom_0_eth0 -srcFsImportedAsVMWareDatastore 13,20~25,30 -
srcLocalCifsAdminUsername cifsadmin1 -srcLocalCifsAdminPasswd
cifspassword1 -skipServerParamCheck
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection
```

```
Using '-skipServerParamCheck' option could lead to disruptive
cutover during migration. Do you want to continue?
yes / no: yes
ID = import_1
Operation completed successfully.
```

View import sessions for file

View details about import sessions for file. You can filter on the session ID.

Format

```
/import/session/nas [{-id <value> | -active | -completed | -
cancelled}] show
```

Object qualifier

| Qualifier | Description |
|------------|---|
| -id | Type the ID of the import session. |
| -active | Show only active sessions (sessions that are not completed or cancelled). |
| -completed | Show only completed sessions. |
| -cancelled | Show only cancelled sessions. |

Example

The following command displays file import sessions on the system:

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /import/session/nas
show -detail
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

1:      ID                               = import_1
        Protocol                         = NFS
        Name                             =
import_sess_vdm1_BB0050562C7D2A_FCNCH0972C330D
        Health state                     = OK (5)
        Health details                   = "The component is
operating normally. No action is required."
        State                             = Initialized
        Progress                         =
        Source system                    = RS_1
        Source resource                   = vdm1
        Source import interface           = nas_migration_1
        Source file systems imported as VMware datastore = 13,20~25,30
        Source file systems imported with Data Reduction enabled = 31,40~45
        Source file systems imported with advanced deduplication enabled = 31,40~45
        Target resource                   =
        Target resource pool              = pool_1
        Target file system to pool mapping = 13~14:pool_1
        Target import interface           = if_3
        Target default production port    = spa_iom_0_eth0
        Target production interface to port mapping =
filesim8129dm2:spa_iom_0_eth0
        Target production interface to vlan mapping = filesim8129dm2:1
        CIFS local administrator username = admin
        Source DHSM user                  = dhsm_admin
```

Change import session settings for file

Change the settings for a NAS import session.

Format

```
/import/session/nas -id <value> set [-async] [-paused {yes |
no}] -name <value>] [-targetResPool <value>] [-fsPoolPairs
<value>] [-targetImportIf <value>] [-productionIfPortPairs
<value>] [-productionIfVlanPairs <value>] [-
srcLocalCifsAdminUsername <value> {-srcLocalCifsAdminPasswd
<value> | srcLocalCifsAdminPasswdSecure}] [-
srcFsImportedAsVMwareDatastore <value>] [-
```

```
srcFsImportedWithDataReductionEnabled <value>] [-
srcFsImportedWithAdvancedDedupEnabled <value>]}
```

Object qualifier

| Qualifier | Description |
|-----------|------------------------------------|
| -id | Type the ID of the import session. |

Action qualifiers

| Qualifier | Description |
|------------------------|---|
| -async | Run action in asynchronous mode. |
| -name | Specifies the new name of the import session. |
| -paused | Specifies whether to pause the session. Valid values are: <ul style="list-style-type: none"> yes no <hr/> <p>Note</p> no starts or resumes the import session. |
| -targetResPool | Specifies the new pool for the target resource. Applicable only when the session status is Initialized or the target NAS server provision fails. |
| -fsPoolPairs | Specifies the source file system IDs and target pool pairs. Applicable only when the session status is Initialized or the target file system provision fails. |
| -targetImportIf | Specifies the new target migration interface. Applicable only when the session status is Initialized or the target NAS server provision fails. |
| -productionIfPortPairs | Specifies the source VDM production interface and target port pairs. Applicable only when the session status is Initialized or the target production interface creation fails. |
| -productionIfVlanPairs | Specifies the source VDM production interface and the |

| Qualifier | Description |
|---|--|
| | target VLAN pairs. Applicable only when the session status is initialized or the target production interface creation fails. |
| <code>-srcLocalCifsAdminUsername</code> | Specifies the user name for authentication to the CIFS server on the source VDM. |
| <code>-srcLocalCifsAdminPasswd</code> | Specifies the password for authentication to the CIFS server on the source VDM. |
| <code>-srcLocalCifsAdminPasswdSecure</code> | Specifies the password in secure mode. Note The user is prompted to input the password and the password confirmation. |
| <code>-srcFsImportedAsVMWareDatastore</code> | Specifies what source file systems are imported as VMware datastore file systems. Only applies to file import when the session is initialized. Note If a VNX file system is specified by this option, it should not contain any tree quotas or user quotas. |
| <code>-srcFsImportedWithDataReductionEnabled</code> | Specifies which source file systems are imported with data reduction enabled. Only applies to file import when the session is initialized. |
| <code>-srcFsImportedWithAdvancedDedupEnabled</code> | Specifies which source file systems are imported with advanced deduplication enabled. Only applies to file import when the session is initialized. |

Example

The following command changes the NAS import session settings:

Note

This command only makes changes to the import session configuration. To resume (start) the import session through the UEMCLI, you must run the `/import/session/nas set` command and specify `no` for the action qualifier `-paused`.

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /import/session/nas
-id import_1 set -name newName -targetResPool pool_2 -targetImportIf
if_3 -productionIfPortPairs
source_interface_1:spa_iom_0_eth1,source_interface_2:spa_iom_0_eth0 -
fsPoolPairs 100~200:pool_2,255:pool_3 -srcFsImportedAsVMWareDatastore
17~20 -srcFsImportedWithDataReductionEnabled 31,40~45
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

Operation completed successfully.
```

Start or resume an import session

Once an import session is created and optionally modified, it remains in the initialized state until it is started (or resumed). The following command starts (or resumes) the example NAS import session:

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /import/session/nas
-id import_1 set -paused no
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

Operation completed successfully.
```

Cutover import session for file

Cut over an existing NAS import session. Cutting over a session switches the active host IOs to the target side and initiates the incremental data synchronization from the source to the target.

Format

```
/import/session/nas -id <value> cutover [-async] [-netbiosName
<value>] [-cifsServerName <value> -domainUsername <value> {-
domainPasswd <value> | -domainPasswdSecure}]
```

Object qualifier

| Qualifier | Description |
|-----------|---|
| -id | Specifies the ID of the import session. |

Action qualifier

| Qualifier | Description |
|-----------|--------------------------------------|
| -async | Run the action in asynchronous mode. |

| Qualifier | Description |
|---------------------|---|
| -netbiosName | Specifies new NetBIOS name for source the CIFS server. |
| -cifsServerName | Specifies the new name for the source CIFS server after the cutover. SMB (CIFS) server name must be unique on the network. Note If not specified, the default name for renaming the source CIFS server is the original CIFS server name prefixed with an underscore (_). |
| -domainUsername | Specifies the domain administrator name. This name is required for renaming the source CIFS server and joining it to the Active Directory. (Used for AD-joined CIFS server migration only) |
| -domainPasswd | Specifies the domain user password. |
| -domainPasswdSecure | Specifies the password in secure mode. Note The user is prompted to input the password and the password confirmation. |

Example 1

The following command cuts the NFS import session, import_1, over to the target system:

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /import/session/nas -id import_1 cutover
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

Operation completed successfully.
```

Example 2

The following command cuts the SMB import session, import_1, over to the target system:

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /import/session/nas -id import_1 cutover -cifsServerName cifs1 -domainUsername user1 -domainPasswd password1
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

Operation completed successfully.
```

Commit import session for file

Commit an existing NAS import session. Committing a session completes the import process.

Format

```
/import/session/nas -id <value> commit [-async]
```

Object qualifier

| Qualifier | Description |
|-----------|------------------------------------|
| -id | Type the ID of the import session. |

Action qualifier

| Qualifier | Description |
|-----------|--------------------------------------|
| -async | Run the action in asynchronous mode. |

Example

The following command commits the import session, import_1.

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /import/session/nas
-id import_1 commit
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection
Operation completed successfully.
```

Cancel a NAS import session

Cancel an existing NAS import session.

Format

```
/import/session/nas -id <value> cancel [-async] [-
domainUsername <value> {-domainPasswd <value> | -
domainPasswdSecure}] [-skipSourceRestore]
```

Object qualifier

| Qualifier | Description |
|-----------|------------------------------------|
| -id | Type the ID of the import session. |

Action qualifier

| Qualifier | Description |
|-----------|--------------------------------------|
| -async | Run the action in asynchronous mode. |

| Qualifier | Description |
|---------------------|--|
| -domainUsername | Specifies the domain user with administrative rights to update the AD (not necessary for standalone CIFS server). |
| -domainPasswd | Specifies the domain user password (not necessary for standalone CIFS server). |
| -domainPasswdSecure | Specifies the password in secure mode (not necessary for standalone CIFS server). Note The user is prompted to input the password and the password confirmation. |
| -skipSourceRestore | Skip source VDM restore. When specified, the source VDM restore operations are skipped. Normally, the cancel action stops the import transport, deletes the corresponding destination resources, and restores the source VDM (turns up the source interfaces attached to the VDM if they are turned down during cutover and deletes internal export options created by the import for import transport). |

Example

The following command cancels the NAS import session, import_1.

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /import/session/nas
-id import_1 cancel
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

Operation completed successfully.
```

Create a block import session

Prerequisites

Before creating a block import session, complete the following configuration tasks:

- Create interfaces on both source and target for data transfer.
- Create an import connection to a Unity-based target system.
- Create a block import target (LUN or LUN Group) on the target system.

Format

```
/import/session/block create [-async] [-name <value>] [-throttle {yes | no}] -srcSys <value> -srcRes <value> -lunPoolPairs <value> [-cutoverThreshold <value>] [-hosts <value>] [-importAsVMwareDatastore {yes | no}]
```

Action qualifiers

| Qualifier | Description |
|--------------------------|--|
| -async | Run action in asynchronous mode. |
| -name | <p>Specifies the name of the import session.</p> <hr/> <p>Note</p> <p>If name is not specified, it will be generated in the pattern</p> <pre>import_sess_<srcRes>_<srcSysSerialNumber>_<targetSysSerialNumber>[_<index>]</pre> <hr/> |
| -throttle | <p>Specifies whether to throttle the import transfer. Throttle impacts the import speed and host latency for the related LUNs and file systems that are in use on the source and target storage systems. Valid values are:</p> <ul style="list-style-type: none"> • yes • no <hr/> <p>Note</p> <p>Default is to throttle the import transfer, which means that it is throttled at less than the full speed.</p> <hr/> |
| -srcSys | Specifies the source system. |
| -srcRes | Specifies the source resource. |
| -lunPoolPairs | <p>Specifies the LUN pool pairs. A comma separated list of mappings between the source LUN and the target storage configuration.</p> <hr/> <p>Note</p> <p>Use the format <code>srcLUN1:tgtPool1,...</code>. Target LUNs will have the same properties as those of the source LUN, such as name, isThin, SP, and size.</p> <hr/> |
| -cutoverThreshold | The percentage threshold below which the import session becomes ready to be cutover. |
| -hosts | Specifies the hosts. A comma separated list of friendly IDs of hosts to give access to target elements. |
| -importAsVMwareDatastore | <p>Specifies whether the source LUN is to be imported as a VMware datastore (VMFS). This option is only valid for a LUN session and is not valid for a CG session. Valid values are:</p> <ul style="list-style-type: none"> • yes • no |

Example

The following command creates an import session with these settings:

- Import session name is lun_17_import.
- Source storage system is RS_1.

- Source storage resource is 17.
- LUN pool pair is 17:pool_1.

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! import/session/block
create -name lun_17_import -srcSys RS_65596 -srcRes 17 -lunPoolPairs
17:pool_1 -importAsVMwareDatastore yes
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

ID = import_1
Operation completed successfully.
```

View import sessions for block

View details about import sessions for block. You can filter on the session ID.

Format

```
/import/session/block [{-id <value> | -active | -completed | -
cancelled}] show
```

Object qualifier

| Qualifier | Description |
|------------|---|
| -id | Type the ID of the import session. |
| -active | Show only active sessions (sessions that are not completed or cancelled). |
| -completed | Show only completed sessions. |
| -cancelled | Show only cancelled sessions. |

Example

The following command displays block import sessions on the system:

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /import/session/
block show -detail
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

1:      ID              = import_2
      Name              = VNX LUN Group 1 import
      Session type      = block
      Health state      = OK (5)
      Health details    = "This import session
is operating normally. No action is required."
      State             = Syncing
      Progress          = 0%
      Source system     = RS_65535
      Source resource   = LUNGroup1
      Target resource   = res_1
      Estimated remaining bytes = 47185920 (45 M)
      Percent remaining for import = 6
```

```
Cutover threshold percent = 5
Throttle                  = no
```

Change import session settings for block

Change the settings for a block import session.

Format

```
/import/session/block -id <value> set [-async] [-name <value>]
[-paused {yes | no}] [-throttle {yes | no}] [-cutoverThreshold
<value>]
```

Object qualifier

| Qualifier | Description |
|-----------|------------------------------------|
| -id | Type the ID of the import session. |

Action qualifiers

| Qualifier | Description |
|-------------------|--|
| -async | Run action in asynchronous mode. |
| -name | Specifies the new name of the import session. |
| -throttle | <p>Specifies whether to throttle the import transfer. Throttle impacts the import speed and host latency for the related LUNs and file systems that are in use on the source and target storage systems. Valid values are:</p> <ul style="list-style-type: none"> • yes • no <hr/> <p>Note</p> <p>Default is to throttle the import transfer, which means that it is throttled at less than the full speed.</p> |
| -paused | <p>Specifies whether to pause the import session. Valid values are:</p> <ul style="list-style-type: none"> • yes • no <hr/> <p>Note</p> <p>no starts or resumes the import session.</p> |
| -cutoverThreshold | Specifies the threshold percentage below which the import session is cutover-ready. |

Example

The following command changes the block import session settings for name to newName, the commitThrottle level to 5, and to not apply the throttle:

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /import/session/
block -id import_1 set -name newName -throttle no -cutoverThreshold 5
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

Operation completed successfully.
```

Cut over import session for block

Cut over and complete an existing block import session. Cutting over a block import session can be a long and disruptive process. To reduce the period of disruption, set the cutover threshold as small as possible. By decreasing the cutover threshold to a small value, a smaller number of changes will need to be transferred after the application is quiescent. The cutover threshold is a percentage of the LUN size and hence for larger LUNs it is recommended that the cutover threshold be set to a value smaller than the default value of 5 percent. Lastly, cut over an import session only when the session is in the Cutover Ready state. This action ensures that the cutover is performed when the least number of changes has to be transferred.

After cutover completes successfully, host IOs are switched to the target side and the import process completes automatically.

Format

```
/import/session/block -id <value> cutover [-async]
```

Object qualifier

| Qualifier | Description |
|-----------|------------------------------------|
| -id | Type the ID of the import session. |

Action qualifier

| Qualifier | Description |
|-----------|--------------------------------------|
| -async | Run the action in asynchronous mode. |

Example

The following command cuts the import session, import_1, over to the target system:

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /import/session/
block -id import_1 cutover
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

Operation completed successfully.
```

Cancel a block import session

Cancel an existing block import session.

Format

```
/import/session/block -id <value> cancel [-async]
```

Object qualifier

| Qualifier | Description |
|-----------|------------------------------------|
| -id | Type the ID of the import session. |

Action qualifier

| Qualifier | Description |
|-----------|--------------------------------------|
| -async | Run the action in asynchronous mode. |

Example

The following command commits the block import session, import_1.

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /import/session/
block -id import_1 cancel
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

Operation completed successfully.
```

View import session elements

View details about import status for each element in the active import session, for example, each LUN in a consistency group (CG).

Format

```
/import/session/element -importId <value> show
```

Object qualifier

| Qualifier | Description |
|-----------|------------------------------------|
| -importId | Type the ID of the import session. |

Example

The following command displays import status for each element in the specified import session:

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /import/session/
element -importId import_2 show -detail
```

```
Storage system address: 10.0.0.1
Storage system port: 443
HTTPS connection

1:   Source system   = RS_1
     Source resource = lun1
     Target resource = sv_1
     Health state    = OK (5)
     Health details  = "The component is operating normally. No
```

Configure import using the CLI

```
action is required."
  Stage           = Incremental Sync
  Iteration       = 4
  Progress        = 10%
  Source system   = RS_1
  Source resource = lun4
  Target Resource = sv_2
  Health state    = OK (5)
  Health details  = "The component is operating normally. No
action is required."
  Stage           = Incremental sync
  Iteration       = 4
  Progress        = 0%
```

CHAPTER 6

Troubleshooting

This chapter addresses the following topics:

- [Information related to import operation problems](#)..... 66
- [VNX system with two Control Stations](#)..... 67

Information related to import operation problems

Before you contact your service provider, use either Unisphere or the Unisphere CLI to access information about jobs that failed and alert information and check the target storage system's log files.

Jobs and Alerts information

Use Unisphere to get information about Jobs that fail. Under **Events**, select **Jobs**. Use Jobs to view information on all jobs, including those jobs that are active and those jobs that are complete or failed. To quickly determine the number of active jobs (those jobs that are queued or running) and view job progress, use the Jobs icon in the status bar. To view detailed information about the job, specifically the individual tasks included in the job and the status of these tasks, select the Details icon. If a task fails, select **View Error** for more information.

To get information about Jobs that fail, use the Unisphere CLI. To find the job that failed, review the Jobs output. The following is an example:

```
C:>uemcli -d -u Local/admin -p /sys/task/job show
```

```
74:  ID          = N-66
     Type       = Replication Service
     Title      = Create VNX remote system connection
     State      = Failed
```

Once you have the Job ID, you can retrieve more detailed information about the failure. The following is an example:

```
C:>uemcli -d -u Local/admin -p /sys/task/job/step -jobId N-66 show -
detail
```

```
1:  Title          = Register VNX remote system
    connection
    Status        = Failed
    Execution result code = 105906574
    Execution result description = An error occurred while trying
    to communicate with the remote VNX system. The credentials used
    might be incorrect or there may be a network issue while connecting
    to the remote VNX system. (Error Code:0x650018e)
    Rollback result code = 4106
    Rollback result description = Task was rolled back and
    marked as failed. This is because some tasks failed or SP rebooted
    during task execution. (Error Code:0x100a)
```

Alerts provide you with information about the source of an event, the symptoms and cause, and actions that you can take to resolve it. Any actions that are taken to resolve an alert must be performed directly on the system on which the alert was reported.

In Unisphere under **Events**, select **Alerts**. In addition to appearing on the **Alerts** page, each alert generates a pop-up alert bubble in Unisphere. The alert bubble provides information about the alert and may also contain a link to a help topic on how to resolve the problem.

Use the Unisphere CLI commands `/event/log show` and `/event/alert/hist show` to display additional event attributes that provide more detailed event reports than what appear in Unisphere. For example:

```
uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /event/log show -
fromTime "2009-11-09 00:00:00.000" -to "2009-11-09 23:59:59.999"

uemcli -d 10.0.0.1 -u Local/joe -p MyPassword456! /event/alert/hist
show
```

For detailed information about Jobs and Alerts, refer to either the *Unisphere Online Help* or the *Unisphere Command Line Interface User Guide*.

Log information

One of the most useful logs for reviewing errors that are related to setting the file import connection or creating an import session, or any other file import task, is `/EMC/CEM/log/cemtracer_migration.log`.

VNX system with two Control Stations

For a VNX system with two Control Stations, ensure that the following exists before you set up a file-based import:

- The home directory of a user with Administrator role exists on the primary Control Station of the VNX. The home directory is used when you configure the import connection.
- When you configure other components for an import operation, the primary Control Station of the VNX that is used must be the same Control Station as in the previous bullet item.

You can retrieve information about the primary Control Station of the VNX system using the VNX command line interface (CLI). The following CLI output is an example that includes SPA, SPB, and the primary Control Station.

```
# naviseccli -User Local/joe -Password MyPassword456! -Scope 0 -h
10.50.100.104 domain -list
```

```
Node: APM00153042305
IP Address: 10.0.0.1 (Master)
Name: hop21130
Port: 80
Secure Port: 443
IP Address: 10.0.0.2
Name: hop21131
Port: 80
Secure Port: 443
IP Address: 10.0.0.3
Name: Unity_CS0_03
Port: 80
Secure Port: 443
```

If the primary Control Station of the VNX does not have a user home directory, you can manually fail over the Control Station. The following is an example set up by logging on the primary Control Station through SSH.

```
# /nas/sbin/cs_standby -failover
```

```
The system will reboot, do you wish to continue? [yes or no]: yes
Failing over from Primary Control Station...
```

For more information about this situation and how to resolve it, see Knowledge Based Article 000489181.

APPENDIX A

NFS-only VDM import details

This appendix addresses the following topics:

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NFS-only VDM import work flow

Most of the NFS-only VDM import operations are executed from the target Unity storage system. However, some initial setup operations, such as creating an import interface on the source VDM, must be executed on the source VNX system.

Prerequisites for an NFS-only VDM import session

Before starting an NFS-only VDM import session, the following conditions must be met:

1. The source VNX system exists, and the VNX1 OE is 7.1.x or later or the VNX2 OE is 8.1.x or later.
2. (Optional) The specified name for the import session is not used by other import sessions.
3. The source VDM exists, and is in the loaded state.
4. The source VDM is not under import or has an associated complete import.
5. The source VDM is not configured with CIFS servers, secured NFS, or NFSv4.
6. The maximum allowed deviation in time between the source side Data Mover (DM) that hosts the VDM and the target side SP that hosts the target NAS server is 5 seconds.
7. There exists only one network interface whose name starts with `nas_migration_xx` among all the up network interfaces that are attached to the source VDM. This interface is used as the source import interface.
8. Verify that the physical Data Mover on which the source VDM is located, has at least one IP interface configured that is not attached to the VDM being migrated.
9. One import interface of type replication exists on the default production port of the target SP, uses the same IP protocol (IPv4 or IPv6) and is in the same VLAN as the source import interface. The target import interface can reach the source import interface and access all the source base exports. This interface can be auto-detected, or specified as the target import interface.
10. The default target production port exists, and supports the type file.
11. All the specified target production ports in the interface-port pairs exist, support the type file, and are on the same SP of the default target production port.
12. All the specified source production interfaces in the interface-port pairs exist, and are in the up state.
13. The import interface on the source must be dedicated for only the import purpose. Hosts must not use this interface for access. Ensure it is not used for any other purpose, for example, used to export NFS exports or CIFS shares to hosts.
14. All the specified source file systems in the file system-pool pairs exist, and are valid import candidates. (These import candidates are mounted to the source VDM, and cannot be NMFS, replication destination, root file system, raw file system, and non-imported FLR file system.).
15. The target pool that is specified to create the target NAS server exists.
16. All the specified target pools in the file system-pool pairs exist.
17. All the specified source file systems in the target VMware data store candidate exist, and are valid import candidates.

18. There is no active import session on the SP of the default target production port.
19. If the import session is created, the total number of the import candidate source file systems cannot exceed the limit of total file systems of all active sessions.
20. There is at least one valid source file system that is mounted on the source VDM.
21. There is at least one valid source production interface, which is up, attached to the source VDM.
22. The total number of valid source production interfaces cannot exceed the limit of network interfaces for each NAS server on the target Unity system.
23. The specified file systems to be imported as a VMware NFS data store should have only one export at root directory.
24. NFS export does not contain an unsupported character or characters, such as comma (,) or double quote (").
25. There are no NFS exports that were only temporarily un-exported and whose path do not exist anymore. To check for this kind of export run the following command on the control station:


```
nas_server -query:name==vdm147 -
fields:exports -format:%q -query:IsShare==False -
fields:Path,AlternateName,Options -format:"<Path>%s</Path>
\n<AlternateName>%s</AlternateName>\n%s\n" Compare the resulting
list with the output of server_export. If there are some differences, you must
delete the old entry in the VDM in the vdm.cfg file. Do the following:
```

 - a. Login as root on the control station.
 - b. Go to the root file system of the VDM (`cd /nas/quota/slot_X/root_vdm_xx/.etc`).
 - c. Edit the file `vdm.cfg` and remove the line corresponding to the NFS export that you want to clean (`vi vdm.cfg export "/fs4" anon=0`).
 - d. Check that the export does not appear any more in the `nas_server -query`. You do not need to reboot the VDM.
26. If the source VNX system is configured with the code page 8859-1 or 8859-15 for the NFSv3 clients, ensure the code page for the Unity system matches the code page being used on the VNX system. With Unity OE 4.3 and later, the code page of the Unity system can be changed through the `svc_nas {<NAS_server_name> | all} -param -facility vdm -modify codepage -value <value>` service command.
27. When performing a VDM import of FLR-enabled file systems, the source VNX Data Mover that is running the DHSM service should also be configured with username and password credentials.

Change settings of an NFS-only VDM import

You can change some import settings before the import session starts or during an initial copy failed status. The changeable parameters include:

- Pools of the target file system
- Pool of the target NAS server
- Ports of the target production interfaces
- Mobility interface for import
- Name of import session

Note

The import session name is not limited to an import session start or during an initial copy failed status and can be changed at any time.

The following changes on the source system are discouraged during an import session:

- Changes to Quota settings
 - NIS or LDAP configuration changes
 - DNS, gateway, or routing changes
 - Creating or deleting file systems
 - File system level FLR properties (on either source or target systems) or epoch year on source file systems
 - Retention settings of DHSM for the specific file systems
-

Note

If the source system is configured with **auto delete** or **auto lock** enabled, the target system will not enable the respective option until the import session is committed. Also, if expired files exist on the source FLR file systems, after file import, the expired files remain expired. However, the time they expired is not the same as before. The expired time after file import is the time that the file was imported.

The target system cannot prevent these actions on the source system. However, these actions can result in the changes not being imported to the target system and causing the import session to fail.

Start an NFS-only VDM import session

The import session is automatically started after creation in the Unisphere UI.

For UEMCLI or REST, the UEMCLI command and REST operation of start are shared with the same command and operation of resume to align with the behavior of block import and replication. You can only start an import session when it is in the Initialized state. If the import start fails, the import state is kept as Initial Copy with a Minor failure health state and the health details are set to `The migration session failed to provision target resource`. **At this time, you can fix the problem by getting detailed information from the job and tasks and then resume the import session.**

The start of an import session is an asynchronous operation by default and always returns a success after creating a backend job to run the initial copy. Before the start of the import, a pre-check is done.

In the event of an SP reboot, affected import sessions fail over to the peer SP. In the event of a system reboot, import sessions pause and automatically resume when the system returns.

NFS-only VDM import initial copy

After the start of the import, VDM import enters the initial copy state. The initial copy consists of three sequential stages:

1. Target NAS server and file system (thin file systems) provisioning
2. Initial data copy
3. Configuration import

Target provisioning

The following is the sequence of provisioning of the NAS server and file systems (thin file systems) in the target system:

1. The import session is validated to be initialized and all parameters are set correctly.
2. The target NAS server is created in import target mode with the correct name.
3. The target file system or file systems are created in import target mode with correct names that exactly match the source mount path.
4. The quota information is dumped from the source file system or file systems to the matching target file system or file systems. If the file system is imported as a VMware NFS data store on Unity, quotas import dumping is skipped.
5. A private server is set up for data transfer from the source NFS server to the target SP. The source VDM exports are updated to include the target import IP address at the file system root directory.
6. The file system level import session between source side file system and the target side file system are created and started.
7. The auto-retry mechanism is started.

Initial copy

Once the import target NAS server and file systems are provisioned, the initial copy job creates and starts the file system level import sessions for the initial data copy between the source and target file systems. Initial copy does not enter the Configuration Import stage until all file systems are migrated.

Configuration import

The initial copy job task continuously runs while waiting for the completion of the baseline copy. Once the baseline copy is complete, it stops the auto-retry mechanism and starts the configuration import (configuration import task). The VDM configuration that is imported ensures that the NAS server on the target system works correctly. The VDM configuration includes:

- NFS export
- Network interface
- Route configuration
- IP reflect parameter
- DNS configuration
- Local file
- LDAP configuration
- NIS configuration
- UNIX Directory Service setting
- Quota configuration

Once the configuration import completes, the initial copy job prepares for cutover to reduce the overall time and the DU time for cutting over. After the configuration import completes, the file import session enters the Ready to Cutover state. If import failed during initial copy, the configuration import is not rolled back. You can resume the import operation after fixing the reported issues, and import start can continue from the last point when it failed.

NFS-only VDM import cutover

Before you run the cut over operation, ensure the following:

- The source VDM has not been deleted or renamed before cutover.
- The file system that is mounted on the source VDM has not been renamed, unmounted, or deleted.
- The source VDM interface has not been deleted or renamed.
- When migrating a VNX VDM that is using NIS, ensure that NIS connectivity is enabled before cutover.

NOTICE

The Unity system firewall can block a NAS server from connecting to a NIS server. It is highly recommended to enable NIS connectivity before cutover. If NIS is not enabled after cutover, a host application may not be able to access the NAS server successfully. In this case, follow the instructions to resolve the access issue.

To resolve the NAS server access issue due to disabled NIS connectivity, enable NIS. The following example demonstrates how to do this:

1. Query NAS server with ID nas_6: # `uemcli -d localhost -sslPolicy accept -noheader -u admin -p adminpassword /import/session/nas show`

```
1:  ID           = import_1
    Type        = CIFS
    Name        =
import_sess_vdml_APM00151909181_FNM00153800463
    Health state = OK (5)
    State       = Completed
    Progress    =
    Source system = RS_65538
    Source resource = vdml
    Target resource = nas_6
    CIFS local user = cifsuser
```

2. Query NAS server network interface, for example, if_14: # `uemcli -d localhost -sslPolicy accept -noheader -u admin -p adminpassword /net/nas/server -id nas_6 show`

```
1:  ID           = nas_6
    Name        = vdml
    NetBIOS name =
    SP          = spb
    Storage pool = pool_1
    Tenant      =
    Interface   = if_14
    NFS enabled  = yes
    NFSv4 enabled = no
    CIFS enabled = no
    Multiprotocol sharing enabled = no
    Unix directory service = localThenNis
    Health state = OK (5)
```

3. Query the network interface related to the port, for example, eth2 and VLAN 404: # `uemcli -d localhost -sslPolicy accept -noheader -u admin -p adminpassword /net/if -id if_14 show`

```
1:  ID           = if_14
    Type        = file
    NAS server   = nas_6
    Port        = spb_eth2
    VLAN ID     = 404
    IP address   = 10.109.104.133
```

4. Add firewall rule for NIS server connection.

- Example for VLAN-enabled NAS server network interface: `svc_firewall -udp -add eth2.404 10.109.177.170` and `svc_firewall -udp -add eth2.404 10.109.177.169`
- Example for VLAN-disabled NAS server network interface: `svc_firewall -udp -add eth10 1.2.3.4`

When the initial copy has completed, the file import session enters the Ready to Cutover state. You can switch the production VDM from source to target so that the target side NAS server becomes the production side with all data synchronized. The cutover should be transparent to the users. After cutover, the NFS host clients can access the new production side without requiring a remount.

You can launch cutover from either Unisphere, UEMCLI, or REST. Cutover starts a job, which does the following:

1. A pre-cutover validation check.
2. Freeze the source network lock files for import. The job tries to get all the NLM data from the source VDM and import it to the target system.
3. Freeze the source file systems (frozen file systems ignore NFS request, NFSv3 lock request, and denies NLM lock).
4. Turn down the source client interface or interfaces (public IP interface).
5. Unfreeze source file systems.
6. Turn up the target interface or interfaces (public IP interface).
7. Reclaim network lock files in the target system. The job tries to revive all imported lock files in the target system.
8. Start an incremental copy.

NFS-only VDM import incremental copy

Incremental copy starts after the cutover to the target storage system. It synchronizes any data updates in the source after the initial data copy starts and before cutover. During the incremental copy, all data writes to target storage system are synchronized back to the source as well to guarantee that the data is identical between the source VDM and target NAS server. Pause and resume operations are supported during the incremental copy.

Note

The data change synchronized back to the source storage system cannot be paused.

During incremental copy, quota import disables online quota check. It is resumed during import committing.

NFS-only VDM import commit

When all data is synchronized between the source VDM and target NAS server, the import session enters the Ready to commit state. You can complete the import through Unisphere or by running the commit command in UEMCLI or REST.

After the commit operation completes, the new data update on the production (target) NAS server is no longer synchronized back to the source VDM. All import specific resources, such as NAS server, file systems, production interfaces, are cleaned up on the target system. The exceptions to this process are the import session information and the summary report. That data is removed when the import

related source storage system is deleted from the target storage system. Because the source VDM is obsolete, the import temporary changes on the source VDM are not cleaned up during import commit. You cannot cancel the import session and rollback the imported NAS server to the source VDM after the import session is committed.

NFS-only VDM import pause

You can pause an import session during the Initial Copy state (internally provisioning target, initial copy, or import configuration) and the Incremental Copy state through Unisphere, UEMCLI, or REST. This operation is useful when the network load is too heavy. If the import session is in the Initial Copy state, the pause operation fails the job executing the Initial Copy. When the import session is paused, the session state remains unchanged but the health state is not OK. A paused import session can be resumed.

NFS-only VDM import resume

You can resume a paused import session through Unisphere, UEMCLI, or REST. The Resume and Start operation (resume an initialized session) actually share the command. Similar to the Pause operation, the Resume command returns immediately, and then the file system level import sessions resume one by one internally. The whole import session returns to the running state when all the underlying file system import sessions are resumed. It may take a while for the import session health state to change to the expected OK state. Use the Resume operation to restart the data transfer or configuration import when the import session fails and the reason for the failure has been fixed.

NFS-only VDM import cancel

Any time during the import, except the cutting over and committing phase, you can decide to cancel an ongoing import session. Depending on which state the import session is in, canceling the import session has different meanings:

- Before import start, the import session is deleted.
- After the import starts and before cutover:
 - Stops data copy
 - Cleans up the copied data and imported configuration data
 - Cleans up the migrating NAS Server and file systems except the user created file systems
- After cutover and before committing:
 - Stops data copy and data sync
 - Rollbacks to source VDM
 - Cleans up the copied data and imported configuration data
 - Cleans up the importing NAS server and file systems except the user created file systems

Hosts that are created for NFS exports during the import are not cleaned up. If the user creates file systems after import cutover, these file systems and the target NAS server are kept while the target production interfaces are removed. If the import to the NAS server is kept due to user created file systems, the imported configuration (UNIX Directory service, DNS) is kept as well.

View NFS-only VDM import information

You can view VDM import session information from Unisphere, UEMCLI, or REST. After an import session is created, you can query the progress of the session from UEMCLI or REST. However, this property is only valid when the session is in the Initial Copy phase or Incremental Copy phase:

- When the VDM import session is in the Initial Copy phase, the progress reflects the progress of the whole initial copy, including initial data copy, configuration import, and quota configuration import.
- When the VDM import session is in the Incremental Copy phase, the progress just reflects the progress of the incremental data copy.

Import Summary Report

The Import Summary Report provides information about the import session. The report can be downloaded during any of the various stages of the Import process (for example, during Initial Copy, Syncing, Paused, Ready to Cutover, Ready to Commit states, Canceled, Completed). This report can be meaningful when reviewing or troubleshooting import session progress. In Unisphere, after creating an import session, go to **More Actions > Download Summary Report**, which produces a Zip file that can be downloaded to the host system. The most relevant file from the download is the SummaryReport.html.

File system mount options mapping

Many of the mount options for VNX storage systems are not supported on Unity storage systems. [Table 1](#) on page 77 maps the VNX mount options that Unity supports.

Table 1 Mount option mapping between VNX and Unity

| VNX | Unity | Comment |
|-------------|-------------|--|
| mover_name | vdm | |
| fs_name | description | |
| mount_point | name | |
| Ro | rw | Unity always uses rw. See Ro mount option special handling . |
| Rw | rw | Unity always uses rw. |

Ro mount option special handling

For Unity systems with OE version 4.3.x or earlier, if a file system is mounted on a VNX with the Ro option, the NFS exports that are created from this file system are actually read-only to their clients. The clients although are granted read/write or root privilege. After import, the NFS shares that are imported to the Unity system will be ro-exported. If the default access is rw or root, it is degraded to ro (read-only). If default access is na (no access), it remains unchanged. All rw or root host entries that are configured on these NFS shares are degraded to roHosts so that the NFS shares will still be read-only to their clients.

For example, if source VNX export option is `access=<IP>`, only this IP has access permission, other clients cannot access the export. The NFS share configuration on Unity would be: `defAccess=na, roHost=<IP>`.

If source VNX export option is `root=<IP>`, the IP has root permission, other clients have `rw` permission to this export. The NFS share configuration on Unity would be: `defAccess=ro, roHost=<IP>`.

For Unity systems with OE version 4.4.x or later, the following enhancements have been incorporated:

- Another type of host access (**Read only, allow Root**) of an NFS share has been defined that does not require a host object. However, NFS shares still support host access by registered hosts. Read only, allow Root access means hosts have permission to view the contents of the share, but not to write to it. The root of the NFS client has root access to the share.
- Clients can be a hostname, netgroup, subnet, a DNS domain, or IP address and must be comma-separated, without spaces. No host object is involved in this simplified host definition.
- NFS share objects can have either five hosts lists as registered hosts or five host lists as strings. A new attribute named **advHostMgmtEnabled** has been added that indicates whether host lists are configured using a string or configured by specifying the IDs of registered hosts. For the same NFS share, you can either create a host list by using a string or by selecting registered hosts. You cannot use both methods for creating a host list. When creating a new NFS share through CLI or from Unisphere (in a regular context), the default is to configure host lists using the IDs of registered hosts. In the case of importing an NFS VDM from a VNX system, the imported NFS shares are created in the Unity system with hosts lists configured with strings (because hosts lists on VNX are strings).

Note

For more information about settings for NFS shares, refer to the *Unisphere Command Line Interface User Guide*, *Unity Unisphere Online Help*, and *Unity Service Commands Technical Notes*.

NFS export options mapping

Some of the NFS export options for VNX storage systems are not supported on Unity storage systems. [Table 2](#) on page 78 maps the VNX NFS export options that Unity supports.

Table 2 NFS export option mapping between VNX and Unity

| VNX (server_export - option) | Description | Unity (/stor/prov/fs/nfs) |
|--|---|---|
| <code>Sec=sec</code> | AUTH_SYS(default) | <code>-minSecurity sys</code> |
| <code>ro</code> | Exports the <i><pathname></i> for all NFS clients as read-only. | <code>-defAccess ro</code> |
| <code>ro=<client>[:<client>]</code> ... | Exports the <i><pathname></i> for the specified NFS clients as read-only. | <code>-roHosts</code> |
| <code>rw=<client>[:<client>]</code> ... | Exports the <i><pathname></i> as read-mostly for the specified NFS clients. | <code>-rwHosts &&-defAccess ro</code> |

Table 2 NFS export option mapping between VNX and Unity (continued)

| VNX (server_export - option) | Description | Unity (/stor/prov/fs/nfs) |
|-------------------------------|---|-------------------------------|
| root=<client>[:<client>]... | Provides root privileges for the specified NFS clients. | -rootHosts or -roRootHosts |
| anon=<uid> | If the NFS request comes from the root (uid=0) on the host and the host access is ro or rw, the anonUID is used on the NFS server as the effective user ID. | -anonUID |
| access=<client>[:<client>]... | Provides mount access for the specified NFS clients. | roHosts, rorootHosts, rwHosts |
| access=<-client>[:<-client>] | Excludes the specified NFS clients from access even if they are part of a subnet or netgroup that is allowed access. | No access |
| ro=<-client>[:<-client>] | Excludes the specified NFS clients from ro privileges. | No access |
| rw=<-client>[:<-client>] | Excludes the specified NFS clients from rw privileges. | No access |
| root=<-client>[:<-client>] | Excludes the specified NFS clients from root privileges. | No access |
| -comment | Comment for the specified NFS export entry. | -descr |

APPENDIX B

CIFS-only VDM import details

This appendix addresses the following topics:

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- [View CIFS-only VDM import information](#) 90

CIFS-only VDM import work flow

Most of the CIFS-only VDM import operations are executed from the target Unity storage system. However, some initial setup operations, such as creating an import interface on the source VDM, must be executed on the source VNX system.

Prerequisites for a CIFS-only VDM import session

Before starting a CIFS-only VDM import session, the following conditions must be met:

1. The source VNX system exists, and the VNX1 OE is 7.1.x or later or the VNX2 OE is 8.1.x or later.
2. (Optional) The specified name for the import session is not used by other import sessions.
3. The source VDM exists, and is in the loaded state.
4. The source VDM is not under import or has an associated complete import.
5. The source VDM does not have any NFS exports.
6. The maximum allowed deviation in time between the source side Data Mover (DM) that hosts the VDM and the target side SP that hosts the target NAS server is 5 seconds.
7. There exists only one network interface whose name starts with `nas_migration_xx` among all the up network interfaces that are attached to the source VDM. This interface is used as the source import interface.
8. Verify that the physical Data Mover on which the source VDM is located, has at least one IP interface configured that is not attached to the VDM being migrated.
9. One import interface of type replication exists on the default production port of the target SP, uses the same IP protocol (IPv4 or IPv6) and is in the same VLAN as the source import interface. The target import interface can reach the source import interface. This interface can be auto-detected, or specified as the target import interface.
10. The default target production port exists, and supports the type file.
11. All the specified target production ports in the interface-port pairs exist, support the type file, and are on the same SP of the default target production port.
12. All the specified source production interfaces in the interface-port pairs exist, and are in the up state.
13. The import interface on the source must be dedicated for only the import purpose. Hosts must not use this interface for access. Ensure it is not used for any other purpose, for example, used to export NFS exports or CIFS shares to hosts.
14. All the specified source file systems in the file system-pool pairs exist, and are valid import candidates. (These import candidates are mounted to the source VDM, and cannot be NMFS, replication destination, root file system, raw file system, and non-imported FLR file system.).
15. The target pool that is specified to create the target NAS server exists.
16. All the specified target pools in the file system-pool pairs exist.
17. All the specified source file systems in the target VMware data store candidate exist, and are valid import candidates.

18. There is no active import session on the SP of the default target production port.
19. If the import session is created, the total number of the import candidate source file systems cannot exceed the limit of total file systems of all active sessions.
20. There is at least one valid source file system that is mounted on the source VDM.
21. There is at least one valid source production interface, which is up, attached to the source VDM.
22. The total number of valid source production interfaces cannot exceed the limit of network interfaces for each NAS server on the target Unity system. Refer to the *Unity Support Matrix* on [Online Support](#) for information about network interface limits related to NAS servers.
23. A single CIFS server is configured on the source VDM.
24. C\$ share is available on the source Data Mover that hosts the VDM and is not disabled or set to Read-only. The C\$ share must be available, otherwise the import cannot start. If it was disabled or Read-only on the source, change the corresponding parameters to enable it:

```
server_param <source_server> -facility cifs -modify
admin.shareC_NotCreated -value 0
```

```
server_param <source_server> -facility cifs -modify
admin.shareC_RO -value 0
```

Note

You must stop and start the service associated with the CIFS facility for changes to `admin.shareC_NotCreated` to take effect.

25. Local SMB users are enabled on the source CIFS server.
26. The user performing the import must belong to the source local administrator group and has backup and restore privileges.
27. The extended acl feature is enabled on the source Data Mover that hosts the VDM (parameter `cifs.acl.extacl` should have bits 2, 3, and 4 set, decimal value 28). Use the following command to view the settings:

```
server_param <source_datamover> -facility cifs -info acl.extacl
```

If necessary, use the following command to change the setting:

```
server_param <source_datamover> -facility cifs -modify
acl.extacl -value 28
```

28. Unknown SID feature has been enabled on the source Data Mover that hosts the VDM (parameter `cifs.acl.mappingErrorAction` must be set to `0x0b`, decimal value 11). Use the following command to view the settings:

```
server_param <source_datamover> -facility cifs -info
acl.mappingErrorAction
```

If necessary, use the following command to change the setting:

```
server_param <source_datamover> -facility cifs -modify
acl.mappingErrorAction -value 11
```

29. NT security is enabled on the source. Share and Unix security level is not supported.
30. The source VDM is not utf8-based.
31. The source CIFS server is not a Windows NT 4.0 like CIFS server.
32. DNS is configured for the Windows domain in the case of a domain joined CIFS server.
33. Other VDMs from the source can reach DNS and domain controller (DC) after cutover.
34. DNS and DCs are reachable on the destination after cutover.
35. When performing a VDM import of FLR-enabled file systems, the source VNX Data Mover that is running the DHSM service should also be configured with username and password credentials.

Change settings of a CIFS-only VDM import

You can change some import settings before the import session starts or during an initial copy failed status. The changeable parameters include:

- Pools of the target file system
- Pool of the target NAS server
- Ports of the target production interfaces
- Mobility interface for import
- Name of import session
- SMB credentials used by the target system to connect to the source CIFS server.

Note

The import session name is not limited to an import session start or during an initial copy failed status and can be changed at any time.

The following changes on the source system are discouraged during an import session:

- Changes to Quota settings
- DNS, gateway, or routing changes
- Creating or deleting file systems
- File system level FLR properties (on either source or target systems) or epoch year on source file systems
- Settings of DHSM HTTP server configuration

Note

If the source system is configured with **auto delete** or **auto lock** enabled, the target system will not enable the respective option until the import session is committed. Also, if expired files exist on the source FLR file systems, after file import, the expired files remain expired. However, the time they expired is not the same as before. The expired time after file import is the time that the file was migrated.

The target system cannot prevent these actions on the source system. However, these actions can result in the changes not being imported to the target system and causing the import session to fail.

Start a CIFS-only VDM import session

The import session is automatically started after creation in the Unisphere UI.

For UEMCLI or REST, the UEMCLI command and REST operation of start are shared with the same command and operation of resume to align with the behavior of block import and replication. You can only start an import session when it is in the Initialized state. If the import start fails, the import state is kept as Initial Copy with a Minor failure health state and the health details are set to `The migration session failed to provision target resource`. At this time, you can fix the problem by getting detailed information from the job and tasks and then resume the import session.

The start of an import session is an asynchronous operation by default and always returns a success after creating a backend job to run the initial copy. Before the start of the import, a pre-check is done.

In the event of an SP reboot, affected import sessions fail over to the peer SP. In the event of a system reboot, import sessions pause and automatically resume when the system returns.

CIFS-only VDM import initial copy

After the start of the import, VDM import enters the initial copy state. The initial copy consists of three sequential stages:

1. Target NAS server and file system (thin file systems) provisioning
2. Initial data copy
3. Configuration import

Target provisioning

The following is the sequence of provisioning of the NAS server and file systems (thin file systems) in the target system:

1. The import session is validated to be initialized and all parameters are set correctly.
2. The target NAS server is created in import target mode with the correct name.
3. The target file system or file systems are created in import target mode with correct names that exactly match the source mount path.
4. All network interfaces of the source VDM are cloned into the target NAS server. All interfaces are created in disabled mode.
5. All network routing tables relative to the source VDM interfaces are cloned at the destination.
6. (This step is only applicable when the SMB server is joined to a domain.) The DNS domain and its corresponding servers are selected from the source VDM and set at the target NAS server. The DNS domain is selected as follow:
 - The DNS domain configured at the VDM level (nsdomain).
 - The DNS domain at the storage system level matching exactly the domain name of the VDM's SMB server.

In any other cases, the pre-check fails.

7. The SMB protocol is enabled on the target NAS server and the source CIFS server configuration is cloned.
-

Note

All network interfaces that are attached to the source VDM are added to the target SMB server regardless whether they were or were not at the CIFS server of the source VDM.

8. The quota information is dumped from the source file system or file systems to the matching target file system or file systems. If the file system is imported as a VMware FS data store on Unity, quotas import dumping is skipped.
 9. Copy data of all the file systems from the source to the target file systems. The whole directory and file structure of the file system is parsed and cloned at the destination. However, only cold data (data not modified within one hour) is copied. Data that cannot be accessed is skipped during initial copy.
-

Note

Parsing is done only once. If files or directories are created after the parsing is done, those new nodes are migrated during the incremental copy.

10. Local groups and users are migrated before the CIFS shares.
11. All CIFS shares of the source VDM are cloned into the target NAS server.
12. Source parameters that are migrated during migration of CIFS-only VDM include:
 - acl.extAcl
 - acl.restrictedTakeOwnership
 - admin.shareC_NotCreated
 - admin.shareC_RO
 - allowSnapSureVss
 - cifsclient.timeout
 - LanmanServer.disableNameChecking
 - LanmanServer.IdleUserAutoLogoff
 - LanmanServer.MaxMpxCount
 - nullSession
 - ReadOnly.Comp
 - ReadOnly.Delete
 - set_eas_ok
 - smbSigning
 - srvmgr.diskdrive
 - srvpwd.updtMinutes
 - windowsTimeUpdate
 - virtualDirName
 - updateMode
 - updatePTRrecord
 - cacheMaxGroups
 - cacheMaxHosts

- SecurityLayer
- maxNISCacheGroupsCount
- maxNISCacheUsersCount
- followabsolutpath
- followdotdot
- Traces

After the parameter values are applied, the NAS server is restarted to take the new values into account.

If import failed during initial copy, the configuration import is not rolled back. You can resume the import operation after fixing the reported issues, and import start can continue from the last point when it failed.

CIFS-only VDM import cutover

Before you run the cut over operation, ensure the following has not occurred:

- The source VDM has not been deleted or renamed before cutover.
- The file system that is mounted on the source VDM has not been renamed, unmounted, or deleted.
- The source VDM interface has not been deleted or renamed.
- The source SMB server has not been renamed.

When the initial copy has completed, the file import session enters the Ready to Cutover state. You can switch the production VDM from source to target so that the target side NAS server becomes the production side with all data synchronized. During the cutover, the I/O of SMB host clients to the VDM under import will be interrupted and a short period of data unavailability (DU) will be observed. After cutover, the SMB host clients can access the new production side without requiring a remount.

You can launch cutover from either Unisphere, UEMCLI, or REST. Cutover starts a job, which does the following:

1. A pre-cutover validation check.
2. Forces an CIFS server account password update before the cutover.

Note

Not applicable for a standalone CIFS server.

3. All production network interfaces of the source VDM are disabled. CIFS clients cannot access data. Only the import network interface remains up.

Note

Data Unavailable (DU) time is impacted by following factors:

- Number of production client interfaces
 - Number of shares
 - Time to rename and join the source server
-
4. The local group database file, `/.etc/.db.5.localgroups`, is copied from the source VDM to the target NAS Server.
 5. The home directory configuration, which is located in `/.etc/homedir`, is copied from the source VDM to the target NAS Sever.

6. The Kerberos configuration file, `/etc/krb5.conf`, and the file containing the CIFS account, `/etc/krb5.account`, are copied from the source to the target. After the cutover, regular SMB clients can have access to the SMB server at the target in the same way as on the source.

Note

Not applicable for a standalone CIFS server.

7. A new CIFS share synchronization is done with the source to get any updates since the initial share migration was done at the beginning of the initial copy phase.
8. Permission to all the source's CIFS shares is changed to deny any access. This action is taken to prevent any host access to the source VDM data after the cutover.
9. The source CIFS server is renamed to an alternate name that is provided by the administrator.
10. The production interfaces are enabled at the target. DU ends and clients accesses are now directed to the target.
11. Start the incremental copy phase.

Note

Data that was not copied during initial copy phase can be accessed after the cutover. The migration process redirects any I/O operations to non-migrated data to the source VDM, unless it is migrated.

CIFS-only VDM import incremental copy

Incremental copy starts after the cutover to the target storage system. It synchronizes again the target with the source to ensure that all nodes and data that were not migrated during the initial copy phase or updated after it, are migrated to the target. During the incremental copy, all data writes to the target storage system are synchronized back to the source as well to guarantee that the data is identical between the source VDM and target NAS server. This operation ensures data integrity, no data loss, in case the migration session is cancelled after the cutover.

Pause and resume operations are supported during the incremental copy. However, only the incremental copy process can be paused, data synchronizing between the target and source is always running.

During incremental copy, quota import disables online quota check. It is resumed during import committing.

To ensure that the source is always synchronized with the target (for example, to be able to cancel the migration), any change to the target file system is first done at the source file system.

Note

If the modification at the source fails, the modification is not applied at the target and an error is returned to the SMB client. If the source becomes unreachable, the user data becomes unavailable from the target.

CIFS-only VDM import commit

When all data is synchronized between the source VDM and target NAS server, the import session enters the Ready to commit state. You can complete the import through Unisphere or by running the commit command in UEMCLI or REST.

After the commit operation completes, the new data update on the production (target) NAS server is no longer synchronized back to the source VDM. All import specific resources, such as NAS server, file systems, production interfaces, are cleaned up on the target system. The exceptions to this process are the import session information and the summary report. That data is removed when the import related source storage system is deleted from the target storage system. Because the source VDM is obsolete, the import temporary changes on the source VDM are not cleaned up during import commit. You cannot cancel the import session and rollback the imported NAS server to the source VDM after the import session is committed.

CIFS-only VDM import pause

You can manually pause an import session during the Initial Copy state and Incremental Copy state through Unisphere, UEMCLI, or REST. The whole import session is paused when all the underlying file system import sessions are paused. When the import session is paused, the session state remains unchanged but the health state is not OK. A paused import session can be resumed.

Pause during initial copy suspends the migration of the cold data (data not modified within one hour) from the source to the target.

Pause during incremental copy only pauses the data copy of hot data (data that changed during the baseline copy and data that was not accessible during the Initial Copy phase). The data change to the target is still synchronized with the source so that the target system is still usable by the SMB clients and rollback is allowed with data consistency.

CIFS-only VDM import resume

You can resume a paused import session through Unisphere, UEMCLI, or REST. The Resume and Start operation (resume an initialized session) actually share the same command. Similar to the Pause operation, the Resume command returns immediately, and then the file system level import sessions resume one by one internally. The whole import session returns to the running state when all the underlying file system import sessions are resumed. It may take a while for the import session health state to change to the expected OK state. Use the Resume operation to restart the data transfer or configuration import when the import session fails and the reason for the failure has been fixed.

CIFS-only VDM import cancel

Any time during the import, except the cutting over and committing phase, you can decide to cancel an ongoing import session. Depending on which state the import session is in, canceling the import session has different meanings:

- Before import start, the import session is deleted.
- After the import starts and before cutover:
 - Stops data copy
 - Cleans up the copied data and imported configuration data
 - Cleans up the migrating NAS Server and file systems except the user created file systems

Note

CIFS clients still access the source and the source configuration is intact.

- After cutover and before committing, the SMB migration synchronizes back to the source some configuration changes made at the target after the cutover:
 - All network interfaces are disabled at the target. The DU starts from there.
 - All file system data migration is stopped. The data on the source file system are in synchronization with the data on the target file system.
 - The SMB server Active Directory (AD) account is copied back to the source. The source can reuse the AD account without any change in AD.
 - The CIFS server at the source is renamed to the production name of the CIFS server. There is no join. The CIFS can reuse the AD account without any change.

Note

Since AES256 is not supported on the VNX, regular CIFS clients may need to clear their kerberos cache (klist purge) to be able to re-connect.

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- The home directory file at the target is copied back to the source.
 - Any add, delete, or update of shares done at the target during the incremental copy, are propagated back to the source (including Access Control List (ACL)). There are several limitations relative to Distributed File System (DFS):
 - Only DFS links of pre-existing DFS shares at the source are synced.
 - DFS shares that are created during incremental copy will be non DFS on source.
 - DFS shares that were DFS at the source will stay DFS
 - Re-enable all production interfaces at the source.
 - The source VDM is restarted to take all configuration updates into account. The DU ends at the end of this step.
 - The NAS server and file systems at the target are deleted.

Note

The import session is not destroyed to keep access to the downloadable import report.

If the user creates file systems after import cutover, these file systems and the target NAS server are kept while the target production interfaces are removed.

View CIFS-only VDM import information

You can view VDM import session information from Unisphere, UEMCLI, or REST. After an import session is created, you can query the progress of the session from UEMCLI or REST. However, this property is only valid when the session is in the Initial Copy phase or Incremental Copy phase:

- When the VDM import session is in the Initial Copy phase, the progress reflects the progress of the whole initial copy, including initial data copy, configuration import, and quota configuration import.
- When the VDM import session is in the Incremental Copy phase, the progress just reflects the progress of the incremental data copy.

Import Summary Report

The Import Summary Report provides information about the import session. The report can be downloaded during any of the various stages of the Import process (for

example, during Initial Copy, Syncing, Paused, Ready to Cutover, Ready to Commit states, Canceled, Completed). This report can be meaningful when reviewing or troubleshooting import session progress. In Unisphere, after creating an import session, go to **More Actions > Download Summary Report**, which produces a Zip file that can be downloaded to the host system. The most relevant file from the download is the SummaryReport.html.

APPENDIX C

LUN or Consistency Group of LUNs import details

This appendix addresses the following topics:

- [LUN or Consistency Group of LUNs import work flow](#)..... 94

LUN or Consistency Group of LUNs import work flow

All LUN or Consistency Group (CG) import operations are executed from the target Unity storage system.

Prerequisites for a LUN or CG import session

Before starting a LUN or CG import session, the following conditions must be met:

1. The source VNX system exists, and the VNX1 Block OE is 5.32.x or later or the VNX2 Block OE is 5.33.x or later.
2. (Optional) The specified name for the import session is not used by other import sessions.
3. SAN Copy is enabled on the source VNX system.
4. The source LUN or CG exists.
5. The source LUN or CG is not under import or has an associated complete import.
6. Depending on the type of import connection that is used between the source and target systems:
 - For an import using an FC-based connection, FC ports are cabled and ports zoning is configured between the VNX and Unity storage systems.

Note

Avoid ports that are used for host traffic and MirrorView. On the VNX, SAN Copy and MirrorView configured on the same ports do not operate. Import connections cannot be configured. Configure and cable the source SPA FC_1 and SPB FC_1 ports to the target SPA FC_1 and SPB FC_1 ports for SAN Copy. Also, avoid ports that are used for synchronous replication.

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- For an import using an iSCSI-based connection, iSCSI interfaces are configured on both the source and target systems.
 - Configure iSCSI IP interfaces on SPA and SPB on the source system. Avoid MirrorView reserved iSCSI ports for block import iSCSI interfaces.
 - Configure iSCSI IP connections between the source and target systems and verify the connection configuration.
 - Once the import connections are created, the following has occurred:
 - Management IP connectivity and VNX Admin credentials are verified.
 - VNX SAN Copy FC or iSCSI initiators are discovered and registered.
 - All block resources on the source system that are eligible for import are discovered.

Note

The discovered objects and their relationships persist.

7. A reserved LUN pool (RLP) is configured:

Note

The size of the RLP LUN created for a source LUN is recommended to be 20% of the size of the source LUN.

- For the import of a single LUN, one RLP LUN is configured.
- For the import of a CG of LUNs, one RLP LUN is configured for each LUN in the CG.

Note

An RLP LUN is not tagged to a source LUN for a specific feature. When an RLP LUN is added to an RLP that is intended for a source LUN, it is possible that a completely different SnapView or other SAN Copy session can consume the newly added RLP LUN. It is recommended that other features like SnapView and MirrorView/A are stopped during import.

8. Configure hosts on the target system the same as the hosts or storage groups on the source system.
-

Note

For iSCSI hosts, the hosts should log in to the target system to register the host initiators on the target system.

Start a LUN or CG import session

The import session is automatically started after creation in the Unisphere UI.

For UEMCLI or REST, the UEMCLI command and REST operation of start are shared with the same command and operation of resume to align with the behavior of VDM import and replication. If the import start fails, the import state is kept as Initial Copy with a Minor failure health state and the health details being set to `The import session failed to provision target resource. At this time, you can fix the problem by getting detailed information from the job and tasks and then resume the import session.`

The start of an import session is an asynchronous operation by default and always returns a success after creating a backend job to run the initial copy. Before the start of the import, a pre-check is done.

In the event of a system reboot, import sessions are paused and resume automatically when the system returns. Affected LUNs may fail over to the peer SP. If a LUN is failed over, it would need to be failed back and the session resumed.

LUN or CG import initial copy

When the import session starts, it enters the initial copy state. The target resource (LUN or CG) is automatically created on the selected target pool from the respective source LUN or CG and balanced between the target SPs. The SAN Copy limits that are configured on the source system are used to schedule syncs:

1. From the current SP of the LUN or LUNs in the import session, separate lists are created for SPA and SPB LUNs from which to find the counts for each SP.
2. If there are available differential sync slots from the concurrent SAN Copy sync limits, the slots are allocated so from SPA and SPB and the session is changed from the Pending to Syncing state.

Note

Once slots from SPA and SPB are allocated to an import session, no other session can take those slots until either the session is canceled or completed. If the session is canceled or completed, the slots are distributed to either existing sessions (if they can benefit from it) or new pending sessions.

3. Once the import session reaches below the cutover threshold (percentage of data remaining to be copied), the session is changed from the Syncing to Ready for Cutover state.

LUN or CG import cutover

When the initial copy has completed, the LUN or CG import session enters the Ready to Cutover state. Before you run the cutover operation, ensure that the import session exists and is in the Cutover Ready state.

You can launch cutover from either Unisphere, UEMCLI, or REST. Cutover starts a job, which does the following:

- Host access on VNX Source system for source LUN or LUNs is disabled for all hosts by removing source LUN or LUNs from Host SGs.
-

Note

It is required that all Host I/O be paused before cutover is issued.

- Differential sync for SAN Copy session is run to sync the last delta.
- SAN Copy session is deleted.
- Host access to target LUN or LUNs is enabled for the selected hosts that are configured on the target system.