

Cisco UCS Director EMC VNX Management Guide, Release 6.0

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Audience

This guide is intended primarily for data center administrators who use Cisco UCS Director and who have responsibilities and expertise in one or more of the following:

- Server administration
- Storage administration
- Network administration
- Network security
- Virtualization and virtual machines

Conventions

Text Type	Indication
GUI elements	GUI elements such as tab titles, area names, and field labels appear in **this font**. Main titles such as window, dialog box, and wizard titles appear in **this font**.
Document titles	Document titles appear in *this font*.
TUI elements	In a Text-based User Interface, text the system displays appears in `this font`.

Text Type	Indication
System output	Terminal sessions and information that the system displays appear in `this font`.
CLI commands	CLI command keywords appear in **this font**. Variables in a CLI command appear in *this font*.
[ ]	Elements in square brackets are optional.
{x | y | z}	Required alternative keywords are grouped in braces and separated by vertical bars.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.



Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the document.



Caution Means *reader be careful*. In this situation, you might perform an action that could result in equipment damage or loss of data.



Tip Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.



Timesaver Means *the described action saves time*. You can save time by performing the action described in the paragraph.

Warning

IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS

Related Documentation

Cisco UCS Director Documentation Roadmap

For a complete list of Cisco UCS Director documentation, see the *Cisco UCS Director Documentation Roadmap* available at the following URL: http://www.cisco.com/en/US/docs/unified_computing/ucs/ucs-director/doc-roadmap/b_UCSDirectorDocRoadmap.html.

Cisco UCS Documentation Roadmaps

For a complete list of all B-Series documentation, see the *Cisco UCS B-Series Servers Documentation Roadmap* available at the following URL: http://www.cisco.com/go/unifiedcomputing/b-series-doc.

For a complete list of all C-Series documentation, see the *Cisco UCS C-Series Servers Documentation Roadmap* available at the following URL: http://www.cisco.com/go/unifiedcomputing/c-series-doc.

Note The *Cisco UCS B-Series Servers Documentation Roadmap* includes links to documentation for Cisco UCS Manager and Cisco UCS Central. The *Cisco UCS C-Series Servers Documentation Roadmap* includes links to documentation for Cisco Integrated Management Controller.

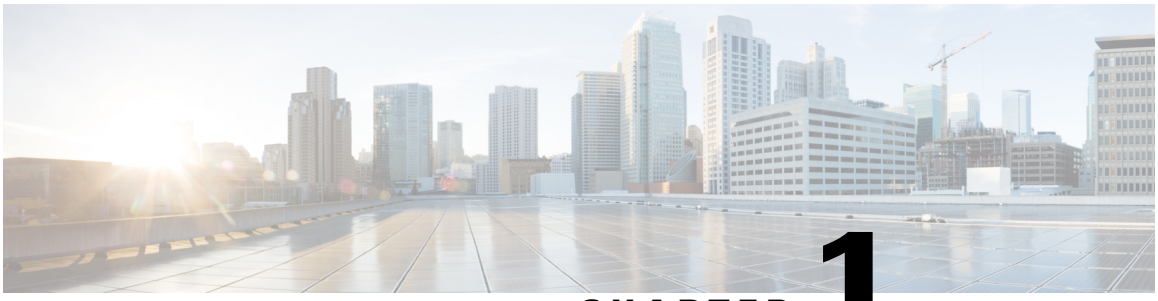
Documentation Feedback

To provide technical feedback on this document, or to report an error or omission, please send your comments to ucs-director-docfeedback@cisco.com. We appreciate your feedback.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see What's New in Cisco Product Documentation.

To receive new and revised Cisco technical content directly to your desktop, you can subscribe to the What's New in Cisco Product Documentation RSS feed. RSS feeds are a free service.



CHAPTER 1

New and Changed Information for this Release

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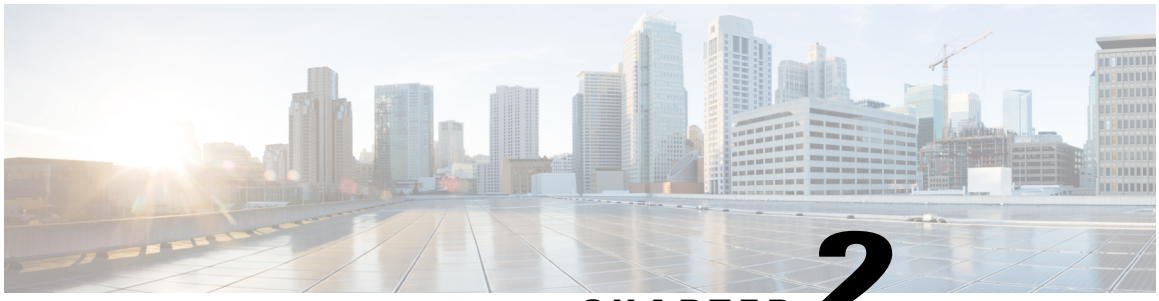
New and Changed Information for this Release

No significant changes were made to this guide for the current release.

New and Changed Information for this Release



CHAPTER 2

Overview

This chapter contains the following sections:

- About Cisco UCS Director for EMC VNX, page 3

About Cisco UCS Director for EMC VNX

Cisco UCS Director supports EMC VNX block, file, and unified storage accounts. Block supports block data, file supports file data, and unified supports both block and file data.

Note See the Compatibility Matrix for all supported VNX versions.

For a VNX Block account, you can manage the following:

- Block Storage Pools
- Storage Groups
- RAID Groups
- Host Initiators
- Logical Unit Numbers (LUNs)

The reports for VNX Block accounts also include details on all of these items, and on storage processors, ports, meta LUNs, hosts, ports, and disk devices.

For a VNX File account, you can manage the following:

- Data Movers
- Storage Pools for File
- Volumes
- Filesystems
- Common Internet File Servers (CIFS) servers
- Common Internet File Servers (CIFS) shares

- Network File System (NFS) exports
- Data Mover Interfaces
- DNS Domains

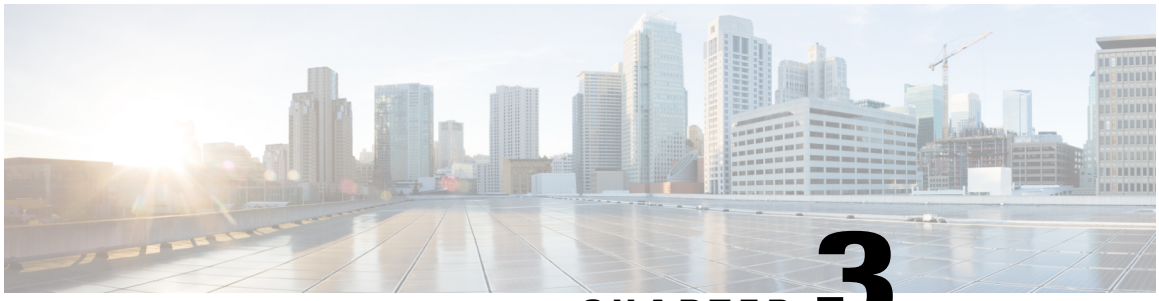
The reports available for VNX File accounts include details on the above items, and system overview summaries.

For a VNX File new account, you create either Common Internet File Servers (CIFS) or Network File System (NFS) Export.

For NFS Export, you create the following:

- Storage pools for files
- File systems
- Interfaces
- Volumes
- Mounts

For a VNX unified account, which combines VNX block and VNX file accounts, you can perform all the steps needed for both VNX block and VNX file accounts.



CHAPTER 3

Installing EMC NaviSphere

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Installing EMC NaviSphere

To communicate with VNX, Cisco UCS Director supports Windows-based EMC NaviSphere and Linux-based EMC Navisphere.

Before using NaviSphere, you must install and configure a Secure Shell (SSH) server on it.

Installing and Configuring Windows-Based Navisphere

Guidelines for SSHD Server Configuration

To set up an SSHD server, we recommend that you install Cygwin version 1.7.27, and use the SSH daemon on the host. Cygwin provides a Linux-like environment on Microsoft Windows.

After you install the SSHD server on the Windows-based EMC NaviSphere, modify the Path variable under System Variables to include the NaviSphere `bin` folder. This update ensures that anyone who uses SSH to access Windows-based NaviSphere can execute VNX commands.

After you configure the SSHD server, set up new default paths to enable the user-installed software to override the system software.

Installing a Cygwin Package

Ensure that you install the `openssh`, `openssl`, and `TCL` Cygwin packages on a Windows host.

Step 1 Download the Cygwin executable from http://www.cygwin.com/.

Step 2 While installing the Cygwin package on the package selection screen, choose the following packages:

- openssh

- openssl
- TCL

Configuring the SSHD Server

Step 1 Navigate to the `C:\Cygwin-Install-Dir.` directory,

Step 2 Open the `Cygwin.bat` file in edit mode, using any editor, and add the following line: set CYGWIN=binmode ntsec
The following example shows the contents of the `Cygwin.bat` file after adding the above line:

```
@echo off
            C:
            chdir C:\<Cygwin-Install-Dir>\bin
            set CYGWIN=binmode ntsec
            bash --login -i
```

Step 3 Configure the SSHD service by running the `C:\Cygwin-Install-Dir\Cygwin.bat` file in a command prompt and enter the following command: `$ ssh-host-config`.

a) Answer the following questions:

Question	Recommended Response
Should privilege separation be used? <yes/no>	Yes
New local account 'sshd'? <yes/no>	Yes
Do you want to install sshd as a service? <yes/no>	No if SSHD is already installed as a service. Yes if SSH has not yet been installed as a service.
Enter the value of CYGWIN for the daemon: [ ] binmode ntsec	Enter the value as binmode ntsec
Do you want to use a different name? (yes/no)	Yes
Enter the new username: <new-username>	Enter the new username.
Reenter: <new-username>	Reenter the new username.
Replace cloupia with new-username? (yes/no)	Yes
Please enter the password: <password>	Enter the password for this account.

Question	Recommended Response
Reenter: <password>	Reenter the password for this account.

Configuring System Environment Variables

Step 1 On the Windows host, right-click the **Computer** icon on the desktop and choose **Properties**.

Step 2 If you don't have a computer icon on your desktop, do the following:

a) Click **Start**.
b) Right-click the **Computer** option in the Start menu.
c) Choose **Properties**.

Step 3 Click **Advanced System Settings**.

Step 4 On the **Advanced** tab, choose **Environment Variables**.

Step 5 Under **System Variables** choose the **Path** variable and append the following two binary paths: `c:\Program Files (x86)\EMC\Navisphere CLI;c:\<Cygwin-Install-Dir>\bin.`
The following is an example of the path variable with the binary paths added:

```
Variable Name: Path
     Variable Value: <Existing Folders Path>;c:\Program Files(x86)\EMC\Navisphere CLI;c:\cygwin
64\bin
```

Step 6 Add the following new system variable:

- System Variable Name: `CYGWIN`
- System Variable Value: `binmode tty ntsec`

Starting the Cygwin SSHD Service

Step 1 Start the Cygwin SSHD service manually under Window Services.

Step 2 Configure the Cygwin SSHD service to start automatically every time the computer is restarted.

Verifying SSH Access

Ensure that you can run the `naviseccli` commands without providing the absolute path at the command prompt. You can use any SSH client to verify SSH access.

Step 1 In your SSH client, access another machine that has the SSH client running and execute one of the following commands:

- `ssh USERNAME@host-ipaddress 'date'`
- `ssh -l USERNAME@host-ipaddress 'date'`

Example:
For example, `ssh -l user@host-ipaddress 'date'`

Step 2 Enter the password for the account when prompted.
After you enter the correct password, the command returns the current date.

Configuring the Navisphere Path for Windows

By default, Cisco UCS Director executes NavisecCLI commands with an explicit path that does not exist in Windows. You must create a softlink to that path through the Cygwin shell.

Before You Begin

Install Cygwin on the same Windows server as NavisecCLI.

Step 1 Open the Cygwin shell.

Step 2 In the Cygwin shell, create the following directory: `/opt/Navisphere`

Step 3 Create a softlink for the Navisphere directory.

Example:
For example. if you installed Navisphere in the `C:\Program Files (x86)\EMC\NavisphereCLI` directory, execute the following command to create a softlink:

```
ln -s /cygdrive/c/Program\ Files\ \(x86\)/EMC/NavisphereCLI /opt/Navisphere/bin
cd /opt/Navisphere/bin
chmod 775 NaviSECCli.exe
```

Installing and Configuring a Linux Based NaviSphere

Step 1 Search and download the **naviseccli** package for VNX from EMC Support for your specific platform.
For example,
`NaviCLI-Linux-64-x86-en_US-7.33.2.0.51-1.x86_64.rpm.`

Step 2 Switch to root user using *su [username]* if you are not already.

Step 3 Install the **naviseccli** package using the **rpm** command.
For example,
```
rpm -i NaviCLI-Linux-64-x86-en_US-7.33.2.0.51-1.x86_64.rpm
```

Step 4 You are prompted to enter a certificate verifying level. Give verifying level as medium[m].

Step 5 Add the **naviseccli** bin directory, which is usually */opt/Navisphere/bin*, to your system PATH. For example, add the following line to *~/.bash_profile & ~/.bashrc* and then execute this file to make the setting effective by running *source ~/.bash_profile* or *source ~/.bashrc*.
```
PATH=$PATH:/opt/Navisphere/bin
   export PATH
```

Step 6 You must configure this installation of **the naviseccli** to work with each storage processor on each array that it connects to. For all storage processors on all arrays from which this agent collects data, run the following command:
```
 naviseccli -user usename -password password -h sp_ip -scope 0 -np getagent
```

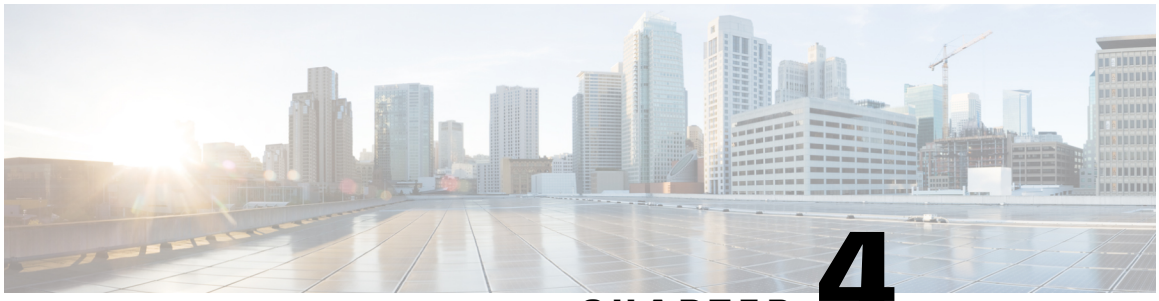
Step 7 . When you reach the security prompt, save the certificate (option 2).

Step 8 Run the same command for each of the storage processors to be used, with a script if necessary. The security prompt should not show again.

Step 9 Log in to UCS Director using an SSH Client as 'root' user. Run the following command against the **Navisphere** host where **Naviseccli** is installed.
This step must be done before adding a VNX Storage Array as an account in UCS Director.
```
# ssh <navicli-user>@<navicli-host-ip> naviseccli -User sysadmin -Password <sysadmin-pass> -Scope 0
 -Address <SP-A-IP> port -list
```

Step 10 Enter the password at the login prompt (after accepting the SSH certificate)
It should list VNX Storage Array port configuration. If it first asks to save the certificate, choose option-2

Step 11 Run the same command shown in Step 9 against the SP-B IP Address as well to save the certificate.



CHAPTER 4

Adding an Account

This chapter contains the following sections:

- VNX Tasks, page 11
- Account Types, page 11
- Adding a VNX File Account, page 12
- Adding a VNX Block Account, page 13
- Adding a VNX Unified Account, page 15

VNX Tasks

To display the available tasks for EMC VNX:

Step 1 On the menu bar, choose **Policies > Orchestration > Workflows** >.

Step 2 Choose **Physical Storage Tasks > EMC VNX > EMC VNX Tasks**.

Changing Information in a VNX Account

To change information in a VNX account, click **Edit**.

Account Types

In Cisco UCS Director you can add three different types of VNX accounts:

- VNX file account—X-Blade enclosure, two to eight blades, configurable failover options, and flexible I/O connectivity. You can have one data mover per license.

- VNX block account—Storage or data processor enclosure, dual active storage processors, automatic failover, and flexible I/O connectivity. You can have two service providers per license.
- VNX unified account—Single platform for VNX file and VNX block. You can have two service providers per license.

Adding a VNX File Account

Before You Begin

You must create a pod for the account.



Note To change any information in a VNX account, click **Edit**.

Step 1 On the menu bar, choose **Administration > Physical Accounts**.

Step 2 In the **Physical Accounts** pane, click **Add**.

Step 3 In the **Add Account** dialog box, complete the following fields:

Name	Description
Pod drop-down list	Choose the pod for this account.
Category drop-down list	Choose **Storage**.
Account Type drop-down list	Choose **EMC VNX File**.

Step 4 Click **Submit**.

Step 5 In the second **Add Account** dialog box, complete the following fields:

Name	Description
Pod drop-down list	The preselected pod for this account appears.
Account Type drop-down list	The preselected type for this account appears.
Account Name field	The account name.
Description field	The description of this account.
Use Credential Policy check box	Check this check box to apply a new or existing policy to the VNX. **Note** If you click this option and apply a policy, the **Control Station IP Address** field, **Password** field, **Transport type** drop-down list, and the **Port** field described below do not appear in this form. They are administered by the policy.

Name	Description
Credential Policy drop-down list and **Add Credential Policy form** icon	You have these two options if you check the **Use Credential Policy** check box: • From the **Credential Policy** drop-down list, choose a predefined policy for this type of account and apply that policy data to this account. • Click the **Add Credential Policy form** icon, and use it to define a policy for this type of account. You can use a defined credential policy in future sessions; it appears in the drop-down list.
Control Station IP Address	The control station IP address of the VNX.
Password field	The password associated with the specified control station address.
Transport Type drop-down list	Choose the transport type.
Port field	The port.
Contact Email field	The contact's email.
Location field	The contact's location (user defined).

Step 6 Click **Submit**.

Step 7 In the **Physical Accounts** pane, choose the account.

Step 8 Click **Test Connection**.

What to Do Next

To change information in a VNX account, click **Edit**.

Adding a VNX Block Account

Before You Begin

- Create a pod for either the generic or Vblock account types.
- Configure a VM.
- Uninstall the legacy NaviCLI software (if it is currently installed).
- Install the new secure NaviSecCLI software so that all Navisphere features are supported (if it is not currently installed).

- Create a set of user credentials for the NaviCLI package with enough privileges to run NaviSecCLI commands to manage and configure VNX storage.

Step 1 On the menu bar, choose **Administration > Physical Accounts**.

Step 2 In the **Physical Accounts** pane, click **Add**.

Step 3 In the **Add Account** dialog box, complete the following fields:

Name	Description
Pod drop-down list	Choose the pod for this account.
Category drop-down list	Choose **Storage**.
Account Type drop-down list	Choose **EMC VNX Block**.

Step 4 Click **Submit**.

Step 5 In the second **Add Account** dialog box, complete the following fields:

Name	Description
Pod drop-down list	The preselected pod (data center) for this account appears.
Account Type drop-down list	The preselected type for this account appears.
Account Name field	The account name.
Description field	The description of this account.
Storage Processor A IP Address field	The IP address for Storage Processor A.
Storage Processor B IP Address field	The IP address for Storage Processor B.
Use Credential Policy check box	Check this check box to apply a new or existing credential policy to the VNX. **Note** If you click this option and apply a policy, the **Block Access User Name** and **Block Access Password** fields described below do not appear in this form.
Credential Policy drop-down list and **Add Credential Policy form** icon	You have these two options if you check the **Use Credential Policy** check box. • From the credential policy drop-down list, choose a predefined policy for this type of account and apply that policy data to this account. • Click the **Add Credential Policy form** icon, and use it to define a policy for this type of account. You can use a defined credential policy in future sessions; it will appear in the drop-down list.

Name	Description
Block Access User Name field	The username for block access. **Note** If you apply a policy, the **Block Access User Name** and **Block Access Password** fields do not appear in this form. The **Block Access Password** is described below.
Block Access Password field	The password for block access.
Protocol drop-down list	Choose the protocol to be used.
NaviSecCLI Host IP Address field	The address for the secure NaviSecCLI host. **Note** NaviSecCLI with Windows is supported from 5.4 release.
Use Credential Policy check box	Check this check box to apply a new or existing credential policy. See the description of your options in the **Credential Policy** and **Add Credential Policy form** icon row above. **Note** If you apply a policy, the **NaviSecCLI Host User Name** and **NaviSecCLI Host User Password** fields described below do not appear in this form.
NaviSecCLI Host User Name field	The username for the specified secure NaviSecCLI host.
NaviSecCLI Host User Password field	The password for the specified secure NaviSecCLI host.
Block Access Port field	The port to be used.
Scope drop-down list	Choose the scope.
Contact field	The contact email.
Location field	The contact's location (user defined).

Step 6 Click **Submit**.

Step 7 In the **Physical Accounts** pane, choose the account.

Step 8 Click **Test Connection**.

Adding a VNX Unified Account

- Create a pod for either the generic or Vblock account types.
- Uninstall the legacy NaviCLI software (if it is currently installed).

- Install the new secure NaviSecCLI software so that all Navisphere features are supported (if it is not currently installed).
- Create a set of user credentials for the NaviSecCLI package with enough privileges to run NaviSecCLI commands to manage and configure VNX storage.

Step 1 On the menu bar, choose **Administration > Physical Accounts**.

Step 2 In the **Physical Accounts** pane, click **Add**.

Step 3 In the **Add Account** dialog box, complete the following fields:

Name	Description
Pod drop-down list	Choose the pod (data center) for this account.
Category drop-down list	Choose **Storage**.
Account Type drop-down list	Choose **EMC VNX Unified**.

Step 4 Click **Submit**.

Step 5 In the second **Add Account** dialog box, complete the following fields:

Name	Description
Pod drop-down list	The preselected pod (data center) for this account appears.
Account Type drop-down list	The preselected type for this account appears.
Account Name field	The account name.
Description field	Description of this account.
The Control Station IP Address field	The control station IP address of the VNX.
Use Credential Policy check box	Check this check box to apply a new or existing policy to the VNX. **Note** If you click this option and apply a policy, the Control Station User Name and Password field, and the File Access Protocol and File Access Port fields described below will not appear in this form. They are administered by the policy.
Credential Policy drop-down list and **Add Credential Policy form** icon	You have these two options if you check the **Use Credential Policy** check box: • From the credential policy drop-down list, choose a predefined policy for this type of account and apply that policy data to this account. • Click the **Add Credential Policy form** icon, and use it to define a policy for this type of account. You can use a defined credential policy in future sessions; it appears in the drop-down list.

Name	Description
Control Station User Name field	The username associated with the specified control station address.
Password field	The password associated with the Control Station IP address and username.
File Access Protocol drop-down list	Choose the protocol to be used.
File Access Port field	The port to be used.
Storage Processor A IP Address field	The IP address for Storage Processor A.
Storage Processor B IP Address field	The IP address for Storage Processor B.
Use Credential Policy check box	Check this check box to apply a new or existing credential policy. See the description of your options in the previous Credential Policy drop-down list and Add Credential Policy form icon row. **Note** If you apply a policy, the **NaviSecCLI Host User Name** and **NaviSecCLI Host User Password** fields described below do not appear in this form.
Block Access User Name field	The username for block access.
Block Access Password field	The associated password for block access.
NaviSecCLI Host IP Address field	The address for the secure NaviSecCLI host. **Note** NaviSecCLI with Windows is supported from 5.4 release.
Use Credential Policy check box	Check this check box to apply a new or existing credential policy. See the description of your options in the previous Credential Policy drop-down list and Add Credential Policy form icon row. **Note** If you apply a policy, the **NaviSecCLI Host User Name** and **NaviSecCLI Host User Password** fields described below do not appear in this form.
NaviSecCLI Host User Name field	The username for the specified secure NaviSecCLI host.
NaviSecCLI Host User Password field	The password for the specified secure NaviSecCLI host.
Block Access Port field	The port to be used.
Scope drop-down list	Choose the scope.
Contact field	The contact email.
Location field	The contact's location (user defined).

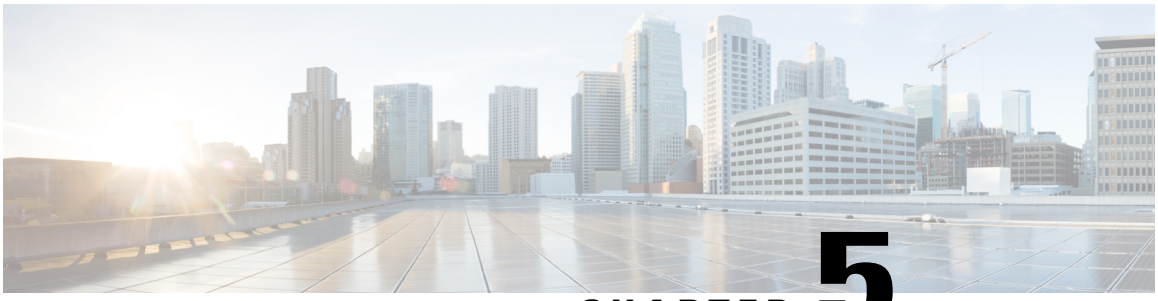
Step 6 Click **Submit**.

Step 7 In the **Physical Accounts** pane, choose the account.

Step 8 Click **Test Connection**.

What to Do Next

To change information in a VNX account, click **Edit**.



CHAPTER 5

Managing VNX Block Storage

This chapter contains the following sections:

- VNX Block Storage Management, page 19
- Summary of Steps, page 20
- Storage Pools, page 21
- RAID Groups, page 22
- Host Initiators, page 24
- Storage Groups, page 26
- LUNs, page 26
- Adding a Host to a Storage Group, page 29
- Adding a LUN to a Storage Group, page 30
- Creating a Meta LUN, page 30
- Associating a LUN as a Datastore, page 32

VNX Block Storage Management

For VNX block (and VNX unified) accounts, you manage the following pools, groups, devices, and views:

- Storage pools—Name, description, RAID type (RAID 1/0, RAID-5, RAID-6), disks, and percentage of the full threshold
- RAID groups—RAID group ID, RAID Type (RAID 1, 0, 3, or 5, disk, hot spare), expansion, or defragmentation priority, disks. You have options to automatically destroy a RAID group after the last LUN is unbound, and for power saving.
- Host initiators—Add to new or existing host, hostname, WWN/IQN, SP port, initiator type (CLARiiON Open, HP Auto Trespass, HP No Auto Trespass, SGI, Fujitsu Siemens, Compaq Tru64), and failover mode (Active-Active mode -Failover Mode 4, Active-Passive mode (PNR)-Failover Mode 1, AIX Active-Passive mode (PAR)-Failover Mode 3, Legacy Failover Mode 2, Legacy Failover Mode 0). You add hosts to the storage groups.

- Storage groups—Name
- Logical unit numbers (LUNs)—Storage pool type (pool, RAID group), RAID type (1_0, 5), storage pool for new LUN (new or existing pool), user capacity, capacity units (MB, GB, TB, Blocks), alignment offset (LBA), default owner, initial tier placement (optimize for pool performance, highest available tier, lowest available tier), and options for automatically assigning LUN IDs as LUN names, LUN ID autogeneration, and Thin or Maximum provisioning. You mount LUNs as Datastores and also add them to the storage groups.

The read-only report detail includes the following information:

- **System Summary—**File system allocation and system overview summary graphs
- **Data Movers—**Unique ID, account name, server name, and role
- **Storage Processors—**SP name, serial number, IP address, and faults (on or off)
- **Disk Devices—**Unique ID, account name, name, disk type, state, capacity (GB), and other data
- **Hosts—**Account name, hostname, IP address, storage group, attached to host (on or off), number of HBA ports, log in status, and status
- **Initiators—**Account name, storage group, initiator name, log in status, SP port ID, SP port type, registered (y/n), hostname, and IP address
- **Ports—**SP port, port IP address, port WWN, port type, storage processor, and fabric WWN
- **More Reports—**Tabular report for RAID groups or hosts, and instant reports for file system allocation, as well as the top five storage capacity file systems, the top five file systems file count, and the top five storage capacity volumes

Summary of Steps

Step 1 Add the VNX block account (s).

Step 2 Create the pools, groups, hosts, and LUNs needed for block management:

a) Create the storage pools.
b) Create the RAID groups.
c) Create the host initiators.
d) Create the storage groups.
e) Create the LUNs and mount them as datastores.
f) Add hosts to the storage groups.
g) Add LUNs to the storage groups.

Step 3 Review reports.

Storage Pools

A storage pool requires the following parameters:

- Storage pool name
- Description
- RAID type—1/0, 5, or 6
- Disks
- Percent full threshold

You click buttons on the **Block Storage Pools** tab for the following actions:

Button Name	Description
Create	Creates a new storage pool.
Delete	Deletes a selected storage pool.
Expand	Expands a selected storage pool.
Assign to Group	Assigns a selected storage pool to a group.
View Details	Views details on a selected storage pool.

Creating a Storage Pool

Step 1 On the menu bar, choose **Physical > Storage**.

Step 2 On the **Storage** pane, choose the VNX pod on which you want to create a storage pool.

Step 3 Click the **Block Storage Pools** tab.

Step 4 Click **Create**.

Step 5 In the **Create Storage Pool** dialog box, complete the following fields:

Name	Description
Storage Pool Name field	The storage pool name.
Description field	The description.
RAID Type drop-down list	Choose the **RAID Type**. This can be one of the following: **1/0** **5** **8**

Name	Description
Disks field	Click **Select**. Go to Step 6.
Percent Full Threshold field	The percentage full threshold.

Step 6 In the **Select Items** dialog box, choose one of the following options:

- Check the individual items to use a subset of disks.
- **Check All** (to use all disks)
- **Check None** (to use no disks)

Step 7 Click **Select**.

Step 8 In the **Create Storage Pool** dialog box, click **Submit.**

RAID Groups

A RAID group has the following parameters:

- RAID Group ID—The system can specify or you can create a group ID
- RAID type—1/0, 5, or 6
- Option to automatically destroy after last LUN is unbound
- Expansion or defragmentation priority
- Option to allow power saving
- Disks

You click buttons on the **RAID Groups** tab for the following actions:

Button Name	Description
Create	Creates a new RAID group.
Delete	Deletes a selected RAID group.
Assign to Group	Assigns a selected RAID group to a group.
View Details	Views details about the selected RAID group.

Creating a RAID Group

Step 1 On the menu bar, choose **Physical > Storage**.

Step 2 On the **Storage** pane, choose the VNX data center where you want to create a RAID group.

Step 3 Click the **RAID Groups** tab.

Step 4 Click **Create**.

Step 5 In the **Create RAID Group** dialog box, complete the following fields:

Name	Description
RAID Group ID field	Enter the RAID group ID. This can be one of the following: **1** **0** **3** **5** **disk** **hot spare**
RAID Type drop-down list	Choose the RAID type. This can be one of the following: **RAID0** **RAID1** **RAID1/0** **RAID3** **RAID5** **RAID6** **DISK**
Allow Power Saving check box	If checked, the system allows power saving for this RAID group.
Disks field	Click **Select**. Go to Step 6.

Step 6 In the **Select Items** dialog box, choose one of the following options:

- Check the individual items to use a subset of disks.

• Check the box next to Account Name to select all of the disks. Uncheck the box to Deselct all of the disks.

Step 7 Click **Select**.

Step 8 In the **Create RAID Group** dialog box, click **Submit.**

Host Initiators

A host initiator requires the following parameters:

- Add initiator to—You can add an initiator to a new or existing host
- Host
- WWN/IQN
- SP port
- Initiator type
- Failover mode

You click buttons on the **Initiators** tab for the following actions:

Button Name	Description
Register	Registers a new initiator.
View Details	Views details about the selected initiator.
Deregister	Deregisters a selected initiator.

Registering a Host Initiator

Step 1 On the menu bar, choose **Physical > Storage**.

Step 2 On the **Storage** pane, choose the VNX data center where you want to register a host initiator.

Step 3 Click the **Initiators** tab.

Step 4 Click **Register**.

Step 5 In the **Register Host Initiator** dialog box, complete the following fields:

Name	Description
Add Initiator to drop-down list	Choose either **Existing Host** or **New Host**. If you chose **New Host**, go to Step 6.

Name	Description
Host field	If you chose **Existing Host**, click **Select**. Go to Step 7.
WWN/IQN	The WWN/IQN for the new or existing host.
SP Port field	Click **Select.** Go to Step 8.
Initiator Type drop-down list	Choose the **Initiator Type**. This can be one of the following: • CLARiiON Open • HP Auto Trespass • HP No Auto Trespass • SGI • Fujitsu Siemens • Compaq Tru64
Failover Mode drop-down list	Choose the **Failover Mode**. This can be one of the following: • Active-Active mode-Failover Mode 4 • Active-Passive mode (PNR)-Failover Mode 1 • AIX Active-Passive mode (PAR)-Failover Mode 3 • Legacy Failover Mode 2 • Legacy Failover Mode 0

Step 6 In the same dialog box, to add the initiator to a new host, complete the following fields:

Name	Description
Host Name field	The hostname of the new host.
IP Address field	The IP address of the new host.

Step 7 In the **Select** dialog box, to add the initiator to an existing host, choose one of the hosts, and click **Select**.

Step 8 In the **Select** dialog box, choose one of the **SP Ports** in the list, and click **Select**.

Step 9 In the **Register Host Initiator** dialog box, click **Submit.**

Storage Groups

A storage group requires a name as a parameter.

You click buttons on the **Storage Groups** tab for the following actions:

Button Name	Description
Create	Creates a new storage group.
View Details	Views details about the selected storage group.
Delete	Deletes a selected storage group.
Add LUN	Adds a LUN to a selected storage group.
Remove LUN	Removes a LUN from a selected storage group.
Add Host	Adds a host to a selected storage group.
Remove Host	Removes a host from a selected storage group.

Creating a Storage Group

Step 1 On the menu bar, choose **Physical > Storage**.

Step 2 On the **Storage** pane, choose the VNX data center where you want to create the storage group.

Step 3 Click the **Storage Groups** tab.

Step 4 Click **Create**.

Step 5 In the **Create Storage Group** dialog box, enter the name for the storage group in the **Name** field.

Step 6 Click **Submit.**

What to Do Next

Add hosts and LUNs to the storage group on the **Storage Groups** tab.

LUNs

A LUN has the following parameters:

- Option to automatically assign LUN IDs as LUN names
- Option to allow the system to specify the LUN ID
- Storage pool type

- RAID type
- Storage pool
- Thin or maximum provisioning
- User capacity (thin LUN only)
- Capacity units
- LUN ID
- Alignment offset (LBA)
- Default owner

You click buttons on the **LUNs** tab for the following actions:

Button Name	Description
Create	Creates a LUN.
Delete	Deletes a selected LUN.
Expand	Expands a selected LUN.
Create Meta LUN	Create a Meta LUN for a selected LUN.
Associate LUN as Datastore	Associates a LUN as a Datastore.
Assign to Group	Assigns a selected LUN to a group.
View Details	View details on a selected LUN.

Creating a LUN

- On the menu bar, choose **Physical > Storage**.
- On the **Storage** pane, choose the VNX pod where you want to create a LUN.
- Click the **LUNs** tab.
- Click **Create**.
- In the **Create LUN** dialog box, complete the following fields:

Name	Description
Storage Pool Type drop-down list	Choose the storage pool type. **Restriction** If you choose **RAID Group**, the system automatically generates the LUN ID. Automatic LUN naming ensures that the LUN name conforms to a set of strict naming conventions. An incorrectly named LUN no longer functions properly. If you choose **Pool**, the default path is set to automatically assign LUN IDs as LUN names. However, you have the option to uncheck this option (not recommended).
Automatically assign LUN IDs as LUN Names check box	If you chose **Pool** as the storage pool type, the default path is set to automatically assign LUN IDs as LUN names. However, you have the option to uncheck this option (not recommended). If checked, LUN IDs are automatically assigned as LUN names. Uncheck the check box if you do not want LUN IDs to be assigned as LUN names.
Storage Pool for New LUN drop-down list	Choose the storage pool for the new LUN.
Thin check box	Check this check box if you want a thin LUN.
Ignore Thresholds check box	Check this check box to ignore Storage Pool threshold limits.
User Capacity field	The user capacity (applies to **Thin LUN** only).
Capacity Units drop-down list	Choose the capacity units type. This can be one of the following: **GB** **MB** **TB** **Blocks**
Alignment Offset (LBA) field	The alignment offset (LBA) (0 to 9999).
Default Owner drop-down list	Choose the default owner from the drop down-list: Auto SP A SP B

Name	Description
Initial Tier Placement drop-down list	Choose one of the following from the drop-down list: Optimize for Pool Performance Highest available tier Lowest available tier

- Click **Submit.**

What to Do Next

Mount the LUN as a Datastore.

Adding a Host to a Storage Group

Before You Begin

A host and a storage group must exist in the system.

Step 1 On the menu bar, choose **Physical > Storage**.

Step 2 On the **Storage** pane, choose the VNX data center where you want to add a host.

Step 3 Click the **Storage Groups** tab.

Step 4 Click **Add Host**.

Step 5 In the **Add Host(s) to Storage Group** dialog box, complete the following fields:

Name	Description
Show Hosts drop-down list	Choose **Include Connected** or **Not Connected**.
Hosts field	Click **Select**. Go to Step 6.

Step 6 In the **Select** dialog box, choose a host.

Step 7 Click **Select**.

Step 8 In the **Add Host(s) to Storage Group** dialog box, click **Submit**.

Adding a LUN to a Storage Group

Before You Begin

A LUN and a storage group must exist in the system.

Step 1 On the menu bar, choose **Physical > Storage**.

Step 2 On the **Storage** pane, choose the VNX data center where you want to add a LUN.

Step 3 Click the **Storage Groups** tab.

Step 4 Click **Add LUN**.

Step 5 In the **Add LUN to Storage Group** dialog box, complete the following fields:

Name	Description
LUN field	If you want to choose the LUN manually, click **Select**. Go to Step 6.
Let System Specify HLU check box	If checked, the system autogenerates the Host LUN ID (HLU).

Step 6 In the **Host LUN ID** field, enter the **Host LUN ID**.

Step 7 Click **Submit**.

Creating a Meta LUN

Before You Begin

Create a LUN.

Step 1 On the menu bar, choose **Physical > Storage**.

Step 2 On the **Storage** pane, choose the VNX Pod where you want to create a Meta LUN.

Step 3 Click the **Meta LUNs** tab.

Step 4 Click **Create Meta LUN**.

Step 5 In the **Create Meta LUN** dialog box, complete the following fields:

Name	Description
Expansion Type drop-down list	Choose an expansion type. This can be one of the following: • **Stripe Expansion** • **Concatenate Expansion**
Flare LUNs drop-down list	Choose a Flare LUN that is added to the base LUN.
Meta LUN Name field	The LUN name.
MAX check box	If checked, the system creates a MAX LUN size.
User Capacity field	The LUN capacity units (applies to **Thin LUN** only).
Capacity Units drop-down list	Choose a capacity unit.
Default Owner drop-down list	Choose the default owner.
Element size Multiplier field	The element size multiplier. This field displays the strip element size multiplier for the meta LUN. The default value is 4.
Alignment Offset field	The alignment offset (LBA) value. The value range is from 0 to 9999.
Enable Auto-assign check box	If checked, the system enables **Auto-assign**. This option enables or disables Auto-assign only to a storage system that has two service providers and a LUN that is not a hot spare.
Expansion Rate drop-down list	Choose an expansion rate for making additional LUN capacity available to the host.

Step 6 Click **Submit**.

What to Do Next

Associate a LUN as a Datastore.

Associating a LUN as a Datastore

Before You Begin

Create a LUN.

Step 1 On the menu bar, choose **Physical > Storage**.

Step 2 On the **Storage** pane, choose the VNX Pod where you want to associate a LUN as a Datastore.

Step 3 Click the **LUNs** tab.

Step 4 Choose the LUN to associate as a Datastore

Step 5 Click **Associate LUN As Datastore**.

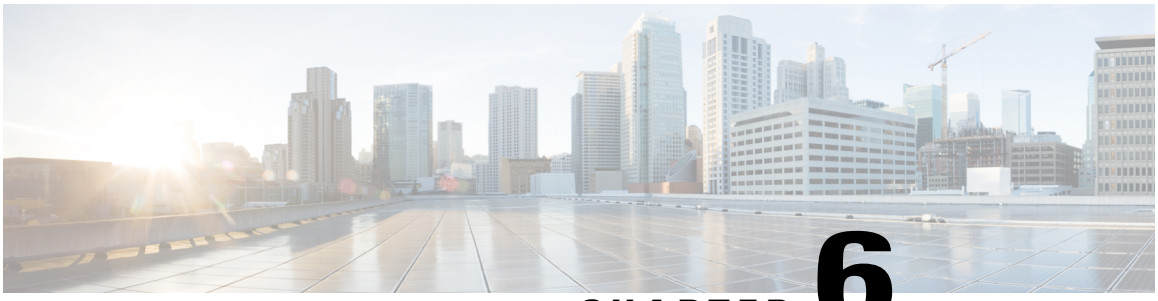
Step 6 In the **Associate LUN As Datastore** dialog box, complete the following fields:

Name	Description
Data store Name field	The Datastore.
Select Host Node field	The host node.
Initiator Type drop-down list	Choose the initiator type.
LUN Name field	The LUN name.
VDC Name drop-down list	Choose the VDC name.
Success Criteria drop-down list	Choose how to measure the association as successful from the drop-down.

Step 7 Click **Submit**.

What to Do Next

Verify that the Datastore is associated to the LUN. For example, you can choose **Virtual > Storage** and click **vCenter** (left pane) to view the related data stores.



CHAPTER 6

Managing VNX File Storage

This chapter contains the following sections:

- About VNX File Storage Management, page 33
- Summary of Steps, page 34
- Using CIFS, page 34
- Using NFS Export, page 39

About VNX File Storage Management

For VNX File (and VNX Unified) accounts, you can use either Common Internet File System (CIFS) or Network File System (NFS) Export.

For CIFS, you create and manage the following:

- CIFS servers—Server type, computer, NetBIOS name, aliases, and domain. You can choose to join a domain, enable local users, and select interfaces.
- CIFS shares—CIFS share name, file systems, path, CIFS server, user limit, and comments.
- DNS domains—Name, DNS servers, and protocol (UDP or TCP).

For NFS Export, you create and manage the following:

- Storage pools for files—Name, description, and subnet mask for the interface. You can create from a metavolume or a storage pool. Optionally, you can slice pool volumes by default.
- Volumes—Name, type (stripe, meta, slice), stripe size (32, 64, 256), and which volumes to select. You can mount volumes to the Datastore.
- File systems—Name, storage pool, storage capacity, capacity units (GB, MB, TB). You can optionally create a file system from a storage pool or volume to contain slices. You can mount file systems to the data store.
- Data mover interfaces—Name, device name, address, subnet mask, maximum transmission unit (MTU), and VLAN ID
- NFS export—File systems, read/write hosts, root hosts, and an option to host access read-only export

- Mounts—Path, file system name, server, read-only or read/write, and access-checking policy (NT, UNIX, Secure, Native, Mixed, or Mixed and Compatible). You can choose to enable virus checking, enable CIFS oplocks, and set advanced options.

The read-only report includes the following information:

- System overview summary—Data center, account, host, role, and mode
- CIFS server and shares detail
- DNS domain detail
- For NFS, storage pool for files, file system, NFS export, and data mover detail

Summary of Steps

Step 1 Add the VNX file account(s).

Step 2 Choose either **CIFS** or **NFS Export**.

- For CIFS, create the CIFS servers, CIFS shares, and DNS domains.
- For NFS Export, create the following:

a) Storage pools for files
b) Volumes
c) File systems
d) Interfaces
e) NFS export information
f) Mounts

Step 3 Review reports.

Using CIFS

In Cisco UCS Director, you can use CIFS to export files or directories. A client can mount any server-exported directory.

To use CIFS, you create the CIFS servers, CIFS shares, and DNS domains.

CIFS Servers

A CIFS server requires the following parameters:

- Server type
- Computer name

- NetBIOS name
- Aliases
- Domain
- Option to join a domain
- Option to enable local users
- Interfaces

You click buttons on the **CIFS Server** tab for the following actions:

Button Name	Description
Add	Creates a new CIFS server.
Delete	Deletes a selected CIFS server.
Modify	Modifies attributes of a selected CIFS server.

Creating a CIFS Server

Step 1 On the menu bar, choose **Physical > Storage**.

Step 2 On the **Storage** pane, choose the VNX data center where you want to create a CIFS server.

Step 3 Click the **Data Movers** tab.

Step 4 In the **Data Movers** list, choose the server.

Step 5 Click **View Details**.

Step 6 Click the **CIFS Servers** tab.

Step 7 Click **Add**.

Step 8 In the **Create CIFS Server** dialog box, complete the following fields:

Name	Description
Server Type drop-down list	Choose the server type.
Computer Name field	The computer name.
NetBIOS Name field	The NetBIOS name for this server.
Aliases field	The alias names for this server.
Domain field	The server domain name.
Join Domain check box	Check this check box to enable the server to join another domain. If you checked this check box, go to Step 9.

Name	Description
Enable Local Users check box	Check this check box to enable local users on this server. If you checked this check box, go to Step 10.
Interfaces field	Click **Select** to choose an interface(s). Go to Step 11.

Step 9 To join the server to another domain, complete the following additional fields:

Name	Description
Domain Admin field	The domain administrator username for this server.
Domain Password field	The server domain password.
Organizational Unit field	The server's organizational unit.

Step 10 If you want to enable local users, complete the following additional fields:

Name	Description
Set Local Admin Password field	The local administrator password for this server.
Confirm Local Admin Password field	The confirmation of the local administrator password.

Step 11 In the **Select Items** dialog box, choose one of the following options:

- Check the individual items in the list
- **Check All** to use all interfaces
- **Check None** to us no interfaces

Step 12 Click **Select**.

Step 13 In the **Create CIFS Server** dialog box, click **Submit**.

CIFS Shares

A CIFS share requires the following parameters:

- CIFS share name

- File system
- Path
- CIFS server
- User limit
- Comments

You click buttons on the **CIFS Share** tab for the following actions:

Button Name	Description
Add	Adds a new CIFS share.
Delete	Deletes a selected CIFS share.

Creating CIFS Shares

Before You Begin

A CIFS server must exist in the system.

Step 1 On the menu bar, choose **Physical > Storage**.

Step 2 Choose the VNX data center where you want to create the CIFS shares.

Step 3 Click the **Data Movers** tab.

Step 4 In the **Data Movers** list, choose the server.

Step 5 Click **View Details**.

Step 6 Click the **CIFS Shares** tab.

Step 7 Click **Add**.

Step 8 In the **Create CIFS Shares** dialog box, complete the following fields:

Name	Description
CIFS Share Name field	The CIFS share name.
File Systems drop-down list	Choose the **File Systems** type.
Path field	The path.
CIFS Server field	**Click Select.** Go to Step 9.
User Limit field	The alias names for this server.
Comments field	Any comments regarding CIFS shares.

Step 9 To choose CIFS shares, complete the following additional fields in the **Select Items** dialog box:

- Check the individual items in the list.
- **Check All** to us all interfaces
- **Check None** to use no interfaces
- Check individual interfaces in the list

Step 10 Click **Select**.

Step 11 In the **Create CIFS Shares** dialog box, click **Submit**.

DNS Domains

A DNS domain requires the following parameters:

- Name
- DNS servers
- Protocol

You click buttons on the **DNS Domains** tab for the following actions:

Button Name	Description
Add	Adds a new DNS domain.
Delete	Deletes a selected DNS domain.

Creating a DNS Domain

Step 1 On the menu bar choose **Physical > Storage** .

Step 2 On the **Storage** pane, choose the VNX data center where you want to create a DNS Domain.

Step 3 Click the **Data Movers** tab.

Step 4 In the **Data Movers** list, choose the server.

Step 5 Click **View Details**.

Step 6 Click the **DNS Domain** tab.

Step 7 Click **Add**.

Step 8 In the **Add DNS Domain** dialog box, complete the following fields:

Name	Description
Name field	The DNS domain name.

Name	Description
DNS Servers field	The DNS server names.
Protocol drop-down list	Choose the protocol.

Step 9 Click **Submit**.

Using NFS Export

In Cisco UCS Director, you can use NFS to export files or directories. A client can mount any server-exported directory.

To use NFS Export, you create the storage pools for files, volumes, file systems, interfaces, NFS export information, and add the mounts.

Storage Pools for Files

An NFS storage pool for files requires the following parameters:

- Name
- Create from—Metavolume or storage pool
- Description
- Volumes—Subnet mask
- Slice pool volumes by default—Checked or unchecked

You click buttons on the **Storage Pools for Files** tab for the following actions:

Button Name	Description
Create	Creates a new NFS storage pool for files.
View Details	Views details about the selected NFS storage pool for files.
Delete	Deletes a selected storage pool for files.

Creating a Storage Pool for Files

Step 1 On the menu bar choose **Physical > Storage**.

Step 2 Choose the VNX data center where you want to create a storage pool for files.

Step 3 Click the **Data Movers** tab.

Step 4 In the **Data Movers** list, choose the server.

Step 5 Click **View Details**.

Step 6 Click the **Storage Pools for File** tab.

Step 7 Click **Create**.

Step 8 In the **Create Storage Pool** dialog box, complete the following fields:

Name	Description
Name field	The storage pool name.
Create from drop-down list	Choose **Meta Volume** or **Storage Pool**. If you chose **Storage Pool**, go to Step 9.
Description field	The description for this storage pool.
Volumes drop-down list	The volumes for this storage pool.
Slice Pool Volumes by Default check box	Check this check box to slice pool volumes by default.

Step 9 To create this storage pool from another storage pool, complete the following additional fields in the same dialog box:

Name	Description
Template Pool drop-down list	Choose the template pool.
Minimum Pool Size (MB) field	The minimum pool size (MB).
Stripe Size (KB) field	The stripe size (KB).

Step 10 Click **Submit**.

Volumes

An NFS volume requires the following parameters:

- Name
- Type
- Volumes
- Stripe size—32, 64, 256

You click buttons on the **Volumes** tab for the following actions:

Button Name	Description
Delete	Deletes a selected volume.

Creating a Volume

Step 1 On the menu bar, Click **Physical > Storage**

Step 2 Choose the VNX data center where you want to create a volume.

Step 3 Click the **Data Movers** tab.

Step 4 In the **Data Movers** list, choose the server.

Step 5 Click **View Details**.

Step 6 Click the **Volumes** tab.

Step 7 Click **Create**.

Step 8 In the **Create Volume** dialog box, complete the following fields:

Name	Description
Name field	The NFS volume name.
Type drop-down list	Choose the type for this volume. This can be on of the following: • Stripe • Meta • Slice
Volumes drop-down list	Choose **Select**. Go to Step 9.
Stripe Size (KB) drop-down list	Choose the **Stripe Size** from the list (256, 32, or 64 KB). Go to Step 9.

Step 9 In the **Select Items** dialog box, choose one of the following options:

- Click the individual volumes in the list.

- **Check All** to use all volumes in the list.
- **Check None** to use no volumes in the list.

Step 10 Click **Select**.

Step 11 In the **Create Volume** dialog box, click **Submit**.

File Systems

An NFS file system has the following parameters:

- Name
- Create from a volume or storage pool
- Storage pool
- Storage capacity
- Capacity units
- Option to contain slices

You click buttons on the **File Systems** tab for the following actions:

Button Name	Description
Create	Creates a new file system.
Extend	Extends a file system.
View Details	Views details about the selected file system.
Delete	Deletes a selected file system.

Creating an NFS File System

Step 1 On the menu bar, choose **Physical > Storage**.

Step 2 On the **Storage** pane, choose the VNX pod where you want to create an NFS File System.

Step 3 Click the **Data Movers** tab.

Step 4 In the **Data Movers** list, choose the server.

Step 5 Click **View Details**.

Step 6 Click the **File Systems** tab.

Step 7 Click **Create**.

Step 8 In the **Create File System** dialog box, complete the following fields:

Name	Description
Name field	The NFS file system name.
Create from drop-down list	Choose either **Storage Pool** or **Volume** as the source for the file system.
Storage Pool drop-down list	Choose the storage pool for this file system.
Storage Capacity field	The storage capacity to allocate for this file system.
Capacity Units drop-down list	Choose the capacity units type. This can be one of the following: • **GB** • **MB** • **TB**
Contain Slices check box	Check this check box to enable the file system to contain slices.

Step 9 Click **Submit**.

What to Do Next

You can mount the file system as a Datastore.

Data Mover Interfaces

An NFS data mover interface requires the following parameters:

- Name
- Device name

- Address
- Subnet mask
- MTU
- VLAN ID

You click buttons on the **Interfaces** tab for the following actions:

Button Name	Description
Create	Creates a data mover interface.
View Details	Views details about the selected interface.
Delete	Deletes a selected data mover interface.

Creating a Data Mover Interface

Step 1 On the menu bar, choose **Physical > Storage**.

Step 2 On the **Storage** pane, choose the VNX pod where you want to create a Data Mover Interface.

Step 3 Click the **Data Movers** tab.

Step 4 In the **Data Movers** list, choose the server.

Step 5 Click **View Details**.

Step 6 Click the **Interfaces** tab.

Step 7 Click **Create**.

Step 8 In the **Create Data Mover Interface** dialog box, complete the following fields:

Name	Description
Name field	The interface name.
Device Name drop-down list	Choose the device name for this interface.
Address field	The interface address.
Subnet Mask field	The subnet mask for this interface.
MTU field	The maximum transmission unit (MTU) for this interface.
VLAN ID field	The VLAN ID for this interface.

Step 9 Click **Submit**.

NFS Export

NFS Export requires the following parameters:

- File system
- Read/write hosts
- Root hosts
- Option to host access read-only export

You click buttons on the **NFS Export** tab for the following actions:

Button Name	Description
Create	Creates an NFS export.
Edit	Edits an NFS export.
View Details	Views details about the selected NFS export.
Delete	Deletes a selected NFS export.

Exporting an NFS File System

Step 1 On the menu bar, choose **Physical > Storage**.

Step 2 On the **Storage** pane, choose the VNX pod where you want to add an NFS File System.

Step 3 Click the **Data Movers** tab.

Step 4 In the **Data Movers** list, choose the server.

Step 5 Click **View Details**.

Step 6 Click the **NFS Exports** tab.

Step 7 Click **Add**.

Step 8 In the **Add NFS Export** dialog box, complete the following fields:

Name	Description
File Systems drop-down list	Choose the **File Systems** type for NFS Export.
Read/Write Hosts field	The read/write hosts for NFS Export.
Root Hosts field	The root hosts for NFS Export.
Host Access Read-only Export check box	Check this check box if you want host access read-only export.

Step 9 Click **Submit**.

Mounts

An NFS mount requires the following parameters:

- Path
- File system name
- Mount server
- Read-only or read and write
- Access checking policy
- Option to enable virus checking
- Option to enable CIFS oplocks
- Option to enable advanced options

You click buttons on the **Mounts** tab for the following actions:

Button Name	Description
Modify	Modifies the attributes of a selected mount.
Delete	Deletes a selected mount.

Modify a File System

Step 1 On the menu bar, choose **Physical > Storage**.
Step 2 On the **Storage** pane, choose the VNX pod where the file system is located.
Step 3 Click the **Data Movers** tab.
Step 4 In the **Data Movers** list, choose the server.
Step 5 Click **View Details**.
Step 6 Click the **Mounts** tab.
Step 7 Choose a file system.
Step 8 Click **Modify**.
Step 9 In the **Modify Mount** dialog box, complete the following fields:

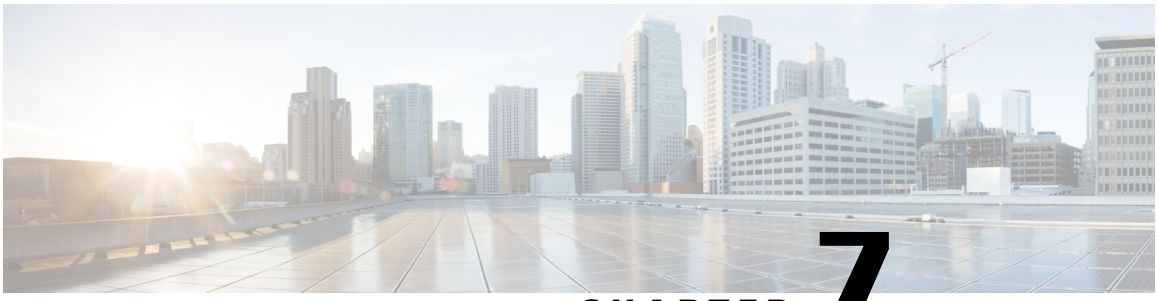
Name	Description
Path field	The path for this mount.

Name	Description
File System Name drop-down list	Choose the file system name for this mount.
Mount On drop-down list	Choose the server for this mount.
Read Only drop-down list	Choose the Read Only or Read and Write option for this mount.
Access-Checking Policy drop-down list	Choose the access-checking policy for this mount.
Virus Checking Enabled check box	Check this check box if you want virus checking enabled.
CIFS Oplocks Enabled check box	Check this check box if you want CIFS Oplocks enabled.
Set Advanced Options check box	Check this check box if you want to set advanced options.

Step 10 Click **Submit**.

Deleting a File System

Step 1 On the menu bar, choose **Physical > Storage**.
Step 2 On the **Storage** pane, choose the VNX pod containing the file system you want to delete.
Step 3 Click the **Data Movers** tab.
Step 4 In the **Data Movers** list, choose the server.
Step 5 Click **View Details**.
Step 6 Click the **Mounts** tab.
Step 7 Choose a file system.
Step 8 Click **Delete**.
Step 9 Click **Delete** once again.



CHAPTER 7

Managing VNX Unified Storage

This chapter contains the following sections:

- VNX Unified Storage Management, page 49
- Summary of Steps, page 49

VNX Unified Storage Management

VNX unified storage combines VNX block storage with VNX file storage.

Summary of Steps

Step 1 Add the VNX block account(s).

Step 2 Create the pools, groups, hosts, and logical unit numbers (LUNs) needed for block management:

a) Create the storage pools.
b) Create the RAID groups.
c) Create the host initiators.
d) Create the storage groups.
e) Create the LUNs and mount them as datastores.
f) Add hosts to the storage groups.
g) Add LUNs to the storage groups.

Step 3 Review VNX block storage reports.

Step 4 Add the VNX file account(s).

Step 5 Choose either **CIFS** or **NFS Export**.

- For CIFS, create the CIFS servers, CIFS shares, and DNS domains.
- For NFS Export, create the following:

a) Storage pools for files

b) Volumes
c) File systems
d) Interfaces
e) NFS export information
f) Mounts

Step 6 Review VNX file storage reports.

What to Do Next

See the previous chapters on how to manage VNX block storage and VNX file storage for more details.