Cisco UCS Director EMC Isilon Management Guide, Release 6.0

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Preface

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.

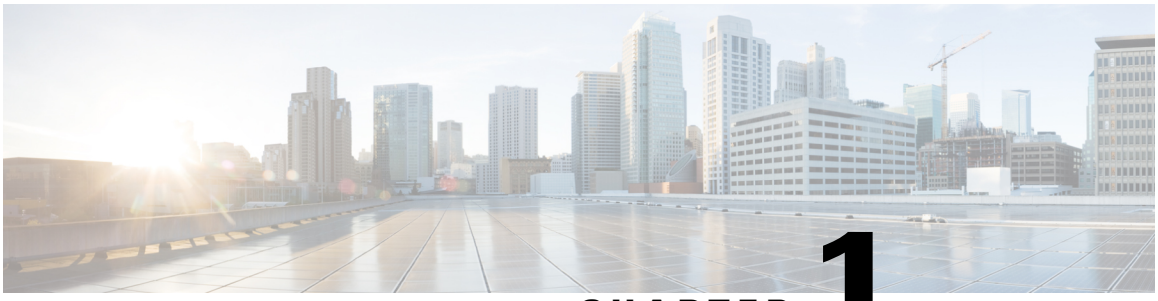
Documentation Feedback

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.



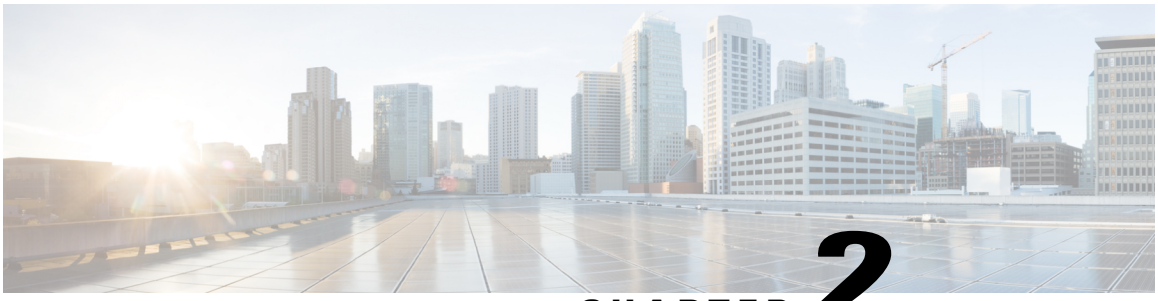
CHAPTER 1

New and Changed Information for this Release

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 EMC Isilon

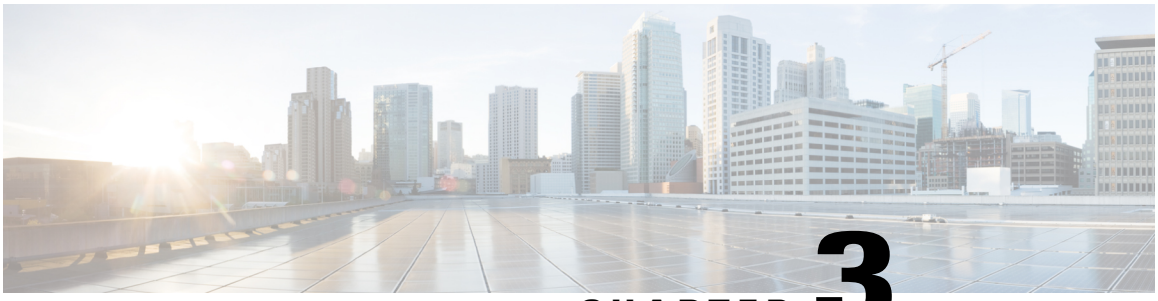
The EMC Isilon storage system consists of three or more nodes that make a cluster. Each node is a self-contained, rack-mountable device that contains industry standard hardware, such as disk drives, CPU, memory, and network interfaces. Each EMS Isilon system is integrated with the OneFS operating system (OS) that is based on FreeBSD.

OneFS unifies a cluster of nodes into a single shared resource. OneFS also has a file-striping functionality across each node in a cluster, a fully distributed lock manager, caching, fully distributed metadata, and a remote block manager to maintain global coherency and synchronization across the Isilon cluster.

The Isilon cluster is a single storage pool with a global namespace. This cluster enables you to support multiple volumes and file systems.

Cisco UCS Director Support for EMC Isilon

Cisco UCS Director manages, monitors, and does reporting for the EMC Isilon system. Data is collected through the Isilon cluster platform and namespace REST API, which is connected to Cisco UCS Director through HTTP or HTTPS. This data is parsed and bound to the output as Plain Old Java Objects (POJOs), and these objects are distributed throughout the pod.



CHAPTER 3

EMC Isilon Account Management

This chapter contains the following sections:

Creating an EMC Isilon Account

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

Step 2 Click the **Physical Accounts** tab.

Step 3 Click **New**.

Step 4 In the **Add Account** dialog box, complete the following fields:

Name	Description
Pod drop-down list	The pod type. This can be one of the following: • **Default Pod** • **Generic** • **VSPEX** • **Vblock**
Category drop-down list	Choose **Storage**.
Account Type drop-down list	Choose **EMC Isilon Cluster**.

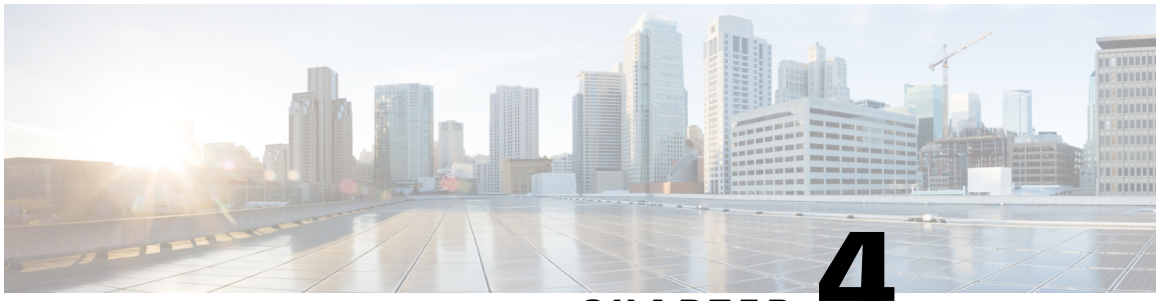
Step 5 Click **Submit**.

Step 6 In the next **Add Account** dialog box, complete the following fields:

Name	Description
Account Name field	The name of this Isilon account. For example, isilon-1.
Server IP field	The IP address of the Isilon storage system.
Description field	The description of the Isilon storage system.
Use Credential check box	Check the check box if you want to use a policy to give the credentials.
Username field	The username that this account uses to access the Isilon storage system. This username must be a valid account in the Isilon storage system.
Password field	The password associated with the username.
Protocol drop-down list	Choose the protocol transport type that you want to use for the account. This can be one of the following: • **http** (Hypertext Transfer Protocol) • **https** (Hypertext Transfer Protocol Secure) **Note** The default transport type protocol for this account is HTTPS.
Port field	The port used to access the Isilon storage system. Port 443 is the default secure HTTPS port. **Note** Port 8080 is used for both HTTP and HTTPS.
Contact field	The email address that you use to contact the administrator or other person responsible for this account.
Location field	The location of the contact.

Step 7 In the **Physical Accounts** tab, choose the EMC Isilon account that you just created.

Step 8 Click **Test Connection**.



CHAPTER 4

Configuring EMC Isilon

This chapter contains the following sections:

Configuring EMC Isilon System

You can manage, monitor, and configure reporting for the EMC Isilon system in Cisco UCS Director.

Configuring Storage Pool Tiers

Storage pool tiers are collections of node pools that you group to optimize storage according to need, such as a mission-critical high-speed tier that is best suited to data archiving. You can organize storage pool tiers, into logical groupings by creating policies that store or move files among these groups automatically, based on a specified criteria.

The following storage pool tiers can be created for specific purposes:

- An EMC Isilon S-Series performance tier can be combined with an archive tier (EMC Isilon NL-Series) in the same cluster.
- An EMC Isilon S-Series with Solid State Drives (SSDs) latency tier of can be added for latency-sensitive data must meet certain time constraints in order to be acceptable to a user.
- Older nodes can be reduced in numerical quantity and new nodes can be added as a new tier in the same cluster.

Tier	Description
EMC Isilon S-Series	This platform has Input/Output Operations Per Second (IOPS) for intensive applications which process large volumes of data and devote most of their processing time to input/output (I/O) and manipulation of data.
EMC Isilon X-Series	This platform is used for high concurrent and sequential throughput workflows.
EMC Isilon NL-Series	This platform is used for cost-effective, scalable near line (NL) on-site storage of data on removable media.

Creating Storage Pool Tiers

A tier is a user-defined collection of node pools that you can specify as a storage pool for files. A node pool can belong to only one tier. Use the following steps to create a storage pool tier.

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

Step 2 On the **Storage** pane, navigate to the pod with the Isilon account.

Step 3 Click the pod icon arrow to navigate to the Isilon server icon.

Step 4 Click the Isilon server icon.

Step 5 Click the **Storage Pool Tiers** tab.

Step 6 Click **Create**.

Step 7 In the **Create Storage Pool Tier** dialog box, complete the following field:

Name	Description
Storage Pool Tier Name field	The name of the storage pool tier. These node pools are grouped to optimize storage according to need.

Step 8 Click **Submit.**

Note If you want to modify or delete a storage pool tier, click the storage pool tier and use the **Modify** or **Delete** icons. Use the **View Details** icon to view the configured storage pool tier attributes.

Configuring Storage Node Pools

Node pools are sets of physical nodes that are grouped by their equivalence class to optimize reliability and requested data protection settings. OneFS operating system creates node pools automatically when you install the system and whenever you add or remove nodes. The automatic creation of node pools is referred to as automated provisioning.

You can organize storage node pools into logical groupings and create policies that store or move files among these nodes automatically, based on a specified criteria.

Creating Node Pools

You can use a node pool to group equivalence-class nodes.

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

Step 2 On the **Storage** pane, navigate to the pod with the Isilon account.

Step 3 Click the pod icon arrow to navigate to the Isilon server icon.

Step 4 Click the Isilon server icon.

Step 5 Click the **Node Pools** tab.

Step 6 Click **Create**.

Step 7 In the **Create Node Pool** dialog box, complete the following fields:

Name	Description
Node Pool Name field	The name of the node pool.
Nodes field	Click **Select**. In the **Select** dialog box, choose one or more nodes to be added to this node pool.

Step 8 Click **Submit.**

Note If you want to modify or delete a node pool, click the storage pool tier and use the **Modify** or **Delete** icons. Use the **View Details** icon to view the configured node pool attributes.

Configuring SMB Shares

The Server Message Block (SMB) Protocol is a network file sharing protocol that was implemented by Microsoft for Windows. SMB shares provide Windows clients network access to file system resources on the cluster.

You can grant permissions to users and groups to carry out operations such as reading, writing, and setting access permissions on SMB shares.

The `/ifs` directory is configured as an SMB share and is enabled by default. OneFS supports both user and anonymous security modes. If the user security mode is enabled, users who connect to a share from an SMB client must provide a valid username with proper credentials.

The SMB protocol uses security identifiers (SIDs) for authorization data. All identities are converted to SIDs during retrieval and are converted back to their on-disk representation before they are stored on the cluster.

Creating an SMB Share

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

Step 2 On the **Storage** pane, navigate to the pod with the Isilon account.

Step 3 Click the pod icon arrow to navigate to the Isilon server icon.

Step 4 Click the Isilon server icon.

Step 5 Click the **SMB Shares** tab.

Step 6 Click **Create**.

Step 7 In the **Create SMB Share** dialog box, complete the following fields:

Name	Description
SMB Share Name field	The name of the SMB share.
SMB Share Description field	The description of the SMB share.
Path field	The `/ifs` directory path that is configured to be an SMB share.
Allow Variable Expansion check box	Check the check box to expand path variables (%U, %L, %D, %Z) in the share directory path.
Auto-Create Directories check box	Check the check box if the share path includes path variables. When path variables are included, the share automatically creates directories when users access the share for the first time. **Note** This check box is available only if the **Allow Variable Expansion** check box is checked.

Step 8 Click the User/Group Mapping plus (+) icon to add an entry.

Step 9 In the **Add Entry to User/Group Mapping** dialog box, complete the following fields:

Name	Description
Type drop-down list	Choose a mapping type. This can be one of the following: • **User** • **Group** • **Wellknown**

Name	Description
Permission drop-down list	Choose a permission option for the user, group, or well-known member. This can be one of the following: • **No Access** • **Read Access** • **Read-Write Access** • **Full Access** • **Root Access**

Step 10 Click **Submit**.

Note If you want to modify or delete an SMB share, click on the SMB share and use the **Modify** or **Delete** menu selections. Use the **View Details** icon to view the configured SMB share attributes.

Creating an NFS Export

Network File System (NFS) exports provide UNIX clients network access to file system resources on the cluster.

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

Step 2 On the **Storage** pane, navigate to the pod with the Isilon account.

Step 3 Click the pod icon arrow to navigate to the Isilon server icon.

Step 4 Click the Isilon server icon.

Step 5 Click the **NFS Exports** tab.

Step 6 Click **Create**.

Step 7 In the **Create NFS Export** dialog box, complete the following fields:

Name	Description
Path field	The paths in the `/ifs` directory that are to be exported to UNIX clients.
Description field	A description that helps identify and document the purpose of the export.
Clients field	The clients that have access to the NFS export.
Read-Only Clients field	The clients that have read-only access to the NFS export.
Read-Write Clients field	The clients that have read and write access to the NFS export, even if the NFS export is read-only.

Name	Description
Root Clients field	The clients that have root access to the NFS export.
Enable Mount Access for Subdirectories check box	Check the check box to allow all directories under the specified paths to become mountable.
Restrict Access to Read Only check box	Check the check box to make the NFS export read-only.

Step 8 Click **Submit**.

Note If you want to modify or delete an NFS export, click the NFS export and from the menu, click the **Modify** or **Delete** icons. Use the **View Details** icon to view the configured NFS export attributes.

Configuring Quotas

Quotas are used to manage storage in the following ways:

- Monitor disk storage.
- Define a criteria that tracks or limits the amount of storage a user, group, or project uses.
- Write notification rules to trigger an action according to event thresholds. A rule can specify a schedule for executing an action or immediate notification of certain state transitions. When an event occurs, a notification trigger can execute one or more actions, such as sending an email or sending a cluster alert to the interface.

Creating a Quota

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

Step 2 On the **Storage** pane, navigate to the pod with the Isilon account.

Step 3 Click the pod icon arrow to navigate to the Isilon server icon.

Step 4 Click the Isilon server icon.

Step 5 Click the **Quotas** tab.

Step 6 Click **Create**.

Step 7 In the **Create Quota** dialog box, complete the following fields:

Name	Description
Type drop-down list	Choose a quota type. This can be one of the following. • **Directory** • **User** • **Group** • **All Users** • **All Groups**
Path field	The `/ifs` directory path that is to be governed.
Enforced check box	Check the check box to have the quota provide enforcement. Once checked, other parameters can be configured such as the hard limit and soft limit. If the check box is not checked, this quota is an accounting quota.
Include Snapshots check box	Check the check box if the quota governs snapshot data and head data. If the check box is not checked, no snapshots are included.
Thresholds Include Overhead check box	Check the check box if the thresholds apply to data plus the filesystem overhead required to store this data for physical usage. If the check box is not checked, thresholds do not include any overhead.

Step 8 Click **Submit**.

Note If you want to modify or delete a quota, click the quota and use the **Modify** or **Delete** icon selections. Use the **View Details** icon to view the configured quota attributes.

Quota Report Settings

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

Step 2 On the **Storage** pane, choose **Unassigned Pods** > **Default Pod** .

Step 3 Under the **Default Pod** icon, click the icon for the Isilon server.

Step 4 Click the **Quota Report Settings** tab.

Step 5 Click **Modify**.

Step 6 In the **Modify Quota Report Settings** dialog box, complete the following fields:

Name	Description
Live Directory field	The directory path on `/ifs` where manual or live reports are placed.

Name	Description
Live Retain field	The number of manual reports to keep.
Schedule field	The schedule used to generate ports.
Schedule Directory field	The directory path on **/ifs** where scheduled reports are placed.
Scheduled Retain field	The number of scheduled reports to keep.

Step 7 Click **Submit**.

Creating a Group for the Isilon Cluster

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the**Storage** pane, navigate to the pod with the Isilon account.
Step 3 Click the pod icon arrow to navigate to the Isilon server icon.
Step 4 Click the Isilon server icon.
Step 5 Click the **Groups** tab.
Step 6 Click **Create**.
Step 7 In the **Create Group** dialog box, complete the following fields:

Name	Description
Name field	The name of the `/ifs` directory path governed.
GID field	The UNIX numeric group identifier (GID).
Members field	Click **Select**. In the **Select** dialog box, choose a member (user account) for this group.

Step 8 Click **Submit**.

Note If you want to modify or delete a group, click on the group and use the **Modify** or **Delete** icon selections. Use the **View Details** icon to view the configured group attributes.

Creating a User Account for the Isilon Cluster

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

Step 2 On the **Storage** pane, navigate to the pod with the Isilon account.

Step 3 Click the pod icon arrow to navigate to the Isilon server icon.

Step 4 Click the Isilon server icon.

Step 5 Click the **Users** tab.

Step 6 Click **Create**.

Step 7 In the **Create User** dialog box, complete the following fields:

Name	Description
Name field	The name of the user account that has access to the Isilon cluster.
Password field	The user password.
UID field	The user ID number. **Note** We recommend that you leave this field blank in order for a user ID to be automatically generated.
Full Name field	The full name of the user.
Email Address field	The email address of the user.
Primary Group field	Click **Select**. In the **Select** dialog box, choose the primary group.
Aditional Group check box	Click **Select**. In the **Select** dialog box, choose one or more additional groups.
Home Directory field	The home directory of the user.
Unix Shell drop-down list	Choose the type of UNIX shell. For example, **/bin/sh**.
Account Expiration Date field	The expiration date in MM/DD/YYYY format. Alternately, click the calendar icon to choose the date.
Enable the Account check box	Check the check box if you want to enable this user account. **Note** Unchecking the check box disables the user account.

Step 8 Click **Submit**.

Note If you want to modify or delete a user account, click on the user and use the **Modify** or **Delete** icon selections. Use the **View Details** icon to view the configured user attributes.

Configuring the Namespace Access Point

The Isilon One FS cluster creates a single namespace and file system that is distributed across all nodes in the cluster and is accessible by clients connecting to any node in the cluster. You can assign a name to a namespace access point and the path to its file system.

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

Step 2 On the**Storage** pane, navigate to the pod with the Isilon account.

Step 3 Click the pod icon arrow to navigate to the Isilon server icon.

Step 4 Click the Isilon server icon.

Step 5 Click the **Namespace** tab.

Step 6 Click **Create**.

Step 7 In the **Create Namespace Access Point** dialog box, complete the following fields:

Name	Description
Namespace Access Point Name field	The namespace access point name.
Path field	The `/ifs` home directory path for the namespace access point.

Step 8 Click **Submit**.

Note If you want to delete a namespace, click on the quota and use the **Delete** icon selection. Use the **View Details** icon to view the configured namespace access point attributes.

Viewing an Access Zone

An access zone is a context that is set up through the EMC Isilon CLI to control access to the EMC Isilon cluster based on an incoming IP address. Access zones are used to define a list of authentication providers that apply only in the context of these zones.

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

Step 2 On the**Storage** pane, navigate to the pod with the Isilon account.

Step 3 Click the pod icon arrow to navigate to the Isilon server icon.

Step 4 Click the Isilon server icon.

Step 5 Click the **Access Zones** tab.

Configuring Data Snapshots

Snapshots of specific data can be taken on the Isilon cluster. This data can also be backed up automatically and as frequently as required to meet your recovery point objectives. You can easily move directories, assign resources, and change directory names. Up to 1,024 snapshots can be taken per directory to provide scalability and data protection in a large data environment.

Creating a Snapshot

You can create a data snapshot on the EMC Isilon cluster for your recovery point needs.

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

Step 2 On the**Storage** pane, navigate to the pod with the Isilon account.

Step 3 Click the pod icon arrow to navigate to the Isilon server icon.

Step 4 Click the Isilon server icon.

Step 5 Click the **Snapshots** tab.

Step 6 Click **Create**.

Step 7 In the **Create Snapshot** dialog box, complete the following fields:

Name	Description
Snapshot Name field	The name of the snapshot.
Snapshot Path field	The `/ifs` directory that is contained by the snapshot.
Alias check box	Check the check box to create an alias for the snapshot name. In the **New** dialog box, enter an alias name for the snapshot name. If the check box is unchecked, an alias is not created for this snapshot name.
Snapshot Expiration drop-down list	Choose the expiration date of the snapshot. This can be one of the following: • **Never Expires** • **Snapshot Expires On**
Snapshot Expiration Date calendar	If the **Snapshot Expires On** selection was selected, then include the expiration date.

Step 8 Click **Submit.**

Note If you want to modify or delete a snapshot, click on the snapshot and use the **Modify** or **Delete** icon selection.

The snapshot is created and appears in the list of snapshots.

Step 9 (Optional) Click the **Snapshots Schedules** tab if you want to view snapshot schedules.

Running System Jobs

You can run system jobs, such as running an antivirus scan, on the Isilon cluster.

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the**Storage** pane, navigate to the pod with the Isilon account.
Step 3 Click the pod icon arrow to navigate to the Isilon server icon.
Step 4 Click the Isilon server icon.
Step 5 Click the **System Jobs** tab.
Step 6 Click a pre-defined system job from the list and click **Start**.
Step 7 In the **Start System** dialog box, complete the following fields:

Name	Description
Allow Duplicate Jobs check box	Check the check box to allow duplicate jobs to be run with this job.
Priority drop-down list	Choose a priority for this job. This can be from 1 to 10, with 1 being the highest priority job.

Step 8 Click **Submit.**

Gathering System Job Summary, Policy, and Reporting Information

Step 1 On the menu bar, choose **Physical** > **Storage**.
Step 2 On the**Storage** pane, navigate to the pod with the Isilon account.
Step 3 Click the pod icon arrow to navigate to the Isilon server icon.
Step 4 Click the Isilon server icon.
Step 5 (Optional) If you want to see job summary information for job types on the Isilon cluster, click the **Job Summary** tab.
Step 6 Click **Collect Inventory** to obtain the status and inventory information for all active job types.
Step 7 (Optional) If you want to modify an active job, click **Modify**.
Step 8 In the **Modify Active Job** dialog box, complete the following fields:

Name	Description
Impact Policy field	Click **Select**. In the **Select** dialog box, check the check box to choose a single Isilon policy. **Note** You can click the **System Job Policy** tab to view specific details for each of these Isilon policies.
Priority drop-down list	Choose a priority for this job from 1 to 10, with 1 being the highest priority job.
State drop-down list	Choose a state for this job. This can be one of the following: • **Run** • **Pause** • **Cancel**

Step 9 Click **Submit.**

Step 10 (Optional) If you want to see job report results, click the **System Job Reports** tab.

Step 11 Choose a report and click **View Details**.

Viewing Storage Efficiency Through Deduplication Results

You can use data deduplication to maximize storage efficiency by scanning the cluster for identical blocks and then eliminating the duplicates, which decreases the amount of physical storage required.

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

Step 2 On the**Storage** pane, navigate to the pod with the Isilon account.

Step 3 Click the pod icon arrow to navigate to the Isilon server icon.

Step 4 Click the Isilon server icon.

Step 5 (Optional) If you want to see deduplication job reports, click the **Deduplication** tab.

Step 6 Choose a report and click **View Details**.

Viewing NFS Datastores

You can show each Network File System (NFS) datastore, with its NFS export path, ESXi host, NFS remote host, and capacity information.

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

Step 2 On the**Storage** pane, navigate to the pod with the Isilon account.

Step 3 Click the pod icon arrow to navigate to the Isilon server icon.

Step 4 Click the Isilon server icon.

Step 5 Click the **Datastores** tab.