IsilonSD Edge With IsilonSD Management Server

Version 1.1.1

Installation and Administration Guide

DELL EMC

Published May 2019

Dell EMC
Hopkinton, Massachusetts 01748-9103
1-508-435-1000 In North America 1-866-464-7381
www.DellEMC.com

CONTENTS

CHAPTER 1

Introduction

This section contains the following topics:

About this guide

This guide can be used with OneFS versions 8.0.0 through 8.1.2 and IsilonSD Management Server version 1.1.1.

VMware administrators and storage administrators can use this guide to deploy and administer IsilonSD Management Server for deploying and configuring OneFS as a virtual machine on VMware ESXi hosts. In order to use this guide effectively, administrators must be familiar with the VMware vSphere infrastructure, ESXi host administration, and virtual machine deployment and configuration procedures.

The following conventions are adopted in this guide to represent the first and subsequent occurrences of the frequently-used terminology in a section:

First occurrence in the title and introductory paragraph	Subsequent occurrences
IsilonSD cluster	cluster
IsilonSD node	node
IsilonSD Management Server	management server
IsilonSD Management Plug-in	management plug-in
VMware vCenter server	vCenter

For a description of the terminology that is referenced in this guide, see the *IsilonSD Edge Terminology* section.

Isilon OneFS storage and architecture

Isilon OneFS consists of a number of rackable Isilon nodes that run OneFS. The nodes are clustered together to provide scale-out file services that are resilient to node and drive failures.

OneFS implements network RAID capabilities. Files stored in the cluster are striped across multiple nodes through a forward error correcting scheme that is a generalization of the RAID-5 and RAID-6 technologies. Through the protection settings, a storage administrator can specify the number of simultaneous node and drive failures to tolerate before data becomes unavailable. The protection settings can be specified at individual file and directory levels.

On top of the file system is a clustered and scalable network protocols stack that implements dynamic IP migration and data-access mechanisms, such as NFS version 3/4, SMB, HDFS, FTP, Swift, and HTTP. The implementation supports simultaneous access to the same data through these network protocols along with scalable fault-tolerant file-locking mechanisms across the cluster.

OneFS networking considerations

An Isilon cluster accesses two networks:

- The cluster's back-end network over which the nodes of the cluster communicate with each other. The back-end network is usually isolated from devices that are not in the cluster.
- The front-end network over which clients can move data in and out of the cluster.

When configuring an Isilon cluster, a storage administrator must allocate two ranges of IP addresses in different IP subnets—one for each of the back-end and front-end networks.

OneFS storage considerations

An Isilon node has a boot device, a journaling device, and a fixed set of data drives for its storage requirements. The drives and devices are typically not shared with the other nodes.

Configuring a OneFS cluster

Configuring a OneFS cluster involves racking the Isilon nodes, connecting their back-end interfaces to the back-end switch, and powering on the nodes. After this process is completed successfully, an unconfigured node is added. Starting with this node, you can create a new cluster or you can join the node to an existing cluster that is accessible over its back-end network. You can then configure the cluster through one of the nodes and join additional unconfigured nodes to the cluster. A OneFS cluster supports a minimum of three nodes.

IsilonSD Edge storage and architecture

IsilonSD Edge creates OneFS virtual clusters through the resources available on VMware ESXi hosts. The OneFS clusters are deployed as virtual machines (VMs) and drives are hosted on data disks. The nodes that you add to an IsilonSD cluster are the OneFS virtual machines.

IsilonSD Edge components include IsilonSD Management Server, IsilonSD Management Plug-in, and the OneFS virtual machine files. The management plug-in is bundled with the management server and automatically installs when the management server is deployed on an ESXi host and a VMware vCenter server is registered.

You can deploy IsilonSD clusters using the free, Edge, or the Edge-Flex license. The free license is bundled with the installation package.

The management server can deploy nodes on single or multiple hosts using single or multiple datastores. Multiple datastores on multiple hosts is the configuration that provides the highest availability.

IsilonSD Edge networking considerations

The OneFS data-path requires two NICs to provide connectivity for back-end and front-end networks respectively. In an IsilonSD Edge deployment, a node has virtual NICs allocated to it that are plumbed into virtual switches. You must connect the back-end and front-end Ethernet networks to two different subnets. The front-end Ethernet subnet is for client and management access and must be always accessible. A management or service IP address must be allocated to the cluster in the same subnet as the front-end IP range. The management server interacts with the cluster through this IP address. We recommend that you reserve the maximum possible range of IP addresses on the front-end and back-end networks to allow for future expansion requirements. A supportability consideration for nodes is that their serial port device must be accessible over the network. This is accomplished through a virtual serial port concentrator (vSPC) that runs on the management server. The ESXi host of a node must be able to establish a TCP connection to port number 8080 on the management server. Make sure that there is a proper route and there is no firewall set up between the hosts and vCenter.

IsilonSD Edge storage considerations

IsilonSD nodes access storage through the following mechanisms:

- VMFS
- vSAN

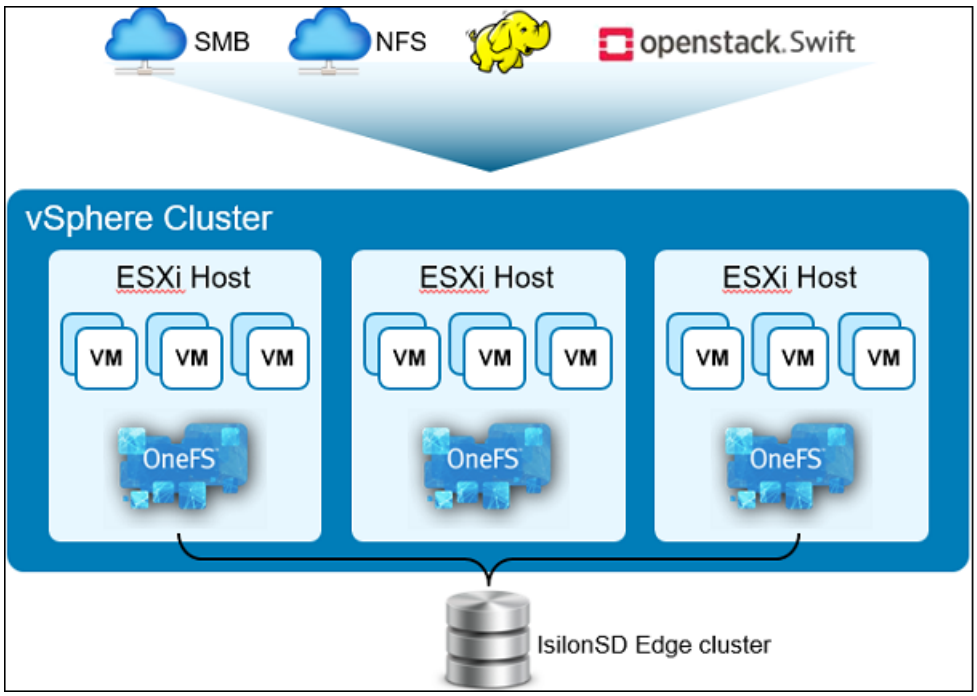
Note

NFS and Raw Disk Mapping (RDM) are not supported with IsilonSD Edge.

Drives are mapped to the VMware ESXi hosts in the following ways:

- Direct attached disks without RAID
- Direct attached disks with RAID
- Direct attached disks with vSAN
- SAN LUNs

The architecture of a three-node cluster is shown in the following figure:



IsilonSD Edge installation requirements

Before you deploy IsilonSD Management Server and an IsilonSD cluster, verify that the following requirements are satisfied.

Software and hardware requirements

Component	Requirement	Recommendation
VMware vCenter	• VMware vCenter versions 6.0, 6.5, or 6.7 • Access VMware vCenter through the VMware vSphere Web Client (browser-based client)	

Component	Requirement	Recommendation
	Note Check the VMware Knowledge Base to see if you must install any patches for the specific vCenter version.	
Host	• VMware ESXi versions 6.0, 6.5, or 6.7 **Note** Check the VMware Knowledge Base to see if you must install any patches for the specific version of the ESXi host.	
Web browser	Latest versions of Mozilla Firefox or Google Chrome **Note** Refer to the fix proposed in the following article if the VMware vSphere Web Client Integration Plug-in does not work due to known issues with Chrome version 42.0 and later, and Mozilla firefox version 39.0: • http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2125623	We recommend that you use Mozilla Firefox to deploy the OVA templates. For all of the other IsilonSD cluster and node management tasks, you can use the latest versions of Mozilla Firefox or Google Chrome.
RAM	Minimum unused RAM—6 GB per node Maximum unused RAM—256 GB per node	
vCPU	Minimum vCPUs—2 per node Maximum vCPUs—16 per node	
Drive type	SATA, SAS, SSD	
Virtual infrastructure	IsilonSD Edge is supported on systems that meet the minimum deployment requirements and are built with Virtual SAN-certified components. For more information, see the *Identify systems compatible with IIsilonSD Edge* section.	

Storage requirements

See the *IsilonSD Edge cluster deployment requirements based on licenses* section for details regarding the storage requirements for legacy and flexible IsilonSD cluster deployment methods.

Networking requirements

Component	Requirement	Recommendation
Internal network (back-end)	1 GB/10 GB Ethernet	• We recommend a 10 GB Ethernet for back-end networking. • Isolate back-end network and ideally route it through a dedicated VLAN or physical switch. • Configure LACP or a port channel group to improve the back-end network reliability and to increase the intercluster traffic throughput.
Internal IP addresses	• One IP address per node. • The IP addresses that you configure for the nodes must be contiguous.	
External network (front-end)	1 GB/10 GB Ethernet	• We recommend a 10 GB Ethernet for front-end networking. • The front-end network is recommended to be on a different Ethernet network than the back-end network. If this is not the case, the recommended best practice is to configure the front-end network on a different IP subnet than the back-end network.
External IP addresses	• One IP address per node. • One IP address per SmartConnect zone. At least one SmartConnect zone is required for a cluster. • Make sure that you allocate the IP address range based on the maximum number of nodes that you plan to deploy in the cluster taking future requirements into consideration. For example, for a six-node cluster, you must allocate six IP addresses for the	

Component	Requirement	Recommendation
	node and one IP address for SmartConnect. • The IP addresses that you configure for the nodes must be contiguous.	

Other networking requirements

A few other networking requirements follow:

- Nodes must be on the same Ethernet network.
- The Ethernet network must allow broadcasts to be propagated between the nodes.
- IsilonSD Management Server supports the vSPC (Virtual Serial Port Concentrator) service to provide serial console access to nodes. The vSPC service listens on port 8080. Make sure that port 8080 is open and available on the ESXi host for the vSPC connections. ESXi firewall settings can prevent transmissions. To avoid this issue, we recommend that you add a Firewall Rule Set for the serial port network connections before you connect network-backed virtual serial ports. Connect to the serial port output through a network with the virtual serial port concentrator option enabled to allow only outgoing communication from the host.

Security requirements

Before you deploy IsilonSD clusters, refer to the *OneFS Security Configuration Guide* for mandatory security requirements for protecting the clusters against network spoofing, sniffing, and tampering threats.

Identify systems compatible with IsilonSD Edge

IsilonSD Edge is supported on all of the VMware Virtual SAN compatible systems that meet the minimum deployment requirements. You can identify the compatible systems through the following procedure.

Procedure

1. Browse to the VMware Compatibility Guide at http://www.vmware.com/resources/compatibility/search.php?deviceCategory=vsan.
2. Select `Virtual SAN` from the **What are you looking for** field.
3. Select a ready node profile from the **Ready Node Profile** section to determine the approximate configuration that meets your needs.
4. Select the supported version of VMware ESXi , for example, `ESXi 6.0`, as the host from the **Ready Node Supported Releases** section.
5. Select the other attributes depending on your workload profile as described in the *Virtual SAN Hardware Quick Reference Guide*.
6. Click **Update and View Results**.
7. From the list of available Virtual SAN-supported platforms and approximate configurations, select the systems that are configurable to meet the IsilonSD Edge minimum deployment requirements, and include enterprise-quality disk drives.

8. On the page that appears when you click **Build Your Own based on Certified Components**, select the drives to populate the systems that you selected in the previous step.

IsilonSD Edge licensing overview

With IsilonSD Edge, you can configure one license per cluster to manage your storage requirements. This license contains a cluster license and a OneFS features license. These two licenses determine the maximum number of nodes, capacity, memory, vCPU, disks, and IsilonSD cluster features that are available to you.

You can install IsilonSD Edge by configuring a FREE license that is bundled with your installation package. However, this license does not support all of the advanced cluster capabilities. Purchase an EDGE or EDGE-FLEX license to access advanced cluster features.

The EDGE license allows you to deploy clusters with the highest data availability guarantees, even with failures in the ESXi hosts or in the individual disk drives. To ensure that this condition is satisfied, the following configuration rules are enforced:

- Each node in the cluster must be on a separate ESXi host.
- The datastores for each node must be on direct-attached disks, and each datastore must be on a separate disk.

The EDGE-FLEX license allows greater flexibility in cluster configuration, but the data availability guarantees are reduced, because a single failure event can have consequences beyond the ability of the OneFS file system to compensate. The following configurations are permitted with an EDGE-FLEX license:

- An ESXi host can support multiple nodes in the cluster.
- The datastores for the nodes can be on vSAN or SAN. You can use a single datastore, if required.

You can deploy clusters using a FREE license following either the EDGE or EDGE-FLEX configuration rules. Any cluster that you have deployed using the FREE license can be supported by Isilon with the purchase of a license. You can purchase an EDGE or EDGE-FLEX license depending on which set of configuration rules you used initially for deploying the cluster.

Note

- A FREE license is supported with all the management server versions. With a FREE license, you are not entitled to any support from Isilon for product-related questions. You can post your questions at the Isilon Community Network for assistance.
- EDGE configuration is supported with management server version 1.0.1 and later.
- EDGE-FLEX configuration is supported with management server versions 1.0.2 and later.

For questions related to the licensing support, contact the eLicensing team. For information regarding the purchase of licenses, contact your Isilon sales representative.

The following table summarizes the availability of the cluster features depending on the type of licenses you have configured for your installation.

Feature	Function	FREE license	EDGE and EDGE-FLEX licenses
CloudPools	Creates file pool policies that archive files to the cloud	no	yes
NFS, SMB, HTTP, FTP, HDFS	File-sharing and transfer protocols	yes	yes
InsightIQ	Monitors and analyzes the performance of a cluster to help you optimize storage resources and forecast capacity	yes	yes
SyncIQ	Asynchronously replicates data on another cluster and supports failover and failback between clusters	yes	yes
SmartLock	Protects critical data from malicious, accidental, or premature alteration or deletion.	no	yes **Note** IsilonSD Edge supports the SmartLock software module in enterprise mode only. Compliance mode is not supported. An IsilonSD cluster may not comply with SEC regulations.
SmartConnect Advanced	Manages round-robin connections, CPU utilization, connection counting, and throughput balancing	yes	yes
SmartPools	Groups nodes and files into pools	yes	yes
SmartDedupe	Saves storage space on a cluster by reducing redundant data	yes	yes
SmartQuota	Monitors and enforces administrator-	yes	yes

Feature	Function	FREE license	EDGE and EDGE-FLEX licenses
	defined storage limits		
SnapShotIQ	Creates snapshots to protect data against accidental data deletion and modification and restores modified or deleted data	yes	yes
Swift	Provides object-based storage capabilities	yes	yes
Two-way NDMP backup	A Network Data Management Protocol (NDMP) in which a data management application (DMA) on a backup server instructs a Backup Accelerator node on the cluster to back up data to a tape media server that is attached to the Backup Accelerator node	no	no
Three-way NDMP backup	A Network Data Management Protocol (NDMP) in which a data management application (DMA) on a backup server instructs the cluster to back up data to a tape media server that is attached either to the LAN or directly to the DMA	yes	yes

Recommended reading

We recommend that you consult the following documentation as you install and run IsilonSD Edge.

- *IsilonSD Edge With IsilonSD Management Server Release Notes* available on the IsilonSD Edge Info Hub page on the Isilon Community Network

- The following documentation which is accessible from the release-specific links on the Isilon Info Hubs page:
  - *Isilon OneFS Release Notes*
  - *Isilon Supportability and Compatibility Guide*
  - *OneFS Web Administration Guide*
  - *OneFS CLI Administration Guide*
  - *OneFS Backup and Recovery Guide*
  - *OneFS Event Reference*
- VMware vSphere Documentation

CHAPTER 2

Summary of IsilonSD Edge Installation

This section contains the following topics:

IsilonSD Edge installation overview

You must download the IsilonSD Edge installation files or copy and save the URL of the installation files to start the installation.

All the components mentioned in the *IsilonSD Edge storage and architecture* section must be deployed successfully to enable the software-defined storage feature. Deployment of each component follows a separate workflow. The process is described in detail in the subsequent sections.

Download the IsilonSD Edge installation files

Follow this procedure to download the IsilonSD Edge installation files. Contact Isilon Technical Support if you have any questions regarding the installation package.

Procedure

1. Perform one of these steps depending on whether you are using a free license or have purchased a license of IsilonSD Edge:

   a. If you have purchased a license of IsilonSD Edge, go to Online Support and select the desired versions of the following files from the **Downloads for IsilonSD Edge** page. Refer to the *Compatibility matrix for IsilonSD Edge* section in *IsilonSD Edge With IsilonSD Management Server Release Notes* for information about the compatible versions of VMware ESXi, management server, and OneFS VMs.

   - Expand the **PRODUCT TOOL** section to download the management server OVA file for installing the management server for the first time. Download the management server RPM file from the same location for upgrading the management server.
   - Click **Browse Products** > **IsilonSD Edge** on the left pane to select the desired version of the OneFS VM.
   - Click **Documentation** to access the documentation for OneFS and IsilonSD Edge. You can access the *IsilonSD Edge Info Hub*, *IsilonSD Edge With IsilonSD Management Server Installation and Administration Guide* and *IsilonSD Edge With IsilonSD Management Server Release Notes* directly from the **Downloads for IsilonSD Edge** page.

   b. If you have not purchased a license but would like to try out the most recent version of IsilonSD Edge, download or copy the URL of the installation archive from the IsilonSD Edge community page. The installation archive for a free license consists of the following files:

   - `EMC_IsilonSD_Edge_ms_X.X.X.ova`—The IsilonSD Management Server installation image that includes IsilonSD Management Plug-in
   - `EMC_IsilonSD_Edge_ms_X.X.X.rpm`— A file that you can use to upgrade an existing management server to the latest version
   - `EMC_IsilonSD_EDGE_OneFS_VM_X.X.X.X.ova`—OneFS image built for virtual environment
   - `OneFS_vX.X.X.X_Install.tar.gz`—The latest upgraded image of OneFS
   - *IsilonSD Edge With IsilonSD Management Server Installation and Administration Guide*—A document with instructions for installing and administering IsilonSD Edge

- *IsilonSD Edge With IsilonSD Management Server Release Notes*—Release notes for IsilonSD Edge
- The installation files for InsightIQ

2. If you are copying the files, copy them to a virtual machine disk on the same network as the VMware ESXi host where you want to install the management server.

IsilonSD Edge installation workflow

After downloading the binary files for installing IsilonSD Management Server and the OneFS virtual machine files, you can install IsilonSD Edge.

The management server binary file includes a free license and IsilonSD Management Plug-in.

The workflow for installing IsilonSD Edge follows. Detailed instructions are given in the previous and subsequent sections.

Procedure

1. Contact your Isilon sales representative to verify that you have the appropriate license keys based on your cluster requirements.
2. Verify the prerequisites for installing IsilonSD Edge. If you ignore this step, you might run into problems. For more information, refer to the details in the *IsilonSD Edge installation requirements* section.
3. Download the IsilonSD Edge installation package to a location on your system. For more information, refer to the details included in the *Download the IsilonSD Edge installation files* section.
4. Deploy the management server on the VMware ESXi host to create a virtual machine. For more information, refer to the details included in the *Working with IsilonSD Management Server* section.
5. Log in to the stand-alone management server interface, add license keys, add a OneFS OVA template, and register one or more VMware vCenter servers. For more information, refer to the details included in the *Working with IsilonSD Management Server* section.
6. Register the IsilonSD Management Plug-in.
7. Deploy IsilonSD clusters and add nodes either using the stand-alone management server interface or using VMware vSphere Web client. For more information, refer to the details included in the *Deploying IsilonSD Clusters* chapter.

CHAPTER 3

Working With IsilonSD Management Server

This section contains the following topics:

IsilonSD Management Server overview

IsilonSD Management Server serves as a gateway for deploying OneFS clusters on VMware ESXi. These clusters that are deployed on the ESXi hosts are called IsilonSD clusters. You must successfully deploy and configure the management server to deploy the IsilonSD clusters. The management server manages IsilonSD licenses which in turn determine the software modules that are available to you for accessing the advanced cluster capabilities. The management server orchestrates the functioning of multiple versions of IsilonSD clusters through licensing.

Two types of users typically access the management server:

- Administrator—Manages the back-end tasks that are associated with the management server, some of which are as follows:
  - Switch to the root user at any point of time
  - Run any command with root permissions
  - Create and manage IsilonSD clusters through the stand-alone management server interface
  - Back up and restore the management server database
  - Connect to the management server through the SSH client and collect logs
  - Gather the management server's serial console information
  - Upgrade the management server
- Admin—Manages the front-end tasks that are associated with the management server user interface, some of which are as follows:
  - Add and remove licenses
  - Register VMware vCenter server instances
  - Change the management server user interface password
  - Manage the OVA template that is used for deploying an IsilonSD cluster

Each of these user types have their own credentials for logging in to the management server.

Deploy IsilonSD Management Server

IsilonSD Management Server is deployed on a VMware ESXi host from an Open Virtualization Application (OVA) file. We recommend that you deploy the management server on an ESXi host that is different from the ESXi hosts where the IsilonSD nodes will be deployed.

Before you begin

Make sure that the following virtual machine resource requirements for deploying the management server are met:

- vCPUs—2
- Memory—4 GB
- Hard disk—50 GB

Procedure

1. Log in to the VMware vSphere Web Client through the following URL:

`https://<vcenter_dnsname_or_ip_address>:9443/vsphere-client/`

The vSphere Web Client opens.

2. Right-click the cluster or datacenter and then select **Deploy OVF Template**. The OVF deployment wizard appears.

   The **Deploy OVF Template** wizard appears.

   Note

   When you try to deploy the management server from VMware vSphere Web Client through Google Chrome version 42 or later, or Mozilla Firefox version 39 or later, error messages might appear. If you do encounter issues, follow the workarounds that are recommended in the articles http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2114800 and http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2125623.

3. On the **Select template** page, provide the complete URL to the OVA file. Alternatively, browse to the folder where you have downloaded the `EMC_IsilonSD_Edge_ms_X.X.X.ova` file, select the file, and then click **Next**.
4. On the **Select name and location page**, type a unique name for the virtual machine, select a deployment location, and click **Next**.
5. On the **Select a resource** page, select a resource where to run the deployed VM template, and click **Next**.
6. On the **Select a resource** page, select a host to deploy and run the management server.
7. On the **Review details** page, verify the OVF or OVA template details and click **Next**.
8. On the **Select storage** page, select the following parameters:
   a. A virtual disk format.
   b. A virtual machine storage policy, if applicable.
   c. A datastore for storing the virtual machine configuration files on the destination resource that you selected in the previous step.
   d. Click **Next**.
9. On the **Select networks** page, select a source network and map it to a destination network. Click **Next**.
10. On the **Ready to complete** page, review the details for all the settings.
11. After you have confirmed and accepted all the settings, click **Power on after deployment** to power on the management server.
12. Click **Back** to return to the previous screens to make any changes, if required.
13. To accept all of the deployment settings and close the **Deploy OVF Template** wizard, click **Finish**.

    The **Recent Tasks** column shows the progress of deployment. If the template is uploaded successfully, the management server is added to your VMware inventory. It is powered on and booted up automatically.

Configure the IsilonSD Management Server settings

You must connect to IsilonSD Management Server for registering a VMware vCenter server, adding licenses, selecting OneFS virtual machine templates, and for changing the administrator password.

Before you begin

Before you proceed, make sure that the management server virtual machine has been deployed successfully.

Procedure

1. On the VMware vSphere Web Client home page, browse to the management server virtual machine that you have previously deployed.
2. Right-click the management server virtual machine and click **Power** > **Power On**.
3. The management server virtual machine boots up and displays a welcome screen with details as shown in the following example:

```
Please enter a new password for root:
Please re-enter password:
Passwords do not match! Please try again.

Please enter a new password for root:
Please re-enter password:
Password updated successfully
Please enter a new password for administrator:
Please re-enter password:
Password updated successfully
Current IP:
Current assignment method: dhcp

Would you like to change the network settings? (y/n)y
Changing assignment method to static
Enter 'exit' at any prompt to quit.
Enter IP address: 10.213.9.10
Enter netmask: 255.255.252.0
Enter default gateway: 10.213.8.1
Enter DNS server(s) (comma seperated) : 10.213.2.6


IP: 10.213.9.10
Netmask: 255.255.252.0
Gateway: 10.213.8.1
DNS: 10.213.2.6

Are these settings correct? (y/n): y
Configuring new network settings
Restarting Networking
Would you like to change the hostname? (y/n)
```

4. Change the root password (IsilonSD) and administrator password.
5. If required, change the IP address from dhcp to static and provide the network information related to IP, NetMask, Gateway, and DNS.

The new network settings are configured after you confirm that they are accurate.

6. If required, specify a new host name for the management server.

   Register the vCenter server and register the plug-in within that instance.

Connect to the IsilonSD Management Server

After configuring the IsilonSD Management server settings, you can follow the instructions in this section to connect to the management server.

Procedure

1. Open a web browser and connect to the stand-alone management server interface using the IP address that you specified earlier when configuring the management server settings. For example, specify the following URL:

   ```
   https://10.28.51.58:9443/
   ```

2. Type **admin** for the user name and **sunshine** for the password to log into the management server.
3. Review the end user license agreement, click **I accept the terms of the license agreement**, and then click **Submit**.
4. Change the default admin password **sunshine** to a password of your choice and record the new password. You must provide the changed password to log in to the management server subsequently.

   The management server home page appears with tabbed pages for registering vCenter servers, creating IsilonSD clusters, configuring licenses, importing OneFS virtual machine images, and updating settings.

Register a vCenter server

You must register IsilonSD Management Server with a VMware vCenter server in order to deploy IsilonSD Management Plug-in.

Before you begin

Make sure that the vCenter server version is supported by the management server. Also, the vCenter server must not have another management server instance already installed on it. If that is the case, uninstall all the instances of the management server before you proceed.

Procedure

1. Connect to the stand-alone management server interface.
2. On the **Managed Virtual Infrastructure** page of the management server, click **+** to open the **Register vCenter** dialog box.
3. Specify the fully qualified domain name (FQDN) or the IP address of the vCenter server in the **FQDN OR IP Address** field.
4. Specify the vCenter login credentials in the corresponding fields.

   These are the same credentials that you would provide for logging into vCenter.

5. Specify a custom name for vCenter, for example, type **my-vcenter** in the **Custom Name** field.

6. Click **Register**.

   The system registers the vCenter server instance with the management server.

Unregister a vCenter server

You can unregister a previously registered VMware vCenter server and disable all the unwanted instances of the IsilonSD Management Plug-in.

Before you begin

A registered management Plug-in is required in order to unregister a vCenter server.

You unregister vCenter when you restore IsilonSD cluster configuration data.

Procedure

1. On the **Managed Virtual Infrastructure** page of the management server, select a vCenter instance and click **-**.
2. On the **Remove vCenter** dialog box, provide the user name and password for that vCenter instance.
3. Click **Remove**.

   Note

   To remove or disable unwanted instances of IsilonSD Management Plug-in from vCenter, click **Unregister Plugin** that appears against the vCenter instance on the **Managed Virtual Infrastructure** page, and unregister the unwanted plugin instances. You can continue to manage the cluster using the stand-alone management server interface.

Register IsilonSD Management Plug-in

After registering a VMware vCenter server, you must register the IsilonSD Management Plug-in with the vCenter server to deploy and manage IsilonSD clusters.

Procedure

1. Perform all the steps as described in the section *Register a vCenter server*.
2. On the **Managed Virtual Infrastructure** page, click **Register Plugin** that appears against the vCenter server that you have registered.
3. Specify the username and password for the registered vCenter server.
4. Click **Register**.

   The management plug-in gets registered with the vCenter server.

Register an IsilonSD Edge license

You can add and register one or more IsilonSD Edge licenses. The licenses that you register determine the number of nodes that you can add to your IsilonSD cluster and the features that are enabled.

With the IsilonSD Management Server user interface open, follow this procedure for each license key that you want to register.

Procedure

1. On the stand-alone management server user interface, click the **Licenses** tab. A single free license is registered by default.

   Note

   You are not entitled to any support with this license.

2. To add your purchased license, click **+**. The **Add License** dialog box appears.
3. Add your license key in the **License Key** field, and click **Next**.
4. Read the software license and maintenance agreement.
5. Click **I accept the terms of the license agreement**, and then click **Acknowledge**.

   The `<license>.csv` file downloads automatically.

6. Save this license file locally.
7. Click **Close**.

   The license key appears on the **License Management** page. An additional section appears on the page with the license details, supported cluster configuration, and OneFS features supported with the license.

8. Send the license file to the Licensing and Support team at Isilon-Registration@emc.com to complete the license registration process.

Unregister an IsilonSD Edge license

You can unregister an IsilonSD Edge license that you previously registered.

With the IsilonSD Management Server user interface open, follow this procedure for each license key that you want to unregister.

Procedure

1. On the stand-alone IsilonSD Management Server user interface, click the **Licenses** tab.
2. From the **License Management** page, select a license key, and click **-**.
3. On the **Remove License** dialog box, click **Remove**.

   The license key is unregistered.

Manage OneFS virtual machine images

You can upload the OneFS virtual machine that is bundled as an `OVA` template with your installation package. Through the uploaded OneFS virtual machine template, you can add nodes to an IsilonSD cluster in a VMware vCenter server. You can also delete an `OVA` template or select a default template from the existing list.

Procedure

1. Click the **OneFS Images** tab in the stand-alone IsilonSD Management Server user interface.
2. To add an `OVA` template, perform the following actions:

   a. Click **+** to open the **Add Template** dialog box.

b. Specify the URL of the `EMC_IsilonSD_<version>.ova` file to upload it. Alternatively, click **Browse**, and then click the specified area in the dialog box to browse to the location where you have saved the template file, and upload the file. You can also drag and drop the file to the specified area in the dialog box.

   The OVA image or the OneFS build image is uploaded to IsilonSD Management Server.

3. If you have uploaded multiple versions of the `OVA` template, for example, if you have uploaded `EMC_IsilonSD_8.0.0.0.ova` and `EMC_IsilonSD_EDGE_OneFS_VM_8.0.1.ova`, perform the following actions:

   a. Select the required `OVA` template.

   b. Click **Set as Default** to set the selected `OVA` template as the default.

   The default template will be used for all the future cluster creation and node addition tasks if no other template is specified for these tasks.

4. To remove an `OVA` template, perform the following actions:

   a. Set another template as the default.

   b. Select the template that you want to remove.

   c. On the **Templates** page, click **–** to open the **Remove Template** dialog box and remove the template.

   Note

   You cannot remove a template that you have set as the default.

Change the password for IsilonSD Management Server

If you are required to periodically change the password for security reasons, follow this procedure.

Procedure

1. On the stand-alone IsilonSD Management Server user interface, click the **Settings** tab.
2. Type the old password, provide the new password, and reconfirm the new password in the corresponding fields.

   For more information on setting a strong password, refer to step 5 in the *Connect to IsilonSD Management Server* section.

3. Click **Save**.

CHAPTER 4

Deploying IsilonSD Clusters

This section contains the following topics:

Deploying and configuring IsilonSD clusters

You can use IsilonSD Management Plug-in to deploy and configure IsilonSD clusters. After successfully registering a VMware vCenter server through the IsilonSD Management Server user interface, the management plug-in gets installed within that vCenter server instance.

The management plug-in also enables you to scale the clusters by adding nodes. The number of nodes that you can add to your cluster depends on the number of licenses you own and on the underlying virtualization infrastructure.

You can also use the management plug-in to configure storage for the clusters, provided you configure direct attached storage through RAID, LUNs, or raw disks, and make them available to the ESXi host. The management plug-in thereafter creates virtual disks, formats the disks, and makes them available to the clusters.

IsilonSD cluster and node management tasks

You can perform most of the IsilonSD cluster and node management tasks through the IsilonSD web administration interface. However, you can perform the following tasks only through the IsilonSD Management Server stand-alone interface or IsilonSD Management Plug-in in VMware vCenter.

- Deploying a cluster
- Deleting a cluster
- Upgrading licenses on a cluster
- Adding nodes to a cluster
- Removing nodes from a cluster
- Adding drives
- Removing drives
- Smartfailing nodes
- Smartfailing drives

Note

After you deploy or delete clusters or add or remove nodes from the clusters, make sure to back up the cluster configuration data stored within the management server database. The backup can protect the configuration in case the management server is unavailable. See the *Backup IsilonSD cluster configuration data* section for details. To back up the cluster configuration data, you must use the administrator password that you have set previously using the instructions in the *Connect to the IsilonSD Management Server* section. If forgotten, the administrator password cannot be recovered or reset.

Accessing the IsilonSD cluster management interface

By default, you can access the IsilonSD cluster deployment and management screens through the stand-alone IsilonSD Management Server interface. This access mechanism enables you to manage all the clusters irrespective of the vCenter instances and the datacenters where the clusters are deployed. Alternatively, you can deploy and manage clusters using the IsilonSD Management Plug-in that is deployed

within a specific vCenter instance. The management plug-in enables to manage clusters that are deployed within a specific datacenter attached to a VMware vCenter instance.

Access the IsilonSD cluster deployment screens using the management server interface

Follow the steps given in this procedure to access the IsilonSD cluster deployment screens using the stand-alone IsilonSD Management Server interface.

Before you begin

Make sure that you have deployed the IsilonSD Management Plug-in successfully before you perform these steps.

Procedure

1. Connect to the management server as described in the *Connect to the IsilonSD Management Server* section.
2. On the **Managed Virtual Infrastructure** page of the management server, click the **IsilonSD Clusters** tab to open the **Welcome to IsilonSD** screen.
3. Click **Create IsilonSD Cluster** on the **Welcome to IsilonSD** screen.

   Alternatively, click **+** on the left pane of the welcome screen to open the **Create IsilonSD Cluster** page.

Access the IsilonSD cluster deployment screens using the management plug-in

If you are deploying or managing an IsilonSD cluster using a specific datacenter attached to a VMware vCenter instance, perform the steps described in this section to access the cluster deployment and management screens.

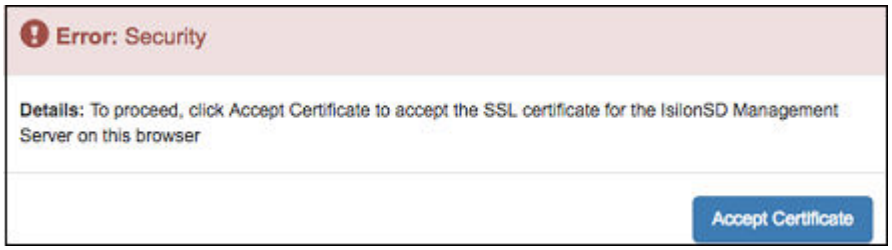
Procedure

1. On the VMware vSphere Web Client home page, click **Hosts and Clusters**, and from the left pane, select the datacenter where you want to deploy the cluster.
2. Click the **Manage** tab and then click the **IsilonSD Clusters** tab.

   Note

   If you are running VMware vCenter version 6.5 or above, the **IsilonSD Clusters** tab is accessible through the **Configure** tab on the VMware vSphere Web Client home page.

3. Click **Accept Certificate** on the security message window to open a new tabbed page within the same browser for accepting the SSL certificate for IsilonSD Management Server.



Note

If you have not specified the correct FQDN or IP address of the vCenter server in the System Name [FQDN or IP address] field in the Network Settings page on the VMware vCenter Server Appliance Deployment screen, you will not be able to proceed further even if you have accepted the SSL certificate. Reason being that vCenter encodes the system name (PNID) in the SSL certificate of the system so that the components can communicate with one another using this name. You cannot change the vCenter system name (PNID) after the vCenter instance is deployed. Refer to https://kb.vmware.com/kb/2130599 for specific details. To overcome this issue, re-deploy vCenter with the correct FQDN or IP address. Alternatively, perform these steps:

a. Connect to the serial console of the management server through an SSH client.

b. Run `nslookup` *<vCenter_system_name (PNID)>*

c. If the `nslookup` command fails, modify the `/etc/hosts` file to add the entry that maps the vCenter system name(PNID) to the vCenter IP address.

4. Click **Create IsilonSD Cluster** on the **Welcome to IsilonSD** screen.

   Alternatively, click **+** on the left pane of the **Welcome to IsilonSD** screen.

Select a license key

You must select the appropriate license key to deploy IsilonSD clusters and add nodes to the clusters.

Procedure

1. On the stand-alone IsilonSD Management Server home page, click the **IsilonSD Clusters** tab.

   If you are deploying or managing your cluster using the IsilonSD Management Plug-in, follow the steps described in the *Access the IsilonSD cluster deployment screens using the IsilonSD Management Plug-in* section.

2. Click **+** on the left pane of the **Welcome to IsilonSD** screen. Alternatively, click **Create IsilonSD Cluster** on the welcome screen.

   The **Create IsilonSD Cluster** wizard opens.

3. In the **Select a License** section, select the appropriate license to deploy the IsilonSD cluster.

   The page expands to display additional fields.

4. Select a vCenter server instance on which you want to deploy the cluster.

5. Select a datacenter on which you want to deploy the cluster.

   The maximum cluster capacity is populated by default. You can change the value as needed.

Note

Steps 4 and 5 are applicable only if you are deploying a cluster using the management server stand-alone interface.

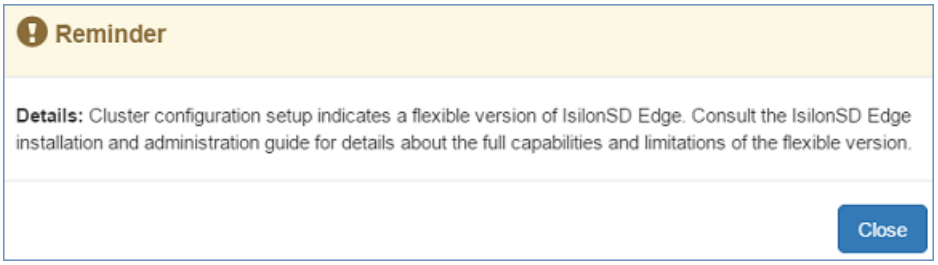
6. Configure an IsilonSD cluster as required based on your license configuration. See *IsilonSD cluster deployment requirements based on licenses* for details.

Note

The default values are populated in all the fields. You could change them as per the allowable maximum and minimum values.

7. If you want to change the default OneFS image, select an alternate image from the **OneFS Image** list.
8. Click **Next** to proceed to the next screen.

   The following message appears if you have selected a flexible configuration:



   Click **Close** to proceed to the host selection screen to select the hosts.

IsilonSD Edge cluster deployment requirements based on licenses

This section summarizes the IsilonSD cluster deployment requirements for the FREE, EDGE, and EDGE-FLEX licenses.

- The minimum cluster capacity requirement is 768 GB.
- The maximum cluster capacity requirement is 36 TB.
- The minimum virtual disk size requirement is 64 GB.
- The number of OneFS virtual nodes that you can select depends on the number of selected ESXi hosts. This is because OneFS virtual nodes are equally distributed across the selected ESXi hosts. The following table shows the details:

Number of ESXi hosts	Number of OneFS virtual nodes
Single host	Minimum: 3 Maximum: 6
Multiple hosts: Minimum: 2 Maximum: 6	▪ For 2 ESXi hosts: 4 or 6 ▪ For 3 ESXi hosts: 3 or 6 ▪ For 4 ESXi hosts: 4 ▪ For 5 ESXi hosts: 5 ▪ For 6 ESXi hosts: 6

- The number of datastores for the VMFS storage type can be one of the following:
  - One per ESXi host: One datastore is used for all the nodes (data disks, boot disks, and journal disks) that are deployed on that ESXi host.
  - One per OneFS virtual node: Each OneFS virtual node has its own dedicated datastore,
  - One per virtual data disk: A separate datastore is assigned for each OneFS disk. A 1:1 mapping is maintained between the OneFS disk and VMFS datastore.

  The number of datastores for the vSAN storage type is one per ESXi host.
- You must provision at least 36 GB of free space for a boot disk and 1 GB for a journal disk in order to deploy a single OneFS virtual node. If you are using a single ESXi host or shared storage, you can point some of these disks to the same shared resources. If you are using three separate ESXi hosts, you must allocate space on each ESXi host for deploying the OneFS virtual nodes.
- The number of data disks per OneFS virtual node for both single and multiple hosts is 4, 6, or 12.
- The minimum memory allocation per OneFS virtual node is 6 GB. The maximum value is 256 GB.

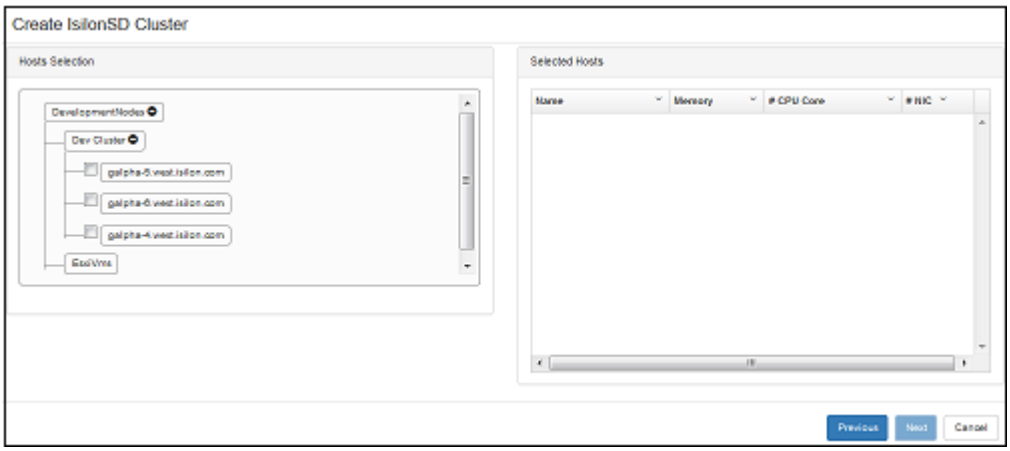
Select a host

You must select one or more ESXi hosts within a datacenter to deploy your IsilonSD cluster. All the hosts that you select for a given cluster must reside within the same datacenter.

This procedure assumes that you have successfully selected a license as described in the *Select a license key* section in this guide.

Procedure

1. Depending on the cluster configuration, select the physical hosts from the **Hosts Selection** area. The resources available on the selected hosts are populated in the **Selected Hosts** area.



Note

Make sure that all the hosts that you select are synchronized with the same NTP server.

2. Click **Next**.

   The selection is validated. If successful, you can configure the storage and port devices for the cluster on the next page. If unsuccessful, an error message appears. Fix the error as indicated in the message to move to the next page.

Specify the storage settings

For the hosts that you selected previously, you can provision storage either by accepting the default disk selection or by selecting one or more disks based on your cluster capacity requirement. You can also configure front-end and back-end port groups for the host.

Before you begin

This procedure assumes that you have successfully selected the hosts to deploy the IsilonSD cluster as described in the *Select a host* section in this guide.

Procedure

1. Click the corresponding checkbox to specify whether you want to choose a separate datastore for the IsilonSD journal drive.
2. If you have selected a separate journal for the host, select a datastore from the list that appears.
3. From the **Name** column, select the same number of datastores for the hosts as indicated in the **Storage Information** alert at the top of the page.
4. From the **External Network Port Group** area, select a primary front-end network for the host.
5. From the **Internal Network Port Group** area, select a primary back-end network for the host.

   Note

   Make sure that the back-end network is reachable from all of the hosts.

6. Click **Next Host** and configure the storage and network settings for the second host.
7. After you are done configuring the settings for all the hosts, click **Complete Host**.
8. Click **Next**.

   All the settings are validated. If successful, you can configure the cluster identity settings on the next page. If unsuccessful, an error message appears. Fix the error as indicated in the message to move to the next page.

Configure the IsilonSD cluster identity settings

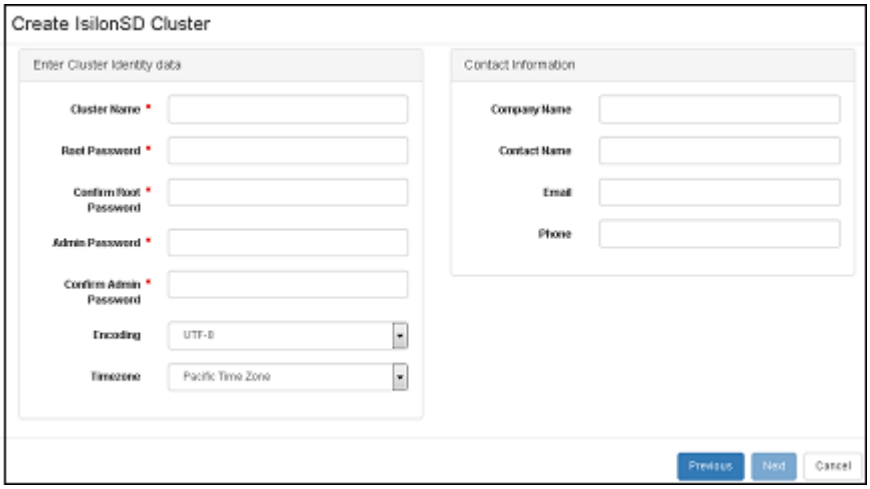
You can specify identity attributes for the IsilonSD cluster and your contact information, so, if you have purchased a license, Isilon Technical Support personnel and event notification recipients can contact you.

Before you begin

This procedure assumes that you have successfully selected the storage and port group settings for the cluster as described in the *Specify the storage settings* section in this guide.

Procedure

1. Specify the cluster identity settings by providing the following details:



   a. In the **Enter Cluster identity data** area, specify the following attributes:
      - A cluster name that begins with a letter and has a total length of up to 11 characters. For example, if you provide a name `einstein`, the IsilonSD node name appears as `IsilonSD-einstein-1`, where `1` is the node number that gets incremented automatically for every node that you add.
      - A password for the cluster.
      - An administrator password for the cluster.
      - A character encoding set. UTF-8 is the default.
      - A timezone.

   b. If you have purchased a license, in the **Contact Information** area, provide the following optional details:
      - Your company name
      - Your name
      - Your email address
      - Your phone number

2. Click **Next**.

   All the specified attributes are validated. If successful, you can configure the network settings on the next page. If unsuccessful, an error message appears. Fix the error as indicated in the message to move to the next page.

Configure the network settings

You can configure the internal and external network interfaces for an IsilonSD cluster.

Before you begin

This procedure assumes that you have successfully specified the cluster identity settings for the cluster as described in the *Configure the IsilonSD cluster identity settings* section in this guide.

All the IsilonSD nodes access two networks: an external network and an internal Ethernet network. Additionally, nodes communicate with each other through an

Ethernet network. Each node uses a separate IP address to access each of the networks. Thus, a three-node cluster uses three IP addresses.

Procedure

1. Specify the network settings by providing the following details:

   a. In the **Enter external network data** area, specify the following values:

   - A netmask for the external network.
   - A low IP address and a high IP address for the external IP range of your network.
   - An MTU value. The default value is 1500.
   - The gateway IP address of your network to configure the gateway server through which the cluster communicates with the clients outside of the network.
   - One or more comma-separated IP addresses of your DNS servers.
   - Search domains for the external network. You can designate up to three DNS servers and up to six search domains for your external network.

   b. In the **Enter internal network data** area, specify the following values:

   - A netmask for the internal network. Make sure that this netmask is not the same as the netmask for the external network. This is because the external network and the internal network addresses cannot be in the same IP subnet.
   - A low IP address and a high IP address for the internal IP range of your network.

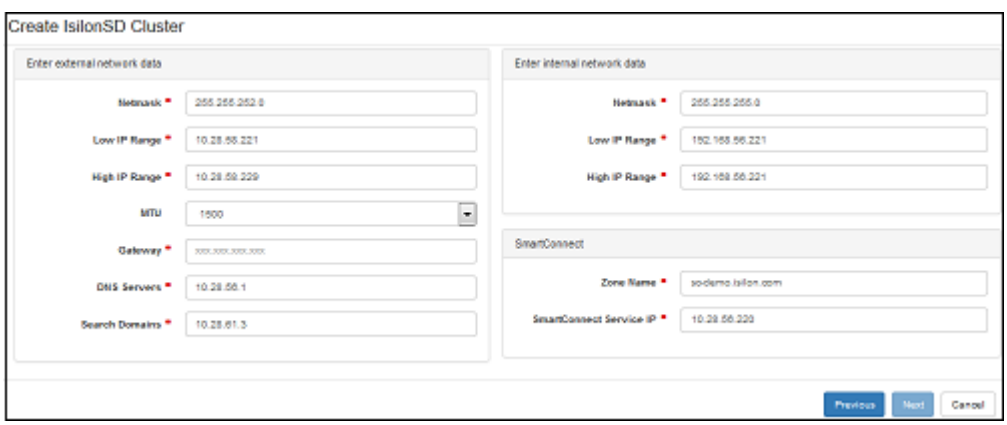
   Note

   An internal network is a private network accessed by the cluster for intra-node communication. The internal network should not be routable on the corporate network. It should also not overlap with the IP addresses in the external network configuration.

   c. In the **SmartConnect** area, specify the SmartConnect zone name and service IP address.

   A sample screen with all the settings is shown:

   Figure 1



2. Click **Next**.

   All the values that you specified are validated. If successful, you can view a summary of the cluster configuration settings on the next page.

View the summary and deploy the IsilonSD cluster

You can view a summary of the IsilonSD cluster configuration settings to make sure that the cluster is deployed successfully.

Before you begin

This procedure assumes that you have successfully configured the network settings for the cluster as described in the *Configure the network settings* section in this guide.

Procedure

1. Review the settings for the storage and ports, the cluster identity attributes, and the internal and external networks on the summary screen.
2. If required, click **Previous** to change any settings.
3. Click **Create** to accept the cluster deployment settings and to deploy the cluster.

   After the nodes in the cluster are deployed successfully, they boot up. Depending on the configuration of your cluster, this process may take some time. We recommend that you stay on this screen until the process is completed successfully.

   If desired, you can perform the following actions to view the status of the node configuration process:

   a. Connect to the management server through an SSH client.

   b. Retrieve the port numbers of the nodes and connect to the serial consoles of the nodes to view the progress as described in the next section.

   Note

   If there are issues with a cluster created using a purchased license and you want to recreate the cluster, delete the cluster to unlock the license before you proceed.

Connect to the serial console of an IsilonSD node

You can retrieve the serial console information of an IsilonSD node and then connect to it. Serial console information is helpful if you want to view the status of the node configuration process when you are deploying an IsilonSD cluster. Serial console information is also helpful when a node panics and you want to connect to the node and retrieve the stack traces for debugging purposes.

Before you begin

Firewall is enabled on the OVAs shipped with IsilonSD Management Server 1.0.3 and later. Therefore only the following required ports are open by default:

- 22—SSH
- 546—IPv6 DHCP Client port

- 8080—vSPCServer main thread port
- 9443—IsilonSD management service port

Since only the above-mentioned ports are open, remote access through telnet to IsilonSD nodes is disabled by default. You must edit the firewall rules and reload the firewall in order to access the telnet remote access mechanism.

Note

Firewall is disabled by default on versions of the management server earlier than 1.0.3.

Procedure

1. Connect to IsilonSD Management Server through the SSH client by providing the administrator credentials.
2. Run the following command to view the serial port numbers of each of the nodes in the cluster:

   ```
   vSPCClient
   ```

   The output is shown in the following example:

   ```
   IsilonSD-Demo-1:503d73af0286db2c-98bf32f7d143119a:50000
   IsilonSD-Demo-2:503d15544faa0f09-fe681f6157766dd1:50001
   IsilonSD-Demo-3:503db7bda1697ad4-a8f47d6a1c5b0eed:50002
   ```

   If there are multiple clusters, run the following command for each of the clusters to identify their port numbers:

   ```
   vSPCClient | grep <cluster_name>
   ```

   Note

   After you delete a cluster, the serial port numbers of the nodes in the cluster will be displayed for up to 24 hours when you run the `vSPCClient` command. This happens because the vSPCClient service maintains a one-to-one relationship between the port numbers and virtual machines (nodes) and cannot determine immediately whether a node is powered off or deleted.

3. If you are running IsilonSD Management Server version 1.0.3 or later, and want to run telnet for remotely accessing the IsilonSD nodes, perform the following steps:
   a. Edit the firewall rules and reload the firewall. The iptables (ipv4) rules reside at `/etc/sysconfig/iptables`.
   b. Add rules under the 9443 rule to open the specific ports as follows:

   ```
   -A INPUT -m state --state NEW -m tcp -p tcp --dport 9443 -j
   ACCEPT
   -A INPUT -m state --state NEW -m tcp -p tcp --dport <PORT
   TO OPEN> -j ACCEPT
   ```

   The service iptables reload as soon as you edit the rules.

4. Run the following command to connect to the management server and view the serial console of a node:

```
telnet <management-server-ip> <port-number-of-node>
```

   For example, run the following command to connect to the management server and view the serial console of a node with serial port number 50000:

```
telnet 10.28.59.81 50000
```

5. Repeat the previous step to view the serial consoles of all the nodes that you are adding to the cluster.

   If the nodes are being formatted, the process is shown. After all the nodes are formatted, they are automatically joined to the cluster. After the initial configuration, a login prompt appears in the serial console corresponding to each of the nodes.

6. To log in to the nodes, type the credentials that you provided during the cluster deployment.

7. Run the `isi status` command to view the details for all the nodes in the cluster.

   You can connect to the clusters and nodes through either of the following methods:

   - Typing the IP address of the cluster through an SSH client connection.
   - Accessing the web administration interface through the URL `https://<node_ip_address>:8080`

CHAPTER 5

Managing IsilonSD Clusters

This section contains the following topics:

Managing an IsilonSD cluster

After successfully deploying an IsilonSD cluster, you can view the cluster and node details, upgrade a cluster, delete a cluster, add or remove nodes from the cluster, and smartfail or smartstop nodes and drives.

Note

- IsilonSD nodes do not manage or monitor the physical drives installed on the host machines. Use VMware vCenter or other vendor-specific utilities to monitor the health of the drives and to track if firmware updates are required.
- If you have smartfailed a drive or node through the OneFS web administration interface or through any other process that OneFS automatically triggers, we recommend that you remove the corresponding virtual machine or drive using the smartfail options available in the **Nodes** and **Drives** areas on the **IsilonSD Clusters** tab in VMware vCenter. For more information, see the *Smartfail an IsilonSD node* and *Smartfail a drive* sections.

View and manage IsilonSD cluster information

You can view information about the deployed IsilonSD clusters. You can also upgrade to a newer license or delete a cluster.

Procedure

1. Open the IsilonSD Management Server interface and click the **IsilonSD Clusters** tab. Alternatively, on the VMware vSphere Web Client home page, click **Hosts and Clusters** and select the datacenter where you have deployed the cluster. Click the **Manage** tab and then click the **IsilonSD Clusters** tab.

   Note

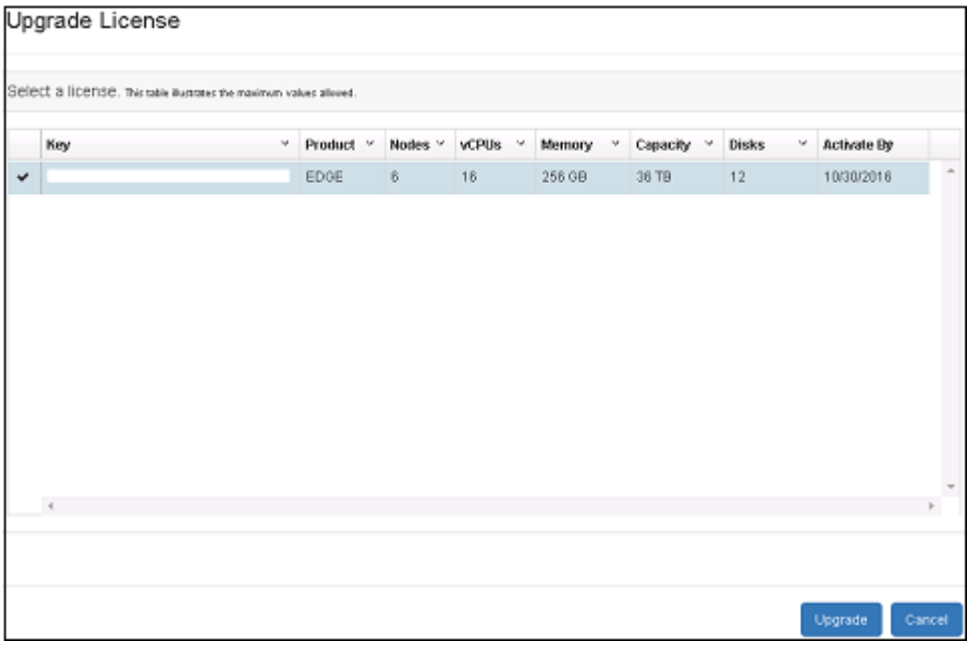
   If you are running VMware vCenter 6.5 or above, the **IsilonSD Clusters** tab is accessible through the **Configure** tab on the VMware vSphere Web Client home page.

2. On the left pane, select the cluster name for which you want to view the details.
3. In the **Details** area, you can view details related to the raw capacity, capacity used, capacity available, SmartConnect IP, SmartConnect name, license key, license model, and OneFS version. In the case of flexible configurations, a message indicates that you have deployed a flexible version of IsilonSD Edge. See the *Configuring IsilonSD clusters* section in this guide for special considerations regarding the flexible versions of IsilonSD Edge.
4. If necessary, click that appears in the SmartConnect IP row to modify the SmartConnect IP address using the **Change SmartConnect IP** dialog box.

Note

- If you have more than one groupnet:subnet combination, you can change the SmartConnect IP address to a value that lies within the groupnet0:subnet0 combination.
- Make sure that you do not rename groupnet0 or subnet0 or you do not change the SmartConnect IP through the OneFS web administration or command-line administration interface. If you do so, the cluster cannot be managed through IsilonSD Management Plug-in within vCenter.

5. If necessary, in the **Details** area, click **Upgrade** to open the **Upgrade License** wizard as shown to upgrade to a new license that supports additional features or more nodes.



Note

You can perform this action only if you have purchased a new license and have registered the license through the stand-alone management server user interface before the upgrade.

6. The **New Events** area lists any events related to the node operations.
7. If necessary, on the left pane, click 🗑 to delete the cluster.

Note

You cannot reimage a cluster through the `isi_reimage -fmb <build>` command. To reimage the cluster, delete the cluster as described in this step, and then recreate it through the **Create IsilonSD Cluster** wizard.

Add nodes to an IsilonSD cluster

Depending on your license configuration, you can scale an IsilonSD cluster by adding nodes to it. Make sure that you add as many nodes as necessary to a cluster before moving the cluster into SmartLock compliance mode. You cannot add nodes to a cluster running in SmartLock compliance mode. Also, the SmartLock software module is available only if you have purchased a license.

Before you begin

Before you add nodes to a cluster, make note of the following items:

- View the cluster and node details to make sure that you can add more nodes to the cluster.
- Make sure that you have reserved enough internal and external IP addresses for the new nodes.

Procedure

1. On the VMware vSphere Web Client home page, click **Hosts and Clusters** and select the datacenter where you have deployed the cluster.
2. Click the **Manage** tab and then click the **IsilonSD Clusters** tab.
3. From the left pane, select the cluster to which you want to add nodes.
4. On the right pane, click the **Nodes** tab.

   The details of the nodes that belong to the cluster are displayed.
5. Click **+** on the **Nodes** tab to add nodes to the cluster through the **Add Node** wizard.
6. If you have not already reserved internal and external IP addresses for the new nodes, follow the instructions in the wizard to reserve the IP addresses.
7. Specify the number of hosts and nodes to add and click **Next**.
8. Select the OneFS image to add the node.

   Note

   You cannot add nodes to an existing cluster using an OVA template that is higher in version than the cluster version. For example, you cannot add nodes using the template `EMC_IsilonSD_EDGE_OneFS_VM_8.1.0.ova` to a cluster that is previously deployed using the template `EMC_IsilonSD_Edge_8.0.1.0.ova`.
9. Select the hosts from the list and click **Next**. For more information, see the *Select a host* section.
10. Specify the storage information for each of the nodes click **Next**. For more information, see the *Select the storage settings* section.
11. View a summary of the node configuration:
12. Click **Save** to save the node configuration settings and proceed with the configuration.
13. Click the refresh button to view the progress of the node configuration in the **Recent Tasks** pane. For more information, see the *View the summary and deploy the IsilonSD cluster* section.

14. If required, connect to IsilonSD Management Server through the SSH client and view the serial consoles of the newly added nodes to determine the status of the node configuration. For more information, see the *Connect to the serial console of an IsilonSD node* section.

    After the node is configured and joined to the cluster, it appears in the **Nodes** area.

Smartfail an IsilonSD node

You can smartfail an IsilonSD node if you want to remove the node from the cluster.

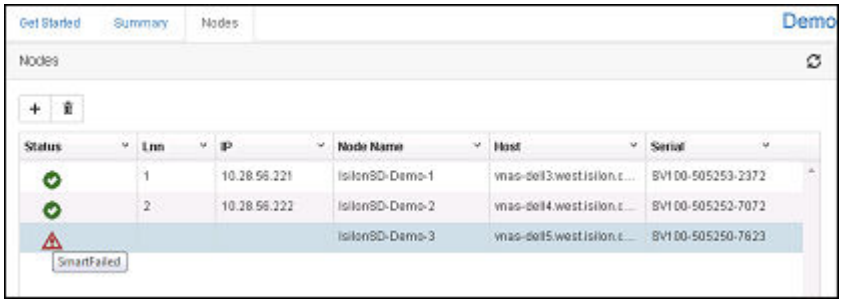
Procedure

1. On the VMware vSphere Web Client home page, click **Hosts and Clusters**, and from the left pane, select the datacenter where you deployed the IsilonSD cluster.
2. Click the **Manage** tab and then click the **IsilonSD Clusters** tab.
3. From the left pane, select the cluster that has the node you want to smartfail.
4. Click the **Nodes** tab. The details corresponding to the nodes and drives in the cluster appear in the **Nodes** and **Drives** areas respectively.
5. Select a node to smartfail from the list in the **Nodes** area.
6. On the **Smartfail Node** window, click **-** and then click **Yes** to begin the smartfail process.

   The status of the node changes in the **Nodes** area and a **Stopfail** button appears in the **Status** column as shown.

   For more information on the node status, see the *Reviewing the status of IsilonSD nodes* section.
7. Click the refresh button at the top-right corner of the **Nodes** area to view the status of the smartfail operation.
8. Depending on whether you want to smartfail the node or not, perform one of the following actions:
   - Click the **Stopfail** button to stop the smartfail process and restore the node to its original configuration. The node rejoins the cluster.
   - Allow the node to smartfail. The node status changes in the **Nodes** area after the node smartfails successfully as shown:



Reviewing the status of IsilonSD nodes

You can review the status of the nodes in an IsilonSD cluster to track the health of an IsilonSD cluster.

Point to a specific status that appears in the **Status** column in the **Virtual Nodes** section of the **OneFS Virtual Nodes** tabbed page to view the node status. The following table describes all the possible node states that you might encounter:

Node status	Description
Healthy	The node is up and running.
Down	The node is down.
Read-only	The read-only node can be smartfailed and later on deleted. A node running in read-only mode behaves like an accelerator node. It can read and write data to the shared `/ifs` partition. However, it cannot write that data to its own journal or local drives.
SmartFailing	The node is being smartfailed and the process can be stopfailed, if necessary.
SmartFailed	The node has been smartfailed and removed from the cluster. However, the virtual machine associated with the node still exists and must be deleted.
Not part of Cluster	The node did not exist previously in the cluster and is being added through the **Create IsilonSD Cluster** wizard or the **Add Node** wizard that appears when you try to add a node to an existing cluster.

Remove a smartfailed IsilonSD node

You can remove an IsilonSD node after it smartfails successfully.

Procedure

1. On the VMware vSphere Web Client home page, click **Hosts and Clusters**, and from the left pane, select the datacenter where you deployed the IsilonSD cluster.
2. Click the **Manage** tab and then click the **IsilonSD Clusters** tab.
3. From the left pane, select the cluster that has the node you have smartfailed and want to remove.
4. Click the **Nodes** tab on the right pane and from the **Nodes** area, select the smartfailed node and click 🗑.

5. On the **Remove Node** dialog box, click **Yes** to permanently remove the node from the cluster and retrieve the license that was initially configured to create the node.

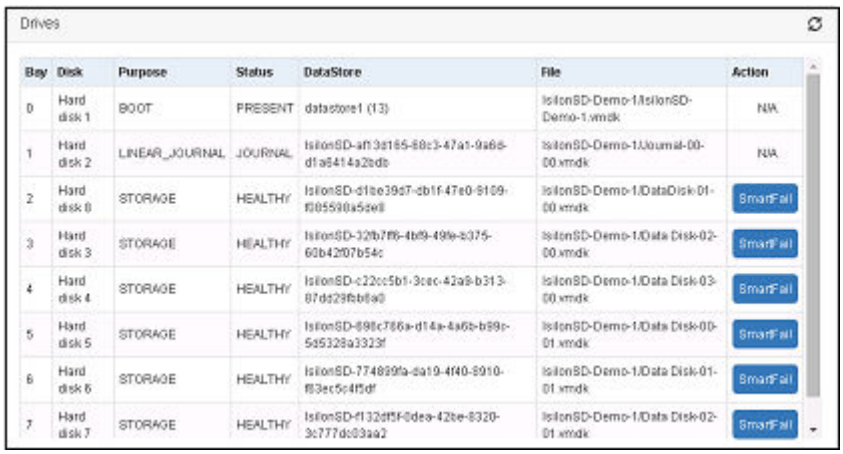
Smartfail a drive

You must smartfail a drive before it can be removed from an IsilonSD cluster.

Procedure

1. On the VMware vSphere Web Client home page, click **Hosts and Clusters** and from the left pane, select the datacenter where you have deployed the cluster.
2. Click the **Manage** tab and then click the **IsilonSD Clusters** tab.
3. From the left pane, select the cluster with the node that you want to smartfail.
4. Click the **Nodes** tab.

   A list of all the nodes and drives in the cluster appear in the **Nodes** and **Drives** areas, respectively.
5. Click a node from the list in the **Nodes** area to view the drive information corresponding to that node in the **Drives** area.
6. Click the **SmartFail** button corresponding to the drive that you want to smartfail.



Drives

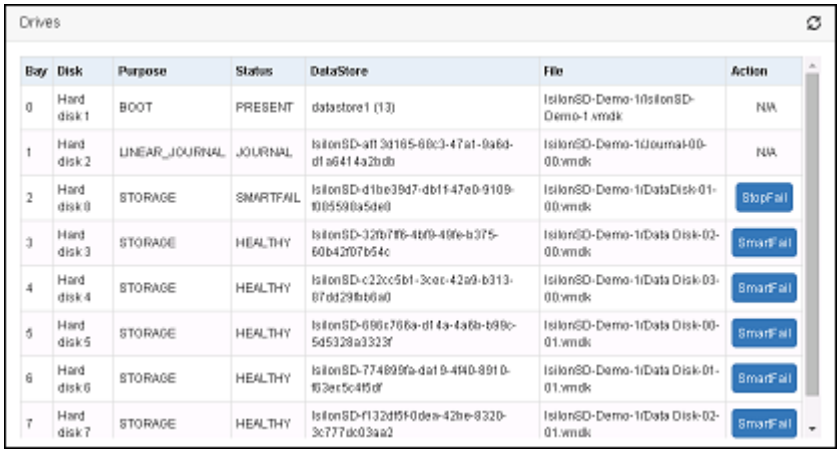
Bay	Disk	Purpose	Status	DataStore	File	Action
0	Hard disk 1	BOOT	PRESENT	datastore1 (13)	IsilonSD-Demo-1/IsilonSD-Demo-1.vmdk	N/A
1	Hard disk 2	LINEAR_JOURNAL	JOURNAL	IsilonSD-af13d165-88c3-47a1-9a68-d1a8414a2bdb	IsilonSD-Demo-1/Journal-00-00.vmdk	N/A
2	Hard disk 0	STORAGE	HEALTHY	IsilonSD-d1be39d7-db1f-47e0-9109-f805590a52e8	IsilonSD-Demo-1/DataDisk-01-00.vmdk	SmartFail
3	Hard disk 3	STORAGE	HEALTHY	IsilonSD-32fb7ff6-4bf9-49fe-8375-60b42f07b54c	IsilonSD-Demo-1/Data Disk-02-00.vmdk	SmartFail
4	Hard disk 4	STORAGE	HEALTHY	IsilonSD-c22cc5b1-3cec-42a9-b313-87dd29fbbfa0	IsilonSD-Demo-1/Data Disk-03-00.vmdk	SmartFail
5	Hard disk 5	STORAGE	HEALTHY	IsilonSD-698c786a-d14a-4a6b-b99c-5d5328a3323f	IsilonSD-Demo-1/Data Disk-00-01.vmdk	SmartFail
6	Hard disk 6	STORAGE	HEALTHY	IsilonSD-774899fa-da19-4f40-8910-f83ec5c4f5df	IsilonSD-Demo-1/Data Disk-01-01.vmdk	SmartFail
7	Hard disk 7	STORAGE	HEALTHY	IsilonSD-f132df5f-0dea-42be-8320-3c777dc03aa2	IsilonSD-Demo-1/Data Disk-02-01.vmdk	SmartFail

7. On the **Smartfail Drive** dialog box, click **Yes** to begin the smartfail process.
8. At the top-right corner of the **Drives** area, click the refresh button to view the status.

   The **SmartFail** button changes to **StopFail** in the **Drives** area. The drive state is displayed as `SMARTFAIL` to indicate that the drive is being smartfailed. The **StopFail** button changes to **Remove** after the drive has been successfully smartfailed. The drive state changes to `REPLACE` to indicate that the drive is ready to be removed and replaced.

   Note

   For more information about the different drive states, see the *Reviewing the drive states* section.
9. To abort the smartfail process, click the **Stopfail** button that is shown in the following screen:



Drives

Bay	Disk	Purpose	Status	DataStore	File	Action
0	Hard disk 1	BOOT	PRESENT	datastore1 (13)	IsilonSD-Demo-1/IsilonSD-Demo-1.vmdk	N/A
1	Hard disk 2	LINEAR_JOURNAL	JOURNAL	IsilonSD-aff3d165-68c3-47a1-9a8d-d1a6414a2bdb	IsilonSD-Demo-1/Journal-00-00.vmdk	N/A
2	Hard disk 8	STORAGE	SMARTFAIL	IsilonSD-d1be39d7-db11-47e0-9109-f0b559ba5de0	IsilonSD-Demo-1/DataDisk-01-00.vmdk	StopFail
3	Hard disk 3	STORAGE	HEALTHY	IsilonSD-32fb7ff6-4bf9-49fe-b375-60b42f07b54c	IsilonSD-Demo-1/Data Disk-02-00.vmdk	SmartFail
4	Hard disk 4	STORAGE	HEALTHY	IsilonSD-c22cc5b1-3cac-42a9-b313-87dd29fbb6a0	IsilonSD-Demo-1/Data Disk-03-00.vmdk	SmartFail
5	Hard disk 5	STORAGE	HEALTHY	IsilonSD-696c766a-d14a-4a6b-b99c-5d5328a3323f	IsilonSD-Demo-1/Data Disk-00-01.vmdk	SmartFail
6	Hard disk 6	STORAGE	HEALTHY	IsilonSD-774899fa-daf9-4f40-8910-f63ec5c4f5df	IsilonSD-Demo-1/Data Disk-01-01.vmdk	SmartFail
7	Hard disk 7	STORAGE	HEALTHY	IsilonSD-f132df5f-0dea-42be-8320-3c777dc03aa2	IsilonSD-Demo-1/Data Disk-02-01.vmdk	SmartFail

Reviewing the drive states

You can review the details about the different drive states in anIsilonSD cluster.

The **Status** column in the **Virtual Drives** section on the **OneFS Virtual Nodes** tabbed page indicates the drive state. The following table describes all the possible drive states that you might encounter:

Drive state	Description
HEALTHY	The drive is functioning correctly.
SMARTFAIL	The drive is in the process of being removed safely either because of an I/O error or by user request.
REPLACE	The drive was smartfailed successfully and is ready to be removed.
PREPARING	The drive is undergoing a format operation. The drive state changes to `HEALTHY` when the format is successful.
PRESENT	The drive is a boot drive and cannot be smartfailed.
JOURNAL	The drive is a journal drive and cannot be smartfailed.
EMPTY	The drive has been removed and is ready to be replaced.

Remove a smartfailed drive

You can remove a drive after it is smartfailed successfully.

Procedure

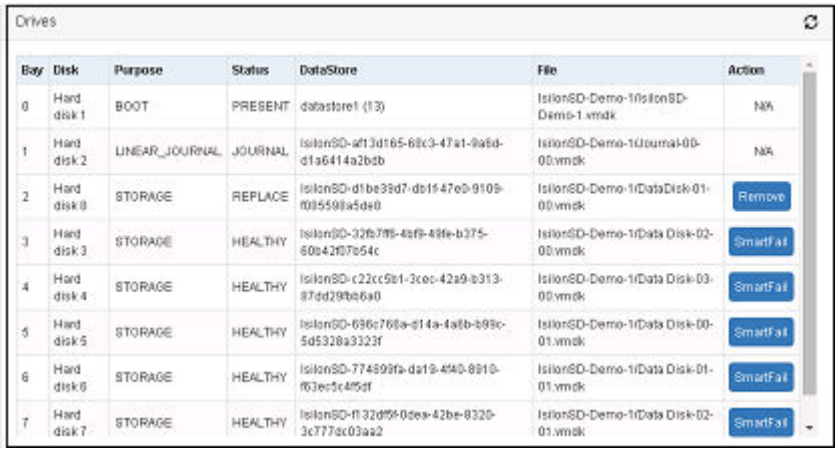
1. On the VMware vSphere Web Client home page, click **Hosts and Clusters** and from the left pane, select the datacenter where you have deployed the cluster.
2. Click the **Manage** tab and then click the **Manage IsilonSD Clusters** tab.
3. In the **Clusters** section, select the cluster with the node that has the drive you have smartfailed.

4. Click the **Nodes** tab.

   A list of all the nodes and drives in the cluster appear in the **Nodes** and **Drives** areas respectively.

5. Click a node from the list in the **Nodes** area that has the drive you have smartfailed.

6. In the **Drives** area, click the **Remove** button corresponding to the smartfailed drive that you want to remove.



Drives

Bay	Disk	Purpose	Status	DataStore	File	Action
0	Hard disk 1	BOOT	PRESENT	datastore1 (13)	IsilonSD-Demo-1/IsilonSD-Demo-1.vmdk	N/A
1	Hard disk 2	LINEAR_JOURNAL	JOURNAL	IsilonSD-af13d165-68c3-47a1-9a6d-d1a6414a2bdb	IsilonSD-Demo-1/Journal-00-00.vmdk	N/A
2	Hard disk 8	STORAGE	REPLACE	IsilonSD-d1be39d7-db15-47e0-9109-f08559fa5de0	IsilonSD-Demo-1/DataDisk-01-00.vmdk	Remove
3	Hard disk 3	STORAGE	HEALTHY	IsilonSD-32fb7ff9-4bf9-49fe-b375-60b42f07b54c	IsilonSD-Demo-1/Data Disk-02-00.vmdk	SmartFail
4	Hard disk 4	STORAGE	HEALTHY	IsilonSD-c22cc5b1-3cec-42a9-b313-87dd29fbb6a0	IsilonSD-Demo-1/Data Disk-03-00.vmdk	SmartFail
5	Hard disk 5	STORAGE	HEALTHY	IsilonSD-696c766a-d14a-4a6b-b99c-5d5328a3323f	IsilonSD-Demo-1/Data Disk-00-01.vmdk	SmartFail
6	Hard disk 6	STORAGE	HEALTHY	IsilonSD-774899fa-da19-4f40-8910-f63ec5c4f5df	IsilonSD-Demo-1/Data Disk-01-01.vmdk	SmartFail
7	Hard disk 7	STORAGE	HEALTHY	IsilonSD-f132df5f-0dea-42be-8320-3c777dc03aa2	IsilonSD-Demo-1/Data Disk-02-01.vmdk	SmartFail

7. On the **Remove Drive** dialog box, click **Yes** to confirm the removal of the drive.

   The drive is removed from the cluster and the **Add** button appears in place of the **Remove** button.

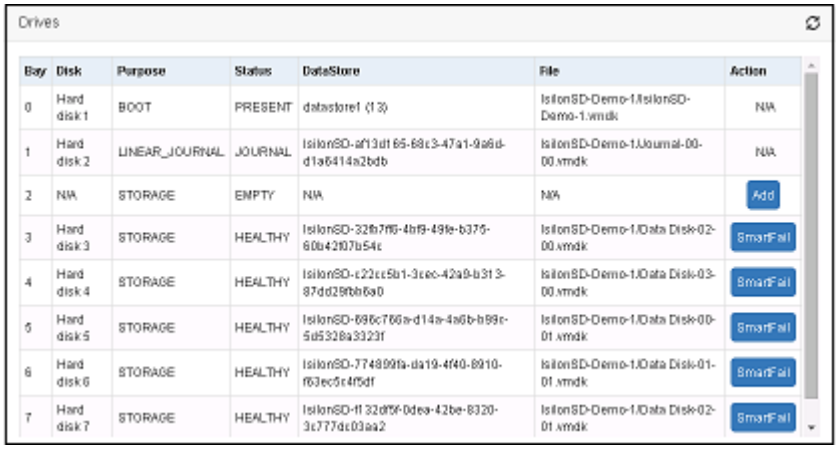
Add a drive to an IsilonSD cluster

You can add a drive to an IsilonSD cluster only after you successfully smartfail and remove an existing drive.

Procedure

1. Smartfail and remove a drive as described in the *Smartfail a drive* and *Remove a smartfailed drive* sections.

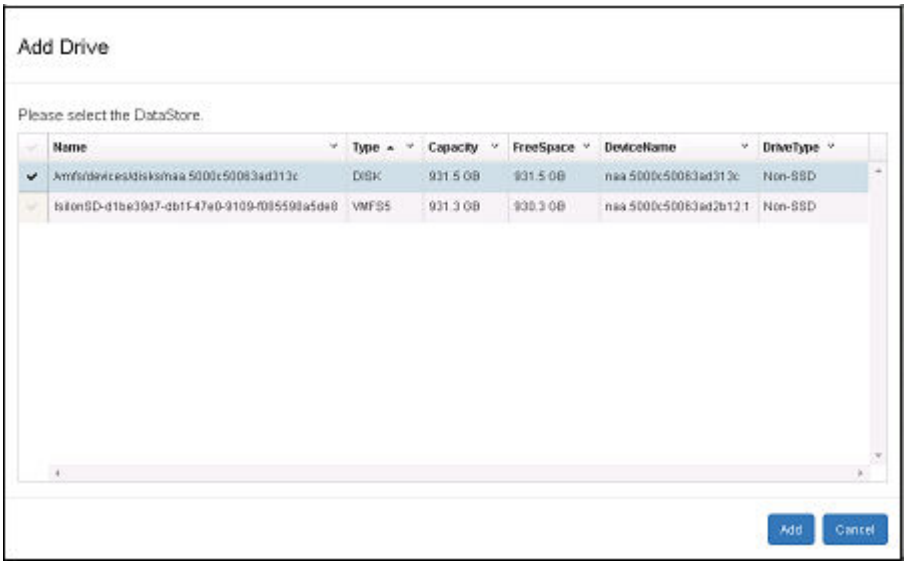
2. In the **Drives** area that appears on the **Nodes** tab for a selected cluster and node, click the **Add** button, corresponding to the drive that you previously removed.



Drives

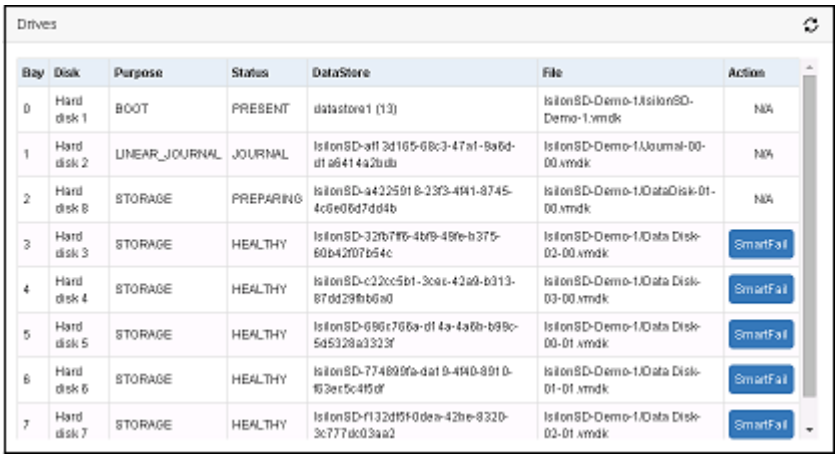
Bay	Disk	Purpose	Status	DataStore	File	Action
0	Hard disk 1	BOOT	PRESENT	datastore1 (13)	IsilonSD-Demo-1/IsilonSD-Demo-1.vmdk	N/A
1	Hard disk 2	LINEAR_JOURNAL	JOURNAL	IsilonSD-af13d165-68c3-47a1-9a6d-d1a6414a2bdb	IsilonSD-Demo-1/Journal-00-00.vmdk	N/A
2	N/A	STORAGE	EMPTY	N/A	N/A	Add
3	Hard disk 3	STORAGE	HEALTHY	IsilonSD-32fb7ff9-4bf9-49fe-b375-60b42f07b54c	IsilonSD-Demo-1/Data Disk-02-00.vmdk	SmartFail
4	Hard disk 4	STORAGE	HEALTHY	IsilonSD-c22cc5b1-3cec-42a9-b313-87dd29fbb6a0	IsilonSD-Demo-1/Data Disk-03-00.vmdk	SmartFail
5	Hard disk 5	STORAGE	HEALTHY	IsilonSD-696c766a-d14a-4a6b-b99c-5d5328a3323f	IsilonSD-Demo-1/Data Disk-00-01.vmdk	SmartFail
6	Hard disk 6	STORAGE	HEALTHY	IsilonSD-774899fa-da19-4f40-8910-f63ec5c4f5df	IsilonSD-Demo-1/Data Disk-01-01.vmdk	SmartFail
7	Hard disk 7	STORAGE	HEALTHY	IsilonSD-f132df5f-0dea-42be-8320-3c777dc03aa2	IsilonSD-Demo-1/Data Disk-02-01.vmdk	SmartFail

3. On the **Add Drive** wizard, select a datastore to create a hard disk as shown in the following example:



4. Click **Add** to add the drive to the cluster.

   The drive status shows `PREPARING` when the drive is being added to the cluster as shown:



   Click the refresh button at the top-right corner of the **Drives** area to monitor the status. The drive status changes to `HEALTHY` after the drive is successfully added to the cluster.

CHAPTER 6

Managing IsilonSD Cluster Configuration Data

This section contains the following topics:

Backing up and restoring IsilonSD cluster configuration data

After adding or removing IsilonSD clusters, you must backup the cluster configuration data stored in the database of the IsilonSD Management Server. In a disaster recovery situation involving the loss or unavailability of the management server, you can restore data from the most recent backup session.

The cluster configuration data that gets backed up includes the IsilonSD Edge licenses, cluster and node information and VMware vCenter server information. Templates or log files stored in the management server are not backed up, and therefore, cannot be restored.

In summary, back up the management server database at regular intervals, specifically, whenever you perform one of the following operations because they change the database:

- Add a new cluster or node
- Add a new license
- Upgrade a cluster
- Register a new vCenter
- Delete a cluster or node

When you back up and restore data to a newer version of the management server, for example, when you back up data to management server version 1.1.1, you can migrate the serial port information for the existing cluster to point to the newer version of the management server. This process enables serial port connections.

Backup IsilonSD cluster configuration data

You can back up IsilonSD cluster configuration data.

Before you begin

You must always create backups on an NFS mount. However, make sure that the NFS is not mounted at `/home/administrator`. Otherwise, the backup operation fails.

You are provided with a backup and restore script called `isi_backup_restore.py` within the management server virtual machine. You must run this script by logging into the management server.

Procedure

1. Connect to the management server through an SSH client with administrator credentials.
2. Run the following command to back up the cluster configuration data from the management server:

   ```
   isi_backup_restore.py backup backup_path
   ```

   For the *backup_path* variable, provide the NFS mount point for the backup operation. If an NFS mount point is not created, mount an NFS share for the backup operation and make sure that you have created a file systems table (fstab) entry for it.

For example, run the following command to back up the cluster configuration data from the management server:

```
isi_backup_restore.py backup /mnt/backup
```

Restore IsilonSD cluster configuration data

You can restore IsilonSD cluster configuration data from a previous backup session.

You can restore data to the same IsilonSD Management Server or to a new version of the management server. To restore data in the latter case, follow the procedures in this document to deploy the management server and then restore data to the newly deployed server. After restoring data, make sure that the backed up data is accessible.

Procedure

1. Unregister vCenter from the previously installed management server.
2. Connect to the management server through an SSH client with administrator credentials.
3. Stop the virtmgmt service by running the following command:

   ```
   sudo service virtmgmt stop
   ```

4. Run the following command to restore data:

   ```
   isi_backup_restore.py restore <backup_name>
   ```

   For the `backup_name` option, provide the name of the backup file with the complete path to restore the data from.

   For example, run the following command to restore data:

   ```
   isi_backup_restore.py restore /mnt/backup/isi_sd_back/
   <datetime>isilonSD.bak
   ```

5. Start the virtmgmt service by running the following command:

   ```
   sudo service virtmgmt start
   ```

6. Log in to the stand-alone management server, unregister, and re-register the VMware vCenter server. The restore operation does not reestablish a session with vCenter automatically.
7. Add the necessary OVA templates to upload the OneFS virtual machine files.
8. Restart the vSphere Web Client. This step eliminates issues that you might encounter with the management plug-in. Refer to the VMware vSphere documentation set for instructions on restarting the vSphere Web Client.

Migrate serial port information

You can migrate the virtual serial console of all the IsilonSD nodes in an existing IsilonSD cluster from a previous version of IsilonSD Management Server to an upgraded version that is currently installed.

Procedure

1. Connect to the upgraded version of the management server through an SSH client using administrator credentials.
2. Run the following command:

```
isi_backup_restore.py restore --migrate backup_name
```

Where:

Parameter	Description
`backup_name`	The name of the backup file with the complete path to restore data from. For example, run the following command: `isi_backup_restore.py restore /mnt/backup/isi_sd_back/<datetime>isilonSD.bak`
`--migrate`	Indicates that the virtual serial consoles on the machines that are going to be restored must be reconfigured with the IPv4 address of the current machine.

Alternatively, run the `vm_console_migrator` script independent of the `isi_backup_restore.py` script to migrate the serial port information for the existing cluster to point to the upgraded version of the management server as follows:

```
vm_console_migrator [-h] [-v]
```

Where `-h` shows the help and `-v` runs the script in the verbose mode. Both are optional arguments.

Note

When you use the `migrate` option or the `vm_console_migrator` script to migrate the serial port, all of the nodes managed by the management server will reboot.

CHAPTER 7

Upgrading IsilonSD Edge

This section contains the following topics:

Performing an upgrade

The process of upgrading IsilonSD Edge involves upgrading to a later version of the OneFS operating system on an IsilonSD cluster or upgrading IsilonSD Management Server.

Note

If you are upgrading the licenses of IsilonSD Edge, refer to the section *Upgrading IsilonSD Edge licenses* and follow the instructions in the section *View and manage IIsilonSD cluster information*.

Upgrade the OneFS image on IsilonSD clusters

You can upgrade the OneFS image on an IsilonSD cluster at any point by downloading and reinstalling the latest OneFS build image. This process follows the same workflow as that of upgrading physical OneFS clusters.

A brief summary of the upgrade process is given in this section. For detailed information, see the *OneFS Upgrade Planning and Process Guide*.

Procedure

1. Extract the OneFS build image, `OneFS_vX.X.X.X_Install.tar.gz`, from the installation package if you are using a free license of IsilonSD Edge. If you have purchased a license, download the OneFS build image from Dell EMC Online Support.
2. Copy the OneFS build image to any node on your cluster.
3. Open a secure shell (SSH) connection to the cluster that is associated with the node where you have copied the OneFS build image.
4. Log in to the cluster with administrator credentials.
5. Run the following command to upgrade the cluster:

```
sudo isi upgrade cluster start
<path_to_OneFS_vX.X.X.X_Install.tar.gz>
```

Upgrade IsilonSD Management Server

You can upgrade to a later version of IsilonSD Management Server through the RPM package manager utility.

Before you begin

If you are upgrading from IsilonSD Management Server version 1.0.2 or earlier to version 1.0.3 or later, port 5480 is open by default. Though this port is required for managing and upgrading the management server, it might pose a security threat. You can disable access to port 5480 by running the following command:

```
service vami-lighttp stop
```

Refer to the *OneFS Security Configuration Guide* for further recommendations on how to manage port 5480. When you install IsilonSD Management Server version 1.0.3 or later, port 5480 is not open for connections, by default.

Procedure

1. If you are using a free license of IsilonSD Edge, extract the `EMC_IsilonSD_Edge_ms_X.X.X.rpm` file from the installation archive, `EMC_IsilonSD_Edge.zip`, that you downloaded for the initial installation of IsilonSD Edge from IsilonSD Edge community page. If you have purchased a license, go to Online Support and download the management server RPM file from the **PRODUCT TOOL** section.
2. Copy the `EMC_IsilonSD_Edge_ms_X.X.X.rpm` file into the `/tmp` folder on the management server.
3. Check for the JDK version. If you are upgrading to management server version 1.1.1 from a previous version, we recommend that you upgrade to JDK version 151. Refer to the vendor documentation for upgrade instructions.
4. Run the following command from the `/tmp` folder to upgrade to a newer version of the management server:

   ```
   sudo rpm -Uvh EMC_IsilonSD_Edge_ms_X.X.X.rpm
   ```

   Note

   If you are upgrading from management server version 1.0.0 to a later version, run the following command from the `/tmp` folder:

   ```
   sudo rpm -Uvh --oldpackage EMC_IsilonSD_Edge_ms_X.X.X.rpm
   ```

   You can also specify `--force` instead of `--oldpackage` to perform the upgrade.

5. Unregister the vCenter plug-in using the stand-alone management server interface.
6. Register the vCenter plug-in again using the stand-alone management server interface.

   Note

   If you have unregistered the vCenter server before the RPM upgrade process and get the error `"Error retrieving the drive list"`, the vCenter and datacenter details will not be available on the cluster summary page. You must manually update the vCenter and datacenter details. Alternatively, you must restart the virtmgmt service after the RPM upgrade process.

Updating the IsilonSD management server

Specific software configurations are validated and supported for the IsilonSD Management Server.

Note

To preserve the supported configuration, we recommend that you do not use `yum` or any other tool to update the virtual machine that hosts the management server, unless you are specifically directed to do so.

Should it become necessary to update the virtual machine configuration, an advisory containing specific instructions will be issued.

Note

Back up the management server database before initiating any configuration change.

CHAPTER 8

EMC Remote Support for IsilonSD Edge

This section contains the following topics:

Configuring EMC Secure Remote Support for IsilonSD Edge

If you have purchased a license of IsilonSD Edge, you can configure support for EMC Secure Remote Support (ESRS) on your IsilonSD cluster. However, ESRS cannot be configured while deploying IsilonSD clusters through IsilonSD Management Plug-in. ESRS configuration is supported only through the OneFS web or command-line administration interface.

ESRS monitors your cluster, and with your permission, allows remote access to Isilon Technical Support personnel to gather cluster data and troubleshoot issues.

ESRS requires a unique identifier to connect to the ESRS Gateway for cluster and node monitoring. The identifiers of each of the IsilonSD clusters are unique. However, in the case of the IsilonSD nodes, the identifiers are unique only for those nodes that are deployed using IsilonSD Management Server 1.0.1 and later versions. In this case, the nodes are uniquely identified using the following serial number format:

```
<product_type>-<SWID>-<MAC_addr>
```

Where:

- *product_type* is always set to SV100 for IsilonSD Edge
- *SWID* represents the 8-digit software ID of IsilonSD Edge which is unique for each IsilonSD cluster
- *MAC_addr* represents the last six digits of your VMware vSphere MAC address which is unique for all the nodes in a specific cluster and for the VMware vCenter instance where the nodes are deployed

For example, to support ESRS, the serial number of an IsilonSD node must follow the format `SV100-12345678-987654`.

For the nodes that have been deployed using versions of IsilonSD Management Server earlier than 1.0.1, you must update the serial numbers of the nodes to match the serial number format that is described previously.

Configure ESRS for IsilonSD Edge

You can configure ESRS for IsilonSD Edge using IsilonSD Management Server versions 1.0.1 and later.

Procedure

1. Install ESRS gateway server version 3.x.
2. Configure ESRS using the installed gateway server either using the OneFS web or command-line administration interface. Refer to the *Isilon OneFS Web Administration Guide* and *Isilon OneFS CLI Administration Guide* for details.
3. Upgrade to IsilonSD Management Server version 1.0.1 or later if you are using the earlier versions of the management server.

Update the serial numbers of IsilonSD nodes to enable ESRS

With a purchased license of IsilonSD Edge, you can update the serial numbers of IsilonSD nodes that are deployed using IsilonSD Management Server version 1.x.x to a format that enables ESRS.

Before you begin

Make sure that you are running management server version 1.0.1 or later.

Procedure

1. Connect to the management server through an SSH client using administrator credentials.
2. Run the `serial_sync` script as follows:

   ```
   serial_sync [-h] --vcenter [vCenter] [-v] cluster
   ```

   Where:

   - `vcenter`—The hostname of the VMware vCenter instance where the cluster is currently deployed.
   - `cluster`—The name of the cluster on which the serial numbers must be updated.

   Note

   To update the serial number, the nodes in the cluster are automatically rebooted as soon as you run the `serial_sync` script.

CHAPTER 9

IsilonSD Edge Terminology

This section contains the following topics:

IsilonSD Edge terminology

The following terms are referenced in this guide.

Term	Definition
OneFS	A distributed file system that combines file system, volume manager, and data protection capabilities into a single software layer and runs on an Isilon storage cluster.
Host	A physical server with a Hypervisor.
IsilonSD cluster	A virtual cluster formed through the OneFS virtual machines hosted by multiple physical hosts.
IsilonSD node	An instance of a OneFS virtual machine installed on VMware ESXi.
IsilonSD Management Server	A server that primarily provides services to IsilonSD Management Plug-in.
IsilonSD Management Plug-in	The IsilonSD cluster management user interface that is accessible from within VMware vCenter. The plug-in is bundled with the IsilonSD Management Server installation files.
Storage device	A DAS (JBOD or internal) or RAID disk.
Disk	A virtual machine disk (vmdk).
Boot disk	A disk that stores the software image of an IsilonSD node.
Journal disk	A disk that is internal to an IsilonSD node where file system journaling takes place. The performance of IsilonSD Edge varies depending on the endurance level and performance of the storage device you have configured for journaling.
Data disk	A disk that stores all of the protected data.
Cluster capacity	An aggregate of all the data disks across all of the IsilonSD nodes.
Raw disk capacity	The total amount of actual disk space available without accounting for the OneFS file system protection.
Usable disk capacity	The total amount of disk space available after accounting for the RAID overhead.
Per-disk capacity	Calculated as follows: If n is the number of nodes and d is the number of disks per node, the per-disk capacity is (Total cluster capacity requested) / ($n * d$).

Term	Definition
Internal network	A network accessed for inter-virtual-node connectivity and for internal messages.
External network	A network used for client connections to an IsilonSD cluster over the Ethernet. IsilonSD cluster supports standard network communication protocols including NFS, SMB, HTTP, and FTP.