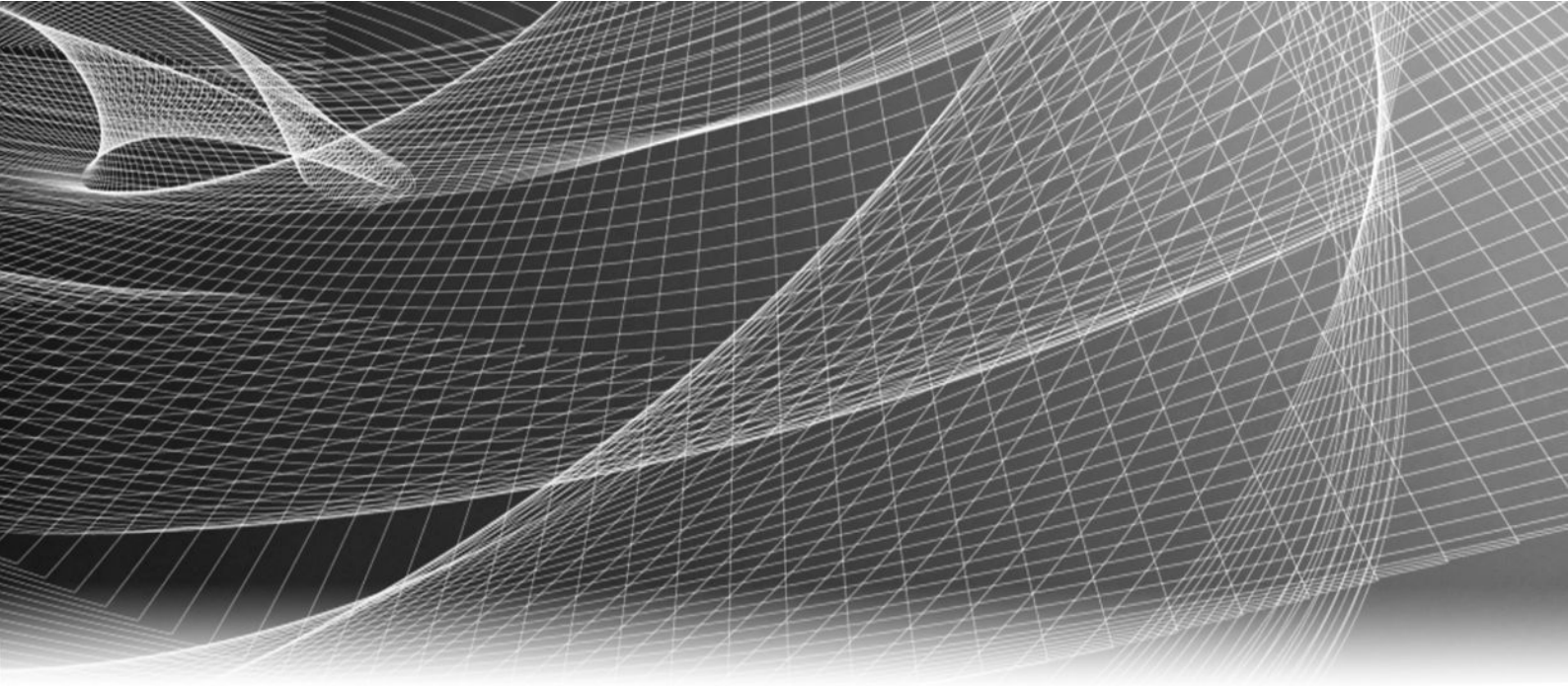

Isilon
OneFS Simulator

Version 8.0.0

Installation Guide

EMC²

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CHAPTER 1

OneFS Simulator Installation Guide

This section contains the following topics:

About this guide

This guide describes how you can install and configure OneFS Simulator to monitor and manage virtual clusters. This guide also describes how to run virtual nodes on the virtualization products supported by VMware.

Note

OneFS Simulator is for demonstration and noncommercial purposes only, and should not be installed in a production environment.

OneFS Simulator overview

OneFS Simulator is a virtual version of the physical storage nodes that you can deploy in a physical infrastructure.

Throughout this document, the following conventions are used:

- A *virtual node* refers to a virtual machine.
- A *host* refers to a physical host with a virtual infrastructure, such as VMware ESXi or VMware Workstation.

System requirements

Before you install a virtual node, verify that your system meets the requirements for the virtual version of OneFS. At least three virtual nodes are required to create an Isilon OneFS virtual cluster.

Note

Virtual nodes are for demonstration purposes only and are ineligible for support or repair by Isilon Technical Support.

Table 1 Host system requirements

Component	Value	Notes
RAM	Minimum of 2 GB RAM for a virtual node 6 GB RAM recommended per virtual node per ESXi host **Note** A minimum of 2.5 GB RAM per virtual node is required for a fully populated virtual cluster.	Virtual nodes might not function correctly if they do not meet the recommended memory requirements. **Note** Other nodes that are added to your virtual environment to provide services such as the Active Directory domain controller service or DNS service, will have additional memory requirements.
Processor	VT-capable processor	Virtualization technology must be enabled in the BIOS.
Hard drive	42 GB of disk space per virtual node for a fully populated virtual cluster.	

Table 1 Host system requirements (continued)

Component	Value	Notes
Operating system	The following operating systems have been tested for and validated for the installation: • Microsoft Windows (recommended) • Ubuntu 12.04.5 and 14.04 (Linux) • CentOS 6.6 (Linux)	All of the procedures in this guide are based on the Microsoft Windows operating system. Some of the steps in the procedures might differ based on your host operating system.
Virtual infrastructure	Standalone components: • VMware Server • VMware Fusion • VMware Workstation • VMware Player VMware vSphere components: • VMware ESXi 5.5 or later	Install at least one standalone component. If you are installing VMware Workstation, VMware Player, or VMware Fusion, make sure that the external network is configured as a bridged network and not as a nat network. This configuration allows the clients to access the virtual nodes. VMware Player is available at: http://www.vmware.com/products/player/

Network settings

It is critical that you set up the internal and external network of a virtual cluster according to the networking setup on your host computer.

Follow these guidelines to set up your virtual network:

- Reserve an IP address range for configuring your virtual cluster. You must be able to route the IP range through the hardware host for your virtual cluster. You can perform this step by setting up a virtual interface on your computer with an IP address from the same subnet as your virtual cluster. Alternatively, you can configure IP addresses from the same subnet as your hardware host for your virtual cluster.
- Virtual clusters have two network interfaces: nat and bridged. The nat interface facilitates internal communication within the virtual cluster and does not need to be public and routable. The bridged interface facilitates client access and must be public and routable. Therefore, if you are setting up VMware Workstation, VMware Player, or VMware Fusion as a host, make sure that the external network is configured as a bridged interface in order to enable clients to access the virtual nodes.
- We recommend that you allocate sufficient internal IP addresses to accommodate any changes that you might want to make to your virtual cluster. If your virtual cluster does not have an available internal IP address, you will not be able to add new virtual nodes to your virtual cluster.

Record network configuration data

You must record the configuration information for your internal and external networks before installing the virtual nodes and configuring your virtual cluster.

Procedure

1. Type `ipconfig` at the Windows command prompt.

   The network information appears as shown in the following sample output:

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation.  All rights reserved.

C:\Users\student1>ipconfig

Windows IP Configuration


Wireless LAN adapter Wireless Network Connection:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Ethernet adapter Local Area Connection:

   Connection-specific DNS Suffix  . : isilon.com
   Link-local IPv6 Address . . . . . : fe80::bceb::99fd:182b:2d7%11
   IPv4 Address. . . . . . . . . . . : 10.8.13.166
   Subnet Mask . . . . . . . . . . . : 255.255.254.0
   Default Gateway . . . . . . . . . : 10.8.12.1

Ethernet adapter VMware Network Adapter VMnet1:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::bc49:183c:fc92:d6f2%19
   IPv4 Address. . . . . . . . . . . : 192.168.208.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Ethernet adapter VMware Network Adapter VMnet8:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::2cdc::48fc:2927:408a
%21
   IPv4 Address. . . . . . . . . . . : 192.168.47.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :
```

2. Record the following internal and external network configuration details:

Output	Description	Value
IPv4 or IPv6 Address (VMnet1)	Internal range	192.168.208.*
Subnet Mask (VMnet1)	Netmask for the internal network	255.255.255.0
IPv4 or IPv6 Address (VMnet8)	External range	192.168.47.*
Subnet Mask (VMnet8)	Netmask for the external network	255.255.255.0
Default Gateway	Gateway for the external network	

Installing OneFS Simulator

You can install OneFS Simulator through the OVA file that is included in the ZIP file. You can set up VMware Workstation, VMware Fusion, or VMware ESXi to run the OneFS Simulator virtual nodes.

You can configure a virtual cluster for a single virtual node. However, three- to four-node virtual clusters are recommended for testing and experimentation. For configuring a virtual cluster with more than four virtual nodes, for example, for configuring a six-node virtual cluster, make sure that the host computer has more than 8 GB of available RAM.

Most laptops can only support a three-node virtual cluster. Additional CPU, RAM, and disk space is consumed for each virtual node you add to the virtual cluster.

Installing OneFS Simulator by importing the OVA file

Follow the steps in this procedure to install OneFS Simulator through the OVA file.

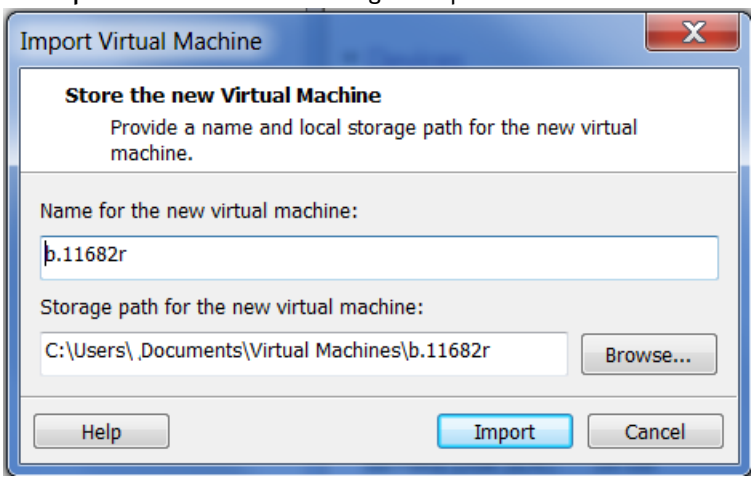
Before you begin

Make sure that you have installed either VMware Workstation or VMware Fusion to deploy and configure the OneFS Simulator virtual node. This procedure assumes that you have installed VMware Workstation.

Procedure

1. Download the ZIP file from the product download page and extract the OVA file from the archive by following the download process specific to your browser and save the file to your local drive.
2. Open VMware Workstation and click **File** › **Open**.
3. Browse to the folder where you have downloaded the OVA file, select the file, and then click **Open**.

   The **Import Virtual Machine** dialog box opens.

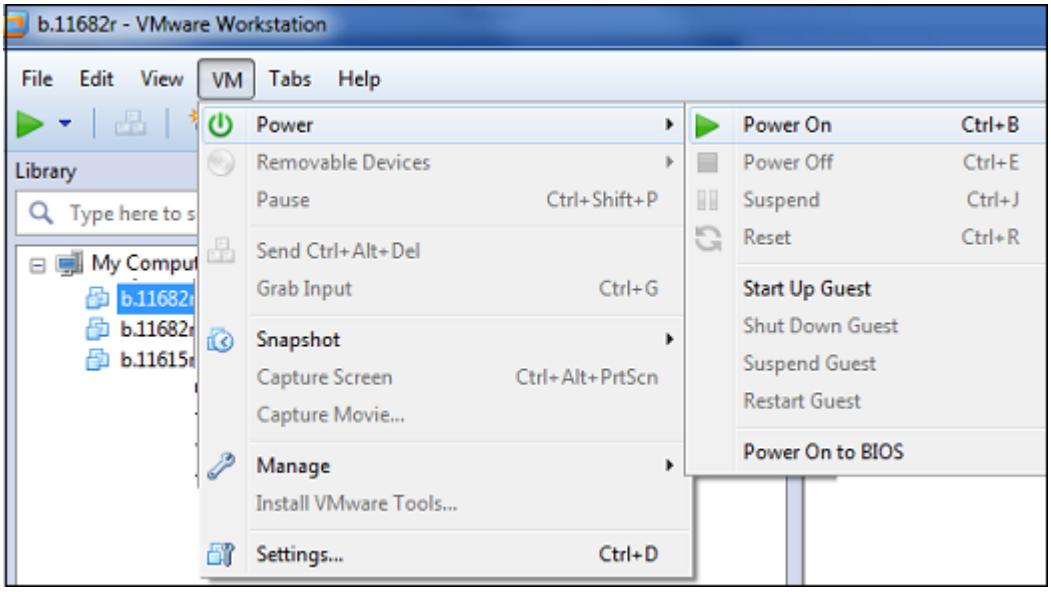


4. Specify a name for the virtual machine and a path to store it and then click **Import**.

   VMware Workstation imports the OVA virtual machine and the virtual machine appears in the virtual machine library.

5. To import more virtual machines, repeat the previous two steps by selecting the same OVA file but by specifying a different name and path for the imported virtual machines in the **Import Virtual Machine** dialog box.

6. Click **VM** › **Power** › **Power on** from the VMware console to power on the first virtual machine.



   A series of checks are performed as the virtual machine powers on.

7. Click anywhere inside the virtual machine console to give the virtual machine, the control of the mouse and keyboard on the host system.
8. Configure the settings for the virtual cluster through the configuration wizard that appears in the virtual machine command console.
9. Power on the other virtual machines that you have imported and repeat the previous two steps individually for each of the virtual machines by selecting the **Join an existing cluster** option in the configuration wizard.

   The virtual machines are added as virtual nodes to the virtual cluster.

Installing OneFS Simulator through the virtual machine files

You can install OneFS Simulator through the virtual machine files that are included in the `ZIP` file as described in this procedure.

Procedure

1. Open the `ZIP` file and double-click the file with a `.vmx` extension. The installed VMware application opens. Alternatively, open the VMware application and then select the `.vmx` file to import.
2. Follow the prompts to create the first virtual machine or OneFS Simulator virtual node.

   The virtual node boots. This process might take some time.
3. Open the newly created virtual machine's console and accept the license agreement.
4. Follow the prompts to create a virtual cluster.
5. When prompted to format the hard drives, type **`yes`**.

   When the virtual cluster is created successfully, a login prompt appears.
6. Repeat the above process for each additional virtual node.
7. Double-click the `.vmx` file and follow the prompts to create the next virtual machine or OneFS simulator virtual node.

8. Select **Join an existing cluster**, and then follow the steps to configure a virtual cluster for each additional virtual node.

   Note

   OneFS Simulator requires at least three virtual nodes to function properly.

9. If the virtual nodes do not power on automatically, click **Virtual Machine** › **Power** › **Power on** from the VMware console to power them on.

Configure a virtual cluster

After installing one or more virtual nodes, you can configure a virtual cluster through the configuration wizard. The wizard provides step-by-step guidance for configuring a new virtual cluster or for adding a new virtual node to an existing virtual cluster.

After a virtual node has been booted, the Isilon IQ configuration wizard options appear in the same command window.

Procedure

1. In the configuration wizard, select one of the following options:
   - To create a new virtual cluster, type `1`.
   - To join the virtual node to an existing virtual cluster, type `2`.
   - To exit the wizard and configure the virtual node manually, type `3`.
2. Follow the prompts to configure the virtual cluster.

Virtual cluster configuration settings

The configuration wizard will prompt you for the information required to configure the virtual cluster in a series of steps.

The following table provides information on each step in the configuration wizard. Enter values that are appropriate for your virtual cluster.

Setting	Description
Root password	Type a password for the root user.
UI admin password	Type a password for the UI administrator user.
ESRS	Type `no` to disable support for EMC Secure Remote Services (ESRS) on your virtual cluster.
Name	Type a name to identify the virtual cluster.
Encoding	Specify the character encoding for the virtual cluster. The default character encoding is UTF-8.
Interface int-a	Specify the network settings for the int-a network which facilitates communication between the virtual nodes. 1. Specify an IP address to configure the netmask. 2. Retain the existing value for MTU. 3. Specify a low IP address and a high IP address for the internal IP range of your network.

Setting	Description
	Press ENTER to retain the existing configuration.
Interface int-b	Press ENTER to skip configuring the failover back-end network.
External subnet	Specify the network settings for the ext-1 network. The ext-1 network provides client access to the virtual cluster. 1. Specify an IP address to configure the netmask. 2. Retain the existing value for MTU. 3. Specify a low IP address and a high IP address for the external IP range of your network.
Default gateway	Specify the gateway IP address of your network to optionally configure the gateway server through which the virtual cluster communicates with clients outside the subnet.
SmartConnect	Specify the SmartConnect zone name and service IP address. Press ENTER to retain the default settings.
DNS	Specify the gateway IP address of your network to configure the DNS server.
External subnet	Specify the network settings for the external network interface. Press ENTER to retain the default settings.
Date and time zone	By default, the virtual node is set to the time and date settings based on your host computer. However, you can configure a different date and time zone.

Manage a virtual cluster

After you have joined at least three virtual nodes to a virtual cluster, you can connect to one of the virtual nodes and manage the virtual cluster.

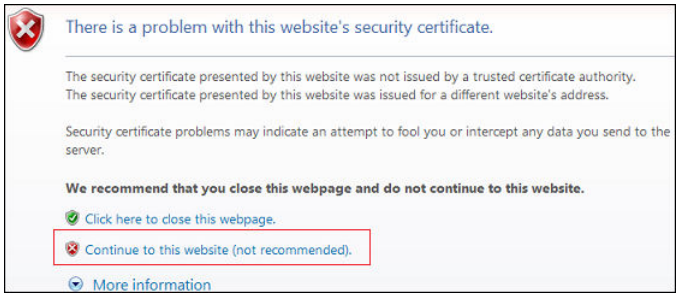
When connecting to a virtual node, provide the information configured on the virtual cluster.

Connect to a virtual node through the web administration interface

You can connect to a virtual node through the web administration interface and manage a virtual cluster.

Procedure

1. Open a browser and type the lowest IP address from the external range.
2. Click **Continue to this website (not recommended)**.



3. Log in with the root or admin username and password.
4. Suppress any warning events by navigating to **Cluster Status** › **Events** › **Summary** and clicking **Quiet** against the event that you want to suppress.

   For example, for each configured virtual node, select **Quiet** to remove the warning that indicates that the virtual machine has four hard drives, when a physical node would have 12.

Connect to a virtual node through SSH

You can connect to a virtual node through SSH and manage a virtual cluster.

Before you begin

Make sure that the ext-1 interface is set to bridged before you proceed.

Procedure

1. Open an SSH client and type the lowest IP address from the external range.
2. Log in with the root username and password.
3. At the command prompt, type the required `isi` commands to monitor and manage your virtual cluster.

   For example, type the following command at the command prompt to monitor the health and performance of the virtual cluster:

   ```
   isi status
   ```

   Note

   OneFS supports tab completion. When typing an `isi` command, you can press the TAB key to identify or complete the command syntax.

   For more information about the OneFS commands, see the *OneFS CLI Administration Guide* at EMC Online Support.

Uninstall OneFS Simulator

You can uninstall and remove OneFS Simulator by removing all of the virtual nodes and virtual clusters that you configured.

Procedure

1. Power off the virtual machine nodes.
2. Delete the virtual machines and all the associated files and folders.

Deploy OneFS Simulator on an ESXi server

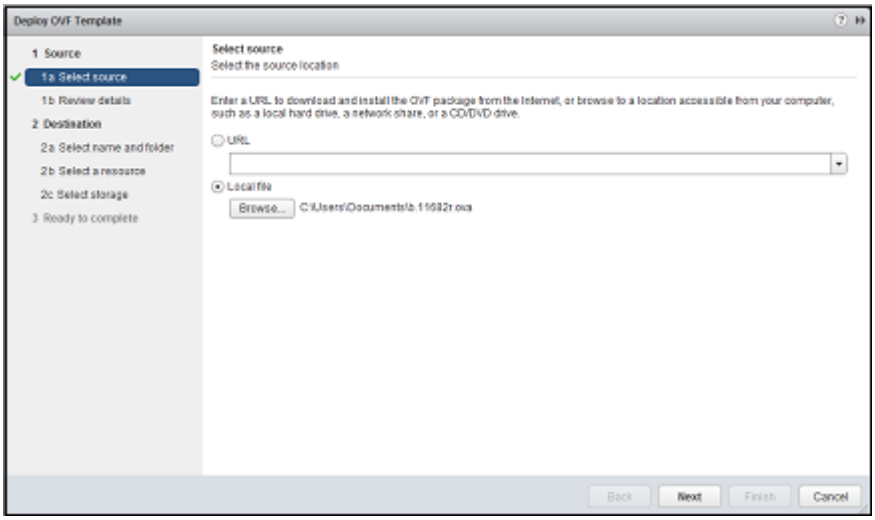
You can run virtual nodes on an ESXi server by deploying the `OVA` file on a selected ESXi host.

Procedure

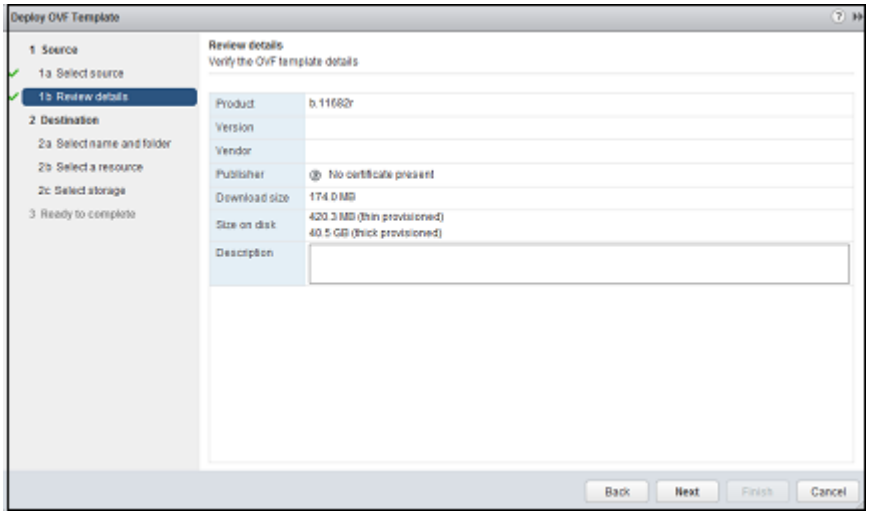
1. Log in to the VMware vSphere Web Client through the following URL:

   ```
   https://<your-vcenter-dnsname or
   ip_address_of_vcenter>:9443/vsphere-client/
   ```

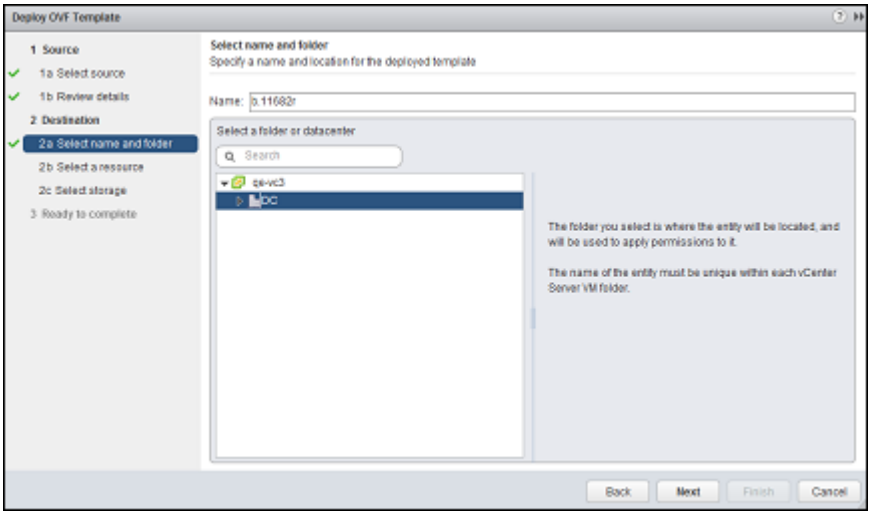
2. On the vCenter home page, click **Hosts and Clusters**.
3. Select a local host from a virtual cluster and click **Actions** › **Deploy OVF Template** to open the **Deploy OVF Template** wizard.
4. On the **Select source** page, browse to the folder where you have downloaded the `OVA` file and select the file. Alternatively, provide the URL to the `OVA` file and then click **Next**.



5. On the **Review details** page, review the details, and then click **Next**.



6. On the **Select name and folder** page, perform the following actions:

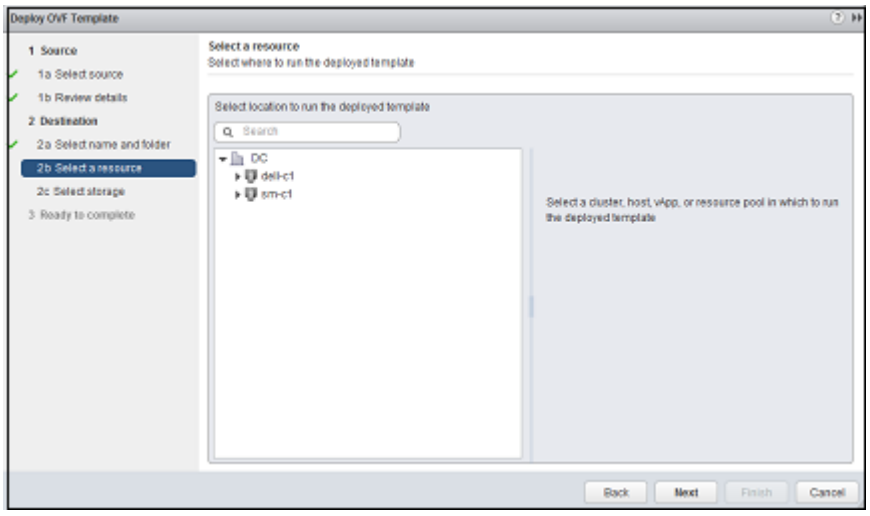


a. Type a name for the deployed template.

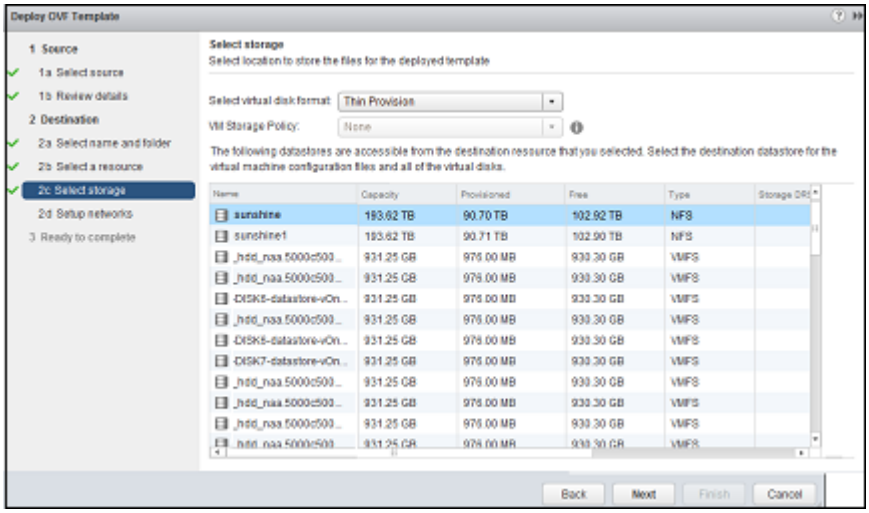
b. Select a folder or datacenter within the inventory where OneFS Simulator will reside.

c. Click **Next**.

7. On the **Select a resource page,** select a virtual cluster or host to run the virtual machine after it is deployed.



8. On the **Select storage** page, select the following parameters:



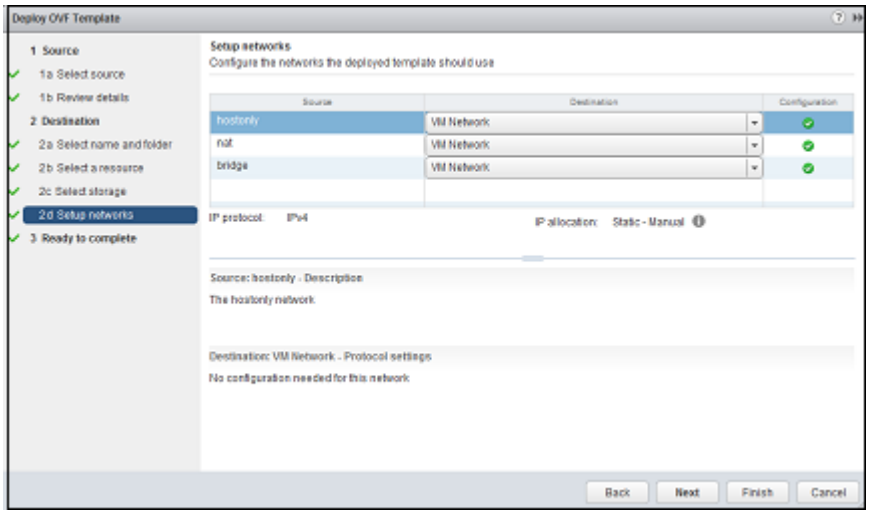
a. A virtual disk format from the list.

b. A virtual machine storage policy, if applicable.

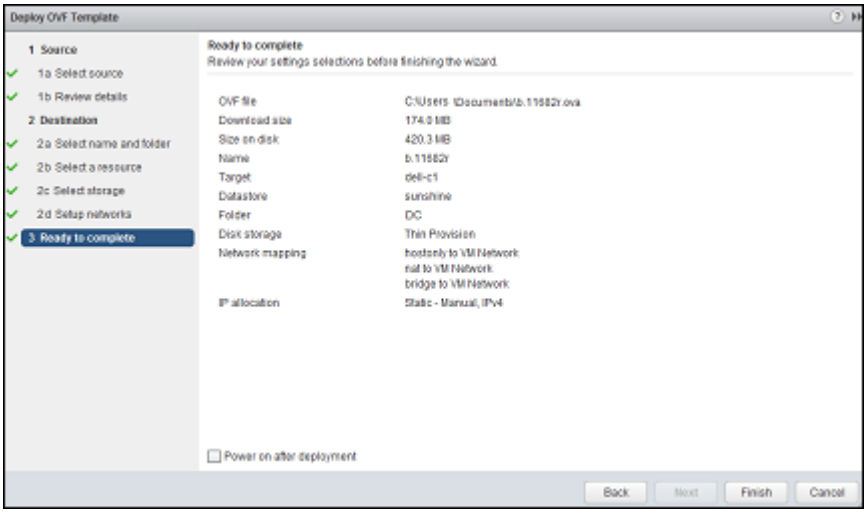
c. A datastore for storing the virtual machine configuration files on the destination resource that you selected in the previous step.

d. Click **Next**.

9. On the **Setup networks** page, configure the networking parameters and click **Next**.



10. Review the summary on the **Ready to complete** page. and click



11. Click **Power on after deployment** and then click **Finish** to deploy the virtual node as a virtual machine.

Results

If the amount of RAM in the deployed virtual node has increased, you can convert the virtual machine to a template and create additional virtual nodes from the template. You do not need to create a template if the configuration of the virtual machine has not been changed.

Note

Do not create templates from a virtual machine that has ever been booted.

Feedback and troubleshooting

This product is for demonstration purposes only and is not supported by Isilon Technical Support.

For any questions or feedback about this tool, visit the EMC Community Network at http://community.emc.com.

You can ask questions about the EMC Isilon OneFS Simulator nodes in the following forum: https://community.emc.com/community/products/isilon.