

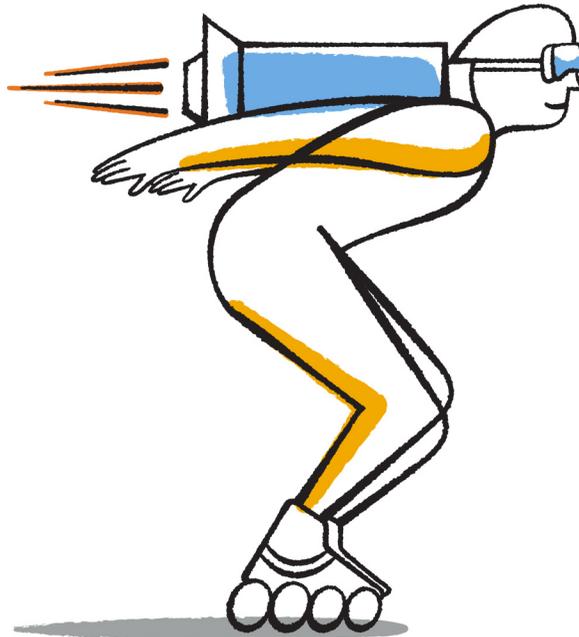


NetApp®

Data ONTAP® Edge 8.3

Express Setup Guide

For Clustered Data ONTAP



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Deciding whether to use this guide

This guide describes how to quickly install and configure a Data ONTAP Edge storage system. You should use this guide if you want a standard configuration following NetApp best practices, and you do not want information about all the available options or a lot of conceptual background for the tasks.

Data ONTAP Edge is a remote office storage solution that you install on the VMware vSphere platform. It converts the server's disk drives into a storage platform to provide the benefits of a dedicated NetApp storage system. Data ONTAP Edge uses SnapVault and SnapMirror technology to copy and move data to a central Data ONTAP storage system where it can be archived or used for disaster recovery.

This guide is based on the following assumptions:

- You are familiar with VMware vSphere virtualization software and you have worked with virtual machines.
- You are familiar with NetApp Data ONTAP software and features.
- You have a Data ONTAP cluster installed in your main data center. Data ONTAP Edge forms a relationship with that cluster to perform SnapVault and SnapMirror operations.

If these assumptions are not correct for your installation, or if you want more conceptual background information, you should use the following documentation instead:

- [*Data ONTAP-v Administration Tool 1.3.0 Installation Guide*](#)
Describes how to install the Data ONTAP-v Administration Tool (dvdadmin).
- [*Data ONTAP Edge 8.3 Installation and Administration Guide for Clustered Data ONTAP*](#)
Describes how to install and manage clustered Data ONTAP Edge storage systems using dvdadmin.
- [*Data ONTAP-v Administration Tool 1.3.0 Command Reference*](#)
Describes the dvdadmin commands used to install, manage, and monitor a Data ONTAP Edge storage system.

You will complete the following major tasks using this guide:

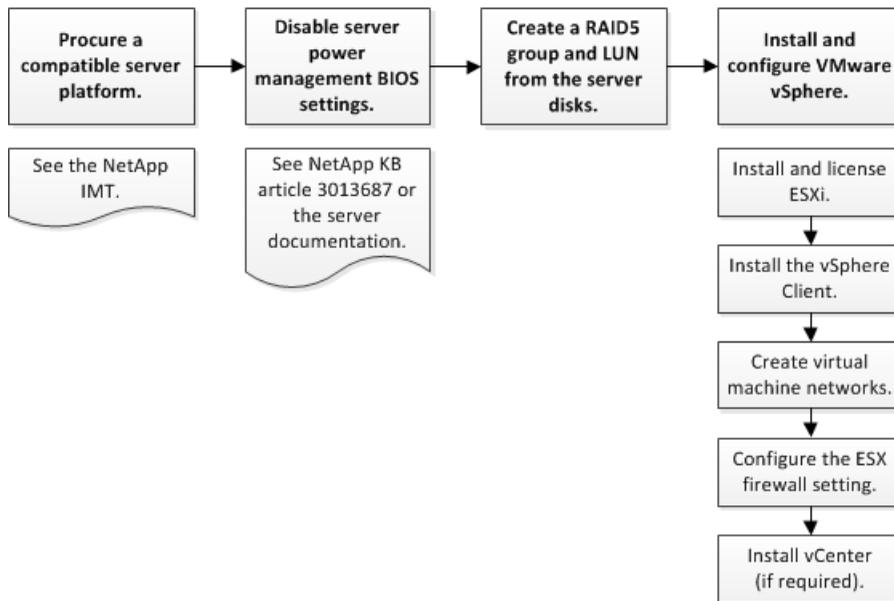
- Configure the physical server
- Install and configure Data ONTAP Edge

Related information

[*Documentation on the NetApp Support Site: mysupport.netapp.com*](http://mysupport.netapp.com)

Physical server configuration workflow

You must obtain a particular server platform and you must configure it properly prior to installing Data ONTAP Edge on the server.



Note: If an appropriate server platform was configured to these standards at the main office and shipped to the remote office, then you can skip this step.

Steps

1. [Procuring a compatible server platform](#) on page 6
The hardware platform on which Data ONTAP Edge is installed must meet certain system and server requirements.
2. [Disabling server power management BIOS settings](#) on page 7
You must disable the power management BIOS settings on the server where you are going to install Data ONTAP Edge so that the Data ONTAP Edge virtual machine can manage the power settings.
3. [Creating a RAID group and LUN from the server disks](#) on page 7
You must create a RAID group from the disks available to the server to provide the LUN that Data ONTAP Edge will manage. Only disks local to the server platform can be used by Data ONTAP Edge.

4. [Installing and configuring VMware vSphere](#) on page 8

You must install and configure the VMware vSphere components on the server before you can install Data ONTAP Edge.

Procuring a compatible server platform

The hardware platform on which Data ONTAP Edge is installed must meet certain system and server requirements.

The Data ONTAP Edge virtual machine requires the following resources from the host server:

- 2 dedicated physical CPU cores
- 8 GB of dedicated memory
- 20 GB disk space for system disk images and virtual machine metadata

Therefore, your server should meet or exceed the following minimum requirements:

- Quad core, or two dual-core, 64-bit Intel x86 processors
- 2.27 GHz or greater processor speed
- 12 GB or greater memory
- 4 or more physical disks on the server
- Single Gigabit Ethernet network
- Hardware RAID - Must have a battery-backed write cache

A full list of the currently supported platforms, and other support requirements, are listed in the Interoperability Matrix Tool at mysupport.netapp.com/matrix.

Important Notes:

- You can install only one Data ONTAP Edge storage system per server.
- Data ONTAP Edge can be configured with a maximum of 10 TB total storage capacity, but the server can contain more than this amount of storage.
- If you plan to install other virtual machines on the server where Data ONTAP Edge is installed, do not over-commit available memory or you will notice performance issues.

Disabling server power management BIOS settings

You must disable the power management BIOS settings on the server where you are going to install Data ONTAP Edge so that the Data ONTAP Edge virtual machine can manage the power settings.

About this task

If the BIOS settings are not set correctly, you will be able to install Data ONTAP Edge, but it will not start. See knowledgebase article 3013687 at <https://kb.netapp.com/support/> for more details and for the names of the actual BIOS settings for the server you are using.

Steps

1. Disable the required power management BIOS settings using the documentation that came with your server.
2. Restart the server so that it recognizes the changed BIOS values.

After you finish

Confirm that server power management has been disabled through the VMware vSphere Client under the Configuration tab. Active Policy must be listed as "Not supported". If this value is not correct, adjust the BIOS settings and restart the server.

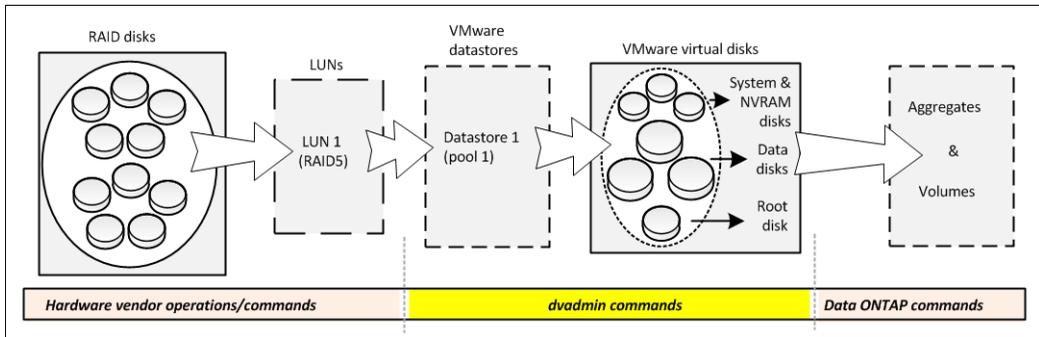
Creating a RAID group and LUN from the server disks

You must create a RAID group from the disks available to the server to provide the LUN that Data ONTAP Edge will manage. Only disks local to the server platform can be used by Data ONTAP Edge.

About this task

Because the disks are connected to the server, not directly to the Data ONTAP software, the virtual machine provides the storage status to Data ONTAP Edge. Data ONTAP uses RAID0 groups to optimize performance and storage utilization, therefore, the server must provide the RAID5 parity protection for disks.

As shown in the figure, you create a single datastore from the RAID5 LUN. The datastore (also known as a pool when using Data ONTAP Edge) will contain the Data ONTAP Edge system disks, virtual NVRAM disk, Data ONTAP root disk, and the data disks that will be managed.



Follow these steps to create the RAID group and LUN on your system:

Steps

1. Using the tools that came with your server, create a RAID5 group from all the disks.
2. Using the tools that came with your server, create a LUN from the RAID5 group.

After you finish

The creation of the datastore (pool) is completed later in this procedure.

Installing and configuring VMware vSphere

You must install and configure the VMware vSphere components on the server before you can install Data ONTAP Edge.

About this task

The virtualization platform requirements include VMware vSphere, including ESXi and the VMware vSphere Client. A VMware vCenter Server is optional. See the Interoperability Matrix at mysupport.netapp.com/matrix for supported versions and required licenses.

Important Notes:

- The Data ONTAP Edge virtual machine reserves two CPU cores and 8 GB of RAM from the host.
Do not change these settings or the storage system will not boot. Limiting resources is not supported and has not been tested.
- Data ONTAP Edge does not release the CPUs when idle, so vSphere reports a high CPU warning because it sees 100% usage.
You can ignore or clear the vSphere alarm for CPU usage.
- The Data ONTAP Edge virtual machine must be fully booted before any other virtual machines start booting.

After installation, you can set the startup order on the host through the vSphere Client under the Configuration tab.

The following steps install and configure the VMware vSphere components on the server. See the VMware documentation for detailed installation instructions.

Steps

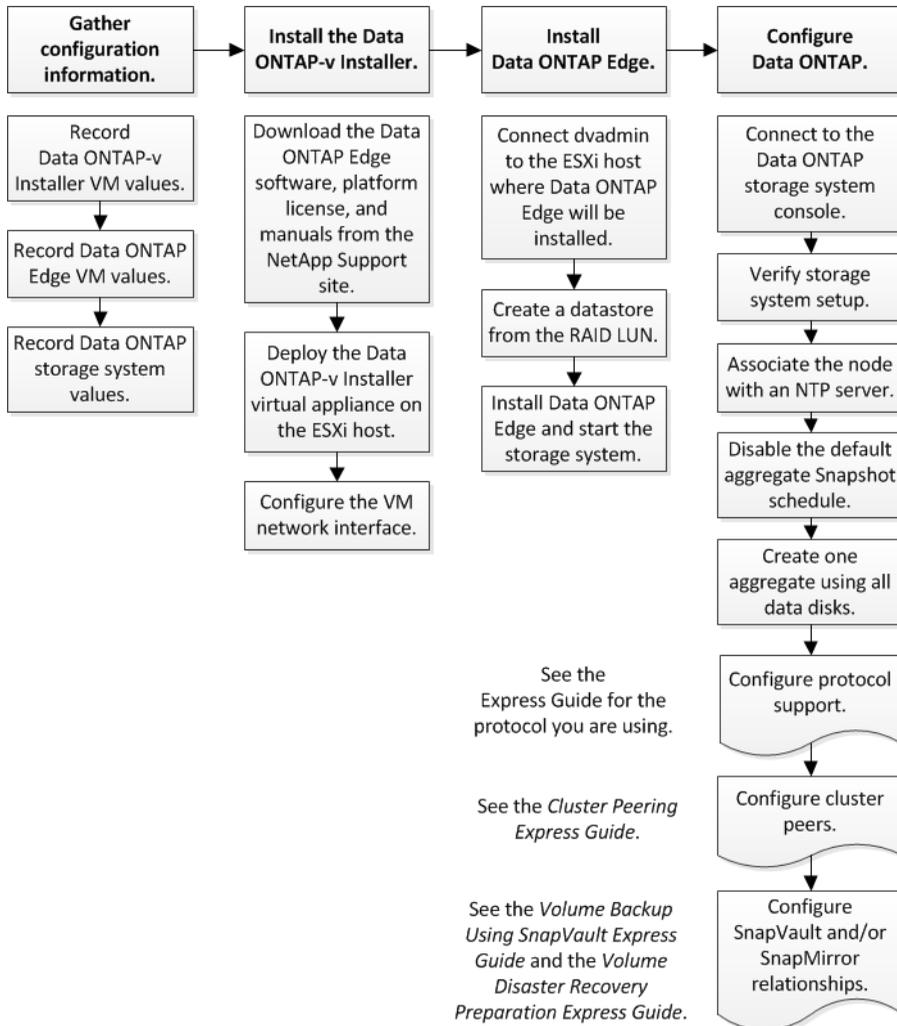
1. Install and license ESXi on the server.
2. If you do not already have the vSphere Client installed on a local computer, install the Client now.
3. Configure the virtual machine networks that you need to use on the host server.
4. Either disable the ESX firewall, or enable the firewall rule for “remoteSerialPort”.

Using the vSphere Client, you can select **Configuration > Security Profile > Firewall Properties** and ensure that the check box is selected for **VM Serial port connected over network**.

5. If you plan to use the capabilities of vCenter in your installation, deploy the vCenter software on a server now.

Data ONTAP Edge installation workflow

You install Data ONTAP Edge on a server using dvadmin. Both dvadmin and Data ONTAP Edge software are contained within the Data ONTAP-v Installer virtual appliance.



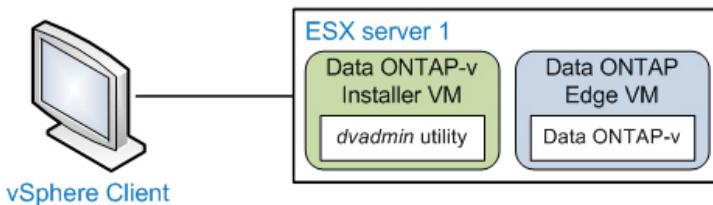
Gathering required configuration information

You need to gather configuration information for the Data ONTAP-v Installer virtual machine, for the Data ONTAP Edge storage system, and for Storage Virtual Machines (SVMs) before you begin the installation. Worksheets are provided to record your information.

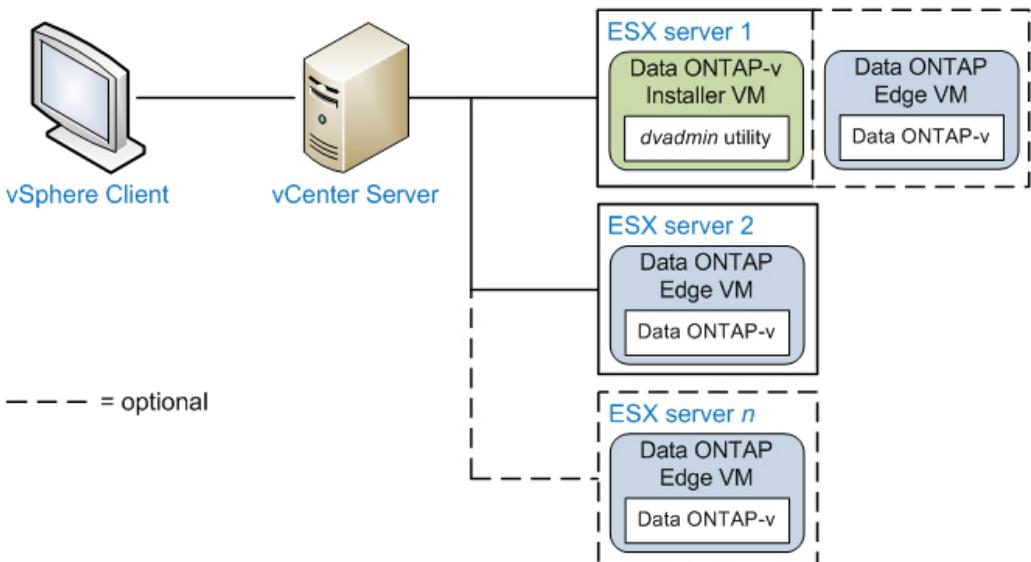
The Data ONTAP-v Installer virtual machine can reside on the same ESX server where you are planning to install Data ONTAP Edge, or it can reside on a different ESX server, as long as it has network connectivity to the ESX server where you are planning to install Data ONTAP Edge.

The `dvadmin` software on the Data ONTAP-v Installer can manage one, or multiple, Data ONTAP Edge storage systems. To manage a single system, `dvadmin` can be connected directly to the ESX server, or connected to the server through a vCenter Server. To manage multiple systems, all Data ONTAP Edge storage systems must be connected to the same vCenter Server.

Single unmanaged ESX server



Single, or multiple, managed ESX servers



Required configuration information for the Data ONTAP-v Installer

You need to specify the host server information where the Data ONTAP-v Installer virtual machine will be installed.

Host configuration information	Your values
Name you will use for the Installer virtual machine. “Data ONTAP-v Installer” is the default name.	
ESX host where the Installer virtual machine will be installed. This might or might not be the same host where you plan to install Data ONTAP Edge.	
Datastore where the virtual machine files will be installed. These files consume approximately 8 GB.	
Network to which the virtual machine will be connected.	

By default, the Data ONTAP-v Installer attempts to use DHCP to assign an IP address to the Installer virtual machine.

Virtual machine configuration information	Your values
VM Host name	
VM Host IP address	
VM Subnet mask	
VM Gateway	
VM Primary DNS address	
VM Secondary DNS address (optional)	
VM Search domains (optional)	

Required configuration information for Data ONTAP Edge

Before starting the Data ONTAP Edge installation, you should complete the configuration worksheet. This information is required during the software setup process.

Some of this information is required for connecting to the host server, some is required for installing the Data ONTAP Edge system on the host server, and some is required for preconfiguring Data ONTAP when you initially start the Data ONTAP Edge system.

Host server information

Host information	Your values
Name, or IP address, of the ESX host where Data ONTAP Edge will be installed.	
Name, or IP address, of the vCenter server if the ESX host is managed by a vCenter server. (optional)	
Admin login name for the vCenter server (or for the ESX host if the host is not managed by a vCenter server).	
Admin password for the vCenter server (or ESX host).	
Name of the datastore (or pool) on which the Data ONTAP Edge virtual machine system files will be installed. These files consume approximately 3.5 GB.	
Name of the datastore on which the Data ONTAP Edge virtual NVRAM disk will be installed. This disk is approximately 5 GB in size.	
Name of the datastore on which the Data ONTAP root aggregate disk will be installed. This disk is approximately 55 GB in size.	
Name of the datastore on which the Data ONTAP virtual data disks will be installed.	

Some datastores might already exist, but others are listed here so that you can define the name you will use when you create the datastore. The best practice is to install all Data ONTAP Edge components on the same RAID5-backed datastore.

Storage system networking information

Network information	Your values
Name of the vSphere virtual machine network that Data ONTAP Edge will use for its network ports.	
Cluster management interface (e0a) IP address. This is the address you will use to manage the system.	
Cluster management subnet mask.	
Cluster management default gateway for network connectivity.	
Node management interface (e0a) IP address. This address is used internally so the cluster administrator can manage the node.	
Node management subnet mask. Defaults to the same value as the “Cluster management subnet mask”. (optional)	

Network information	Your values
Node management gateway. Defaults to the same value as the “Cluster management gateway”. (optional)	
Domain Name System (DNS) domain name. (optional)	
DNS server address, or addresses. (optional)	

Data ONTAP information

Data ONTAP information	Your values
Storage system name. The name must begin with a letter, and it must be fewer than 44 characters. This value is also used as the cluster name and as the Data ONTAP Edge virtual machine name. It corresponds to the “Cluster management IP address”.	
Password for the Data ONTAP admin account. The password must be at least eight characters long, and it must contain at least one number and one letter.	
Data ONTAP Edge platform license that you received when you placed your order.	
Time zone, specified in the Olson format (using the zoneinfo database). The default is GMT. (optional)	
Destination URL on which cluster configuration backups are stored. The destination must support file uploads using HTTP or FTP. If not specified, the URL of the Data ONTAP-v Installer virtual machine is selected using the FTP protocol. (optional)	
The user name required to log in to the destination URL. The user name “ftp” is used for the Data ONTAP-v Installer VM. (optional)	
The password for access to the destination URL. The password “ftp” is used for the Data ONTAP-v Installer VM. (optional)	

Required configuration information for Data ONTAP SVMs

You must gather information about your SVMs before you create and configure them.

You can use the following worksheet to record values for the setup process:

SVM information

Types of information	Your values
<p><i>SVM name</i></p> <p>SVM names can contain alphanumeric characters and the following special characters:</p> <p>· - _</p> <p>The maximum number of characters allowed in SVM names is 47.</p> <p>Note: SVM names must be unique across clusters. You must use the fully qualified domain name (FQDN) of the SVM or another convention that ensures unique SVM names across clusters.</p>	
<p><i>Data protocols</i></p> <p>Protocols that you want to configure or allow on that SVM. This can include NFS, CIFS, ISCSI, and NDMP.</p>	
<p><i>Client services</i></p> <p>Services that you want to configure on the SVM. This can include LDAP, NIS, and DNS.</p>	
<p><i>Aggregate name</i></p> <p>Aggregate on which you want to create the root volume for the SVM. .</p>	The wizard provides a default value.
<p><i>Language setting</i></p> <p>Determines the language setting for each volume in that SVM.</p>	The wizard provides a default value.
<p><i>SVM root volume's security style</i></p> <p>Determines the type of permissions that can be used to control data access to a volume.</p> <p>For more information about the security styles, see the Clustered Data ONTAP 8.3 File Access Management Guide for CIFS or Clustered Data ONTAP 8.3 File Access Management Guide for NFS.</p>	

Information for creating volumes on the SVM

Types of information	Values
<i>Volume name</i>	The wizard provides a default value.
<i>Aggregate name</i>	The wizard provides a default value.
<i>Volume size</i> Size of the volume	
<i>Volume junction path</i>	The wizard provides a default value.

Information for creating an IP network interface on the SVM

Types of information	Values
<i>LIF name</i>	The wizard provides a default value.
<i>Protocols</i> Protocols that can use the LIF. You cannot modify this value after the LIF is created.	
<i>Home node</i> The node on which you want to create a LIF.	The wizard provides a default value.
<i>Home port</i>	The wizard provides a default value.
<i>IP address</i>	
<i>Network mask</i>	
<i>Default gateway IP address</i>	

Information for configuring LDAP

Types of information	Values
<i>LDAP server IP address</i>	
<i>LDAP server port number</i>	The wizard provides a default value.
<i>LDAP server minimum bind authentication level</i>	
<i>Bind domain name and password</i>	
<i>Base domain name</i>	

Information for configuring NIS

Types of information	Values
<i>NIS domain name</i>	
<i>IP addresses of the NIS servers</i>	

Information for configuring DNS

Types of information	Values
<i>DNS domain name</i>	
<i>IP addresses of the DNS servers</i>	

Information for configuring iSCSI

Types of information	Values
<i>igroup name</i>	The wizard provides a default value.
<i>Names of the initiators</i>	
<i>Operating system type of the initiator</i>	
<i>LUN name</i>	The wizard provides a default value.
<i>Volume for LUN</i>	
<i>LUN size</i>	

Installing the Data ONTAP-v Installer virtual appliance

You must download the Data ONTAP-v Installer virtual appliance package from the NetApp Support Site and install it on an ESX host.

Downloading the Data ONTAP-v Installer virtual appliance

The Data ONTAP-v Installer virtual appliance is distributed in an OVA file that contains all the software components you need to run `dvadmin` and install Data ONTAP Edge.

Before you begin

You must have downloaded your Data ONTAP Edge platform license from the **My Licenses** option on the NetApp Support Site.

Steps

1. From the Data ONTAP Edge selection on the NetApp Support Site at mysupport.netapp.com, select the version of software that you want to install.
2. From the **Description** page, download the applicable Data ONTAP Edge and Data ONTAP documentation.
3. From the **Download** page, download the OVA file for the latest Data ONTAP-v Installer virtual appliance.

Example

For example, download the `830_130_v_installer.ova` file.

4. Save the OVA file to a local or network location that is accessible to your VMware vSphere Client.

Deploying the Data ONTAP-v Installer virtual appliance

You use the VMware vSphere Client to deploy the Data ONTAP-v Installer virtual appliance to an ESXi server. The vSphere Client converts the appliance to a virtual machine (VM).

Steps

1. In the vSphere Client, select **File > Deploy OVF Template**.
2. Select the OVA file, and then complete the Deploy OVF Template wizard to deploy the Data ONTAP-v Installer.

You use the information you recorded in [Required configuration information for the Data ONTAP-v Installer host](#) on page 12.

Note: If you are prompted for the VM disk format, select **Thin Provisioned**. For more information, see the vSphere online help.

3. After the appliance has successfully deployed to the ESX server, select the new VM and power it on.

Note: You can select the **Power on after deployment** check box on the last page of the wizard to power on the virtual machine automatically after deployment.

4. Click the **Console** tab to monitor the VM power-on status in the ESX host setup shell.

The VM powers up and the Data ONTAP-v Installer boots.

Note: The first boot of the installer typically takes longer than subsequent boots.

5. By default, the installer uses DHCP to assign an IP address to the VM.

If DHCP is not detected, the installer prompts you to configure the network interface with a static IP address.

Configuring the virtual machine network interface

By default, the Data ONTAP-v Installer uses DHCP to assign an IP address to the installer virtual machine. If DHCP is not detected, or if you have chosen to configure the network interface manually, the installer prompts you to assign a static IP address.

About this task

Skip this task if you are using DHCP to assign an IP address to the installer virtual machine.

Steps

1. Navigate to the **vSphere Console** tab, then type **y** at the Data ONTAP-v Installer prompt, and then press Enter.

```
Would you like to setup a static configuration? [y]: y
```

2. At each displayed prompt, enter the corresponding information from the configuration worksheet you created for the installer host.
3. When you have responded to each prompt, type **y** to verify the entries and then press Enter.

```
Are these values correct? (y/n)
```

Example of configuring the virtual machine network interface

The following example shows how you might configure the network interface with a static IP address. The text in bold is the information you must enter to define the interface.

```
Would you like to setup a static configuration? [y]: y

Static Configuration
-----
Host name           : dvadmin_vm
Host IP address    : 10.10.10.09
Net mask           : 255.255.255.0
Gateway            : 10.10.10.1
Primary DNS address : 10.100.1.1
Secondary DNS address: 10.10.100.1
Please enter in all search domains separated by spaces (can be
left blank):

Selected host name   : dvadmin_vm
Selected IP          : 10.10.10.09
Selected net mask    : 255.255.255.0
Selected gateway     : 10.10.10.1
Selected primary DNS : 10.100.1.1
Selected secondary DNS: 10.10.100.1
Search domains       :
```

```

Calculated network      : 10.10.10.0
Calculated broadcast    : 10.10.10.255
Are these values correct? [y] y

Applying network configuration. Please wait...
Continuing system startup. Please wait...
NetApp Data ONTAP-v Installer vxxx.yyy

Welcome to NetApp Data ONTAP-v Installer vxxx.yyy
The IP address of Data ONTAP-v Installer is: 10.10.10.09

```

After you finish

You can continue the setup steps using the Console tab in the vSphere Client, but it is recommended that you use SSH to access the Data ONTAP-v Installer host IP address (listed above) because that interface is easier to use and is more stable.

Installing Data ONTAP Edge

After the Data ONTAP-v Installer virtual appliance is installed, you can connect `dvadmin` (the Data ONTAP-v Administration Tool) to the ESXi host and install your Data ONTAP Edge storage system.

Connecting `dvadmin` to the Data ONTAP Edge host server

You must connect `dvadmin` to the ESXi host where Data ONTAP Edge will be installed before you can install the storage system.

About this task

Depending on your configuration, there are three ways to connect `dvadmin` to a VMware ESXi host:

If you plan to install Data ONTAP Edge...	Then you...
On a single ESXi host that is not being managed by a vCenter server.	Connect directly to the ESXi host.
On a single ESXi host that is being managed by a vCenter server.	Connect to the ESXi host through the vCenter server that is managing the host.
On multiple ESXi hosts that are being managed by the same vCenter server.	Connect to the vCenter server without specifying an ESXi host. After you are logged in, you use the <code>dvadmin host</code> command to connect to each ESXi host where you plan to install Data ONTAP Edge.

To connect to a vCenter server or an ESXi host, you specify the information you recorded in the configuration worksheet found in [Required configuration information](#) on page 12. The Data ONTAP-

v Installer provides different prompts depending on whether you are connected to the ESXi host through a vCenter server or connected directly to the ESXi host.

Steps

1. If you are not already running `dvadmin`, log in to the Data ONTAP-v Installer.

Using SSH, you specify the Data ONTAP-v Installer IP address, and then enter the default user (“netapp”) and default password (“netapp”).

Example

```
$ ssh 10.10.10.09

login as: netapp
netapp@10.10.10.09's password: *****
```

The Data ONTAP-v Installer displays the following prompt:

```
The following prompts define the connection to the vCenter server
or ESX host.
Is the ESX host managed by a vCenter server? [y]:
```

2. Enter **y** if the ESXi host is managed by a vCenter server, or **n** if it is not managed by a vCenter server.

The following prompts are displayed if you connect to the ESXi host through a vCenter server:

```
Enter vCenter server name or IP address:
Enter ESX host name or IP address (optional):
Enter vCenter server username:
Enter vCenter server password:
```

The following prompts are displayed if you connect directly to the ESXi host:

```
Enter ESX host name or IP address:
Enter ESX host username:
Enter ESX host password:
```

3. Enter the vCenter server and ESXi host information to define the server to which you want to connect.

The following prompt is displayed:

```
Do you want to save this vCenter server login information [y]:
```

4. If you want to save the server login information so that you do not need to reenter it every time you connect, enter **y**; otherwise, enter **n**.

You are logged in to the server and the `dvadmin` prompt is displayed:

```
NetApp Data ONTAP-v Administration Tool 1.x.x
Copyright (C) 1992-2013 NetApp.
All rights reserved.
Logging in Administrator@vcenter_server1
VMware SDK version: 5.0
Console escape key: ^]
Host: host_system1
Installer Version: 8.x.x.1yy
ESX License: VMware vSphere 5 Enterprise

dvadmin host host_system1>
```

Examples of logging in to a server

The following command logs you in to the “host_system1” ESXi server through the “vcenter_server1” vCenter server:

```
Is the ESX host managed by a vCenter server? [y]: y
Enter vCenter server name or IP address: vcenter_server1
Enter ESX host name or IP address (optional): host_system1
Enter vCenter server username: vcenteruser
Enter vCenter server password: *****
Do you want to save this vCenter server login information [y]: y
```

The following command logs you in to the ESXi server with the IP address 126.127.128.129:

```
Is the ESX host managed by a vCenter server? [y]: n
Enter ESX host name or IP address: 126.127.128.129
Enter ESX host username: esxuser
Enter ESX host password: *****
Do you want to save this ESX server login information [y]: y
```

Creating required storage pools

A storage pool is equivalent to a VMware datastore; it is a storage container for files. You create a storage pool for installing Data ONTAP Edge components from the RAID-backed LUN you created previously.

Before you begin

You must know the canonical names of the available LUNs before you can create the storage pool. You can use the `pdisk show` command if you do not know the canonical name. The canonical name is typically in a format such as "naa.60a9800043346c422f34627876694542", but the command examples in this topic use simpler names.

Important: The datastore (pool) on which you plan to deploy Data ONTAP Edge must have a unique name within the vCenter Server. If the name is not unique, you will receive an "HTTP lease" error during installation.

About this task

If you have created a single RAID5-backed LUN from the server storage disks, you will create a single pool from that LUN. You will install the Data ONTAP Edge system files, virtual NVRAM disk, Data ONTAP root aggregate disk, and data disks in that pool.

Note: You can create the storage pools (datastores) using the vSphere Client instead of using the `dvadmin` commands described in this topic.

Steps

1. `dvadmin` must be connected to the ESXi host before creating a pool. The command prompt should include the host name, for example, `dvadmin host host_system>`. If `dvadmin` is not connected to the host, then you must connect to the host using the following command:

```
host <hostname>
```

2. Create a storage pool on a LUN using the following command:

```
pool create <pool_name> <canonical_name>
```

- `<pool_name>` is the name of storage pool you want to create.
- `<canonical_name>` is the canonical name of the LUN that will be used for the storage pool.

Examples of adding storage pools

The following command adds the storage pool "datastore1" using storage from the RAID LUN named "LUN_abc".

```
> pool create datastore1 LUN_abc
```

After you finish

After you have defined the storage pools, you can install Data ONTAP Edge.

Installing Data ONTAP Edge using the dvadmin setup wizard

The dvadmin setup wizard provides an easy way to create and start a Data ONTAP Edge storage system.

Before you begin

You should have completed the *Required configuration information* on page 12 before starting the setup wizard so that you have all the necessary configuration elements written down.

About this task

The dvadmin setup wizard prompts you for all the configuration information that will define your Data ONTAP Edge storage system.

Note: When the wizard presents a default value in square brackets, such as [y], pressing Enter accepts the default value, and typing “n” and then pressing Enter enables you to specify a different value.

Steps

1. Use the `vm setup` command to start the setup wizard.

```
> vm setup
Welcome to the VM setup wizard!
This wizard will take you step-by-step through the process of
creating a Data ONTAP virtual machine.
Use ^C at any prompt to exit the wizard.

Loading existing VMs...
VM Name      Power  CfgState  Heartbeat  Hostname  IP Address
dvadmin_VM   on    -         green     dvspecial 10.97.131.24
Enter a name for the Data ONTAP-v Appliance:
```

2. Enter the name you want to use for the Data ONTAP Edge virtual machine, for example, “dotv1”, and then press Enter.

This name is also used as the cluster name and as the storage system name you see when managing the system using Data ONTAP commands.

```
Enter your Data ONTAP-v platform license:
```

3. Enter the unique 24-character Data ONTAP-v platform license, for example, “ABCD-1234-EFGH-5678-IJKL”, and then press Enter.

The platform license defines the product that runs on top of the Data ONTAP-v platform; for example, a Data ONTAP Edge storage system.

```

Loading Storage Pools...
Pool Name          Type      Access  Capacity  Available  Backing
Store
1) datastore1     VMFS     Online  881111333  826152128  LUN_abc
2) nvrām_data_pool VMFS     Online  251441213  40584192   LUN_xyz

Enter the number corresponding to the pool where you want the virtual
machine system files to be installed:

```

4. Enter the number that corresponds to the storage pool in which you want to install the Data ONTAP Edge virtual machine and system files, and then press Enter.

For example, type “1” to select the pool named “datastore1”.

```

Would you like to use the same pool (datastore1) for the NVRAM disk?
[n]:

```

5. Following the best practice of having a single RAID5-backed LUN and one datastore, type “y”, and then press Enter to use the same pool.

For best performance, the Data ONTAP Edge virtual NVRAM disk should be installed on a storage pool that is created on a storage device that includes a battery-backed write cache.

```

Data ONTAP requires 55296 MB for the root aggregate and volume.
Would you like to use the same pool (datastore1) for the root
aggregate disk? [y]:

```

6. Following the best practice, press Enter to accept the default setting of [y] to use the same storage pool as the virtual NVRAM disk.

Typically, the Data ONTAP Edge root aggregate disk is installed on the same storage pool as the virtual NVRAM disk.

```

Loading Networks...
Network Name          Virtual Switch
1) Lab7-10.97.105     vSwitch0 (804)
2) network_1         vSwitch0 (828)

```

```

Enter the number corresponding to the network you wish to use:

```

7. Enter the number that corresponds to the network to which the Data ONTAP-v virtual machine interfaces should be connected (typically your management network), and then press Enter.

```

Clustered Data ONTAP requires two management interfaces:
- The Cluster Management interface is used for managing the system.
- The Node Management interface is used internally by Data ONTAP.

```

```

Enter the Cluster Management IP address:

```

8. Enter the Cluster Management interface IP address that you will use to communicate with your storage system, for example “10.10.10.10”, and then press Enter.

```
Enter the Cluster Management netmask:
```

9. Enter the Cluster Management subnet mask, for example “255.255.255.0”, and then press Enter.

```
Enter the Cluster Management gateway:
```

10. Enter the Cluster Management gateway that is used for network connectivity, for example “10.10.10.1”, and then press Enter.

```
Enter the Node Management IP address:
```

11. Enter the Node management interface IP address that you will use to communicate with your storage system, for example “10.10.10.12”, and then press Enter.

```
Enter the Node Management netmask [255.255.255.0]:
```

12. Press Enter to use the same netmask that the Cluster Management interface uses, or enter a different Node management subnet mask, and then press Enter.

```
Enter the Node Management gateway [10.10.10.1]:
```

13. Press Enter to use the same gateway that the Cluster Management interface uses, or enter a different Node management gateway, and then press Enter.

```
Enter the password for the VM:
```

14. Enter the administrative password that you want to use for the Data ONTAP admin account, and then press Enter.

The password must be at least eight characters long, and it must contain at least one number and at least two alphabetic characters. You use this password whenever you log in to the storage system console.

```
Confirm the password: *****
```

15. Enter the password again, and then press Enter.

```
Would you like to enter vSphere host information? [y]:
```

16. Choose whether to enter VMware vSphere host information, which consists of the user name and password for the ESX host.

When you provide this information, Data ONTAP can access the host to display physical host information through the Data ONTAP `run local sysconfig -p` command.

If you...	Then...
Do not want to enter this information	Type “n”, and then press Enter to skip this step.
Want to enter this information	Press Enter, and then define the values at the prompts: <pre>Enter the vSphere username: Enter the vSphere password: Confirm the password:</pre>

After you define or skip defining the vSphere host information, the wizard displays the current virtual machine parameters:

```
Loading Data ONTAP-v virtual machine parameters...
VM Name: dotv1
System Pool: datastore1
NVRAM Pool: datastore1
Root Aggregate Pool: datastore1
Network Name: network1
License Key: ABCD-1234-EFGH-5678-IJKL
Cluster Management IP: 10.10.10.10
Cluster Management Netmask: 255.255.255.0
Cluster Management Gateway: 10.10.10.1
Node Management IP Address: 10.10.10.12
Node Management Netmask: 255.255.255.0
Node Management Gateway: 10.10.10.1
Password: *****
vSphere Username: esxuser
vSphere Password: *****

Would you like to create a VM with these parameters? [y]:
```

17. Review the parameters.

If...	Then...
All of the information is correct	Press Enter to create the Data ONTAP-v virtual machine. Creating the virtual machine can take a few minutes.
Any information is incorrect	<ol style="list-style-type: none"> Type “n”, and then press Enter to halt the wizard. Start the wizard again to correct any erroneous values.

```
Creating VM...
Extracting and validating OVF package contents.
Creating VM dotv1 on name.company.com.
Uploading disks to VM dotv1
```

```
Marked VM disks independent-persistent
Added 55296 MB disk [0:0] backed by [datastore1] dotv1/dotv1_3.vmdk
Added serial console and gdb ports
Created VM dotv1 on host name.company.com.
```

The following settings are optional.

The default time zone is GMT. Would you like to select a different time zone? [n]:

18. Press Enter to accept the default GMT setting, or type “y”, and then press Enter to specify a different time zone.

```
Enter the time zone [GMT]:
```

19. Enter the time zone for your storage system using the Olson format, for example, “America/New_York”.

```
Data ONTAP-v will be configured with the following feature licenses:
CIFFS, NFS, iSCSI, FlexClone, SnapRestore, SnapVault, SnapMirror
Would you like to add any additional feature licenses? [n]:
```

20. Press Enter if you have no other feature licenses to add, or type “y”, and then press Enter to specify additional licenses.

The standard Data ONTAP feature licenses for a Data ONTAP Edge system are installed automatically. If you have purchased other Data ONTAP licenses, you can enter them now.

```
Would you like to configure DNS? [n]:
```

21. Press Enter if you do not need to configure DNS information, or type “y”, press Enter, and specify a DNS domain name and up to three DNS servers.

```
When deploying a single-node cluster, you should define a remote
location to store cluster configuration backups. Valid backup
destinations must support file uploads using one of the following
protocols: HTTP, HTTPS, FTP, FTPS, or TFTP.
It is recommended that you define a custom destination, but if you
do not have one, the Data ONTAP-v Installer virtual machine will
be used.
```

```
Would you like to configure a custom backup destination? [y]:
```

22. Press Enter if you want to specify a destination for configuration backups, or type “n”, and then press Enter if you want your configuration backups to be stored on the Data ONTAP-v Installer virtual machine using the FTP protocol.

If you pressed Enter to specify a destination for configuration backups, the following prompts appear:

```
Enter the destination [ftp://10.97.131.24]:
Enter the destination username:
Enter the destination password:
Confirm the password:
```

23. Enter the destination URL, user name, and password, and confirm the password.

```
You have set the following parameters:
Set tmz = America/New_York
Set systemconfigbackup_destination = ftp://10.97.131.24
Set systemconfigbackup_username = ftp
Set systemconfigbackup_password = ***

Would you like to define the data disks that the VM will manage? [y]:
```

24. Press Enter to define the data disks that the Data ONTAP Edge system will manage.

A data disk can consume the entire space in a storage pool, or multiple data disks can be created in a single storage pool.

```
Loading Storage Pools...
Pool Name          Type      Access  Capacity  Available  Backing
1) datastore1     VMFS     Online  881111333  826152128  LUN_abc
2) nvrām_data_pool VMFS     Online  251441213  40584192   LUN_xyz

Enter the number corresponding to the pool where you want the data
disk to be created:
```

25. Enter the number that corresponds to the storage pool in which you want to create the data disk, and then press Enter.

Frequently, this is the same storage pool “datastore1” in which you created the virtual NVRAM disk.

```
Supported disk size for this pool: 1024 MB - 826152 MB
Would you like the disk to span the available free space (826152 MB)?
[y]:
```

26. If you want the disk to use all the available free space in the specified pool the number in the parentheses), press Enter.

Note that a single virtual disk cannot be larger than 2 TB. If the space available in the pool is larger than 2 TB, you need to define two or more similar-size disks (up to a maximum of 10 TB for Data ONTAP Edge systems). Because the pool in this example is only 800 GB, it is OK to press Enter to create a disk of the full size.

```
Creating disk...
Added 826152 MB disk [0:1] backed by [datastore1] dotv1/dotv1_4.vmdk

Would you like to add another disk? [n]:
```

27. Press Enter when you do not need to create any more data disks.

```
Would you like to enable automatic backup of your VM's configuration?
[y]:
```

28. Press Enter to enable the “monitor” feature available through dvadmin.

You should use this functionality because it makes troubleshooting and repair of the system much easier.

```
vm monitor for dotvl is running with options --no-watchdog
Your VM has been configured. Would you like to see a summary? [y]:
```

29. Press Enter to see a summary of the current storage system settings.

```
VM Name      Power  CfgState  Heartbeat  Hostname    IP Address
dotvl        off    new       -          -           -

=====
Detail information for vm dotvl:
VM Version   Data ONTAP Version   Serial Number   System ID
1.x.x        8.x.x                -               -

Disk Name    Ctrl:Unit  Size (MB)  UUID                Backing
Hard disk 1  ide0:0     1943       -                   datastore1
Hard disk 2  ide0:1     1542       -                   datastore1
Hard disk 3  idel:0     5121       -                   datastore1
Hard disk 4  scsi0:0    55296      <uuid-string>      datastore1
Hard disk 5  scsi0:1    826152     <uuid-string>      datastore1

Adapter Name      MAC Address                Network Name
Network adapter 1  00:50:56:97:08:62         VM Network
Network adapter 2  00:50:56:97:08:63         VM Network
Network adapter 3  00:50:56:97:08:64         VM Network
Network adapter 4  00:50:56:97:08:65         VM Network
Network adapter 5  00:50:56:9c:3b:a2         VM Network
Network adapter 6  00:50:56:9c:34:f5         VM Network

Serial Name      Port  Conn  Status      Details
Serial port 1    0     N     untried     Remote tcp://:7209
Serial port 2    1     N     untried     Pipe dotvl_serial_1

Resource          Reservation
CPU               5332 MHz
Memory           8192 MB

Would you like to start the VM? [y]:
```

30. If the disk values you defined are correct, press Enter to start the Data ONTAP Edge storage system.

The “scsi0:1” disk size should match the size of the data disks that you defined earlier.

Important: If you do not start the storage system using the setup wizard, you must use the `dvadmin vm start` command to start the system the first time. **Do not** start the system the first time using VMware commands or the VMware vSphere Client.

```
start VM dotv1

VM wizard is now complete! You can connect to your VM by typing
'vm console connect dotv1', or type 'help' to view the available
commands.
>
```

The storage system will be available to use after it has completed booting up.

Configuring Data ONTAP settings

After you have verified that your Data ONTAP Edge single-node cluster has been initialized correctly, you can configure the Data ONTAP storage and data protection settings.

Connecting to the Data ONTAP Edge storage system console

You connect to the Data ONTAP Edge console to communicate with Data ONTAP as you administer your storage system. The console enables you to use the Data ONTAP command-line interface.

About this task

You can connect to your Data ONTAP Edge storage system by using the `dvadmin vm console connect` command, but it is recommended that you use an SSH client, such as PuTTY, to connect directly to the Cluster Management interface of the storage system.

You can also use NetApp OnCommand System Manager to administer the storage system using the Cluster Management interface IP address.

Steps

1. Using SSH, specify the Data ONTAP Edge storage system Cluster Management interface IP address:

Example

```
$ ssh 10.10.10.10
```

2. Enter the Data ONTAP admin login name and password.

Example

```
login as: admin
admin@10.10.10.10's password: *****
dotv1::>
```

The storage system prompt appears.

3. Confirm that Data ONTAP has started successfully by using the Data ONTAP `disk show` command.

Example

```
dotv1::> version
NetApp Release 8.x.x: Wed Jan 28 23:38:30 PDT 2015
```

This command displays the version of Data ONTAP software that is installed.

Verifying storage system setup

Many of the values that you defined for your storage system during installation are used to configure Data ONTAP settings. You can verify that these values were set correctly by running some Data ONTAP commands.

Steps

1. Enter the following command to verify that the node is healthy:

Example

```
dotv1::> node show
Node      Health Eligibility Uptime      Model      Owner      Location
-----
dotv1-01 true    true          1 days 23:37 FDvM200    host_system1
```

The Health field should be “true”.

2. Enter the following commands to verify that the cluster management and node management logical interfaces (LIFs) are configured correctly:

Example

```
dotv1::> network interface show
Vserver   Logical      Status      Network      Current      Current      Is
Interface Interface    Admin/Oper  Address/Mask Node          Port         Home
-----
dotv1     cluster_mgmt up/up       10.10.10.10/21 dotv1-01     e0a          true
dotv1     dotv1-01_mgmt1 up/up       10.10.10.12/21 dotv1-01     e0a          true

dotv1::> network port show
Speed (Mbps)
```

Node	Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper

dotv1-01	e0a	Default	Default		up	1500	auto/1000
	e0b	Default	Default		up	1500	auto/1000
	e0c	Default	Default		up	1500	auto/1000
	e0d	Default	Default		up	1500	auto/1000
	e0e	Default	Default		up	1500	auto/1000
	e0f	Default	Default		up	1500	auto/1000

Port e0a is used as the cluster management and node management port. The other ports can be used to serve data.

- Enter the following commands to verify that the storage has been configured correctly. These commands show that the root volume (vol0) has been created in the root aggregate (aggr0), and that the 800 GB virtual data disk you created is a spare disk:

Example

```
dotv1::> storage disk show
Disk              Usable      Disk      Container  Container
                  Size       Shelf Bay  Type      Type      Name      Owner
-----
VMw-1.1           53.15GB    -     0  VMDISK    aggregate aggr0     dotv1-01
VMw-1.2           800.00GB   -     1  VMDISK    spare     spare     dotv1-01

dotv1::> storage aggregate show
Aggregate      Size Available Used%  State  #Vols  Nodes      RAID Status
-----
aggr0         47.82GB    2.74GB  94%  online  1     dotv1-01   raid0,
normal

dotv1::> volume show
Vserver      Volume      Aggregate      State      Type      Size Available Used%
-----
dotv1-01    vol0        aggr0          online     RW        44.82GB  42.17GB  5%
```

You use the space from the spare data disk to create a data aggregate in which your Storage Virtual Machines (SVMs) and volumes will be created. Do not include or create data volumes in the root aggregate.

- Enter the following command to verify that the correct Data ONTAP feature licenses are installed on your system, as shown below:

Example

```
dotv1::> system license show
Serial Number: 1-80-000023
Owner: dotv1
Package      Type      Description      Expiration
-----
Base         license   Cluster Base License  -

Serial Number: 1-81-00000000000000000000000023
Owner: none
Package      Type      Description      Expiration
-----
NFS          license   NFS License      -
CIFS         license   CIFS License     -
iSCSI        license   iSCSI License    -
SnapRestore  license   SnapRestore License  -
```

```
FlexClone      license  FlexClone License  -
SnapVault     license  SnapVault License  -
SnapMirror    license  SnapMirror License  -
8 entries were displayed.
```

5. If you defined a destination for cluster configuration backups, enter the following commands to verify that the location is set correctly:

Example

```
dotv1::> set -privilege advanced

Warning: These advanced commands are potentially dangerous; use them only
        when directed to do so by NetApp personnel.
Do you want to continue? {y|n}: y

dotv1::*> system configuration backup settings show
Backup Destination URL      Username
-----
ftp://10.97.131.24          ftp

dotv1::*> set -privilege admin

dotv1::>
```

Configuring additional Data ONTAP settings

Before you begin to configure your storage settings, you must synchronize the cluster time with an NTP server and disable the default aggregate Snapshot schedule.

Steps

1. Associate the cluster with an external Network Time Protocol (NTP) server:

```
cluster time-service ntp server create -server ntp_server_name
```

By associating the cluster with an NTP server, it ensures that the cluster has the same time as other peer clusters, and it prevents CIFS and Kerberos failures.

2. Disable the default aggregate Snapshot schedule:

```
node run -node dotv1-01 snap sched -A aggr0 0 0 0
```

Snapshot copies are not needed for the default aggregate (aggr0), so this saves space.

Creating an aggregate

You create an aggregate from the data disks to provide storage to one or more FlexVol volumes.

Before you begin

You should know what disks will be used in the new aggregate.

About this task

The root aggregate that was created automatically during the installation is named "aggr0". Additional aggregate names must conform to the following requirements:

- Begin with either a letter or an underscore (_).
- Contain only letters, digits, and underscores.
- Contain 250 or fewer characters.

Steps

1. Display a list of the available spare disks by entering the following command:

```
storage disk show -spare
```

2. Create the aggregate by using the `storage aggregate create` command.

You should specify the node on which the aggregate will be created and the number of disks to include in the aggregate.

Example

The following command creates an aggregate named "aggr2" on node "dotv1-01" that is composed of one disk.

```
dotv1::> storage aggregate create -aggregate aggr2 -nodes dotv1-01 -diskcount 1
```

3. Verify the details of your new aggregate by entering the following command:

```
storage aggregate show -aggregate aggr_name
```

Configuring protocol support

After you have successfully created an aggregate, you are ready to create an SVM with FlexVol volumes for your system, and then configure one or more protocols for client access.

About this task

You can use System Manager to create a new SVM.

Step

1. Create either a new SVM or use an existing one, then create FlexVol volumes for data, and then configure one or more protocols for client access.

For complete instructions, see one of the following guides:

- [Clustered Data ONTAP 8.3 NFS Configuration Express Guide](#)

- [Clustered Data ONTAP 8.3 CIFS and NFS Multiprotocol Configuration Express Guide](#)
- [Clustered Data ONTAP 8.3 CIFS/SMB Configuration Express Guide](#)
- [Clustered Data ONTAP 8.3 iSCSI Configuration for Windows Express Guide](#)
- [Clustered Data ONTAP 8.3 iSCSI Configuration for ESX Express Guide](#)
- [Clustered Data ONTAP 8.3 iSCSI Configuration for Red Hat Linux Express Guide](#)

Configuring peers and SnapVault and SnapMirror relationships

After you have successfully created SVMs and data volumes for your system, you are ready to configure peer relationships and then set up SnapVault and SnapMirror relationships.

About this task

Data ONTAP Edge can use the Data ONTAP SnapVault and SnapMirror features to copy and move data to another Data ONTAP cluster where the data can be archived or used for disaster recovery.

You must configure peer relationships before you create SnapVault and SnapMirror relationships.

Steps

1. Configure a peer relationship between your Data ONTAP Edge cluster and another cluster or SVM.

See the [Clustered Data ONTAP 8.3 Cluster Peering Express Guide](#) for complete instructions on configuring a peer relationship between clusters.

See the [Clustered Data ONTAP 8.3 Volume Backup Using SnapVault Express Guide](#) for complete instructions on configuring a peer relationship between SVMs.

2. Create SnapVault relationships for the purpose of backup and recovery.

SnapVault relationships enable you to back up selected Snapshot copies of volumes to a destination volume and retain the backups.

See the [Clustered Data ONTAP 8.3 Volume Backup Using SnapVault Express Guide](#) for complete instructions.

3. Create SnapMirror relationships for the purpose of disaster recovery.

You can use mirroring technology to create an identical second set of data to replace the primary set of data, should something happen to the primary set of data.

See the [Clustered Data ONTAP 8.3 Volume Disaster Recovery Preparation Express Guide](#) for complete instructions.

Where to find additional information

There are other reference manuals to help you configure your Data ONTAP Edge cluster.

Reference guides

The following reference documentation can help you further configure your systems.

- [*Clustered Data ONTAP 8.3 System Administration Guide for Cluster Administrators*](#)
Describes general system administration, including how to manage nodes and SVMs.
- [*Clustered Data ONTAP 8.3 System Administration Guide for SVM Administrators*](#)
Describes SVM administrator capabilities for managing SVMs in clusters, including SVM access and user account authentication.
- [*Clustered Data ONTAP 8.3 Data Protection Guide*](#)
Describes how to plan and manage disaster recovery and disk-to-disk backup of clustered systems.
- [*Data ONTAP-v Administration Tool 1.3.0 Installation Guide*](#)
Describes how to install the Data ONTAP-v Administration Tool (dvdadmin).
- [*Data ONTAP Edge 8.3 Installation and Administration Guide for Clustered Data ONTAP*](#)
Describes how to install and manage clustered Data ONTAP Edge storage systems using dvdadmin.
- [*Data ONTAP-v Administration Tool 1.3.0 Command Reference*](#)
Describes the dvdadmin commands used to install, manage, and monitor a Data ONTAP Edge storage system.

Tools

The following tools can help you manage your new cluster. The tools are available from the NetApp Support Site.

- Interoperability Matrix Tool (IMT)
The Interoperability Matrix lists supported combinations of hardware components, software versions, firmware, and drivers.
- Hardware Universe
The Hardware Universe (HWU) application is the NetApp system configuration solution, replacing the System Configuration Guides.

Related information

[Documentation on the NetApp Support Site: mysupport.netapp.com](https://mysupport.netapp.com)

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