Use the CLI

ONTAP Select

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Use the CLI

Sign in to ONTAP Select Deploy using SSH

You need to sign in to the Deploy management shell using SSH. After signing in, you can issue CLI commands to create an ONTAP Select cluster and perform related administrative procedures.

Before you begin

You must have the current password for the Deploy administrator (admin) account. If you are signing in for the first time and used vCenter to install the Deploy virtual machine, you should use the password set during installation.

Steps

1. Sign in using the administrator account and management IP address of the Deploy virtual machine; for example:

   ```
   ssh admin@<10.235.82.22>
   ```

2. If this is the first time signing in and you did not install Deploy using the wizard available with vCenter, provide the following configuration information when prompted:
   - New password for the administrator account (required)
   - Company name (required)
   - Proxy URL (optional)
3. Type **?** and select **Enter** to display a list of the available management shell commands.

Deploy an ONTAP Select cluster using the CLI

You can use the command line interface provided with the ONTAP Select Deploy administration utility to create a single-node or multi-node ONTAP Select cluster.

Step 1: Prepare for the deployment

Before creating an ONTAP Select cluster on a hypervisor, you should understand the required preparation.

Steps

1. Prepare to attach storage to the ONTAP Select node

   Hardware RAID

   If you use a local hardware RAID controller, you must create at least one datastore (ESXi) or one storage pool (KVM) at each node for the system data as well as the root and data aggregates. You must attach the storage pool as part of configuring the ONTAP Select node.

   Software RAID

   If you use software RAID, you must create at least one datastore (ESXi) or one storage pool (KVM) for the system data and make sure the SSD drives are available for the root and data aggregates. You must attach the storage pool and disks as part of configuring the ONTAP Select node.

2. Available ONTAP Select versions

   The Deploy administration utility contains a single version of ONTAP Select. If you want to deploy clusters using an earlier version of ONTAP Select, you must first add the ONTAP Select image to your Deploy instance.

3. License ONTAP Select for a production deployment

   Before deploying an ONTAP Select cluster in a production environment, you must purchase a storage capacity license and download the associated license file. You can license the storage at each node using the *Capacity Tiers* model or license a shared pool using the *Capacity Pools* model.

Step 2: Upload and register a license file

After acquiring a license file with storage capacity, you must upload the file containing the license to the Deploy virtual machine and register it.

If you are deploying a cluster for evaluation only, you can skip this step.

Before you begin

You must have the password for the admin user account.

Steps

1. In a command shell on your local workstation, use the sftp utility to upload the license file to the Deploy virtual machine.

   Example output:

   ```
   sftp admin@10.234.81.101 (provide password when prompted)
   put NLF-320000nnn.txt
   exit
   ```

2. Sign in to the Deploy utility CLI with the administrator account using SSH.
3. Register the license:

   ```
   license add -file-name <file_name>
   ```

   Provide the administrator account password when prompted.

4. Display the licenses in the system to confirm the license was added properly:

   ```
   license show
   ```

Step 3: Add hypervisor hosts

You must register each hypervisor host where an ONTAP Select node will run.

KVM

You must register a hypervisor host where the ONTAP Select node will run. As part of this, the Deploy administration utility authenticates to the KVM host.

About this task

If more than one hypervisor host is needed, use this procedure to add each host.

Steps

1. Sign in to the Deploy utility CLI using SSH with the administrator account.
2. Register the host:

   ```
   host register -name <FQDN|IP> -hypervisor-type KVM -username
   <KVM_username>
   ```

   Example output:

   ```
   host register -name 10.234.81.14 -hypervisor-type KVM -username root
   ```

   Provide the password for the host account when prompted.

3. Display the state of the host and confirm it is authenticated:

   ```
   host show -name <FQDN|IP> -detailed
   ```

   Example output:

   ```
   host show -name 10.234.81.14 -detailed
   ```

ESXi

As part of this, the Deploy administration utility authenticates either to the vCenter server managing the host or directly to the ESXi standalone host.

About this task

Before you register a host that is managed by vCenter, you must add a management server account for the vCenter server. If the host is not managed by vCenter, you can provide the host credential as part of registering the host. You should use this procedure to add each host.

Steps

1. Sign in to the Deploy utility CLI using SSH with the administrator account.
2. If the host is managed by a vCenter server, add the vCenter account credential:

   ```
   credential add -hostname <FQDN|IP> -type vcenter -username
   ```

```
<vcenter_username>
```

Example output:

```
credential add -hostname vc.select.company-demo.com -type vcenter
-username administrator@vsphere.local
```

3. Register the host:
   - Register a standalone host not managed by vCenter:

     ```
     host register -name <FQDN|IP> -hypervisor-type ESX -username
     <esx_username>
     ```

   - Register a host managed by vCenter:

     ```
     host register -name <FQDN|IP> -hypervisor-type ESX -mgmt-server
     <FQDN|IP>
     ```

     Example output:

     ```
     host register -name 10.234.81.14 -hypervisor-type ESX -mgmt
     -server vc.select.company-demo.com
     ```

4. Display the state of the host and confirm it is authenticated.

   ```
   host show -name <FQDN|IP> -detailed
   ```

   Example output:

   ```
   host show -name 10.234.81.14 -detailed
   ```

Step 4: Create and configure an ONTAP Select cluster

You must create and then configure the ONTAP Select cluster. After the cluster is configured, you can configure the individual nodes.

Before you begin

Decide how many nodes the cluster contains and have the associated configuration information.

About this task

When you create an ONTAP Select cluster, the Deploy utility automatically generates the node names based on the cluster name and node count that you provide. Deploy also generates the unique node identifiers.

Steps

1. Sign in to the Deploy utility CLI using SSH with the administrator account.
2. Create the cluster:

   ```
   cluster create -name <cluster_name> -node-count <count>
   ```

   Example output:

   ```
   cluster create -name test-cluster -node-count 1
   ```

3. Configure the cluster:

   ```
   cluster modify -name <cluster_name> -mgmt-ip <IP_address> -netmask
   <netmask> -gateway <IP_address> -dns-servers <FQDN|IP>_LIST -dns-domains
   <domain_list>
   ```

   Example output:

   ```
   cluster modify -name test-cluster -mgmt-ip 10.234.81.20 -netmask
   255.255.255.192
   -gateway 10.234.81.1 -dns-servers 10.221.220.10 -dnsdomains
   select.company-demo.com
   ```

4. Display the configuration and state of the cluster:

   ```
   cluster show -name <cluster_name> -detailed
   ```

Step 5: Configure an ONTAP Select node

You must configure each of the nodes in the ONTAP Select cluster.

Before you begin

- Verify that you have the configuration information for the node.
- Verify that the Capacity Tier or Capacity Pool license file is uploaded and installed at the Deploy utility.

About this task

You should use this procedure to configure each node. A Capacity Tier license is applied to the node in this example.

Steps

1. Sign in to the Deploy utility CLI using SSH with the administrator account.
2. Determine the names assigned to the cluster nodes:

```
node show -cluster-name <cluster_name>
```

3. Select the node and perform basic configuration:

```
node modify -name <node_name> -cluster-name <cluster_name> -host-name
<FQDN|IP> -license-serial-number <number> -instance-type TYPE
-passthrough-disks false
```

Example output:

```
node modify -name test-cluster-01 -cluster-name test-cluster -host-name
10.234.81.14
-license-serial-number 320000nnnn -instance-type small -passthrough
-disks false
```

The RAID configuration for the node is indicated with the *passthrough-disks* parameter. If you are using a local hardware RAID controller, this value must be "false". If you are using software RAID, this value must be "true".

A Capacity Tier license is used for the ONTAP Select node.

4. Display the network configuration available at the host:

```
host network show -host-name <FQDN|IP> -detailed
```

Example output:

```
host network show -host-name 10.234.81.14 -detailed
```

5. Perform network configuration of the node:

ESXi host

```
node modify -name <node_name> -cluster-name <cluster_name> -mgmt-ip
IP -management-networks <network_name> -data-networks <network_name>
-internal-network <network_name>
```

KVM host

```
node modify -name <node_name> -cluster-name <cluster_name> -mgmt-ip
IP -management-vlans <vlan_id> -data-vlans <vlan_id> -internal-vlans
<vlad_id>
```

When deploying a single-node cluster, you do not need an internal network and should remove "-internal-network".

Example output:

```
node modify -name test-cluster-01 -cluster-name test-cluster -mgmt-ip
10.234.81.21
-management-networks sDOT_Network -data-networks sDOT_Network
```

6. Display the configuration of the node:

```
node show -name <node_name> -cluster-name <cluster_name> -detailed
```

Example output:

```
node show -name test-cluster-01 -cluster-name test-cluster -detailed
```

Step 6: Attach storage to the ONTAP Select nodes

Configure the storage used by each node in the ONTAP Select cluster. Every node must always be assigned at least one storage pool. When using software RAID, each node must also be assigned at least one disk drive.

Before you begin

Create the storage pool using VMware vSphere. If you are using software RAID, you also need at least one available disk drive.

About this task

When using a local hardware RAID controller, you need to perform steps 1 through 4. When using software RAID, you need to perform steps 1 through 6.

Steps

1. Sign in to the Deploy utility CLI using SSH with the administrator account credentials.
2. Display the storage pools available at the host:

```
host storage pool show -host-name <FQDN|IP>
```

Example output:

```
host storage pool show -host-name 10.234.81.14
```

You can also obtain the available storage pools through VMware vSphere.

3. Attach an available storage pool to the ONTAP Select node:

```
node storage pool attach -name <pool_name> -cluster-name <cluster_name>
-node-name <node_name> -capacity-limit <limit>
```

If you include the "-capacity-limit" parameter, specify the value as GB or TB.

Example output:

```
node storage pool attach -name sDOT-02 -cluster-name test-cluster -
node-name test-cluster-01 -capacity-limit 500GB
```

4. Display the storage pools attached to the node:

```
node storage pool show -cluster-name <cluster_name> -node-name
<node_name>
```

Example output:

```
node storage pool show -cluster-name test-cluster -node-name
testcluster-01
```

5. If you are using software RAID, attach the available drive or drives:

```
node storage disk attach -node-name <node_name> -cluster-name
<cluster_name> -disks <list_of_drives>
```

Example output:

```
node storage disk attach -node-name NVME_SN-01 -cluster-name NVME_SN
-disks 0000:66:00.0 0000:67:00.0 0000:68:00.0
```

6. If you are using software RAID, display the disks attached to the node:

```
node storage disk show -node-name <node_name> -cluster-name
```

```
<cluster_name>`
```

Example output:

```
node storage disk show -node-name sdot-smicro-009a -cluster-name NVME
```

Step 7: Deploy an ONTAP Select cluster

After the cluster and nodes have been configured, you can deploy the cluster.

Before you begin

Run the network connectivity checker using the web UI or the CLI to confirm the connectivity among the cluster nodes on the internal network.

Steps

1. Sign in to the Deploy utility CLI using SSH with the administrator account.
2. Deploy the ONTAP Select cluster:

   ```
   cluster deploy -name <cluster_name>
   ```

   Example output:

   ```
   cluster deploy -name test-cluster
   ```

   Provide the password to be used for the ONTAP administrator account when prompted.
3. Display the status of the cluster to determine when it has been successfully deployed successfully:

   ```
   cluster show -name <cluster_name>
   ```

What's next?

Back up the ONTAP Select Deploy configuration data.

Secure an ONTAP Select deployment

You can secure an ONTAP Select deployment by changing the password for the Deploy virtual machine administrator account as needed using the command line interface.

Steps

1. Sign in to the Deploy utility CLI using the administrator account.
2. Change the password:
   `password modify`

3. Respond to all prompts as appropriate for your environment.

Confirm network connectivity among ONTAP Select nodes

You can test the network connectivity among two or more ONTAP Select nodes on the internal cluster network. You typically run this test before a multi-node cluster is deployed to detect issues that might cause the operation to fail.

Before you begin

All the ONTAP Select nodes included in the test must be configured and powered on.

About this task

Each time you start a test, a new process run is created in the background and assigned a unique run identifier. Only one run can be active at a time.

The test has two modes that control its operation:

- Quick
  This mode performs a basic non-disruptive test. A PING test is performed, along with a test of the network MTU size and the vSwitch.
- Extended
  This mode performs a more comprehensive test over all the redundant network paths. If you run this on an active ONTAP Select cluster, the performance of the cluster can be impacted.



It is recommended that you always perform a quick test before creating a multi-node cluster. After the quick test completes successfully, you can optionally perform an extended test based on your production requirements.

Steps

1. Sign in to the Deploy utility CLI using the administrator account.
2. Display the current runs of the network connectivity checker and verify that no runs are active:

   ```
   network connectivity-check show
   ```

3. Start the network connectivity checker and note the run identifier in the command output:

   ```
   network connectivity-check start -host-names HOSTNAMES -vswitch-type
   VSWITCH_TYPE-mode MODE
   ```

   Example

   ```
   network connectivity-check start -host-names 10.234.81.14
   10.234.81.15 -vswitch-type StandardVSwitch -mode quick
   ```

4. Monitor the progress of the network connectivity checker based on the run identifier:

   ```
   network connectivity-check show -run-id RUN_ID
   ```

After you finish

The network connectivity checker normally cleans up by removing any temporary ports and IP addresses added to the ONTAP-Internal port group. However, if the connectivity checker fails to remove the temporary ports, you must perform a manual cleanup operation by rerunning the CLI command with the option `-mode cleanup`. If you do not remove the temporary ports from the ONTAP-Internal port group, the ONTAP Select virtual machine may not be created successfully.

Manage ONTAP Select clusters using the CLI

There are several related tasks you can perform to administer an ONTAP Select cluster using the CLI.

Back up the ONTAP Select Deploy configuration data

Backup of the ONTAP Select Deploy configuration data, for example, after deploying a cluster. The data is saved to a single encrypted file that you can download to your local workstation.

The backup file you create captures all the configuration data. This data describes aspects of your deployment environment, including the ONTAP Select clusters.

Before you begin

Make sure that Deploy is not performing any other tasks during the backup operation.

Steps

1. Sign in to the ONTAP Select Deploy utility CLI using SSH with the administrator account.
2. Create a backup of the ONTAP Select Deploy configuration data, which is stored in an internal directory at the ONTAP Select Deploy server:

   ```
   deploy backup create
   ```

3. Provide a password for the backup when prompted.

   The backup file is encrypted based on the password.

4. Display the available backups in the system:

   ```
   deploy backup show -detailed
   ```

5. Select your backup file based on the date in the **Created** field and record the **Download URL** value.

   You can access the backup file through the URL.

6. Using a web browser or utility such as Curl, download the backup file to your local workstation with the URL.

Delete an ONTAP Select cluster

You can delete an ONTAP Select cluster when it is no longer needed.

Before you begin

The cluster must be in the offline state.

Steps

1. Sign in to the Deploy virtual machine CLI using the administrator account.
2. Display the cluster status:

```
cluster show -name <cluster_name>
```

3. If the cluster is not offline, move it to an offline state:

```
cluster offline -name <cluster_name>
```

4. After confirming the cluster is in an offline status, delete the cluster:

```
cluster delete -name <cluster_name>
```

Nodes and hosts

Upgrade to VMware ESXi 8.0 or later for ONTAP Select

If you are running ONTAP Select on VMware ESXi, you can upgrade the ESXi software from an earlier supported version to ESXi 8.0 or later. Before upgrading, you should understand the process and select the appropriate upgrade procedure.

Prepare to upgrade VMware ESXi

Prepare and select the upgrade procedure that is appropriate for your environment before upgrading the ESXi software on the hypervisors hosting an ONTAP Select cluster.

Steps

1. **Become familiar with how to upgrade VMware ESXi**

   Upgrading the ESXi software is a process described and supported by VMware. The hypervisor upgrade process is part of the larger upgrade procedure when using ONTAP Select. Refer to the VMware documentation for more information.

2. **Select an upgrade procedure**

   Several upgrade procedures are available. You should select the applicable procedure based on the following criteria:

   - ONTAP Select cluster size

     Both single-node and multi-node clusters are supported.

   - Use of ONTAP Select Deploy

Upgrade is possible both with and without the Deploy utility.



You should select an upgrade procedure that uses the Deploy administration utility.

Performing an ESXi upgrade using the Deploy administration utility is the more general and resilient option. However, there might be instances when Deploy is unavailable or cannot be used. For example, upgrading to ESXi 8.0 is not supported with earlier versions of ONTAP Select and the Deploy administration utility.

If you are using these earlier versions and attempt an upgrade, you can leave the ONTAP Select virtual machine in a state where it cannot be booted. In this case, you must select an upgrade procedure that does not use Deploy.

3. **Upgrade the Deploy administration utility**

   Before performing an upgrade procedure using the Deploy utility, you might need to upgrade your Deploy instance. In general, you should upgrade to the most recent version of Deploy. The Deploy utility must support the version of ONTAP Select you are using. Refer to the ONTAP Select release notes for more information.

4. **After the update procedure is complete**

   If you select an upgrade procedure that uses the Deploy utility, you should perform a cluster refresh operation using Deploy after all of the nodes have been upgraded. See Refreshing the Deploy cluster configuration for more information.

Upgrade a single-node cluster using Deploy

You can use the Deploy administration utility as part of the procedure to upgrade the VMware ESXi hypervisor hosting an ONTAP Select single-node cluster.

Steps

1. Sign in to the Deploy utility CLI using SSH with the administrator account.
2. Move the node to the offline state:

```
node stop --cluster-name <cluster_name> --node-name <node_name>
```

3. Upgrade the hypervisor host where ONTAP Select is running to ESXi 8.0 or later using the procedure provided by VMware.
4. Move the node to the online state:

```
node start --cluster-name <cluster_name> --node-name <node_name>
```

5. After the node comes up, verify that the cluster is healthy.

   Example:

```
ESX-1N::> cluster show
Node           Health  Eligibility
```

```
-------------- ------- ------------
sdot-d200-011d true    true
```

After you finish

You should perform a cluster refresh operation using the Deploy administration utility.

Upgrade a multi-node cluster using Deploy

You can use the Deploy administration utility as part of the procedure to upgrade the VMware ESXi hypervisors hosting an ONTAP Select multi-node cluster.

About this task

You must perform this upgrade procedure for each of the nodes in the cluster, one node at a time. If the cluster contains four or more nodes, you should upgrade the nodes in each HA pair sequentially before proceeding to the next HA pair.

Steps

1. Sign in to the Deploy utility CLI using SSH with the administrator account.
2. Move the node to the offline state:

```
node stop --cluster-name <cluster_name> --node-name <node_name>
```

3. Upgrade the hypervisor host where ONTAP Select is running to ESXi 8.0 or later using the procedure provided by VMware.

   Refer to Preparing to upgrade VMware ESXi for more information.

4. Move the node to the online state:

```
node start --cluster-name <cluster_name> --node-name <node_name>
```

5. After the node comes up, verify that storage failover is enabled and the cluster is healthy.

   ▼ **Show example**

```
ESX-2N_I2_N11N12::> storage failover show
Takeover
Node Partner Possible State Description
-------------- -------------- -------- -------------------------
sdot-d200-011d sdot-d200-012d true Connected to sdot-d200-012d
sdot-d200-012d sdot-d200-011d true Connected to sdot-d200-011d
2 entries were displayed.
ESX-2N_I2_N11N12::> cluster show
Node Health Eligibility
--------------------- ------- ------------
sdot-d200-011d true true
sdot-d200-012d true true
```

```
2 entries were displayed.
```

After you finish

You must perform the upgrade procedure for each host used in the ONTAP Select cluster. After all the ESXi hosts are upgraded, you should perform a cluster refresh operation using the Deploy administration utility.

Upgrade a single-node cluster without Deploy

You can upgrade the VMware ESXi hypervisor hosting an ONTAP Select single-node cluster without using the Deploy administration utility.

Steps

1. Sign in to the ONTAP command line interface and halt the node.
2. Using VMware vSphere, confirm that the ONTAP Select virtual machine is powered off.
3. Upgrade the hypervisor host where ONTAP Select is running to ESXi 8.0 or later using the procedure provided by VMware.

   Refer to Preparing to upgrade VMware ESXi for more information.

4. Using VMware vSphere, access vCenter and do the following:
   a. Add a floppy drive to the ONTAP Select virtual machine.
   b. Power on the ONTAP Select virtual machine.
   c. Sign in to the ONTAP CLI using SSH with the administrator account.
5. After the node comes up, verify that the cluster is healthy.

   Example:

```
ESX-1N::> cluster show
Node           Health  Eligibility
-------------- ------- ------------
sdot-d200-011d true    true
```

After you finish

You should perform a cluster refresh operation using the Deploy administration utility.

Upgrade a multi-node cluster without Deploy

You can upgrade the VMware ESXi hypervisors hosting an ONTAP Select multi-node cluster without using the Deploy administration utility.

About this task

You must perform this upgrade procedure for each of the nodes in the cluster, one node at a time. If the cluster contains four or more nodes, you should upgrade the nodes in each HA pair sequentially before proceeding to the next HA pair.

Steps

1. Sign in to the ONTAP command line interface and halt the node.

2. Using VMware vSphere, confirm that the ONTAP Select virtual machine is powered off.
3. Upgrade the hypervisor host where ONTAP Select is running to ESXi 8.0 or later using the procedure provided by VMware.
4. Using VMware vSphere, access vCenter and do the following:
   a. Add a floppy drive to the ONTAP Select virtual machine.
   b. Power on the ONTAP Select virtual machine.
   c. Sign in to the ONTAP CLI using SSH with the administrator account.
5. After the node comes up, verify that storage failover is enabled and the cluster is healthy.

▼ Show example

```
ESX-2N_I2_N11N12::> storage failover show
Takeover
Node Partner Possible State Description
-------------- -------------- -------- -------------------------
sdot-d200-011d sdot-d200-012d true Connected to sdot-d200-012d
sdot-d200-012d sdot-d200-011d true Connected to sdot-d200-011d
2 entries were displayed.
ESX-2N_I2_N11N12::> cluster show
Node Health Eligibility
--------------------- ------- ------------
sdot-d200-011d true true
sdot-d200-012d true true
2 entries were displayed.
```

After you finish

You must perform the upgrade procedure for each host used in the ONTAP Select cluster.

Modify a host management server for ONTAP Select Deploy

You can use the `host modify` command to modify a host management server with this instance of ONTAP Select Deploy.

Syntax

`host modify [-help] [-foreground] -name` *`name`* `-mgmt-server` *`management_server`* `[-username` *`username`*`]`

Required parameters

Parameter	Description
`-name` *`name`*	The IP address or FQDN of the host you want to modify.

`-mgmt-server` *management_server*	The IP address or FQDN of the host management server to be set to the host. Specify "-" (hyphen) to unset the management server from the host. The credentials for this management server must be added prior to registering this host using the `credential add` command.

Optional parameters

Parameter	Description
`-help`	Displays the help message.
`-foreground`	This parameter controls the behavior of long-running commands. If set, the command will run in the foreground and event messages related to the operation will be displayed as they occur.
`-username` *username*	The username that has access to this host. This is required only if the host is not managed by a management server (that is, an ESXi host managed by a vCenter).

Deploy utility

Upgrade an ONTAP Select Deploy instance

Upgrade an existing ONTAP Select Deploy utility virtual machine in-place using the ONTAP Select Deploy utility CLI.

You can upgrade directly to ONTAP Select Deploy 9.19.1 from ONTAP Select Deploy 9.18.1 or 9.17.1. To upgrade from an earlier release, for example, ONTAP Select Deploy 9.16.1, you must first upgrade to ONTAP Select Deploy 9.17.1 or 9.18.1, then upgrade to ONTAP Select Deploy 9.19.1.

If you have an older instance of the ONTAP Select Deploy administration utility installed, you should upgrade to the current release. You upgrade the ONTAP Select node and ONTAP Select Deploy components independently. Refer to Upgrade the ONTAP Select nodes for further details.

Before you begin

Verify that ONTAP Select Deploy is not used to perform any other tasks during the upgrade.

Step 1: Download the upgrade package

To begin the upgrade process, download the ONTAP Select Deploy Upgrade file from the NetApp Support Site. The upgrade package is formatted as a single compressed file.

Steps

1. Access the NetApp Support Site downloads page.
2. Scroll down and select **ONTAP Select Deploy**.
3. Select the desired ONTAP Select version.
4. Review the End User License Agreement (EULA) and select **Accept & Continue**.
5. Select and download the appropriate **ONTAP Select Deploy Upgrade** package. Respond to all prompts as needed.

Step 2: Upload the package to the ONTAP Select Deploy virtual machine

After you download the package, you need to upload the file to the ONTAP Select Deploy virtual machine.

About this task

This task describes one method for uploading the file to the ONTAP Select Deploy virtual machine. There might be other options more suitable for your environment.

Before you begin

- Verify that the upgrade file is available on your local workstation.
- Verify that you have the password for the administrator user account.

Step

In a command shell on your local workstation, use the `scp` (Secure Copy Protocol) utility to upload the image file to the ONTAP Select Deploy virtual machine, as shown in the following example:

```
scp ONTAPdeploy2.12_upgrade.tar.gz admin@10.228.162.221:/home/admin
(provide password when prompted)
```

Result

The upgrade file is stored in the home directory of the admin user.

Step 3: Apply the upgrade package

After you upload the upgrade file to the ONTAP Select Deploy virtual machine, you can apply the upgrade.

Before you begin

- Verify which directory the upgrade file has been placed in at the ONTAP Select Deploy utility virtual machine.
- Verify that ONTAP Select Deploy is not used to perform any other tasks while the upgrade is performed.

Steps

1. Sign in to the ONTAP Select Deploy utility CLI using SSH with the administrator account.
2. Perform the upgrade using the appropriate directory path and file name:

   ```
   deploy upgrade -package-path <file_path>
   ```

   Example command:

   ```
   deploy upgrade -package-path /home/admin/ONTAPdeploy2.12_upgrade.tar.gz
   ```

After you finish

Before the upgrade procedure completes, you are asked to create a backup of the ONTAP Select Deploy virtual machine configuration. Also, you should clear the browser cache so you can view the newly created ONTAP Select Deploy pages.

Migrate an ONTAP Select Deploy instance to a new virtual machine

You can migrate an existing instance of the Deploy administration utility to a new virtual machine using the command line interface.

This procedure is based on creating a new virtual machine that uses the configuration data from the original virtual machine. The new and original virtual machines must run the same version and release of the Deploy utility. You cannot migrate to a different version and release of the Deploy utility.

Step 1:Back up the Deploy configuration data

You must create a backup of the Deploy configuration data as part of migrating the virtual machine. You should also create a backup after deploying an ONTAP Select cluster. The data is saved to a single encrypted file that you can download to your local workstation.

Before you begin

- Make sure that Deploy is not performing any other tasks during the backup operation.
- Save the original Deploy virtual machine image.



The original Deploy virtual machine image is required later in this procedure when you restore the Deploy configuration data from the original to the new virtual machine.

About this task

The backup file you create captures all the configuration data from the virtual machine. This data describes aspects of your deployment environment, including the ONTAP Select clusters.

Steps

1. Sign in to the Deploy utility CLI using SSH with the administrator account.
2. Create a backup of the Deploy configuration data, which is stored in an internal directory at the Deploy server:

   ```
   deploy backup create
   ```

3. Provide a password for the backup when prompted.

   The backup file is encrypted based on the password.

4. Display the available backups in the system:

   ```
   deploy backup show -detailed
   ```

5. Select your backup file based on the date in the **Created** field and record the **Download URL** value.

   You can access the backup file through the URL.

6. Using a web browser or utility such as Curl, download the backup file to your local workstation with the URL.

Step 2: Install a new instance of the Deploy virtual machine

You must create a new instance of the Deploy virtual machine which you can update with the configuration data from the original virtual machine.

Before you begin

You must be familiar with the procedures used to download and deploy the ONTAP Select Deploy virtual machine in a VMware environment.

About this task

This task is described at a high level.

Steps

1. Create a new instance of the Deploy virtual machine:
   a. Download the virtual machine image.
   b. Deploy the virtual machine and configure the network interface.
   c. Access the Deploy utility using SSH.

Related information

Install ONTAP Select Deploy

Step 3: Restore the Deploy configuration data to the new virtual machine

You must restore the configuration data from the original Deploy utility virtual machine to the new virtual machine. The data is in a single file that you must upload from your local workstation.

Before you begin

You must have the configuration data from a previous backup. The data is contained in a single file and must be available on your local workstation.

Steps

1. In a command shell on your local workstation, use the sftp utility to upload the backup file to the Deploy virtual machine, as shown in the following example:

```
sftp admin@10.234.81.101 (provide password when prompted)
put deploy_backup_20190601162151.tar.gz
exit
```

2. Sign in to the Deploy utility CLI using SSH with the administrator account.
3. Restore the configuration data:

```
deploy backup restore -path <path_name> -filename <file_name>
```

   Example command:

```
deploy backup restore -path /home/admin -filename
deploy_backup_20180601162151.tar.gz
```

Add an ONTAP Select image to Deploy

Add an ONTAP Select image to your instance of the Deploy administration utility. After the image has been installed, you can use it when deploying an ONTAP Select cluster.

Before you begin

Before adding any new ONTAP Select images to Deploy, you should first remove any unneeded images.

> You should only add an ONTAP Select image with a version that is earlier than the original version included with your instance of the Deploy utility. Adding later versions of ONTAP Select as they become available from NetApp is not a supported configuration.

Step 1: Download the install image

To begin the process of adding an ONTAP Select image to an instance of the Deploy utility, you must download the install image from the NetApp Support Site. The ONTAP Select install image is formatted as a single compressed file.

Steps

1. Access the NetApp Support Site downloads page.
2. Scroll down and select **ONTAP Select Image**.
3. Select the desired release of the install image.
4. Review the End User License Agreement (EULA) and select **Accept & Continue**.
5. Select and download the appropriate **ONTAP Select Image Install** package. Respond to all prompts as needed.

Step 2: Upload the install image to Deploy

After acquiring the ONTAP Select install image, you must upload the file to the Deploy virtual machine.

Before you begin

Verify that you have the install image file available on your local workstation. You must also have the password for the Deploy administrator user account.

About this task

This task describes one method for uploading the file to the Deploy virtual machine. There may be other options more suitable for your environment.

Step

1. In a command shell on your local workstation, upload the image file to the Deploy virtual machine, as shown in the following examples:

```
scp image_v_93_install_esx.tgz admin@10.234.81.101:/home/admin (provide
password when prompted)
```

```
sftp admin@10.234.81.101 (provide password when prompted)
put image_v_93_install_esx.tgz
```

```
exit
```

Result

The node install file is stored in the home directory of the admin user.

Step 3: Add the install image

Add the ONTAP Select installation image to the Deploy images directory so it is available when deploying a new cluster.

Before you begin

You must know which directory the install image file has been placed in at the Deploy utility virtual machine. It is assumed the file is in the administrator's home directory.

Steps

1. Sign in to the Deploy utility CLI using SSH with the administrator (admin) account.
2. Start the Bash shell:

```
shell bash
```

3. Place the install image file into the images directory, as shown in the following example:

```
tar -xf image_v_93_install_esx.tgz -C /opt/netapp/images/
```

Step 4: Display the available install images

Display the ONTAP Select images that are available when deploying a new cluster.

Steps

1. Access the online documentation web page at the Deploy utility virtual machine and sign in using the administrator (admin) account:

   ```
   http://<FQDN|IP_ADDRESS>/api/ui
   ```

   Use the domain name or IP address of the Deploy virtual machine.

2. Navigate to the bottom of the page and select **Deploy** and then select **GET /images**.
3. Select **Try it out!** to display the available ONTAP Select images.
4. Confirm that the desired image is available.

Remove an ONTAP Select image from Deploy

You can remove ONTAP Select images from your instance of the Deploy administration utility when they are no longer needed.



You should not remove any ONTAP Select images that are in use by a cluster.

About this task

You can remove older ONTAP Select images that are not currently in use by a cluster or planned for use with a future cluster deployment.

Steps

1. Sign in to the Deploy utility CLI using SSH with the administrator (admin) account.
2. Display the clusters managed by Deploy and record the ONTAP images in use:

   ```
   cluster show
   ```

   Note the version number and hypervisor platform in each case.

3. Start the Bash shell:

   ```
   shell bash
   ```

4. Display all of the available ONTAP Select images:

   ```
   ls -lh /opt/netapp/images
   ```

5. Optionally, remove the ONTAP Select image with your hypervisor host.

   ESXi example

   ```
   rm -r /opt/netapp/images/DataONTAPv-9.3RC1-vidconsole-esx.ova
   ```

   KVM example

   ```
   rm -r /opt/netapp/images/DataONTAPv-9.3RC1-serialconsole-kvm.raw.tar
   ```

Recover the ONTAP Select Deploy utility for a two-node cluster

If the ONTAP Select Deploy utility fails or becomes unavailable for some reason, you lose the ability to administer ONTAP Select nodes and clusters. In addition, all two-node clusters lose HA capability because the mediator service included with Deploy is unavailable. If an unrecoverable failure occurs, you must recover the Deploy utility instance to restore administrative and HA functionality.

Prepare to recover the Deploy utility

You need to prepare before attempting to recover an instance of the Deploy utility to ensure success. You must be familiar with several administrative procedures and have the required information.

Steps

1. Verify that you can install a new instance of the ONTAP Select Deploy utility in your hypervisor environment.

   Learn about installing the ONTAP Select Deploy utility

2. Verify that you can log in to the ONTAP Select cluster and access the ONTAP cluster shell (CLI).
3. Determine if you have a backup of the configuration data from the failed Deploy utility instance that contains the ONTAP Select two-node cluster. You might have a backup that does not contain the cluster.
4. Verify that you can restore a backup of the Deploy configuration data, depending on the recovery procedure used.

   Learn about restoring the Deploy configuration data to the new virtual machine

5. You have the IP address of the original Deploy utility virtual machine that failed.
6. Determine whether Capacity Pools or Capacity Tiers licensing is used. If you use Capacity Pools licensing, you must reinstall each Capacity Pool license after recovering or restoring the Deploy instance.
7. Decide which procedure to use when recovering an instance of the ONTAP Select Deploy utility. Your decision is based on whether or not you have a backup of the configuration data from the original failed Deploy utility that contains the ONTAP Select two-node cluster.

Do you have a Deploy backup containing the two-node cluster?	Use the recovery procedure…
Yes	Restore a Deploy utility instance using a configuration backup
No	Reconfigure and recover a Deploy utility instance

Restore a Deploy utility instance using a configuration backup

If you have a backup of the failed Deploy utility instance containing the two-node cluster, you can restore the configuration data to the new Deploy virtual machine instance. You must then complete the recovery by performing additional configuration of the two nodes in the ONTAP Select cluster.

Before you begin

Backup the configuration data from the original failed Deploy virtual machine that contains the two-node cluster. You must be able to sign in to the ONTAP CLI of the two-node cluster and know the ONTAP names of the two nodes.

About this task

Because the configuration backup you restore contains the two-node cluster, the mediator iSCSI targets and mailboxes are recreated in the new Deploy utility virtual machine.

Steps

1. Prepare a new instance of the ONTAP Select Deploy utility:
   a. Install a new Deploy utility virtual machine.
   b. Restore the Deploy configuration from a previous backup to the new virtual machine.

      Refer to the related tasks for more detailed information about the install and restore procedures.

2. Sign in to the ONTAP command line interface of the ONTAP Select two-node cluster.
3. Enter advanced privilege mode:

```
set adv
```

4. If the IP address of the new Deploy virtual machine is different than the original Deploy virtual machine, remove the old mediator iSCSI targets and add new targets:

```
storage iscsi-initiator remove-target -node * -target-type mailbox
```

```
storage iscsi-initiator add-target -node <node1_name> -label mediator
-target-type mailbox -target-portal <ip_address> -target-name <target>
```

```
storage iscsi-initiator add-target -node <node2_name> -label mediator
-target-type mailbox -target-portal <ip_address> -target-name <target>
```

   The `<ip_address>` parameter is the IP address of the new Deploy virtual machine.

   These commands allow the ONTAP Select nodes to discover the mailbox disks on the new Deploy utility virtual machine.

5. Determine the names of the mediator disks:

```
disk show -container-type mediator
```

6. Assign the mailbox disks to the two nodes:

```
disk assign -disk <mediator-disk1-name> -owner <node1-name>

disk assign -disk <mediator-disk2-name> -owner <node2-name>
```

7. Verify that storage failover is enabled:

```
storage failover show
```

After you finish

If you use Capacity Pools licensing, reinstall each Capacity Pool license. See Reinstall a Capacity Pool license for additional details.

Reconfigure and recover a Deploy utility instance

If you do not have a backup of the failed Deploy utility instance containing the two-node cluster, configure the mediator iSCSI target and mailbox in the new Deploy virtual machine. You then complete the recovery by performing additional configuration of the two nodes in the ONTAP Select cluster.

Before you begin

Verify that you have the name of the mediator target for the new Deploy utility instance. You must be able to sign in to the ONTAP CLI of the two-node cluster and know the ONTAP names of the two nodes.

About this task

You can optionally restore a configuration backup to the new Deploy virtual machine even though it does not contain the two-node cluster. Because the two-node cluster is not recreated with the restore, you must manually add the mediator iSCSI target and mailbox to the new Deploy utility instance through the ONTAP Select online documentation web page at the Deploy. You must be able to sign in to the two-node cluster and know the ONTAP names of the two nodes.



The goal of the recovery procedure is to restore the two-node cluster to a healthy state, where normal HA takeover and giveback operations can be performed.

Steps

1. Prepare a new instance of the ONTAP Select Deploy utility:
   a. Install a new Deploy utility virtual machine.
   b. Optionally, restore the Deploy configuration from a previous backup to the new virtual machine.

      If you restore a previous backup, the new Deploy instance will not contain the two-node cluster. Refer to the related information section for more detailed information about the install and restore procedures.
2. Sign in to the ONTAP command line interface of the ONTAP Select two-node cluster.
3. Enter advanced privileged mode:

   ```
   set adv
   ```

4. Get the mediator iSCSI target name:

   ```
   storage iscsi-initiator show -target-type mailbox
   ```

5. Access the online documentation web page at the new Deploy utility virtual machine and sign in using the admin account:

   `http://<ip_address>/api/ui`

   You must use the IP address of your Deploy virtual machine.
6. Select **Mediator** and then **GET /mediators**.
7. Select **Try it out!** to display a list of mediators maintained by Deploy.

   Note the ID of the desired mediator instance.
8. Select **Mediator** and then **POST**.
9. Provide the value for mediator_id.
10. Select the **Model** next to `iscsi_target` and complete the name value.

Use the target name for the iqn_name parameter.

11. Select **Try it out!** to create the mediator iSCSI target.

    If the request is successful, you will receive HTTP status code 200.

12. If the IP address of the new Deploy virtual machine is different than the original Deploy virtual machine, you must use the ONTAP CLI to remove the old mediator iSCSI targets and add new targets:

    ```
    storage iscsi-initiator remove-target -node * -target-type mailbox
    ```

    ```
    storage iscsi-initiator add-target -node <node1_name> -label mediator
    -target-type mailbox -target-portal <ip_address> -target-name <target>
    ```

    ```
    storage iscsi-initiator add-target -node <node2_name> -label mediator-
    target-type mailbox -target-portal <ip_address> -target-name <target>
    ```

    The `<ip_address>` parameter is the IP address of the new Deploy virtual machine.

    These commands allow the ONTAP Select nodes to discover the mailbox disks on the new Deploy utility virtual machine.

13. Determine the names of the mediator disks:

    ```
    disk show -container-type mediator
    ```

14. Assign the mailbox disks to the two nodes:

    ```
    disk assign -disk <mediator-disk1-name> -owner <node1-name>

    disk assign -disk <mediator-disk2-name> -owner <node2-name>
    ```

15. Verify that storage failover is enabled:

    ```
    storage failover show
    ```

After you finish

If you use Capacity Pools licensing, reinstall each Capacity Pool license. See Reinstall a Capacity Pool license for additional details.

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