Clusters

ONTAP Select

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Clusters

Manage ONTAP Select clusters

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

Move an ONTAP Select cluster offline and online

After you've created a cluster, you can move it offline and online as needed.

Before you begin

After a cluster is created it is initially in the online state.

Steps

1. Sign in to the Deploy utility web user interface using the administrator account.
2. Select the **Clusters** tab at the top of the page and select the desired cluster from the list.
3. Select ⋮ on the right of the cluster and select **Take Offline**.

   If the offline option is not available, the cluster is already in the offline state.

4. Select **Yes** in the popup window to confirm the request.
5. Select **Refresh** occasionally to confirm the cluster is offline.
6. To bring the cluster back online, select ⋮ and select **Bring Online**.
7. Select **Refresh** occasionally to confirm the cluster is online.

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 utility web user interface using the administrator account.
2. Select the **Clusters** tab at the top of the page and select the desired cluster from the list.
3. Select ⋮ on the right of the cluster and select **Delete**.

   If the delete option is not available, then the cluster is not in an offline state.

4. Select **Refresh** occasionally to confirm the cluster is removed from the list.

Refresh the Deploy cluster configuration

After creating an ONTAP Select cluster, you can make changes to the cluster or the virtual machine configuration outside of the Deploy utility using the ONTAP or hypervisor administration tools. The configuration of a virtual machine can also change after it is migrated.

When these changes to the cluster or virtual machine occur, the Deploy utility configuration database is not

automatically updated and can become out of sync with the state of the cluster. You should perform a cluster refresh in these and other situations to update the Deploy database based on the current state of the cluster.

Before you begin

Required information

You must have the current configuration information for the cluster, including:

- ONTAP administrator credentials
- Cluster management IP address
- Names of the nodes in the cluster

Stable cluster state

The cluster must be in a stable state. You cannot refresh a cluster when it is in the process of being created or deleted, or when it is in the *create_failed* or *delete_failed* state.

After a VM migration

After a virtual machine running ONTAP Select has been migrated, you must create a new host using the Deploy utility before performing a cluster refresh.

About this task

You can perform a cluster refresh to update the Deploy configuration database using the web user interface.

Instead of using the Deploy UI, you can use the cluster refresh command in the Deploy CLI shell to refresh a cluster.

Cluster and virtual machine configuration

Some of the configuration values that can change and cause the Deploy database to become out of sync include:

- Cluster and node names
- ONTAP network configuration
- ONTAP version (after an upgrade)
- Virtual machine names
- Host network names
- Storage pool names

Cluster and node states

An ONTAP Select cluster or node can be in a state that prevents it from operating properly. You should perform a cluster refresh operation to correct the following conditions:

- Node in *unknown* state
  An ONTAP Select node can be in the *unknown state* for several reasons, including the node is not found.
- Cluster in *degraded* state
  If a node is powered off, it might still appear to be online in the Deploy utility. In this situation, the cluster is in a *degraded* state.

Steps

1. Sign in to the Deploy utility web user interface using the administrator account.

2. Select the **Clusters** tab at the top left of the page and select the desired cluster from the list.
3. Select ⋮ on the right side of the page and select **Cluster Refresh**.
4. Under **Cluster Credentials**, provide the ONTAP administrator password for the cluster.
5. Select **Refresh**.

After you finish

If the operation is successful, the field *Last Refresh* is updated. You should back up the Deploy configuration data after the cluster refresh operation has completed.

Expand or contract an ONTAP Select cluster on ESXi or KVM hosts

Increase or decrease the cluster size of an existing ONTAP Select cluster for ESXi and KVM hypervisor hosts. For both host types, you can increase and decrease the cluster size in increments between four and twelve nodes.

The following cluster expansions and contractions aren't supported for ESXi and KVM hosts:

- Expansions from one or two-node clusters to six, eight, ten, or twelve-node clusters.
- Contractions from six, eight, ten, or twelve-node clusters to one or two-node clusters.

> ⓘ To change the number of nodes in a cluster to a size that isn't supported by cluster expansion or contraction, you need to perform the following tasks:
>
> 1. Deploy a new multi-node cluster by using the CLI or the web UI provided with the ONTAP Select Deploy administration utility.
> 2. If applicable, migrate the data to the new cluster by using SnapMirror replication.

You initiate the cluster expansion and contraction procedures from ONTAP Select Deploy using the CLI, API, or web interface.

Hardware and storage considerations

The cluster expansion and contraction feature is supported on the following KVM and ESXi hypervisor hosts.

ESXi

Beginning with ONTAP Select 9.15.1, cluster expansion and contraction is supported on ESXi hypervisor hosts.

Cluster expansion and contraction is supported for the following ESXi hypervisor versions:

- ESXi 9.0
- ESXi 8.0 U3
- ESXi 8.0 U2
- ESXi 8.0 U1
- ESXi 8.0 GA

KVM

Beginning with ONTAP Select 9.17.1, cluster expansion and contraction is supported on KVM hypervisor hosts.

Cluster expansion and contraction is supported for the following KVM hypervisor versions:

- Red Hat Enterprise Linux (RHEL) 64-bit 10.1, 10.0, 9.7, 9.6, 9.5, 9.4, 9.3, 9.2, 9.1, 9.0, 8.8, 8.7, and 8.6
- Rocky Linux 10.1, 10.0, 9.7, 9.6, 9.5, 9.4, 9.3, 9.2, 9.1, 9.0, 8.9, 8.8, 8.7, and 8.6

Expand the cluster

Use the cluster expansion feature to increase the size of an existing ONTAP Select cluster.

You can increase the size of an existing cluster on an ESXi or KVM host in the following increments:

- From four nodes to six, eight, ten, or twelve nodes
- From six nodes to eight, ten, or twelve nodes
- From eight nodes to ten or twelve nodes
- From ten to twelve nodes

About this task

In preparation for cluster expansion, new ESXi and KVM hosts are added to the inventory and the details of the new nodes are assigned. Before starting the cluster expansion process, a network precheck verifies the selected internal network.

Before you begin

- When deploying a multi-node cluster, you should be familiar with the network connectivity checker. You can run the network connectivity checker using the web UI or the CLI.
- Verify that you have the license details for the new nodes.

Steps

1. Sign in to the Deploy utility web user interface using the administrator account.
2. Select the **Cluster** tab at the top of the page and select the desired cluster from the list.
3. On the cluster details page, select the gear icon at the right of the page and select **Expand Cluster**.
4. Navigate to the **HA Pair 4** section.
5. Choose the following high availability (HA) pair configuration details for the fourth HA pair:
    - Instance type
    - Node names
    - Associated hypervisor hosts
    - Node IP addresses
    - Licenses
    - Networking configuration
    - Storage configuration (RAID type and storage pools)

6. Select **Save HA Pair** to save the configuration details.
7. Provide the ONTAP credentials, and select **Expand Cluster**.
8. Select **Next** and run the network pre-check by selecting **Run**.

   The network pre-check validates that the internal network selected for the ONTAP cluster traffic is functioning correctly.

9. Select **Expand Cluster** to begin the cluster expansion process, and then select **OK** in the dialog box.

   It can take up to 45 minutes for the cluster to be expanded.

10. Monitor the multi-step cluster expansion process to confirm that the cluster expanded successfully.
11. Refer to the **Events** tab for periodic updates on the operation's progress. The page is automatically refreshed at regular intervals.

After you finish

After expanding the cluster, you should back up the ONTAP Select Deploy configuration data.

Contract the cluster

Use the cluster contraction feature to decrease the size of an existing ONTAP Select cluster.

You can decrease the size of an existing cluster on an ESXi or KVM host in the following increments:

- From twelve nodes to ten, eight, six, or four nodes
- From ten nodes to eight, six, or four nodes
- From eight to six or four nodes
- From six to four nodes

About this task

The desired HA pair of nodes in the cluster are selected to prepare for cluster contraction during the procedure.

Steps

1. Sign in to the Deploy utility web user interface using the administrator account.
2. Select the **Cluster** tab at the top of the page and select the desired cluster from the list.
3. On the cluster details page, select the gear icon at the right of the page, then select **Contract Cluster**.
4. Select the HA Pair configuration details for any HA Pair you want to remove and provide the ONTAP credentials, then select **Contract Cluster**.

   It can take up to 30 minutes for the cluster to be contracted.

5. Monitor the multi-step cluster contraction process to confirm that the cluster contracted successfully.
6. Refer to the **Events** tab for periodic updates on the operation's progress. The page is automatically refreshed at regular intervals.

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