NetApp

Configure hosts

E-Series Systems

NetApp
February 12, 2024

Table of Contents

Configure hosts

Host creation overview

To manage storage with the Storage Plugin for vCenter, you must discover or define each host in the network. A host is a server that sends I/O to a volume on a storage array.

Automatic vs manual host creation

Creating a host is one of the steps required to let the storage array know which hosts are attached to it and to allow I/O access to the volumes. A host can be created automatically or manually.

- **Automatic** — Automatic host creation for SCSI-based (not NVMe-oF) hosts is initiated by the Host Context Agent (HCA). The HCA is a utility that you can install on each host attached to the storage array. Each host that has the HCA installed pushes its configuration information to the storage array controllers through the I/O path. Based on the host information, the controllers automatically create the host and the associated host ports and set the host type. If needed, you can make any additional changes to the host configuration. After the HCA performs its automatic detection, the host is automatically configured with the following attributes:

    - The host name derived from the system name of the host.

    - The host identifier ports that are associated with the host.

    - The Host Operating System Type of the host.

  > ⓘ Hosts are created as stand-alone hosts; the HCA does not automatically create or add to host clusters.

- **Manual** — During manual host creation, you associate host port identifiers by selecting them from a list or manually entering them. After you create a host, you can assign volumes to it or add it to a host cluster if you plan to share access to volumes.

How volumes are assigned

For a host to send I/O to a volume, you must assign the volume to it. You can select either a host or host cluster when you create a volume or you can assign a volume to a host or host cluster later. A host cluster is a group of hosts. You create a host cluster to make it easy to assign the same volumes to multiple hosts.

Assigning volumes to hosts is flexible, allowing you to meet your particular storage needs.

- **Stand-alone host, not part of a host cluster** — You can assign a volume to an individual host. The volume can be accessed only by the one host.

- **Host cluster** — You can assign a volume to a host cluster. The volume can be accessed by all the hosts in the host cluster.

- **Host within a host cluster** — You can assign a volume to an individual host that is part of a host cluster. Even though the host is part of a host cluster, the volume can be accessed only by the individual host and not by any other hosts in the host cluster.

When volumes are created, logical unit numbers (LUNs) are assigned automatically. The LUN serves as the address between the host and the controller during I/O operations. You can change LUNs after the volume is created.

Create host access

To manage storage with the Storage Plugin for vCenter, you must discover or define each host in the network.

About this task

By creating a host, you define the host parameters to provide connection to the storage array and I/O access to the volumes.

You can allow the Host Context Agent (HCA) to automatically detect the hosts, and then verify that the information is correct by selecting **View/Edit Settings** from the Configure Hosts page. However, the HCA is not available on all supported operating systems and you must create the host manually.

When you create a host, keep these guidelines in mind:

- You must define the host identifier ports that are associated with the host.
- Make sure that you provide the same name as the host's assigned system name.
- This operation does not succeed if the name you choose is already in use.
- The length of the name cannot exceed 30 characters.

Steps

1. From the Manage page, select the storage array with the host connection.
2. Select **Provisioning › Configure Hosts**.

   The Configure Hosts page opens.

3. Click **Create › Host**.

   The Create Host dialog box appears.

4. Select the settings for the host as appropriate.

Field Details

Setting	Description
Name	Type a name for the new host.
Host operating system type	Select the operating system that is running on the new host from the drop-down list.
Host interface type	(Optional) If you have more than one type of host interface supported on your storage array, select the host interface type that you want to use.
Host ports	Do one of the following: • **Select I/O Interface** — Generally, the host ports should have logged in and be available from the drop-down list. You can select the host port identifiers from the list. • **Manual add** — If a host port identifier is not displayed in the list, it means that the host port has not logged in. An HBA utility or the iSCSI initiator utility may be used to find the host port identifiers and associate them with the host. You can manually enter the host port identifiers or copy/paste them from the utility (one at a time) into the Host ports field. You must select one host port identifier at a time to associate it with the host, but you can continue to select as many identifiers that are associated with the host. Each identifier is displayed in the Host ports field. If necessary, you also can remove an identifier by selecting the **X** next to it.
Set CHAP initiator secret	(Optional) If you selected or manually entered a host port with an iSCSI IQN, and if you want to require a host that tries to access the storage array to authenticate using Challenge Handshake Authentication Protocol (CHAP), select the "Set CHAP initiator secret" checkbox. For each iSCSI host port you selected or manually entered, do the following: • Enter the same CHAP secret that was set on each iSCSI host initiator for CHAP authentication. If you are using mutual CHAP authentication (two-way authentication that enables a host to validate itself to the storage array and for a storage array to validate itself to the host), you also must set the CHAP secret for the storage array at initial setup or by changing settings. • Leave the field blank if you do not require host authentication. Currently, the only iSCSI authentication method used is CHAP.

5. Click **Create**.

6. If you need to update the host information, select the host from the table and click **View/Edit Settings**.

Result

After the host is successfully created, the system creates a default name for each host port configured for the host (user label). The default alias is `<Hostname_Port Number>`. For example, the default alias for the first

port created for host IPT is `IPT_1`.

After you finish

You must assign a volume to a host so it can be used for I/O operations. Go to .

Create host cluster

When two or more hosts require I/O access to the same volumes, you can create a host cluster.

About this task

Keep these guidelines in mind when you create a host cluster:

- This operation does not start unless there are two or more hosts available to create the cluster.
- Hosts in host clusters can have different operating systems (heterogeneous).
- NVMe hosts in host clusters cannot be mixed with non- NVMe hosts.
- To create a Data Assurance (DA)-enabled volume, the host connection you are planning to use must support DA.

  If any of the host connections on the controllers in your storage array do not support DA, the associated hosts cannot access data on DA-enabled volumes.

- This operation does not succeed if the name you choose is already in use.
- The length of the name cannot exceed 30 characters.

Steps

1. From the Manage page, select the storage array with the host connection.
2. Select **Provisioning › Configure Hosts**.

   The Configure Hosts page opens.
3. Select **Create › Host cluster**.

   The Create Host Cluster dialog box appears.
4. Select the settings for the host cluster as appropriate.

Setting	Description
Name	Type the name for the new host cluster.
Select hosts to share volume access	Select two or more hosts from the drop-down list. Only those hosts that are not already part of a host cluster appear in the list.

5. Click **Create**.

   If the selected hosts are attached to interface types that have different Data Assurance (DA) capabilities, a dialog appears with the message that DA will be unavailable on the host cluster. This unavailability prevents DA-enabled volumes from being added to the host cluster. Select **Yes** to continue or **No** to cancel.

DA increases data integrity across the entire storage system. DA enables the storage array to check for errors that might occur when data is moved between the hosts and the drives. Using DA for the new volume ensures that any errors are detected.

Result

The new host cluster appears in the table with the assigned hosts in the rows beneath.

After you finish

You must assign a volume to a host cluster so it can be used for I/O operations. Go to Assign volumes to hosts.

Assign volumes to hosts

You must assign a volume to a host or a host cluster so it can be used for I/O operations.

Before you begin

Keep these guidelines in mind when you assign volumes to hosts:

- You can assign a volume to only one host or host cluster at a time.
- Assigned volumes are shared between controllers in the storage array.
- The same logical unit number (LUN) cannot be used twice by a host or a host cluster to access a volume. You must use a unique LUN.
- For new volume groups, if you wait until all volumes are created and initialized before you assign them to a host, the volume initialization time is reduced. Keep in mind that once a volume associated with the volume group is mapped, all volumes will revert to the slower initialization.

About this task

A volume assignment grants a host or host cluster access to that volume in a storage array.

All unassigned volumes are displayed during this task, but functions for hosts with or without Data Assurance (DA) apply as follows:

- For a DA-capable host, you can select volumes that are either DA-enabled or not DA-enabled.
- For a host that is not DA-capable, if you select a volume that is DA-enabled, a warning states that the system must automatically turn off DA on the volume before assigning the volume to the host.

  Assigning a volume fails under these conditions:

- All volumes are assigned.
- The volume is already assigned to another host or host cluster. The ability to assign a volume is unavailable under these conditions:
- No valid hosts or host clusters exist.
- No host port identifiers have been defined for the host.
- All volume assignments have been defined.

Steps

1. From the Manage page, select the storage array with the host connection.
2. Select **Provisioning › Configure Hosts**.

The Configure Hosts page opens.

3. Select the host or host cluster to which you want to assign volumes, and then click **Assign Volumes**.

   A dialog box appears that lists all the volumes that can be assigned. You can sort any of the columns or type something in the Filter box to make it easier to find particular volumes.

4. Select the check box next to each volume that you want to assign or select the check box in the table header to select all volumes.

5. Click **Assign** to complete the operation.

Results

After successfully assigning a volume or volumes to a host or a host cluster, the system performs the following actions:

- The assigned volume receives the next available LUN number. The host uses the LUN number to access the volume.
- The user-supplied volume name appears in volume listings associated to the host. If applicable, the factory-configured access volume also appears in volume listings associated to the host.

Unassign volumes

If you no longer need I/O access to a volume, you can unassign it from the host or host cluster.

About this task

Keep these guidelines in mind when you unassign a volume:

- If you are removing the last assigned volume from a host cluster, and the host cluster also has hosts with specific assigned volumes, make sure that you remove or move those assignments before removing the last assignment for the host cluster.
- If a host cluster, a host, or a host port is assigned to a volume that is registered to the operating system, you must clear this registration before you can remove these nodes.

Steps

1. From the Manage page, select the storage array with the host connection.

2. Select **Provisioning › Configure Hosts**.

   The Configure Hosts page opens.

3. Select the host or host cluster that you want to edit, and then click **Unassign Volumes**.

   A dialog box appears that shows all the volumes that are currently assigned.

4. Select the check box next to each volume that you want to unassign or select the check box in the table header to select all volumes.

5. Click **Unassign**.

Results

- The volumes that were unassigned are available for a new assignment.

- Until the changes are configured on the host, the volume is still recognized by the host operating system.

Change the settings for a host

You can change the name, host operating system type, and associated host clusters for a host or host cluster.

Steps

1. From the Manage page, select the storage array with the host connection.

2. Select **Provisioning › Configure Hosts**.

   The Configure Hosts page opens.

3. Select the host that you want to edit, and then click **View/Edit Settings**.

   A dialog box appears that shows the current host settings.

4. To change host properties, make sure the **Properties** tab is selected and then change the settings as appropriate.

   Field Details

Setting	Description
Name	You can change the user-supplied name of the host. Specifying a name for the host is required.
Associated host cluster	You can choose one of the following options: • **None** — The host remains a standalone host. If the host was associated to a host cluster, the system removes the host from the cluster. • **<Host Cluster>** — The system associates the host to the selected cluster.
Host operating system type	You can change the type of operating system running on the host you defined.

5. To change port settings, click the **Host Ports** tab and then change the settings as appropriate.

Field Details

Setting	Description
Host Port	You can choose one of the following options: • **Add** — Use Add to associate a new host port identifier to the host. The length of the host port identifier name is determined by the host interface technology. Fibre Channel and Infiniband host port identifier names must have 16 characters. iSCSI host port identifier names have a maximum of 223 characters. The port must be unique. A port number that has already been configured is not allowed. • **Delete** — Use Delete to remove (unassociate) a host port identifier. The Delete option does not physically remove the host port. This option removes the association between the host port and the host. Unless you remove the host bus adapter or the iSCSI initiator, the host port is still recognized by the controller. ⚠ If you delete a host port identifier, it is no longer associated with this host. Also, the host loses access to any of its assigned volumes through this host port identifier.
Label	To change the port label name, click the **Edit** icon (pencil). The port label name must be unique. A label name that has already been configured is not allowed.
CHAP Secret	Appears only for iSCSI hosts. You can set or change the CHAP secret for the initiators (iSCSI hosts). The system uses the Challenge Handshake Authentication Protocol (CHAP) method, which validates the identity of targets and initiators during the initial link. Authentication is based on a shared security key called a CHAP secret.

6. Click **Save**.

Delete host or host cluster

You can remove a host or host cluster so that volumes are no longer associated with that host.

About this task

Keep these guidelines in mind when you delete a host or a host cluster:

- Any specific volume assignments are deleted, and the associated volumes are available for a new assignment.

- If the host is part of a host cluster that has its own specific assignments, the host cluster is unaffected. However, if the host is part of a host cluster that does not have any other assignments, the host cluster and any other associated hosts or host port identifiers inherit any default assignments.

- Any host port identifiers that were associated with the host become undefined.

Steps

1. From the Manage page, select the storage array with the host connection.

2. Select **Provisioning › Configure Hosts**.

   The Configure Hosts page opens.

3. Select the host or host cluster that you want to delete, and then click **Delete**.

   The confirmation dialog box appears.

4. Confirm that you want to perform the operation, and then click **Delete**.

Results

If you deleted a host, the system performs the following actions:

- Deletes the host and, if applicable, removes it from the host cluster.
- Removes access to any assigned volumes.
- Returns the associated volumes to an unassigned state.
- Returns any host port identifiers associated with the host to an unassociated state. If you deleted a host cluster, the system performs the following actions:
  - Deletes the host cluster and its associated hosts (if any).
  - Removes access to any assigned volumes.
  - Returns the associated volumes to an unassigned state.
  - Returns any host port identifiers associated with the hosts to an unassociated state.