Configure storage systems

ONTAP tools for VMware vSphere 9.12

NetApp
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Overview of storage systems for ONTAP tools

You should add storage systems to ONTAP tools and set default credentials, if required, by using the ONTAP tools interface.

ONTAP tools for VMware vSphere provides a single mechanism to discover storage systems and to set the storage credentials. The credentials provide the ONTAP permissions that are required to enable ONTAP tools users to perform tasks by using the storage systems.

Before ONTAP tools can display and manage the storage resources, ONTAP tools must discover the storage systems. As part of the discovery process, you must supply the ONTAP credentials for your storage systems. These are the privileges (or roles) that are associated with the user name and password pair that is assigned to each storage system. These user name and password pairs use ONTAP role-based access control (RBAC) and must be set up from within ONTAP. You cannot change these credentials from within ONTAP tools. You can define ONTAP RBAC roles by using ONTAP System Manager.

If you log in as an administrator, you automatically have all of the privileges for that storage system.

When you add a storage system to ONTAP tools, you must supply an IP address for the storage system and the user name and password pair that is associated with that system. You can set up default credentials that ONTAP tools will use during the storage system discovery process, or you can manually enter credentials when the storage system is discovered. The details of the storage system that is added to ONTAP tools are automatically pushed to the extensions that you enable in your deployment. You do not have to manually add storage to VASA Provider and Storage Replication Adapter (SRA). Both ONTAP tools and SRA support the addition of credentials at the cluster level and storage virtual machine (SVM) level. VASA Provider supports only cluster-level credentials for adding storage systems. When you add a storage system any communication between ONTAP tools plug-in and the storage system should be mutually authenticated.

If your environment includes multiple vCenter Server instances, when you add a storage system to ONTAP tools from the Storage Systems page, the Add Storage System dialog box displays a vCenter Server box where you can specify to which vCenter Server instance the storage system is to be added. If you add a storage system by right-clicking a datacenter name, you do not have the option to specify a vCenter Server instance because the server is already associated with that datacenter.

Discovery happens in one of the following ways. In each case, you must supply credentials for any newly discovered storage system.

- When the ONTAP tools service starts, ONTAP tools begins its automatic background discovery process.
- You can click the REDISCOVER All button in the **Storage Systems** page, or on a host or datacenter to select it from the **Actions** menu (**Actions** > **Netapp ONTAP tools** > **Update Host and Storage Data**). You can also click **DISCOVER** on the **Getting Started** tab of the 'Overview' section.

All of the ONTAP tools features require specific permissions to perform tasks. You can limit what users can do based on the credentials that are associated with the ONTAP role. All of the users that have the same storage system user name and password pair share the same set of storage system credentials and can perform the same operations.

Add storage systems

You can manually add storage system to Virtual Storage Console (VSC).

If ONTAP cluster is SAML enabled, communication with ONTAP is done with basic authentication.

About this task

Each time you start Virtual Storage Console (VSC) or select the **REDISCOVER All** option, VSC automatically discovers the available storage systems.

vVol datastores are not supported on direct SVM.

Steps

1. Add a storage system to VSC by using either one of the options in the ONTAP tools home page:
   - Click **Storage Systems** > **Add**. or
   - Click **Overview** > **Getting Started**, and then click **ADD** button under Add Storage System.
2. In the **Add Storage System** dialog box, enter the management IP address and credentials for that storage system.

   When you add a storage system any communication between ONTAP tools plug-in and the storage system should be mutually authenticated.

   You can also add storage systems using the IPv6 address of the cluster or SVM.

   When you add storage from the VSC Storage System page, specify the vCenter Server instance where the storage is located. The Add Storage System dialog box provides a drop-down list of the available vCenter Server instances. VSC does not display this option if you are adding storage to a datacenter that is already associated with a vCenter Server instance.

   NOTE:

   - From ONTAP tools 9.12 release onwards all ONTAP storage systems communication happens through certificate based authentication.
   - The traditional datastore actions like Delete, Resize, and Mount are not allowed when either of the client or cluster certificate is not valid.
   - The vVol datastore actions like Expand Storage, Mount datastore are not allowed when either of the client or cluster certificate is not valid.
   - Actions like Delete, Remove Storage, and Edit Properties are allowed as these actions does not require ONTAP communication.
   - To add storage system with SVM scoped user, the storage system cluster admin has to edit the user and add authentication method **Certificate** to the Applications HTTP and ONTAPI.

     In the advanced options, there are two ways to upload the **ONTAP Cluster Certificate**:

     1. **Automatically fetch** - Automatically fetches the certificates.
     2. **Manually upload** - You need to manually browse to the location where the certificate is located and upload the certificate.

3. Click **OK** after you have added all of the required information.

   Authorize Cluster Certificate pop-up appears.

4. Click on **Show certificate** to view the certificate details. Click **Yes** to add the storage system

Modify storage systems

Use the following procedure to modify the storage systems.

Steps

1. From the **NetApp ONTAP tools** select **Storage systems**.
2. Click on the Storage system **Available action** (three vertical dots) button where you want to update the certificate.
3. Select **Modify**.

   It is recommended that before the cluster or the client certificate expires, you get the renewed certificate from ONTAP or generate the client certificate from the ONTAP tools for VMware vSphere.

4. In the **Modify Storage system** window, in the **Upload Certificate** field, **Browse** to the location where the ONTAP certificate is stored and upload the certificate.

   For Cluster certificate:

   - If you have modified the cluster certificate on the ONTAP, you need to upload the modified certificate to the ONTAP tools manually. This is a mandatory step.
   - When the cluster certificate has expired, status of the storage system changes to cluster Certificate Expired. When the cluster certificate expires, the storage admin needs to generate the new certificate on the ONTAP side. The **Modify Storage system** window automatically fetches the cluster certificate from ONTAP storage and you need to authorize the cluster certificate.

5. When the client certificate has expired, status of the storage system changes to Client Certificate Expired.

   If client certificate has expired, in the **Modify Storage system** window, select **Generate a new client certificate for ONTAP** option to regenerate the certificate.

Once the certificates are installed the communication with ONTAP is restored.

Update certificate

You need to update the certificate when the client or cluster certificate is about to expire or has expired, or when the cluster certificate is manually altered. When either the client or the cluster certificate expires or does not match, communication with the ONTAP system is discontinued.

Cluster certificate is the server certificate that is generated on the ONTAP side by the storage admin. Client certificate can be generated in the ONTAP tools. When the cluster certificate expires, the storage admin needs to generate the new certificate on the ONTAP side. The Modify Storage system window automatically fetched the cluster certificate from ONTAP storage, and you need to authorize the cluster certificate.

When the certificate is about to expire or if it has already expired follow the procedure in Modify storage systems section to update the certificate.

Discover storage systems and hosts

When you first run Virtual Storage Console (VSC) in a vSphere Client, VSC discovers the ESXi hosts, their LUNs and NFS exports, and the NetApp storage systems that own those LUNs and exports.

What you will need

- All of the ESXi hosts must be powered on and connected.
- All the storage virtual machines (SVMs) to be discovered must be running, and each cluster node must have at least one data LIF configured for the storage protocol in use (NFS, iSCSI, FC, or NVMe/FC).

About this task

You can discover new storage systems or update information about existing storage systems to obtain the latest capacity and configuration information at any time. You can also modify the credentials that VSC uses to log in to the storage systems.

While discovering the storage systems, VSC collects information from the ESXi hosts that are managed by the vCenter Server instance.

Steps

1. From the vSphere Client Home page, select **Hosts and Clusters**.
2. Right-click the required datacenter, and then select **NetApp ONTAP tools** > **Update Host and Storage Data** .

   VSC displays a Confirm dialog box that informs you that this action will restart the discovery of all connected storage systems and might take a few minutes. Do you want to continue?

3. Click **YES**.
4. Select the discovered storage controllers that have the status `Authentication Failure`, and then click **ACTIONS** > **Modify**.
5. Fill in the required information in the **Modify Storage System** dialog box.
6. Repeat steps 4 and 5 for all storage controllers with `Authentication Failure` status.

After the discovery process is complete, perform the following:

- Use VSC to configure ESXi host settings for hosts that display the Alert icon in the Adapter Settings column, the MPIO Settings column, or the NFS Settings column.
- Provide the storage system credentials.

Refresh the storage system display

You can use the update feature that is provided by ONTAP® tools for VMware vSphere to refresh the information about storage systems and to force ONTAP tools to discover

storage systems.

About this task

The `refresh` option is useful if you changed the default credentials for the storage systems after receiving an authentication error. You should always perform an update operation if you changed the storage system credentials after the storage system reported an `Authentication Failure Status`. During the update operation, ONTAP tools tries to connect to the storage system by using the new credentials.

Depending on your system setup, this task can take a long time to complete.

Steps

1. On the VMware vSphere Client Home page, click **Storage**.
2. Start the update:

If this location is…	Click…
Virtual Storage Console	The **REDISCOVER ALL** icon.
Datacenter	Right-click the datacenter, and then click **NetApp ONTAP tools** > **Update Host and Storage Data**.

3. In the Update Host and Storage Data dialog box, click **OK**.

   The discovery might take few minutes depending on the number of hosts and storage systems in your datacenter. This discovery operation works in the background.

4. Click **OK** in the Success dialog box.

Configure alarm thresholds

You can use VSC to set alarms to notify you when volume thresholds and aggregate thresholds reach the set limits.

Steps

1. From the ONTAP tools Home page, click **Settings**.
2. Click **Unified Appliance Settings**.
3. Specify the percent values for the **Nearly full threshold (%)** field and the **Full threshold (%)** field for both the volume alarm thresholds and the aggregate alarm thresholds.

   While setting the values, you must keep the following information in mind:

   - Clicking **Reset** resets the thresholds to the previous values.

     Clicking **Reset** does not reset the thresholds to the default values of 80 percent for “Nearly full” and 90 percent for “Full”.

   - There are two ways to set the values:
     - You can use the up and down arrows next to the values to adjust the threshold values.

        - You can slide the arrows on the track bar below the values to adjust the threshold values.
    - The lowest value that you can set for the **Full threshold (%)** field for volumes and aggregates is 6 percent.
4. After specifying the required values, click **Apply**.

   You must click **Apply** for both volume alarm and aggregate alarm.

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