



## **Configure ONTAP tools**

### **ONTAP tools for VMware vSphere 10.0**

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# Configure ONTAP tools

## Manage network access

This feature enables you to specify specific ESXi host address to be allowed for datastore mount operation.

When you have multiple IP addresses for ESXi hosts, all the discovered IP addresses from the host are added to an Export policy. If you do not want to add all IP addresses to export policy, provide a setting for whitelisted IP addresses in a comma separated list or range or CIDR, or combination of all three for each vCenter.

If the setting is not provided, export policy adds all IP addresses discovered in the pre-mount step. If the setting is provided, ONTAP tools adds only the ones which fall within the whitelisted IPs or range. If none of the IPs of a host belong to the whitelisted IPs, the mount on that host fails.

By default all host IP's are added to the export policy.

Use the following API to add IP addresses for whitelisting:

```
patch /api/v1/vcenters/{vcguid}/settings/ip-whitelist
```

```
{  
  value: string  
}
```

```
GET /api/v1/vcenters/{vcguid}/settings/ip-whitelist
```

```
{  
  value: string  
}
```

## Configure user roles and privileges

You can configure new user roles and privileges for managing storage backends using the JSON file provided with ONTAP tools and ONTAP System Manager.

### What you'll need

- You should have downloaded the ONTAP Privileges file from ONTAP tools using [https://<loadbalancerIP>:8443/virtualization/user-privileges/users\\_roles.zip](https://<loadbalancerIP>:8443/virtualization/user-privileges/users_roles.zip).



You can create users at cluster or direct storage virtual machines (SVMs) level. You can also create users without using the user\_roles.json file and if done so, you need to have a minimum set of privileges at SVM level.

- You should have logged in with administrator privileges for the storage backend.

### Steps

1. Extract the downloaded `https://<loadbalancerIP>:8443/virtualization/user-privileges/users_roles.zip` file.
2. Access ONTAP System Manager. To access ONTAP system manager use the cluster management IP of the cluster.
3. Login as the cluster or SVM user.
4. Select **CLUSTER > Settings > Users and Roles** pane.
5. Select **Add** under Users.
6. In the **Add User** dialog box, select **Virtualization products**.
7. Select **Browse** to select and upload the ONTAP Privileges JSON file.

The **PRODUCT** field is auto populated.

8. Select the required capability from the **PRODUCT CAPABILITY** drop-down menu.

The **ROLE** field is auto populated based on the product capability selected.

9. Enter the required username and password.
10. Select the privileges (Discovery, Create Storage, Modify Storage, Destroy Storage, NAS/SAN Role) required for the user, and then click **Add**.

The new role and user is added and you can see the detailed privileges under the role that you have configured.



The uninstall operation does not remove ONTAP tool roles but removes the localized names for the ONTAP tool specific privileges and appends the prefix `XXX missing privilege` to them. When you reinstall ONTAP tools or upgrade to a newer version of the ONTAP tools, all of the standard ONTAP tools roles and ONTAP tools-specific privileges are restored.

## SVM aggregate mapping requirements

To use direct SVM credentials for provisioning datastores, internally ONTAP tools create volumes on the aggregate specified in the datastores POST API. The ONTAP does not allow the creation of volumes on unmapped aggregates on an SVM using direct SVM credentials. To resolve this, you need to map the SVMs with the aggregates using the REST API or CLI as described here.

REST API:

```
PATCH "/api/svm/svms/f16f0935-5281-11e8-b94d-005056b46485"
'{"aggregates":{"name":["aggr1","aggr2","aggr3"]}}'
```

ONTAP CLI:

```

still15_vsim_ucs630f_aggr1 vserver show-aggregates
AvailableVserver          Aggregate          State          Size Type          SnapLock
Type-----
-----svm_test          still15_vsim_ucs630f_aggr1
online          10.11GB vmdisk  non-snaplock

```

## Create ONTAP user and role manually

Follow the instructions in this section to create the user and roles manually without using the JSON file.

1. Access ONTAP System Manager. To access ONTAP system manager use the cluster management IP of the cluster.
2. Login as the cluster or SVM user.
3. Select **CLUSTER > Settings > Users and Roles** pane.

4. Create Roles:

- a. Select **Add** under **Roles** table.
- b. Enter the **ROLE NAME** and **Role Attributes** details.

Add the **REST API PATH** and the respective access from the drop down.

- c. Add all the needed APIs and save the changes.

5. Create Users:

- a. Select **Add** under **Users** table.
- b. In the **Add User** dialog box, select **System Manager**.
- c. Enter the **USERNAME**.
- d. Select the **ROLE** from the options created in the **Create Roles** step above.
- e. Enter the applications to give access to and the authentication method. The ONTAPI and HTTP are the required application and the authentication type is **Password**.
- f. Set the **Password for the User** and **Save** the user.

## List of minimum privileges required for non-admin global scoped cluster user

The minimum privileges required for non-admin global scoped cluster user created without using the users JSON file is listed in this section. If cluster is added in local scope, it is recommended to use the JSON file to create the users, as ONTAP tools require more than just the Read privileges for provisioning on ONTAP.

Using APIs:

API	ACCESS LEVEL	USED FOR
/api/cluster	Read-Only	Cluster Configuration Discovery
/api/cluster/licensing/licenses	Read-Only	License Check for Protocol specific licenses
/api/cluster/nodes	Read-Only	Platform type discovery

/api/storage/aggregates	Read-Only	Aggregate space check during Datastore/Volume provisioning
/api/storage/cluster	Read-Only	To get the Cluster level Space and Efficiency Data
/api/storage/disks	Read-Only	To get the Disks associated in an Aggregate
/api/storage/qos/policies	Read/Create/Modify	QoS and VM Policy management
/api/svm/svms	Read-Only	To get SVM configuration in case the Cluster is added locally.
/api/network/ip/interfaces	Read-Only	Add Storage Backend - To identify the management LIF scope is Cluster/SVM
/api	Read-Only	Cluster user must have this privilege to get the correct storage backend status. Otherwise, ONTAP tools Manager UI shows "unknown" storage backend status.

## ONTAP tools manager user interface

ONTAP tools for VMware vSphere 10.0 is a Multi-tenant system, which manages multiple vCenters. An administrator needs more control over the vCenters being managed and storage backends being onboarded.

ONTAP tools manager provides more control and power to ONTAP tools administrator, which helps in overall management of the appliance, tenants, and storage backends.

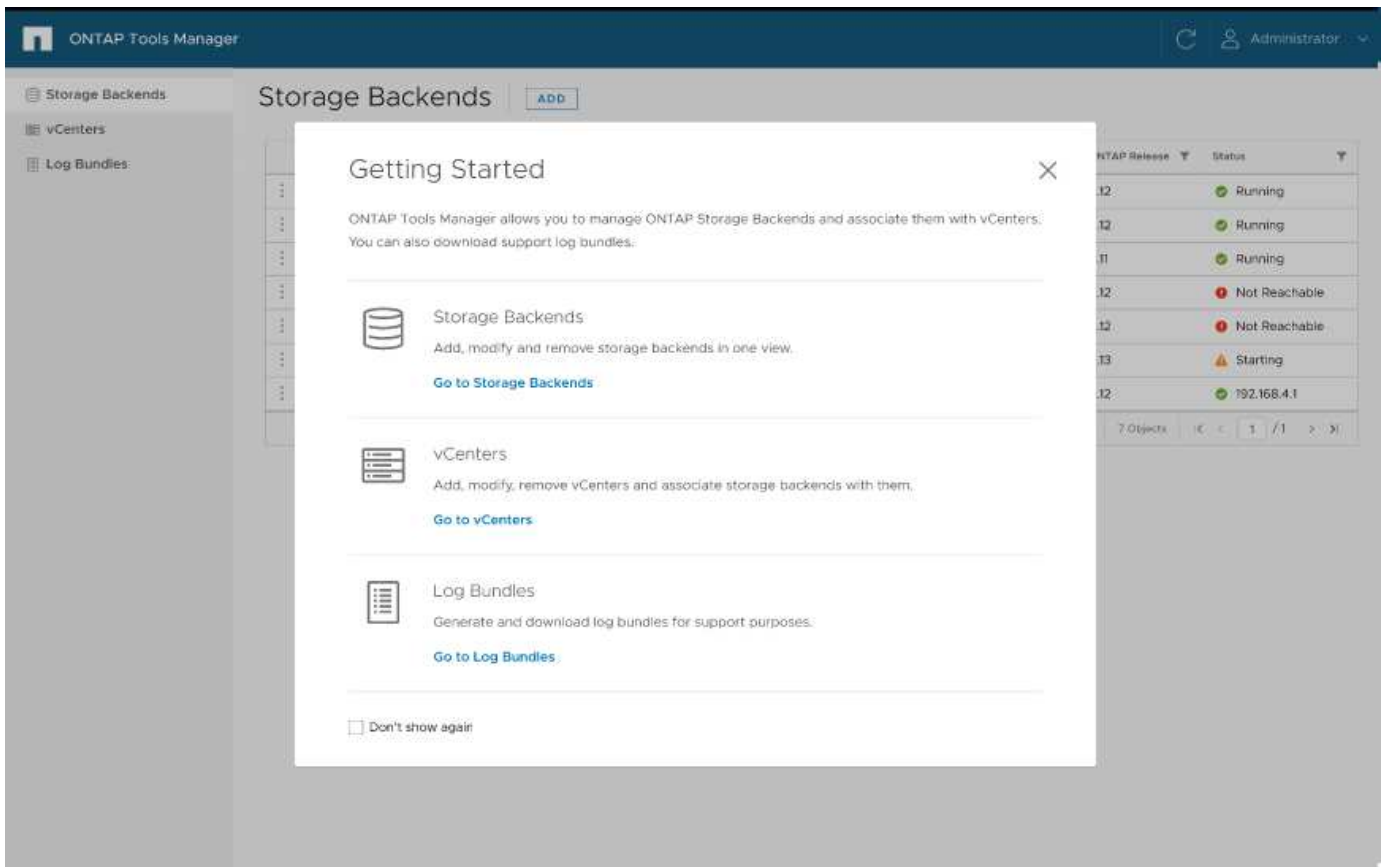
The ONTAP tools performs:

- vCenter management - Register and unregister vCenters to ONTAP tools
- Storage backend management - Register and unregister ONTAP Storage clusters to ONTAP tools and map them to onboarded vCenters globally.

Storage backend is global when added from ONTAP tools manager or common APIs and they are local when added from the vCenter APIs. Example: For multi-tenant setup, you can add storage backend (cluster) globally and SVM locally to use direct SVM credentials.

- Log bundle downloads

To access ONTAP tools UI, launch <https://loadBalanceIP:8443/virtualization/ui/> from the browser and login with ONTAP tools administrator credentials provided during deployment.



You can select **Don't show again** option to not see this pop up when you login again from the same browser.

## Add vCenter

vCenters are the central management platforms that allow you to control hosts, virtual machines (VM), and storage backends.

### About this task

You can add and manage multiple vCenters with one instance of ONTAP tools for VMware vCenter 10.0.

### Steps

1. Launch `https://loadBalanceIP:8443/virtualization/ui/` from browser with ONTAP tools administrator credentials provided during deployment.
2. Select vCenters from the sidebar
3. Select **ADD** to onboard vCenters with vCenter IP Address/Hostname, username, password, and port.

See [List of minimum privileges required for non-admin global scoped cluster user](#).

## Add storage backend

Storage backends are systems that the EXSi hosts use for data storage.

### About this task

This task helps you to onboard the ONTAP cluster.

## Steps

1. Launch `https://loadBalanceIP:8443/virtualization/ui/` from browser with ONTAP tools administrator credentials provided during deployment.
2. Select **Storage Backends** from the sidebar.
3. Select **Add**.
4. Provide the Server IP Address or FQDN, Username, and Password details and select **Add**.



Only IPV4 management LIFs are supported.

## Associate storage backend with vCenter

vCenter listing page shows the associated number of storage backends. Each vCenter has option to Associate a storage backend

### About this task

This task help you to create mapping between storage backend and onboarded vCenter globally.

## Steps

1. Launch `https://loadBalanceIP:8443/virtualization/ui/` from browser with ONTAP tools administrator credentials provided during deployment.
2. Select vCenters from the sidebar.
3. Click on the vertical ellipsis against the vCenter that you want to associate with storage backends.
4. Select storage backend from the dropdown in the pop up.
5. Select **Associate Storage Backend** option to associate vCenter with the required storage backend.

See [List of minimum privileges required for non-admin global scoped cluster user](#).

## Onboard storage backend (SVM or Cluster) with vCenter

Use the following API to onboard the storage backends and map the SVM to vCenter locally. See [Configure user roles and privileges](#) section for the ONTAP SVM user privileges.

```
POST /virtualization/api/v1/vcenters/<vcguid>/storage-backends

{
  "hostname_or_ip": "172.21.103.107",
  "username": "svm11",
  "password": "xxxxxx"
}
```





The ID from the above API response is used in discovery.

You need to pass x-auth for the API. You can generate this x-auth from the new API added under Auth in Swagger.

```
/virtualization/api/v1/auth/vcenter-login
```

## Register VASA Provider to vCenter

You can register VASA provide to vCenter by using either self signed certificate or CA signed certificate. Self signed certificate is generated using VMware CA handshake.

### About this task

You need to have the CA signed certificate placed in vCenter when using the CA signed certificate method.

### Steps

1. Navigate to vCenter server.
2. Select **Configure > Storage Providers**.
3. Click the **Add** icon.
4. Enter the connection information for the storage provider:
  - a. Name: Any user-friendly name like "ScaleoutVP"
  - b. URL: `https://<name>/virtualization/version.xml` - the name in the URL corresponds to Virtual IP provided during the OVA deployment for Single vCenter deployment (or) Domain name for Multi-vCenter deployments. Add the certificates to the URL. Same certificates are published to vCenter.
  - c. Credentials: `<VASA Provider username>/< VASA Provider password>` provided during OVA deployment.
5. After the VASA is registered, click **OK**. Ensure that it is listed under Storage Provider and the status is Online.

If you have placed CA signed certificate in vCenter, the VASA registration continues with CA signed certificate. Else, the handshaking fails and registration defaults to SSA certificate.

6. You can register multiple vCenters to a single scaleout vp instance. Repeat the steps mentioned above to register multiple vCenters.

## Create vVols datastore

You can create vVols datastore with new volumes or with existing volumes. You can also create vVols datastore with the combination of existing volumes and new volumes.



Check to ensure root aggregates are not mapped to SVM.

You need to pass x-auth for the API. You can generate this x-auth from the new API added under Auth in Swagger.

```
/virtualization/api/v1/auth/vcenter-login
```

1. Create vVols datastore with new volume. Get Aggregate id, storage\_id(SVM uuid) using ONTAP REST API.

```
POST /virtualization/api/v1/vcenters/cdded9ad-6bsd-4c9e-b44g-691250bfe2df/vvols/datastores
```

Use the following URI to check the status:

```
`\https://xx.xx.xx.xxx:8443/virtualization/api/jobmanager/v2/jobs/<JobID>?includeSubJobsAndTasks=true`
```

Request Body for NFS datastore

```
{
  "name": "nfsds1",
  "protocol": "nfs",
  "platform_type": "aff",
  "moref": "domain-c8",
  "volumes": [
    {
      "is_existing": false,
      "name": "vol_nfs_pvt",
      "size_in_mb": 2048000,
      "space_efficiency": "thin",
      "aggregate": {
        "id": "d7078b3c-3827-4ac9-9273-0a32909455c2"
      },
      "qos": {
        "min_iops": 200,
        "max_iops": 5000
      }
    }
  ],
  "storage_backend": {
    "storage_id": "654c67bc-0f75-11ee-8a8c-00a09860a3ff"
  }
}
```

Request body for iSCSI datastore:

```

{
  "name" : "iscsi_custom",
  "protocol" : "iscsi",
  "platform_type": "aff",
  "moref" : "domain-c8",
  "volumes" : [
    {
      "is_existing" : false,
      "name" : "iscsi_custom",
      "size_in_mb" : 8034,
      "space_efficiency" : "thin",
      "aggregate" : {
        "id" : "54fe5dd4-e461-49c8-bb2d-6d62c5d75af2"
      }
    }
  ],
  "custom_igroup_name": "igroup1",
  "storage_backend": {
    "storage_id": "eb9d33ab-1960-11ee-9506-00a0985c6d9b"
  }
}

```

#### 1. Create vVols datastore with existing volumes.

Get aggregate\_id and volume\_id using ONTAP REST API.

```

POST /virtualization/api/v1/vcenters/cdded9ad-6bsd-4c9e-b44g-691250bfe2df/vvols/datastores

```

Request Body

```
{
  "name" : "nfsds2",
  "protocol" : "nfs",
  "platform_type": "aff",
  "moref" : "domain-c8",
  "volumes" : [
    {
      "is_existing": true,
      "id": "e632a632-1412-11ee-8a8c-00a09860a3ff"
    }
  ],
  "storage_backend": {
    "storage_id": "33a8b6b3-10cd-11ee-8a8c-
00a09860a3ff"
  }
}
```

## Verify registered SVM

Verify that the onboarded SVM is listed under VASA Provider from vCenter UI.

### Steps

1. Navigate to vCenter Server.
2. Log in with the administrator credentials.
3. Select **Storage Providers**.
4. Select **Configure**.
5. Under Storage Provider/storage backends verify that the onboarded SVM is listed correctly.

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