



Configure storage capability profiles

ONTAP tools for VMware vSphere 9.13

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Table of Contents

Configure storage capability profiles	1
Overview of storage capability profiles	1
Considerations for creating and editing storage capability profiles	2
Create storage capability profiles	3
Generate storage capability profiles automatically	7

Configure storage capability profiles

Overview of storage capability profiles

VASA Provider for ONTAP allows you to create storage capability profiles and map them to your storage. This helps to maintain consistency across the storage. You can also use VASA Provider to check for compliance between the storage and the storage capability profiles.

A storage capability is a set of storage system attributes that identifies a specific level of storage performance, storage efficiency, and other capabilities such as encryption for the storage object that is associated with the storage capability.

For traditional datastores, you can use a storage capability profile to create datastores consistently with common attributes, and assign QoS policy to them. During provisioning ONTAP tools displays clusters, SVMs, and aggregates that match the storage capability profile. You can generate a storage capability profile from existing traditional datastores by using the **GLOBAL AUTO-GENERATE PROFILES** option from the Storage Mapping menu. After the profile is created, you can use ONTAP tools to monitor the compliance of datastores with the profile.



vVol datastores are not supported on SVM user.

When used with vVols datastores, the provisioning wizard can use multiple storage capability profiles to create different FlexVol volumes in the datastore. You can use the VM storage policy to automatically create vVols for a virtual machine in appropriate FlexVol volumes as defined. For example, you can create profiles for common storage classes (such as for performance limits and other capabilities like encryption or FabricPool). You can later create VM storage policies in vCenter Server representing business classes of virtual machines and link these to the appropriate storage capability profile by name (for example Production, Test, HR).

When used with vVols, the storage capability profile is also used to set the storage performance for the individual virtual machine and place it on the FlexVol volume in the vVols datastore that best satisfies the performance requirement. You can specify QoS policy with minimum and/or maximum IOPS for performance. You can use the default policies when you initially provision a virtual machine, or change your VM storage policy later if your business requirements change.



ASA-C storage capability profile is supported from ONTAP tools for VMware vSphere 9.13P1 onwards.

The default storage capability profiles for this release of ONTAP tools:

- Platinum_AFF_A
- Platinum_AFF_C
- Platinum_ASA_A
- Platinum_ASA_C
- AFF_NVMe_AFF_A
- AFF_NVMe_AFF_C
- AFF_NVMe_ASA_A
- AFF_NVMe_ASA_C

- AFF_Thick_AFF_A
- AFF_Thick_AFF_C
- AFF_Thick_ASA_A
- AFF_Thick_ASA_C
- AFF_Default_AFF_A
- AFF_Default_AFF_C
- AFF_Default_ASA_A
- AFF_Default_ASA_C
- AFF_Tiering_AFF_A
- AFF_Tiering_AFF_C
- AFF_Tiering_ASA_A
- AFF_Tiering_ASA_C
- AFF_Encrypted_AFF_A
- AFF_Encrypted_AFF_C
- AFF_Encrypted_ASA_A
- AFF_Encrypted_ASA_C
- AFF_Encrypted_Tiering_AFF_A
- AFF_Encrypted_Tiering_AFF_C
- AFF_Encrypted_Tiering_ASA_A
- AFF_Encrypted_Tiering_ASA_C
- AFF_Encrypted_Min50_AFF_A
- AFF_Encrypted_Min50_AFF_C
- AFF_Encrypted_Min50_ASA_A
- AFF_Encrypted_Min50_ASA_C
- Bronze

The vCenter Server then associates the storage capability of a LUN or volume with the datastore that is provisioned on that LUN or volume. This enables you to provision a virtual machine in a datastore that matches the storage profile of the virtual machine and to ensure that all of the datastores in a datastore cluster have the same storage service levels.

With ONTAP tools, you can configure every virtual volume (vVols) datastore with a new storage capability profile that supports the provisioning of virtual machines with varying IOPS requirements on the same vVols datastore. While executing the VM provisioning workflow with IOPS requirement, all of the vVols datastores are listed in the compatible datastore list.

Considerations for creating and editing storage capability profiles

You should be aware of the considerations for creating and editing storage capability profiles.

- You can configure Min IOPS only on AFF systems.
- You can configure QoS metrics at a virtual volume (vVols) datastore level.

This capability provides greater flexibility in assigning varied QoS metrics for different VMDKs of the same virtual machine that is provisioned on a virtual datastore.

- You can configure storage capability profiles for Flash Array Hybrid, ASA, and AFF datastores.

For Flash Array Hybrid, ASA, and AFF systems, you can configure space reserve to be either thick or thin.

- You can use storage capability profiles to provide encryption for your datastores.
- You cannot modify existing storage capability profiles (created prior to 7.2 version) after upgrading from an earlier version of the ONTAP tools for VMware vSphere to the latest version of the ONTAP tools.

The legacy storage capability profiles are retained for backward compatibility. If the default templates are not in use, then during the upgrade to the latest version of the ONTAP tools, the existing templates are overridden to reflect the new QoS metrics and tiering policies related to the performance of the storage capability profiles.

- You cannot modify or use the legacy storage capability profiles to provision new virtual datastores or VM storage policies.

Create storage capability profiles

You can use ONTAP tools to manually create storage capability profiles, automatically generate a profile based on the capabilities of a datastore, or modify a profile to meet your requirements.

What you'll need

You must have registered your VASA Provider instance with ONTAP tools for VMware vSphere.

After setting up a profile, you can edit the profile as required.

Steps

1. On the ONTAP tools Home page, click **Policies and Profiles**.
2. Create a profile or edit an existing profile, as required:

If you want to...	Do this...
Create a profile	Click CREATE .
Edit an existing profile	Click the profile that you want to modify from the profiles listed on the Storage Capability Profiles page.



To view the values that are associated with an existing profile, you can click the profile name in the Storage Capabilities Profile page. VASA Provider then displays the Summary page for that profile.

3. From **New Datastore > Storage Systems**, click on **Create storage capability profile**.

You Get the following message to confirm navigating away from the datastore window.

This will remove the data entered by closing the current workflow and opens the Create storage capability profile workflow. Do you wish to continue?

4. Click **YES** to open the Create storage capability profile window.
5. Complete the pages in the Create Storage Capability Profile wizard to set up a profile or to edit values to modify an existing profile.

Most of the fields in this wizard are self-explanatory. The following table describes some of the fields for which you might require guidance.

Field	Explanation
Identifying multiple profiles	<p>You can use the Description field on the Name and Description tab to describe the purpose of the storage capability profile (SCP). Providing a good description is useful because it is a good practice to set up different profiles based on the applications that are being used.</p> <p>For example, a business-critical application requires a profile with capabilities that support higher performance, such as AFF and ASA platform. A datastore that is used for testing or training might use a profile with a lower performance Flash Array Hybrid platform, and enable all of the storage efficiency capabilities and tiering to control costs. Combination of Platform type and asymmetric flag determines the type of SCPs. For example: Platinum_ASA_A, Platinum_ASA_C, Platinum_AFF_A, Platinum_AFF_C.</p> <p>If you have enabled “linked” mode for your vCenter Servers, then you must select the vCenter Server for which you are creating the storage capability profile.</p>

Platform	<p>Starting from ONTAP tools for VMware vSphere 9.13, you can create storage capability profiles using the combination of the following items:</p> <ol style="list-style-type: none"> 1. Platform type - Performance, Capacity, and Flash Array Hybrid 2. Asymmetric flag - indicates storage system's SAN optimized (All San Array) status. <ul style="list-style-type: none"> ◦ When Platform type is Performance and Asymmetric flag is TRUE, it considers storage system of type AFF-A ◦ When Platform type is Performance and Asymmetric flag is False, it considers storage system of type ASA-A ◦ When Platform type is Capacity and Asymmetric flag is True, it considers storage system of type AFF-C ◦ When Platform type is Flash hybrid array and Asymmetric flag is NA, it considers storage system of type FAS <p>The options on the subsequent screens are updated based on your selection of the type of storage system.</p>
Protocol	<p>You can select from the available protocols listed based on the platform selected for the storage system. While configuring virtual machines you can configure VM storage policies with storage capability profile and the protocol field filters datastores based on specific protocol. The field 'Any' allows you to work with all protocols.</p>

Performance

You can set traditional QoS policies for your storage system by using the Performance tab.

- When you select **None**, a QoS policy with no limit (infinite) is applied to a data VVol.
- When you select **QoS Policy Group**, then a traditional QoS policy is applied to a VVol.

You can set the value for **Max IOPS** and **Min IOPS** which enables you to use the QoS functionality. If you select Infinite IOPS, the Max IOPS field is disabled. When applied for a traditional datastore, a QoS policy with “Max IOPS” value is created and assigned to a FlexVol volume. When used with a vVols datastore, a QoS policy with Max IOPS and Min IOPS values is created for each data vVols datastore.

NOTE:

- Max IOPS and Min IOPS can also be applied to the FlexVol volume for a traditional datastore.
- You must ensure that the performance metrics are not also set separately at an storage virtual machine (SVM) level, an aggregate level, or a FlexVol volume level.

Storage Attributes

The storage attributes that you can enable in this tab depend on the storage type that you select in the Personality tab.

- If you select Flash Array Hybrid storage, you can configure space reserve (thick or thin), enable deduplication, compression, and encryption.

The tiering attribute is disabled because this attribute is not applicable to Flash Array Hybrid storage.

- If you select AFF storage, you can enable encryption and tiering.

Deduplication and compression are enabled by default for AFF storage and cannot be disabled.

- If you select ASA storage, you can enable encryption and tiering.

Deduplication and compression are enabled by default for ASA storage and cannot be disabled.

The tiering attribute enables the use of volumes that are part of a FabricPool-enabled aggregate (supported by VASA Provider for AFF systems with ONTAP 9.4 and later). You can configure one of the following policies for the tiering attribute:

- None: Prevents volume data from being moved to the capacity tier
- Snapshot: Moves user data blocks of volume Snapshot copies that are not associated with the active file system to the capacity tier

6. Review your selections on the Summary page, and then click **OK**.

After you create a profile, you can return to the Storage Mapping page to view which profiles match which datastores.

Generate storage capability profiles automatically

VASA Provider for ONTAP enables you to automatically generate storage capability profiles for existing traditional datastores. When you select the auto-generate option for a datastore, VASA Provider creates a profile that contains the storage capabilities that are used by that datastore.

What you will need

- You must have registered your VASA Provider instance with ONTAP tools.
- ONTAP tools must have discovered your storage.

About this task

After you create a storage capability profile, you can modify the profile to include more capabilities. The Create storage capability profile wizard provides information about the capabilities that you can include in a profile.

Steps

1. From the NetApp ONTAP tools home page, click **Storage Mapping**.
2. Select the datastore from the available list.
3. From the Actions menu, select **Auto-generate**.
4. When the auto-generate process finishes, refresh the screen to view information about the new profile.

The new profile is listed in the Associated profile column. The name of the new profile is based on the resources in the profile. You can rename the profile, if required.

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