Create storage capability profiles

VSC, VASA Provider, and SRA 9.7

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

What storage capabilities are

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 VSC 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 VSC to monitor the compliance of datastores with the profile.

When used with VVol 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 vVol 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.

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 the virtual appliance for Virtual Storage Console (VSC), VASA Provider, and Storage Replication Adapter (SRA), you can configure every virtual volume (VVol) datastore with a new storage capability profile that supports the provisioning of virtual machines with varying IOPS requirements on the same vVol datastore. While executing the VM provisioning workflow with IOPS requirement, all of the VVol datastores are listed in the compatible datastore list.

When you try to provision or modify virtual machines for vCenter Server earlier than 6.5, only the vVol datastores that contain storage capability profiles with performance set to “MAX_IOPS” are listed in the compatible datastore list. The remaining vVol datastores are listed in the incompatible datastore list. You can ignore this classification and select any vVol datastore from the incompatible datastore list to provision or modify the virtual machine.

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 (VVol) 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 both FAS and AFF datastores.

  For FAS systems, you can configure space reserve to be either thick or thin, but for AFF systems, space reserve can only be configured to thin.

- You can use storage capability profiles to provide encryption for your datastores.
- You cannot modify existing storage capability profiles after upgrading from an earlier version of the virtual appliance for Virtual Storage Console (VSC), VASA Provider, and Storage Replication Adapter (SRA) to the latest version of the virtual appliance for VSC, VASA Provider, and SRA.

  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 virtual appliance for VSC, VASA Provider, and SRA, the existing templates are overridden to reflect the new QoS metrics 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.
- You must use new storage capability profiles for all new datastores.

Configure storage capability profiles

You can use VSC 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.

Before you begin

You must have registered your VASA Provider instance with Virtual Storage Console for VMware vSphere.

About this task

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

Steps

1. On the Virtual Storage Console (VSC) **Home** page, click **Storage Capability 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. - You cannot modify any existing storage capability profiles that were created before the 9.6 virtual appliance for VSC, VASA Provider, and SRA.

3. 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	You can use the **Description** field on the Name and Description tab to describe the purpose of the storage capability profile. 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. For example, a business-critical application requires a profile with capabilities that support higher performance, such as an AFF platform. A datastore that is used for testing or training might use a profile with a lower performance FAS platform, and enable all of the storage efficiency capabilities and tiering to control costs. 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.
Platform	You can select your storage system to have either the AFF or FAS platform type. The options on the subsequent screens are updated based on your selection of the type of storage system.

Field	Explanation
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 VVol datastore, a QoS policy with Max IOPS and Min IOPS values is created for each data VVol.  ◦ 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.

Field	Explanation
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 FAS 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 FAS 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. Space reserve is configured as thin and cannot be changed to thick (thin is required for aggregate efficiency and tiering). 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: • Any: Allows use of this storage capability profile with any FlexVol volume whether Fabric Pool is used or not • None: Prevents volume data from being moved to the capacity tier • Snapshot-Only: Moves user data blocks of volume Snapshot copies that are not associated with the active file system to the capacity tier • Auto: Moves cold user data blocks in the Snapshot copies and the active file system to the capacity tier

4. 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.

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