



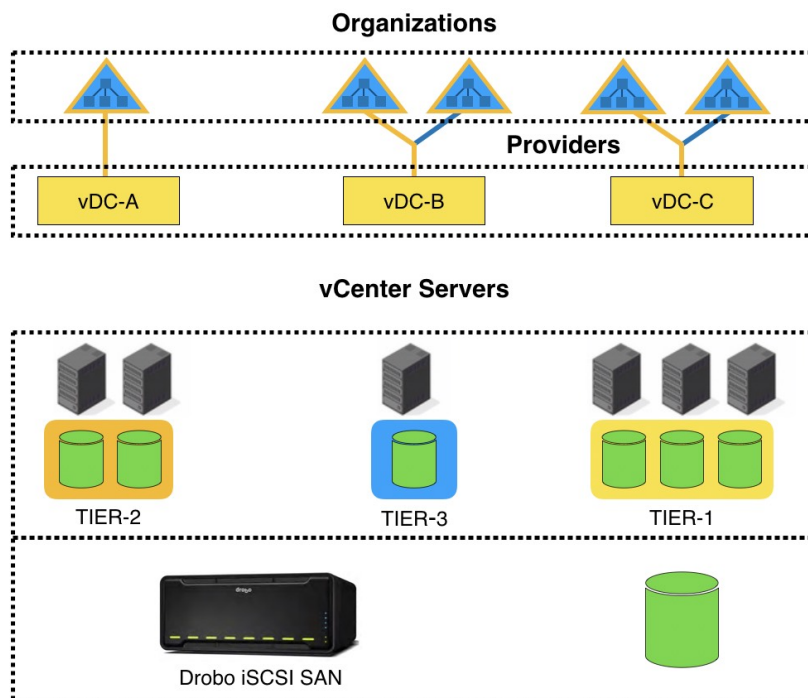
Companies of all sizes are looking for their IT department to deliver virtualization solutions as a service. VMware vCloud enables IT administrators to leverage existing VMware technologies to build public or private clouds. VMware vCloud is an approach to pool IT resources on-demand as self-managed virtual infrastructures. This architecture also enables tiered service levels, an important part of cloud computing.

More and more IT administrators look at the cloud as the next frontier onto which IT resources are being moved to. Companies, as well as service providers, require that existing and new resources are easier to provision, manage and monitor. While VMware's vCloud Director is a technology first used by service providers, it can be use in any sized organization to accomplish better service levels and lower costs. Drobo provides the easy-to-use storage component with a price structure enabling tier 2 or 3 storage alongside enterprise-class top-tier storage.



Topics

- What you will need & Drobo and vCloud basics
- Adding a provider vDC
- Allocating resources to an organization
- Adding datastores to a provider vDC
- Appendix: Storage Profiles





What You Will Need

- Drobo iSCSI SAN storage
- Drobo Dashboard management software on one server (VM)
- Enterprise-grade 7200 RPM SATA disk drives recommended
- VMware vCloud components installed and configured

This document describes using Drobo with vCloud and assumes that the Drobo has been deployed and configured within the VMware virtualization infrastructure (ESX/ESXi and vCenter). For more information on using Drobo with VMware, refer to the VMware How-To document “Deploy VMware and Drobo as a Complete and Cost-Effective Virtualization Solution” in the How-To Guides section on www.drobo.com/resources.

Drobo and IOPS

For most users, particularly larger ones, Drobo devices are cost effective and match the profile for backup or lower-tier primary storage. Drobo SAN models support SATA drives for the best price capacity but not optimized for IOPS. Add SSDs for a mixture of price/capacity and price/performance. By combining a small number of SSDs with high-capacity SAS drives, users can have

NOTE: For those Tier 1 requirements in larger organizations, enterprise tiering solutions or all-SSD storage would be required.

vCloud Director Basics

Think of vCloud as a layer on top of vCenter. Essentially all the resources within vCenter (servers, storage, etc.) are presented to vCloud Director, allowing IT administrators to easily manage these resources and present them to either private or public clouds. vCloud encompasses all aspects known to the IT administrator in one elegant, yet very diverse, ecosystem. Authentication, security, network, storage, virtualization, and compliance, to name a few, are part of this ecosystem.

Among the many components of vCloud, this document focuses on storage and where and how you can leverage the advantages of Drobo iSCSI volumes in a vCloud deployment.

Make sure that the minimum requirements specified in the “vCloud Director Installation and Configuration Guide,” have been met and running successfully:

- vCloud Director
- vShield Manager
- One or more ESX/ESXi hosts
- One or more vCenter servers



Adding a Provider vDC

In the initial installation of vCloud Director, there are number of steps in which storage is involved. In this section, you will see how easy it is to add VMFS Datastores when adding a Provider vDC.

STEP 1

Add Provider vDC

Name this Provider vDC

A Provider vDC is a group of compute, memory, and storage resources from one vCenter. You can allocate portions of a Provider vDC to your organizations using Cloud Director.

Name: DroboCloud-VDC-A

Description: First VDC

Enabled
Disabling a Provider vDC stops additional allocation of resources from this vDC. You cannot create new Organization vDCs. Organization vDCs that are currently backed by this Provider vDC are also disabled. New vApps cannot be run in these Organization vDCs.

Back Next Finish Cancel

Enter the name and description of this “provider,” in this example, Drobo.

STEP 2

Add Provider vDC

Select Resource Pool

The resource pool of the Provider vDC supplies compute and memory resources, memory, and vCenter services, such as high availability (HA) and fault tolerance (FT).

Select a vCenter and a resource pool: If it is not listed, you must attach a vCenter.

vCenter	Resource Pool	VC Path
DroboCloud-vCenter1	Drobo	Drobo
	vCloud-Drobo-Pool	Drobo/vCloud-Drobo-Pool

The following external networks are available to the resource pool you selected:

Network	Gateway	Subnet	DNS

Selected resource pool: vCloud-Drobo-Pool

Back Next Finish Cancel

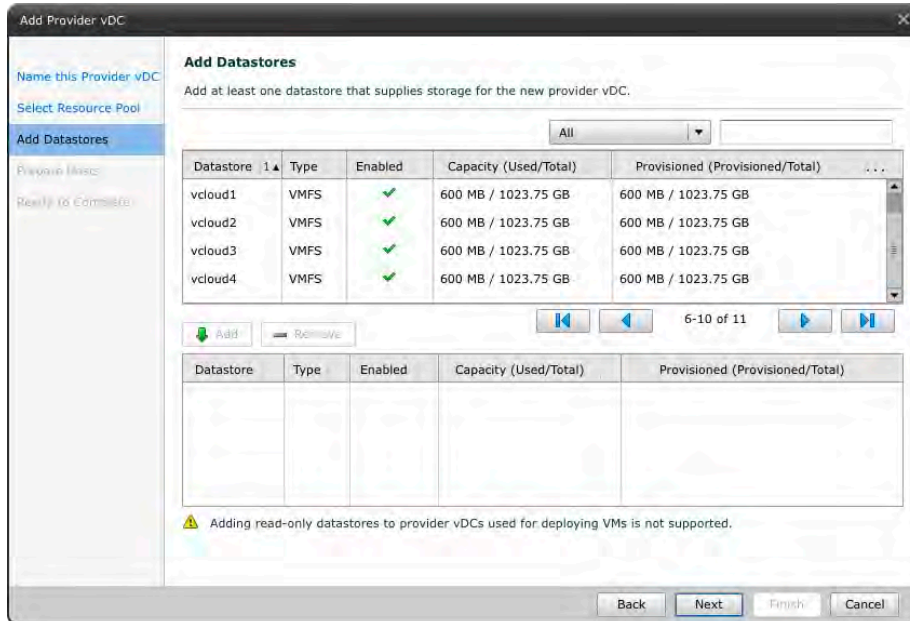
Select a vCenter server to connect to in the first column.

If more vCenter servers are connected, make sure you are selecting the vCenter that has access to the shared storage that you want to provision in this step.



This populates a list of resource pools. If no resource pools appear, you might not have created these resource pools in the vCenter server that you selected. In that is the case, log in to your vCenter server via a vSphere client. Also note that DRS needs to be enabled so that a resource pool can be created.

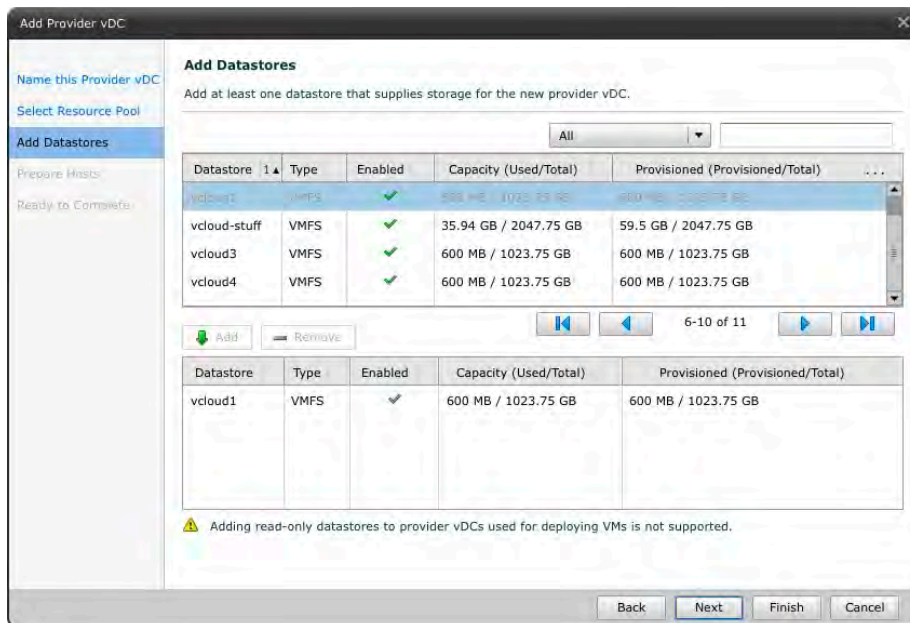
STEP 3



Select the VMFS datastores that you wish to present to this Provider vDC and click **Add**.

In this example, these are Drobo iSCSI volumes that were added as VMFS datastores to the vCenter server.

STEP 4



Once you have selected the datastores, click **Next**.

NOTE: Changing the name of a datastore in vCenter also changes the name in vCloud Director.



STEP 5

Add Provider vDC

Prepare Hosts

To use the selected resource pool's hosts in Cloud Director, the system needs to install the Cloud Director agent on each host. This installation requires root privileges for each host.

Resource Pool vCloud-Drobo-Pool has 2 host(s) that need to be prepared.

One credential for all hosts:

root User Name:

Password:

A different credential for each host:

Host	Status	root User Name	Password
172.32.16.60	✓	<input type="text" value="root"/>	<input type="password"/>
172.32.16.61	✓	<input type="text" value="root"/>	<input type="password"/>

Buttons: Back, Next, Finish, Cancel

Provide the credentials so that vCloud Director can install the agent on each host to access the resource pools of the servers.

STEP 6

Add Provider vDC

Ready to Complete

You are about to create a provider vDC with these specifications. Review the settings and click Finish.

Name: DroboCloud-VDC-A

Description: First-VDC

Enabled: true

Resource pool: vCloud-Drobo-Pool

Datastores: vcloud1

Prepare Hosts: 2 Hosts with common credentials for all hosts

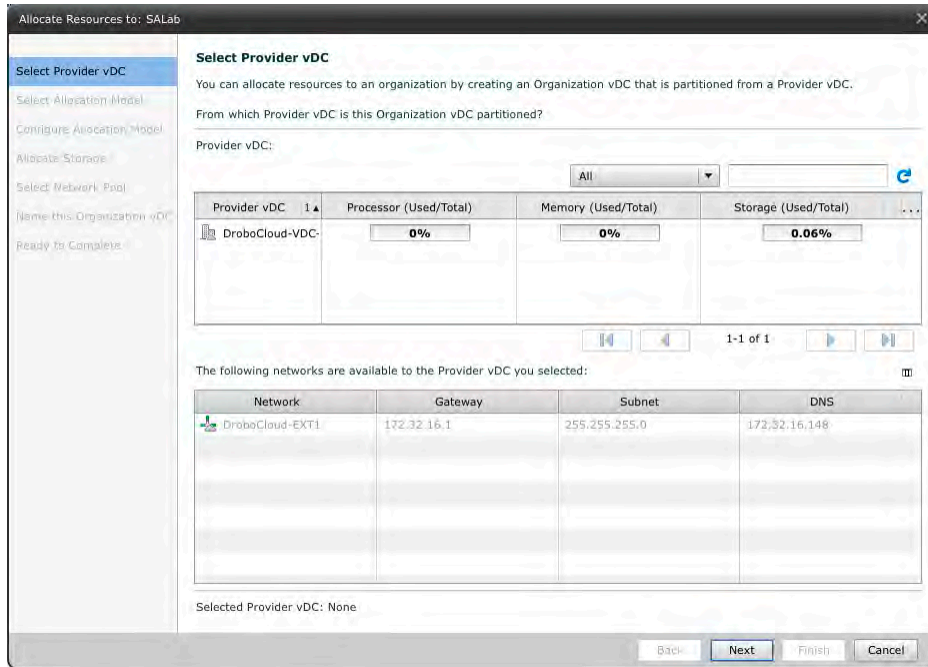
Buttons: Back, Next, Finish, Cancel

Review the summary and if everything looks OK, click **Next**.



Allocating Resources to an Organization

STEP 1

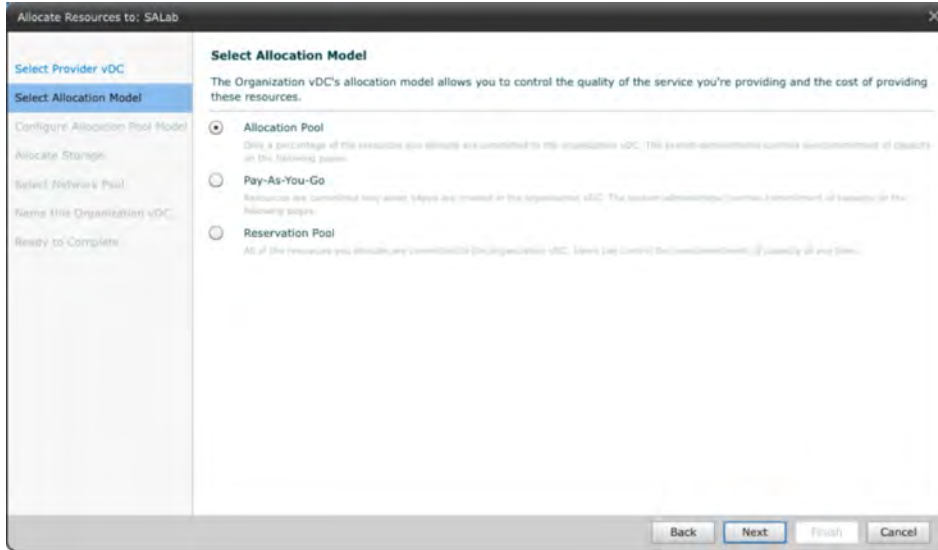


Select a Provider vDC and the appropriate network and click **Next**.



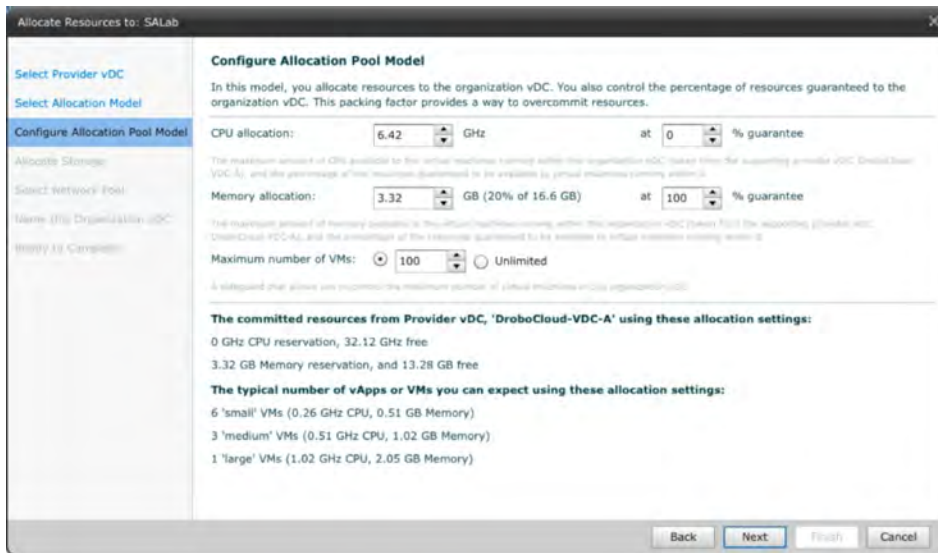
STEP 2

This step is very important since it represents how resources will be allocated to an organization. While storage is treated the same way across all models, the following article describes in detail the advantages of each and storage considerations (e.g., thin provisioning, limits): <http://kb.vmware.com/kb/1026290>.



Click **Select Allocation Model** on the left. In this example, select **Allocation Pool** and click **Next**.

STEP 3



Click **Configure Allocation Pool Model** on the left, change settings if you wish, and click **Next**.

NOTE: These settings can be changed later. These settings are passed down to the vCenter resource pool.



STEP 4

Allocate Resources to: SALab

Select Provider vDC
Select Allocation Model
Configure Allocation Pool Model
Allocate Storage
Name this Organization vDC
Ready to Complete

Allocate Storage

As the service provider, you control the storage allocation to the organization by setting a limit and enabling thin provisioning of live storage.

Storage limit: 50 GB (5% of 1023.16 GB available)

Enable thin provisioning

Back Next Finish Cancel

Click **Allocate Storage** on the left, commit the amount of space that you want the organization to have access to, and click **Next**.

Note that you can enable thin provisioning even if the SAN storage array, in this case Drobo, is also thinly provisioned.

STEP 5

Allocate Resources to: SALab

Select Provider vDC
Select Allocation Model
Configure Allocation Pool Model
Allocate Storage
Select Network Pool
Name this Organization vDC
Ready to Complete

Select Network Pool

Select the network pool that provides vApp networks to this organization vDC and specify the vApp network quota from this pool.

Network pool: DroboCloud-pool1

Total available networks: 1

Quota for this organization: 1024

⚠ The configured quota is greater than the total number of networks available in the selected network pool. The maximum number of networks that can be provisioned is 1.

Back Next Finish Cancel

Click **Select Network Pool** on the left and click **Next**.



STEP 6

The screenshot shows the 'Name this Organization vDC' step in the 'Allocate Resources to: SALab' wizard. The left sidebar contains a list of steps: 'Select Provider vDC', 'Select Allocation Model', 'Configure Allocation Pool Model', 'Allocate Storage', 'Select Network Pool', 'Name this Organization vDC', and 'Ready to Complete'. The 'Name this Organization vDC' step is selected and highlighted. The main area contains the following fields and options:

- Name this Organization vDC**: Enter the name and description for this new Organization vDC.
- Name:** Solutions vDC
- Description:** Solutions Architect vDC
- Enabled**: Disabling an organization vDC stops new vApps from being deployed to the vDC. Running vApps continue to run, but additional vApps cannot be started.

At the bottom, there are four buttons: 'Back', 'Next', 'Finish', and 'Cancel'.

Click **Name the Organization vDC** on the left, enter a name and description for this Organization vDC, and click **Next**.

STEP 7

The screenshot shows the 'Ready to Complete' step in the 'Allocate Resources to: SALab' wizard. The left sidebar contains a list of steps: 'Select Provider vDC', 'Select Allocation Model', 'Configure Allocation Pool Model', 'Allocate Storage', 'Select Network Pool', 'Name this Organization vDC', and 'Ready to Complete'. The 'Ready to Complete' step is selected and highlighted. The main area contains a summary of the configuration:

Ready to Complete
You are about to create an Organization vDC with these specifications. Review the settings and click Finish.

Name:	Solutions vDC
Description:	Solutions Architect vDC
Enabled:	true
Organization:	SALab
Provider vDC:	DroboCloud-VDC-A
Allocation model:	Allocation Pool
CPU configuration:	6.42 GHz allocated, 0 GHz (0%) of which is guaranteed
Memory configuration:	3.32 GB allocated, 3.32 GB (100%) of which is guaranteed
Storage configuration:	50 GB allocated
Maximum number of VMs:	Unlimited
Network pool:	DroboCloud-pool1
Maximum provisioned networks:	1024

Add networks to this organization after this wizard is finished.

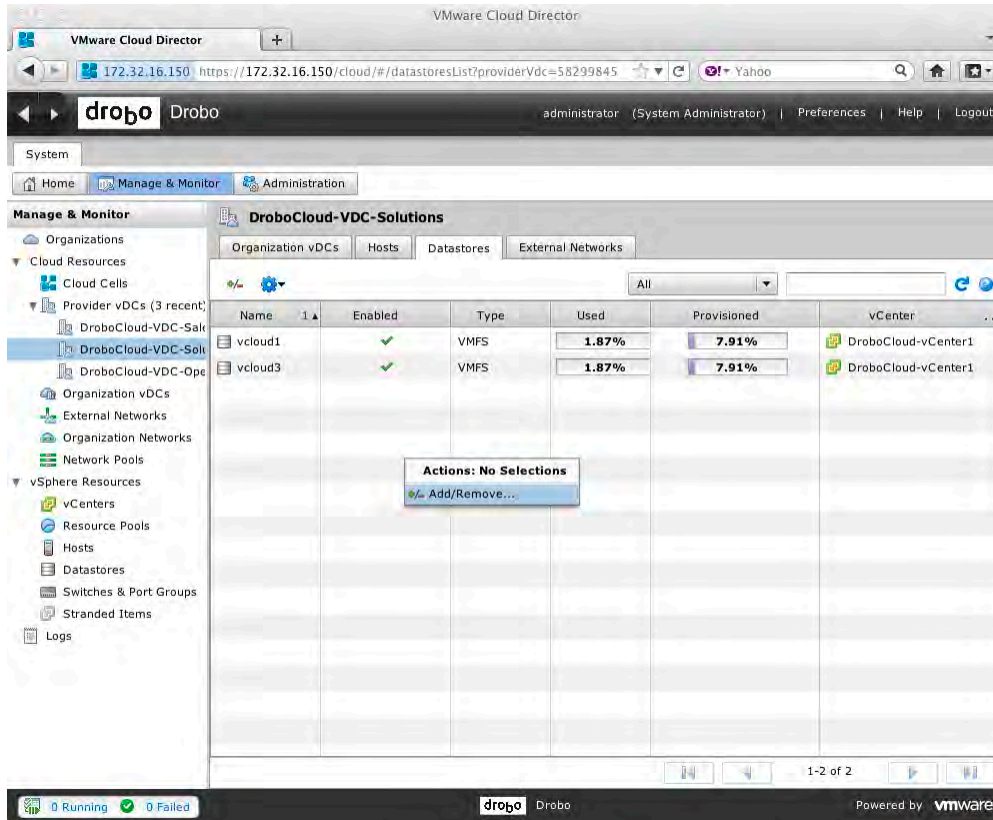
At the bottom, there are four buttons: 'Back', 'Next', 'Finish', and 'Cancel'.

Review the summary and if everything looks OK, click **Finish**.



Adding Datastores to a Provider vDC

STEP 1



In vCloud Director, click the **Datastores** tab, right-click in the pane on the right, and choose **Add/Remove** from the menu.



STEP 2

Add/Remove Datastores: DroboCloud-VDC-Solutions

Datastore	Type	Enabl...	Capacity (Used/Total)	Provisioned (Provisioned/Total)
vShield Mana	VMFS	✓	8.61 GB / 2047.75 GB	8.61 GB / 2047.75 GB
vcloud7	VMFS	✓	600 MB / 2047.75 GB	600 MB / 2047.75 GB
vcloud6	VMFS	✓	600 MB / 2047.75 GB	600 MB / 2047.75 GB
vcloud5	VMFS	✓	600 MB / 2047.75 GB	600 MB / 2047.75 GB

1-5 of 14

Datastore	Type	Enabled	Capacity (Used/Total)	Provisioned (Provisioned/Total)
vcloud3	VMFS	✓	19.13 GB / 1023.75 GB	80.99 GB / 1023.75 GB
vcloud1	VMFS	✓	19.13 GB / 1023.75 GB	80.99 GB / 1023.75 GB

⚠ Adding read-only datastores to provider vDCs used for deploying VMs is not supported.

OK Cancel

You can now select one or more datastores and click **Add**.



STEP 3

Datastore	Type	Enabl...	Capacity (Used/Total)	Provisioned (Provisioned/Total)
vcloud1	VMFS	✓	19.13 GB / 1023.75 GB	80.99 GB / 1023.75 GB
vcloud3	VMFS	✓	8.61 GB / 2047.75 GB	8.61 GB / 2047.75 GB
vcloud5	VMFS	✓	600 MB / 2047.75 GB	600 MB / 2047.75 GB
vcloud6	VMFS	✓	600 MB / 2047.75 GB	600 MB / 2047.75 GB
vcloud7	VMFS	✓	600 MB / 2047.75 GB	600 MB / 2047.75 GB

⚠ Adding read-only datastores to provider vDCs used for deploying VMs is not supported.

Review the newly added datastores and click **OK**.

Name	Enabled	Type	Used	Provisioned	vCenter
vcloud1	✓	VMFS	1.87%	7.91%	DroboCloud-vCenter1
vcloud3	✓	VMFS	1.87%	7.91%	DroboCloud-vCenter1
vcloud5	✓	VMFS	0.03%	0.03%	DroboCloud-vCenter1
vcloud6	✓	VMFS	0.03%	0.03%	DroboCloud-vCenter1
vcloud7	✓	VMFS	0.03%	0.03%	DroboCloud-vCenter1

Additional datastores are now ready and accessible for the Provider vDC and additional space can be committed to organizations.



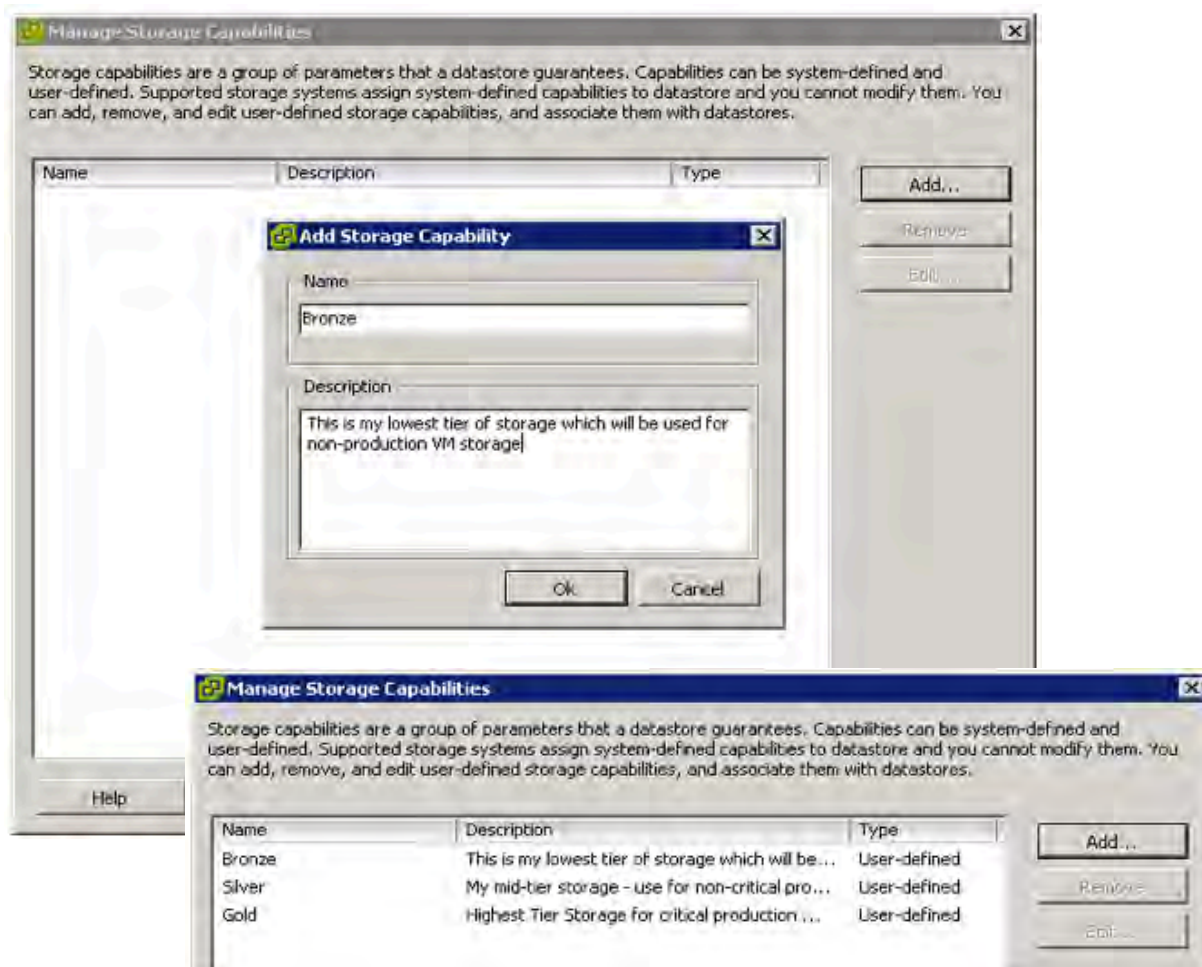
Appendix: Storage Profiles

Profile Driven Storage is a feature that allows you to easily and correctly select the datastore on which to deploy Virtual Machines. This selection is based on the capabilities of the datastore.

NOTE: This appendix is taken from a VMware blog available @ <http://blogs.vmware.com/vsphere/2011/08/vsphere-50-storage-features-part-10-profile-driven-storage.html>

STEP 1: CREATE USER-DEFINED STORAGE CAPABILITIES

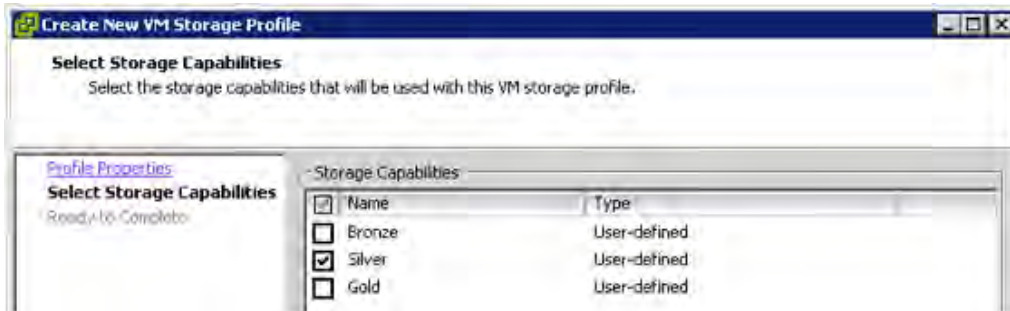
There are a number of steps to successfully use Profile Driven Storage. Before building a Storage Profile with Drobo, you must manually associate the capabilities for the Drobo. From VMware vSphere, click the **VM Storage Profiles** icon in the Management section, and then start adding the user-defined storage capabilities (or business tags). In the VM Storage Profiles view, click **Manage Storage Capabilities** and add them in. In this example, a Bronze user-defined storage capability is created and described as the “lowest tier of storage which will be used for non-production VM storage.”



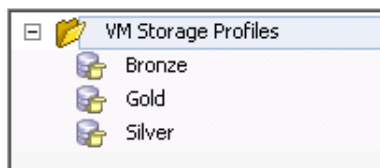


STEP 2: CREATE A VM STORAGE PROFILE

Back in the VM Storage Profiles view, click **Create VM Storage Profile**. First give the profile a name and description and then select the storage capabilities for that profile.

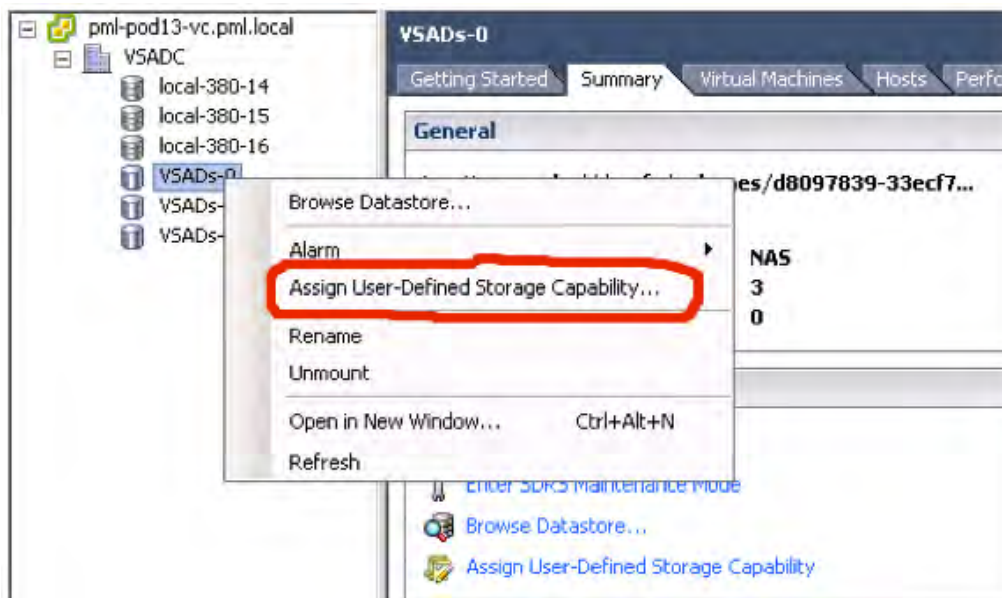


You can make a number of different profiles. For example, one profile for each tier of storage, three in all, each containing a different capability (Bronze, Silver & Gold).



STEP 3: ADD THE USER-DEFINED CAPABILITY TO THE DATASTORE

Right-click on a datastore and choose **Assign User-Defined Storage Capability** from the menu.



Drobo • 1289 Anvilwood Ave, Sunnyvale, CA • www.drobo.com • 1.408.454.4200

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