Installing an Actifio Sky Appliance on a Hyper-V Server

CAUTION: This release includes a change of operating system for the VDP database, from the deprecated CentOS 7 to Rocky 8. Before upgrading any Sky appliance, be sure to back up the appliance. (334849955)



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1 Before You Begin

The Actifio Sky Appliance is a virtual machine installed on a Hyper-V hypervisor. Before you begin, your Actifio representative will provide:

- The latest Sky Appliance VHDX file.
- An Actifio Sky Appliance license key: to get this, capture the system UUID and include it in an email license key request for each install to your representative.

Use these tables to know the requirements to support these models:

Requirements for Sky Appliances That WILL NOT Use Dedup Policies Requirements for Sky Appliances That WILL Use Dedup Policies

Requirements for Sky Appliances That WILL NOT Use Dedup Policies

This table allows you to compare the requirements and capabilities of Sky model for VDP appliances that will protect data in Snapshot Pools only.

Requirement	Model				
	60ТВ	120TB	200ТВ		
CPUs required. ^a	4	6	8		
CPUs required for encryption at rest. ^a	6	8	10		
Minimum Reserved Memory	16GiB	32GiB	48GiB		
Minimum Disk Space for Primary Pool		200GiB			
Minimum Disk Space for Snapshot Pool		10GiB			
Required Disk Space for Dedup Pool if appliance WILL NOT use dedup policies.		100GiB			
Maximum VDisks		10,000			

a. Minimum 2 GHz per CPU. The CPUs **must be reserved** and the balloon driver must be turned off. Any paging or swapping will cause significant performance impact and in some cases result in the appliance deadlocking.

Requirements for Sky Appliances That WILL Use Dedup Policies

The following table allows you to compare the requirements and capabilities of Sky model that will protect data in both the Snapshot and Dedup Pools.

Requirement	Model					
	1TB	5TB	10TB	ЗОТВ	50TB	128TB
CPUs required. ^a	1	2	4	8	12	12
CPUs required for encryption at rest. ^a	2	4	6	10	15	15
Minimum Reserved Memory	6GiB	10GiB	16GiB	48GiB	72GiB	150GiB
Minimum Disk Space for Primary Pool.				200GiB		
Minimum Disk Space for Snapshot Pool.	10GiB					
Minimum Disk Space for Dedup Pool.	100GiB					
SSD Minimums ^b	Optional: 10GiB	Optional: 50GiB	Optional: 100GiB	Required: 300GiB	Required: 500GiB	Required: 1.28TiB
Maximum VDisks		1000	'	3000	5000	5000

a. Minimum 2 GHz per CPU. The CPU **must be reserved** and the balloon driver must be turned off. Any paging or swapping will cause significant performance impact and in some cases result in the appliance deadlocking.

b. See Adding an SSD to an Actifio Sky Appliance on page 15 for details on adding SSDs.

Note: The 5TB license is used for evaluations. It cannot be increased. If you decide to purchase an Actifio Sky Appliance you can either keep the current 5TB appliance or install a new, separate, larger Sky Appliance.

2 Installing an Actifio Sky Appliance Using SCVMM

This chapter details:

Deploying the VHDX in SCVMM on page 3 Configuring the Sky Appliance VM in SCVMM on page 5

Deploying the VHDX in SCVMM

You deploy the VHDX in SCVMM like any other Hyper-V VM. The following steps show SCVMM running on Windows 2012 R2.

- 1. Get the Sky Appliance VHDX file from Actifio Support and copy it into the VMM Library location.
- 2. Launch SCVMM.
- 3. Select Library in the bottom left pane, then select **Library Servers**. Right-click the server and click **Refresh**.

Server Too	ls Adr	ministrator - Hyper-V-m	igmt.services.acti	fio.com - \	Virtual	Machine	Manager				_	D X
Home Folder Library Serv	/er											^ 🕜
Create Sanúra Create VM Create	ibran r	Import Import Physical	Evport Physical		No 🔁 🔁	werShell os						
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 Templates 												٩
Service Deployment Configurations	Na	me				Туре	 Library Server 	Family N	Operatin	Owner	Namesp	Status
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VM Templates	😸 ES>	Xi-5.1.1-1065491-IBM-20130€	i07.iso			ISO Image	Hyper-V-mgmt				Global	OK
> O Profiles	💽 en	_windows_server_2012_r2_x64	_dvd_2707946.iso			ISO Image	Hyper-V-mgmt				Global	OK
	💿 en	_windows_xp_professional_x6	4.iso			ISO Image	Hyper-V-mgmt				Global	OK
Lquivalent Objects	🕑 en	_windows_xp_professional_wi	th_service_pack_3_x86	j_cd_x14-804	128.iso	ISO Image	Hyper-V-mgmt				Global	OK
a Cloud Libraries	😸 en	_sql_server_2008_r2_standard	_x86_x64_ia64_dvd_52	1546.iso		ISO Image	Hyper-V-mgmt				Global	ŌK
🧮 Self Service User Content	🖲 en	_windows_server_2012_x64_d	vd_915478.iso			ISO Image	Hyper-V-mgmt				Global	OK
Julibrany Senvers	🔊 lis4	4-0-11.iso				ISO Image	Hyper-V-mgmt				Global	OK
Hyper-V-mont services actific com	🎐 vi	/ware-VIMSetup-all-5.1.0-147	4365.iso			ISO Image	Hyper-V-mgmt				Global	OK
MSSCVMMLibrary	💿 en	_sql_server_2012_enterprise_e	dition_x86_x64_dvd_8	13294.iso		ISO Image	Hyper-V-mgmt				Global	OK
Stored Virtual Machines and Servic	💿 en_	_windows_server_2012_r2_wit	h_update_x64_dvd_60	/52708.iso		ISO Image	Hyper-V-mgmt				Global	OK
Orphaned Resources	😑 Cer	ntOS-6.7-x86_64-bin-DVD1.is	0			ISO Image	Hyper-V-mgmt				Global	OK
Lindate Catalog and Pacelines	🧼 vc1	1-r4_disk_1				VHDX	Hyper-V-mgmt		64-bit edi	SERVICES	Global	OK
· Solution of the second secon	🧼 Wi	n2K8R2-Ent_disk_1				VHDX	Hyper-V-mgmt		64-bit edi	SERVICES	Global	OK
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	\varTheta Act	tifioReportManager-7.0.0.129	.vhdx.zip			Web Appli	Hyper-V-mgmt				Global	OK
WMs and Services												
📔 Fabric												
🚊 Library												
📋 Jobs												

Refreshing the Library

- 4. Select **VMs and Services** in the bottom left pane.
- 5. On the top tab, select **Create Virtual Machine**.

Cluster Too	Administrator - Hyper-V-	mgmt.services.actifio.com	n - Virtual Mach	nine Manager		_	D X
Home Folder Host Clust	er						^ 🕜
Create Create Virtual Create Create Host Group Create	Create VM Network Cloud Cloud	w VMs Services VM Show	 PowerShell Jobs PRO Window 				
VMs and Services <	VMs (22)						
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L VM Networks	🐌 2A-Linux-2	Running	Runn	HYP-R4-U13	Completed	SER Ad 0 %	Ce
결 Storage	🐌 2A-W2K8R2-1	Running	Runn	HYP-R4-U13	Completed	SER Ad 0 %	64
All Hosts	🐌 2A-W2K8R2-2	Running	Runn	HYP-R4-U13	Completed	SER Ad 0 %	64
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Fabric	🐁 Sky-Test	Stopped	Stop	HYP-R4-U13	Completed	0 %	Un
	🐁 Spark-CKP-Test1	Stopped	Stop	hyp-r4-u14	Completed	0 %	64
🚞 Library	🐌 te-sky	Stopped	Stop	HYP-R4-U13	Completed	SER Ad 0 %	Ce
📋 Jobs	🐌 vc1-r4	Running	Runn	HYP-R4-U13	Completed	SER Ad 0 %	64
Settings	腸 waltham-client1	Running	Runn	HYP-R4-U13	Completed	SER Ad 0 %	64
- settings	Min2K8R2_col1_bv1	Running	Rupp	HVD_RA_1113	Completed	SEB VH U.M.	6A- T
-							Ň

Creating the VM

- 6. In the Select Source section, browse to select the Sky Appliance VHDX file from the Library and select **Next**.
- 7. Name your virtual machine and select **Next**.
- 8. Set up the CPU/Processors and memory based on the Sky Appliance model (see Chapter 1, Before You Begin) and select **Next**.
- 9. Select Availability under Advanced and select Make this virtual machine highly available.

8	Create Virtual Machine Wizard	x
🕞 Configure Ha	ardware	
Select Source Specify Virtual Machine Identity	Configure hardware for the virtual machine. You can import settings from a hardware profile or save a new profile based on your settings.	
Configure Hardware	Hardware profile: [Default - create new hardware configuration settings]	~
Select Destination	🔚 Save as New: 🥪 Disk 💠 SCSI Adapter 🥥 DVD 🗮 Network Adapter 📉 Remove	
Select Host	2 Devices attached 🛆 💽 Availability	_
Configure Settings Add Properties Summary	sky-710-1550.v 130.00 GB, Pri Wirtual DVD drive No Media Capt	*
	SCSI Adapter 0 0 Devices attached Network Adapters Network Adapter 1 High availability	
	Not connected This option places the virtual machine on a virtualization server that is part of a host cluster. Image: a valuability interview of the virtual machine highly available interview of the virtual machine highly available interview of the virtual machine highly available interview.	E

Creating the VM

- 10. Click Next.
- Under Select Destination, place the virtual machine where you want it to reside and select Next.
- 12. Under Select Host, select the Hyper-V server and select **Next**.
- 13. Select the Storage location for the OS and select **Next**.
- 14. Select CentOS Linux 6 (64 bit) for operating system and select **Next**.
- 15. Uncheck Start the virtual machine after deploying it and click **Create**.



Configuring the Sky Appliance VM in SCVMM

Once the Sky Appliance VM has been deployed:

Configure CPUs and Memory on page 5 Configure Disks on page 6

Configure CPUs and Memory

The VM's CPUs and memory are configured from the hardware summary page:

🗈 Sett	ings for Sky-(HyperV-45489 on SBB-LEFT	- 🗆 X
Sky-6.1.1-HyperV-45489	✓ 4 ▶ Q.	
★ Hardware Mad Hardware BIOS Boot from CD Boot from CD Yencessor 2 Virtual processors 2 Dit Controller 0 Bio Hard Drive Sky6.1.1=45499.vhdx IDE Controller 1 DVD Drive None SS SCS Controller	Processor You can modify the number of virtual processors based on the number of the physical computer. You can also modify other resource control settin Number of virtual processors: Resource control You can use resource controls to balance resources among virtual ma Virtual machine reserve (percentage): O Percent of total system resources: O Virtual machine limit (percentage): 100 Percent of total system resources: S	f processors on rgs.
a b e Network Apager b e None c c c c c c c c c c c c c	V	
	OK Cancel	Apply

Configure the CPUs and memory to meet your Sky Appliance model requirements from Chapter 1, Before You Begin.

Note: If you configured the startup memory to match your memory requirements, you will not have to adjust the memory allocation here.

Configure Disks

Note: The pool names associated with these disks are used in Chapter 5, Configuring the Actifio Sky Appliance.

1. Run the New Virtual Hard Disk Wizard three times to define three new blank virtual hard disks on separate RAID-6 arrays:

Disk Name	Minimum Size	SCSI	Controller	Virtual Node
Primary Pool: The Primary Pool is used by the Actifio Sky Appliance.	200 GB	Own SCSI	0 (the OS controller)	1
Snapshot Pool: The Snapshot Pool accommodates the full copies (snapshots) to be retained, plus enough space for future growth.	10 GB	Own SCSI	1	0
Dedup Pool: The Dedup Pool accommodates the deduplicated data to be retained, plus enough space for future growth.	100 GB	Own SCSI	2	0

Caution: Do not resize disks for Snapshot and Dedup Pools. If additional storage is needed, add new disks on the same controller (snapshot disks on Controller 1, dedup disks on Controller 2).

2. The next step is adding SCSI adapters, detailed in Chapter 4, Adding SCSI Adapters.

3 Installing an Actifio Sky Appliance with Hyper-V Manager

This chapter details:

Deploying the VHDX in Hyper-V Manager on page 7 Configuring the Sky Appliance VM in Hyper-V Manager on page 8

Deploying the VHDX in Hyper-V Manager

- 1. Get a copy of the VHDX file from your Actifio representative and put it in a location accessible by the Hyper-V hypervisor that will host the Sky Appliance.
- 2. Deploy the VHDX like any other Hyper-V VM.
- 3. When prompted, give the virtual machine a unique name. This is the name Hyper-V will use. It is not the name displayed in the Sky Appliance user interface.
- 4. When prompted to specify a Generation, select Generation 1.
- 5. Set Startup Memory to match that of your Sky Appliance model requirements. See Before You Begin on page 1 for details.
- 6. Uncheck **Use Dynamic Memory for this virtual machine**. Dynamic memory will render the Sky Appliance unstable.
- 7. To configure networking, use a Hyper-V virtual switch that grants access to your production data.
- 8. When prompted to Connect Virtual Hard Disk, use the Sky Appliance VHDX as the boot image:
 - a. Select Use an existing virtual hard disk.
 - b. For location, browse to or enter the path to the Sky Appliance VHDX image.

Note: After system boot, you will not be able to move this disk.

9. Click Finish.

Configuring the Sky Appliance VM in Hyper-V Manager

Once the Sky Appliance VM has been deployed:

Configure CPUs and Memory on page 8

Configure Disks on page 8

Configure CPUs and Memory

Configure the VM's CPUs and memory from the hardware summary page:



Configure the number of CPUs and memory to meet your Sky Appliance model requirements. See Before You Begin on page 1 for details.

Note: If you configured the startup memory to match your memory requirements, you will not have to adjust the memory allocation here.

Configure Disks

To size your Sky Appliance, your Actifio representative considered the amount of data to be captured, its type, change rate, growth, and how long it would be retained. This same information is required to allocate space for the appliance's disks.

- 1. From the VM's summary page left-hand navigation, select SCSI Controller.
- 2. Click Add and the Disk Wizard will begin. You will add three disks.
- 3. Click **New** to open the New Virtual Hard Disk Wizard.
- 4. Use the New Virtual Hard Disk Wizard to create three VHDX fixed-size hard disks using their own SCSI on separate RAID-6 arrays.



- 5. Make sure VHDX is selected and click **Next**.
- 6. Select **Fixed size** and **Next**.
- 7. Assign Disk Name and set these parameters:

Disk Name	Minimum Size	SCSI	Controller	Virtual Node
Primary Pool: The Primary Pool is used by the Actifio Sky Appliance.	200 GB	Own SCSI	0 (the OS controller)	1
Snapshot Pool: The Snapshot Pool accommodates the full copies (snapshots) to be retained, plus enough space for future growth.	10GB	Own SCSI	1	0
Dedup Pool: The Dedup Pool accommodates the deduplicated data to be retained, plus enough space for future growth.	100 GB	Own SCSI	2	0

Note: Do not resize disks for Snapshot and Dedup Pools. If additional storage is needed, add new disks on the same controller (snapshot disks on Controller 1, dedup disks on Controller 2).

8. The next step is adding SCSI adapters, detailed in Chapter 4, Adding SCSI Adapters.

4 Adding SCSI Adapters

After deploying and configuring the Sky Appliance VM as detailed in Chapter 2, Installing an Actifio Sky Appliance Using SCVMM or Chapter 3, Installing an Actifio Sky Appliance with Hyper-V Manager, you must add SCSI adapters through the new VM's console:

- 1. Right-click on the Sky Appliance and select **Power on**.
- 2. Right-click on the Sky Appliance and select Connect or View Connect via Console.
- 3. Connect to console and enter Alt-F2, select 3, and press Enter.



4. Click Enter for Device configuration.



5. Click **Enter** for eth0 settings.



6. De-select Use DHCP and assign an IP address. DHCP is not supported outside of cloud service providers.



- 7. Select **OK**, select **Save**, and select **Save&Quit**.
- 8. Now point your browser at the IP address to run the installer as detailed in Chapter 5, Configuring the Actifio Sky Appliance.

Remember to add in the SSDs if required. Instructions are in Chapter A, Adding an SSD to an Actifio Sky Appliance.

5 Configuring the Actifio Sky Appliance

After the VM is configured and powered up, it is ready to be configured as a Sky Appliance.

- 1. Open a browser to the IP address of the Sky Appliance: http://<VM IP address/.
- 2. The installer opens the first of three tabs:

STEP 1: Setup Network Cor	nfiguration	STEP 2: Setup Storage Configuration	STEP 3: Review and Complete Installation	
All Items marked with (*) a	re required.			
Public IP				
IPv4 address for cloud confi	guration.			
Appliance IP (*)	172	17 . 205 . 106		
IPv4 address on port 1 for A joining this appliance with o	Actifio Deskto ther PAS ap	op and CLI clients. Also used for pliances.		
Appliance Name (*)	localhost.	localdom		
DNS Server	172.17.1.	10		
Subnet Mask	255	255 .0 .0		
Gateway	172	17 . 1 . 1		
NTP Server				
Infrastructure	VMWare	•		
Timezone	Africa/Abi	djan 🔹		
System uuid (*)	14150687 04a9cfd86	751:c222a0bd-e7bd-37cc-913a- 6f4b:a4b7b9d7		
License	Evaluation to STB with from the s Please cor production	n license: Dedup pool size is set th no encryption for 30 days: start of installation, ntext Actifio to upgrade to n licenses.		
Create Admin Password (*)	Validate	License		
Confirm Admin Password (*)		Next >	

- 3. Ignore the Public IP field, but ensure that the Sky Appliance IP address is correct.
- 4. In the space provided, enter a name for the Sky Appliance.
- 5. Ensure that the network IP addresses are correct.
- 6. From the Infrastructure drop down menu, select the hypervisor.
- 7. Set the time zone as needed.

8. If you are installing the Sky Appliance as a 15-day evaluation, leave the License field set to the default setting and go to Step 13.

If you are not installing this Sky Appliance as an evaluation, then capture the system UUID and include it in an email license key request for each install to Actifio Support. Actifio will use the UUID to generate the Sky Appliance license key.

- 9. In the space provided, paste a copy of the license key you obtained from the Actifio representative.
- 10. Click Validate License to ensure the validity of the license entered.
- 11. If you are using a Sky Appliance model with encryption license, a pass phrase field is displayed. Enter a pass phrase, record the pass phrase, and keep it in a secure location.
- 12. In the spaces provided, create a password for the first Admin user of the Actifio Sky Appliance.
- 13. Click **Next** to get to Step 2. This is where you assign the disks created for the Primary, Dedup, and Snapshot pools to their respective pools.

	PRIMARY POOL	Bequired Size: 400 GB	Available Disks (3) 💠	
200 GB	😸 sdb Size: 400.00 GB	0	sdb Size: 400,00 GB	
			sdd Size: 100.00 GB	
	SNAPSHOT POOL	Required Size: 100 GB	sdc Size: 1024.00 GB	
10 GB	😵 sdd Size: 100.00 GB	•		
100	DEDUP POOL	Required Size: 1024 GB		
GB	SUC 5128: 1024.00 GB			

- REBOOT OF THE ACTIFIC SKY APPLIANCE WILL OCCUR UPON COMPLETING INSTALLATION
- 14. Select and drag the Available Disks to the pools for which they were created.
- Click Validate Installation. The Sky Appliance installer validates the settings and if no issues are encountered, advances to the third tab. Any issues will appear in a yellow field at the top of Step 2.
- 16. The third tab provides the opportunity to review choices and go back and make changes as needed.

STEP 1: Setup Network Configuration	STEP 2: Setup Storage Configuration	STEP 3: Review and Complete Installation	
Your settings have been validated succe Resource Page' but must wait approxima	ssfully. Once you click "Complete Instal ately 30 minutes before the system is bac	lation", the system will complete the installation and conline.	d reboot. You will be redirected to 'Actifio
< Back			Complete Installation

17. Once choices are verified, click **Complete Installation** and the Sky Appliance will reboot.

Note: The reboot may take several minutes. The user interface will become responsive before the appliance is ready for use. Do not attempt any operations until the Dedup light on the Dashboard shows green.

A Adding an SSD to an Actifio Sky Appliance

Actifio Sky Appliances that have dedup pools of 30 TB and greater must use an SSD.

Use the hypervisor vendor's best practices to physically add an SSD to a hypervisor.

Note: The procedures in this document apply to Actifio Sky Appliance's Dedup Pool and are separate from the way SSDs are used with Actifio CDS Appliances. If the dedup pool is built entirely from an SSD, then there is no need to add an SSD.

Table 1:	SSD	Com	patibility
----------	-----	-----	------------

Dedup Pool	SSD	Required/ Optional
50 TB	512 GiB	Required
30 TB	308 GiB	Required
10 TB	103 GiB	Optional
5 TB	52 GiB	Optional
1 TB	11 GiB	Optional

An SSD already assigned to an Actifio Sky Appliance appliance from a release prior to Actifio 7.0 cannot be used. If you have an SSD from a release prior to Actifio 7.0 it does not need to be removed. If you must remove the SSD, contact your Actifio representative for assistance.

To physically add an SSD, use the hypervisor vendor's best practices for adding an SSD. Once the SSD has been added to the hypervisor, see either:

- Adding an SSD via the AGM on page 16. If AGM is not yet installed, see **Installing and Upgrading** Actifio Global Manager on a Hyper-V Server.
- Adding an SSD Via the CLI on page 17.

Adding an SSD via the AGM

Once a hypervisor has been updated with the required SSD, modify the Sky Appliance's Dedup Pool:

- 1. From the AGM Dashboard, click the **Manage** tab and select **Appliances** from the drop-down menu. The Appliances page opens.
- 2. Select a Sky Appliance and click **Configure Appliance.** The Appliance Configuration page opens.

Appliance Configura	ation	Summary Snapshot Primary Decorp OnVault
Appliance Configura Appliance Configura Appliance Configura Securative Securative Securative Securative Securations Users Securations Securation Securation Securation CoNFIGURATION Securation Connector Management Notification Cogs HOSTS HOSTS	Alion Dedup Pool Appliance ID Sayout132730 Appliance Name CDS139-C2 Appliance IP 172.17.139.61	Summary Snapshot Primary Discipp OnVault
DIAGNOSTICS SOFTWARE UPGRADE		

- 3. Select the **Dedup** tab. The Dedup Pool information page opens.
- 4. Click the Pencil icon next to the Dedup Pool name and the Manage Dedup Pool page is displayed.

Note: If your SSD appears in the list of MDisks and not in the list of eligible SSDs, click the Tag disk as SSD option to select the SSD.

- 5. If necessary, scroll down until the SSD section of the window is displayed.
- 6. In the Unmanaged Disks column, click the plus sign (+) next to the SSD you added and it will move to the Selected Disks column.
- 7. Click **Submit** and the SSD is added to the Sky Appliance.

Adding an SSD Via the CLI

If you cannot add the SSD to your Sky Appliance via the Actifio Global Manager, then use the following CLI procedure.

Note: The following procedure requires access to the CLI. Detailed instructions for accessing the CLI can be found in the Actific Global Manager. After adding an SSD to your virtual server, add the SSD to your Sky Appliance's Dedup Pool.

1. Identify the SSD:

udsinfo lsssd

id wwid

- pci-0000:00:10.0-scsi-0:0:4:0

slot status None None

2. Add the SSD to the Actifio Sky Appliance's Dedup Pool:

udstask addssd pci-0000:00:10.0-scsi-0:0:4:0

If the SSD still does not appear in the Sky Appliance's Manage Dedup Pool dialog box, manually add the SSD to the Dedup Pool.

1. Identify the Dedup Pool to which the SSD will be added:

udsinfo lsdiskpool

id warn	oct modifydate	name saf	epct mdiskgrp
71 8	30 2015-07-30 17:19:25.459	act_pri_pool000	90 act_pri_pool000
72 act_ded	88 2015-07-30 17:19:25.462 _vdk0000	act_ded_pool000	100 act_ded_pool000/
73	80 2015-07-30 17:19:25.463	act_per_pool000	90 act_per_pool00

2. Assign the SSD to the Sky Appliance's dedup pool:

udstask addssd -diskpool act_ded_pool000 pci-0000:03:00.0-scsi-0:0:4:0

3. Verify the changes under slot status:

# udsinfo lsssd	
id wwid	slot status
- pci-0000:00:10.0-scsi-0:0:40	None act_ded_pool000