
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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Contents

Chapter 1 - Before You Begin	1
Requirements for Sky Appliances That WILL NOT Use Dedup Policies.....	1
Requirements for Sky Appliances That WILL Use Dedup Policies.....	2
Chapter 2 - Installing an Actifio Sky Appliance Using SCVMM	3
Deploying the VHDX in SCVMM.....	3
Configuring the Sky Appliance VM in SCVMM.....	5
Configure CPUs and Memory.....	5
Configure Disks	6
Chapter 3 - Installing an Actifio Sky Appliance with Hyper-V Manager	7
Deploying the VHDX in Hyper-V Manager	7
Configuring the Sky Appliance VM in Hyper-V Manager	8
Configure CPUs and Memory.....	8
Configure Disks	8
Chapter 4 - Adding SCSI Adapters	11
Chapter 5 - Configuring the Actifio Sky Appliance	13
Adding an SSD via the AGM	16
Adding an SSD Via the CLI.....	17

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		
	60TB	120TB	200TB
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 VDIs	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	30TB	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:

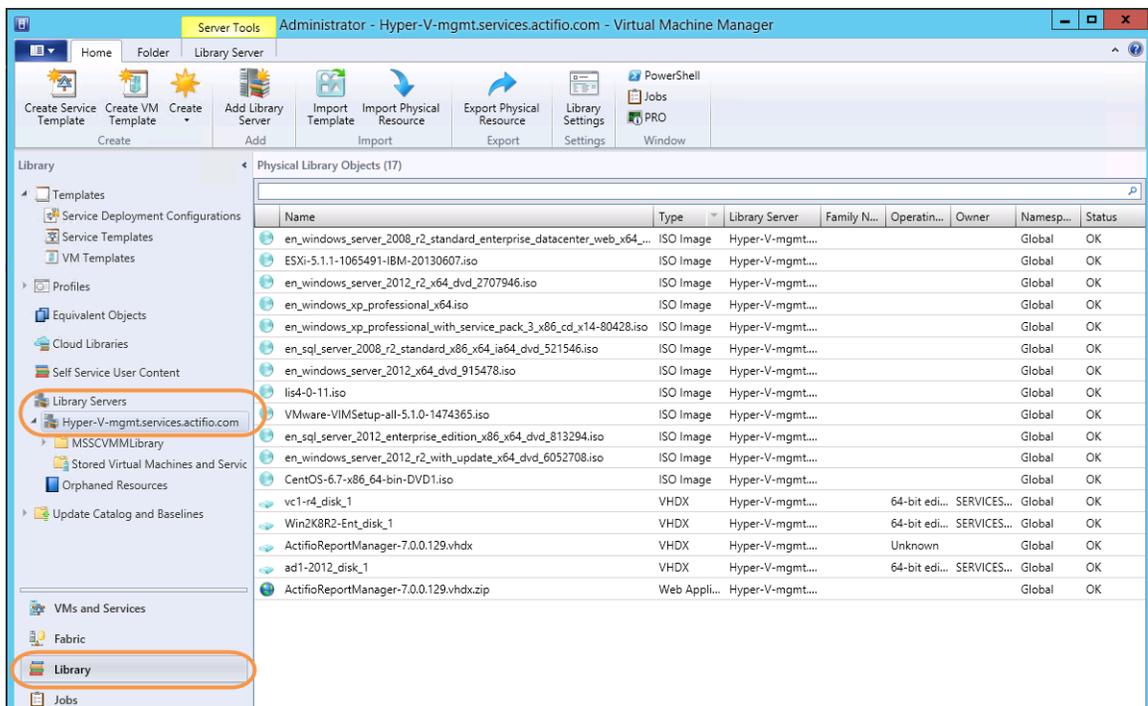
Deploying the VHDX in SCVMM on page 3

Configuring the Sky Appliance VM in SCVMM on page 5

Deploying the VHDX in SCVMM

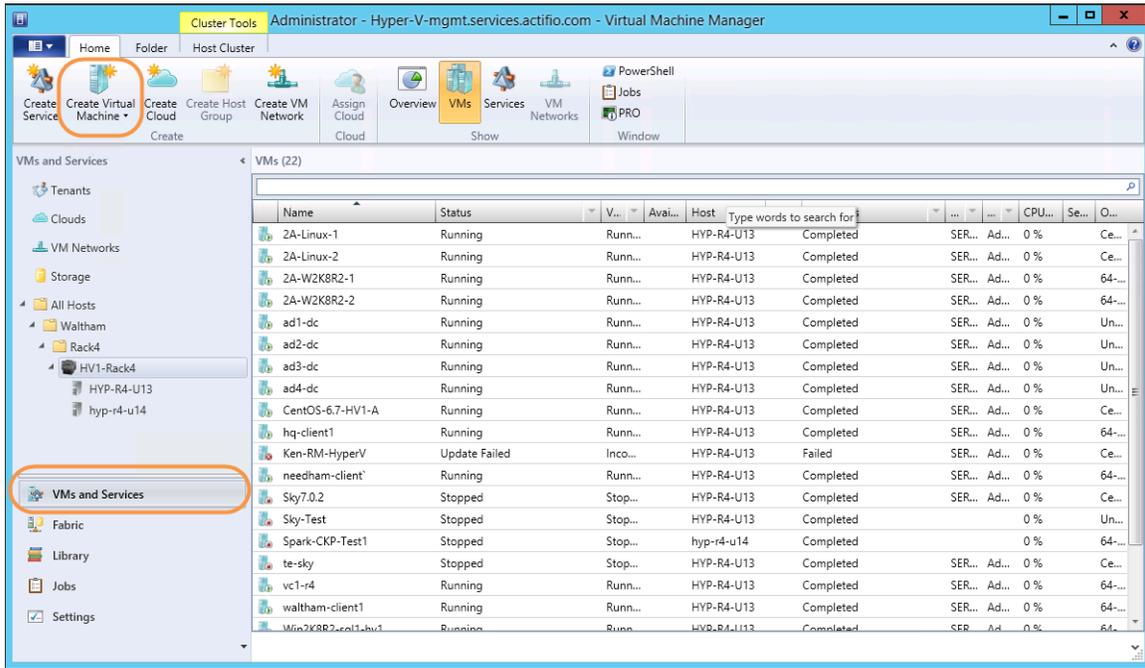
You deploy the VHDX in SCVMM like any other Hyper-V VM. The following steps show SCVMM running on Windows 2012 R2.

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**.



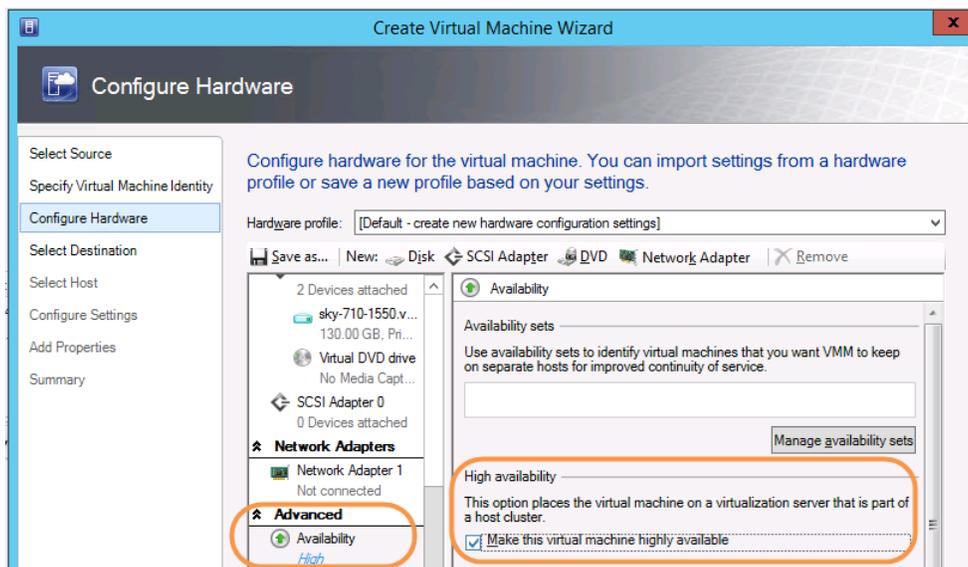
Refreshing the Library

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



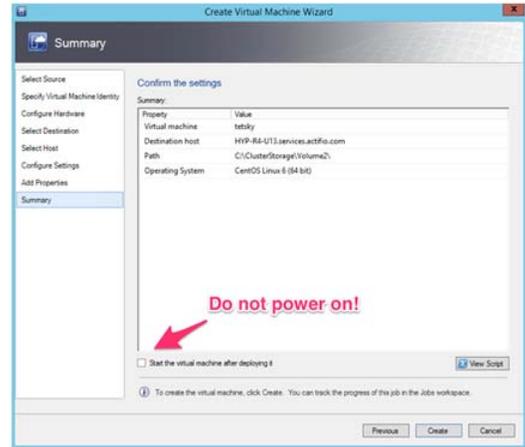
Creating the VM

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**.



Creating the VM

10. Click **Next**.
11. 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

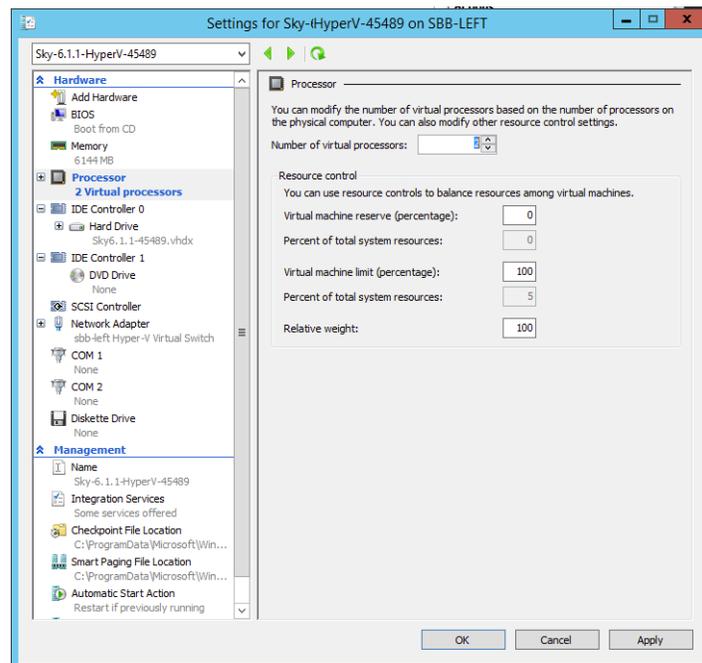
Once the Sky Appliance VM has been deployed:

[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:



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

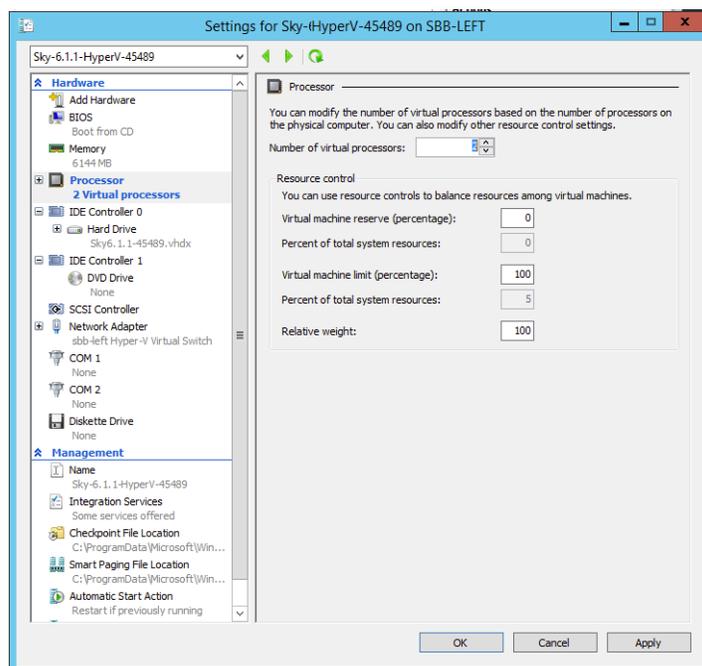
Once the Sky Appliance VM has been deployed:

[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

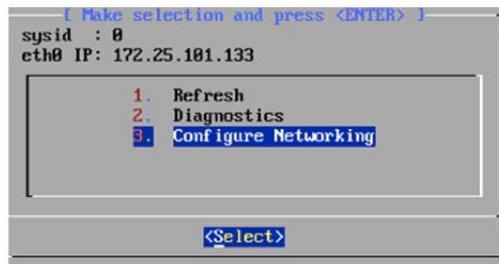
Note: Do not resize disks for Snapshot and Dedup Pools. If additional storage is needed, add new disks on the same controller (snapshot disks on Controller 1, dedup disks on Controller 2).

8. The next step is adding SCSI adapters, detailed in [Chapter 4, Adding SCSI Adapters](#).

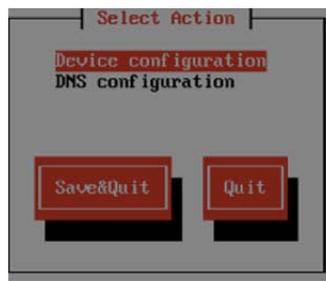
4 Adding SCSI Adapters

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**.



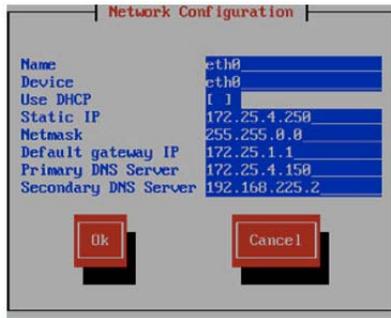
4. Click **Enter** for Device configuration.



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



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



- Select **OK**, select **Save**, and select **Save&Quit**.
- 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.

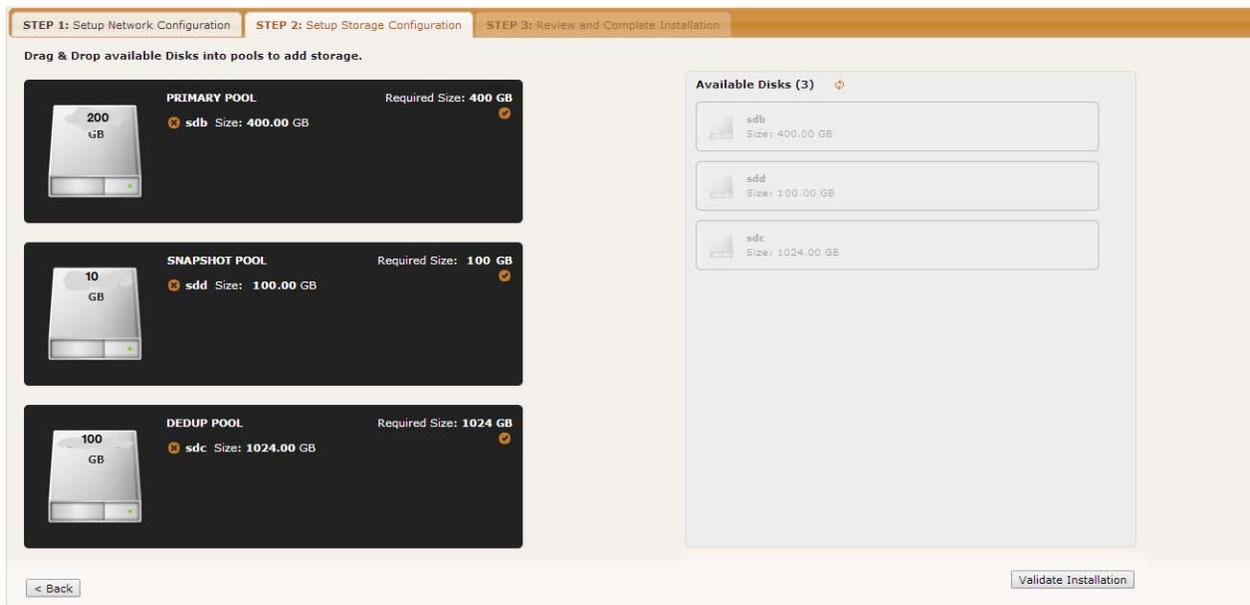
1. Open a browser to the IP address of the Sky Appliance: `http://<VM IP address>/`.
2. The installer opens the first of three tabs:

The screenshot shows the configuration wizard interface with three tabs: "STEP 1: Setup Network Configuration", "STEP 2: Setup Storage Configuration", and "STEP 3: Review and Complete Installation". The first tab is active. Below the tabs, a note states: "All Items marked with (*) are required." The form contains the following fields:

- Public IP: Four empty input boxes for IP address.
- Appliance IP (*): Four input boxes containing "172", "17", "205", and "106".
- Appliance Name (*): Text input field containing "localhost.localdom".
- DNS Server: Text input field containing "172.17.1.10".
- Subnet Mask: Four input boxes containing "255", "255", "0", and "0".
- Gateway: Four input boxes containing "172", "17", "1", and "1".
- NTP Server: Four empty input boxes.
- Infrastructure: Dropdown menu with "VMWare" selected.
- Timezone: Dropdown menu with "Africa/Abidjan" selected.
- System uuid (*): Text input field containing "1415068751:c222a0bd-e7bd-37cc-913a-04a9cf88f4b:a4b7b9d7".
- License: Text area containing the text: "Evaluation license: Dedup pool size is set to 5TB with no encryption for 30 days from the start of installation. Please contact Actifio to upgrade to production licenses." Below this is a "Validate License" button.
- Create Admin Password (*): Text input field.
- Confirm Admin Password (*): Text input field.
- Next >: Button at the bottom right.

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.



14. Select and drag the Available Disks to the pools for which they were created.
15. 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.



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 Compatibility

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.

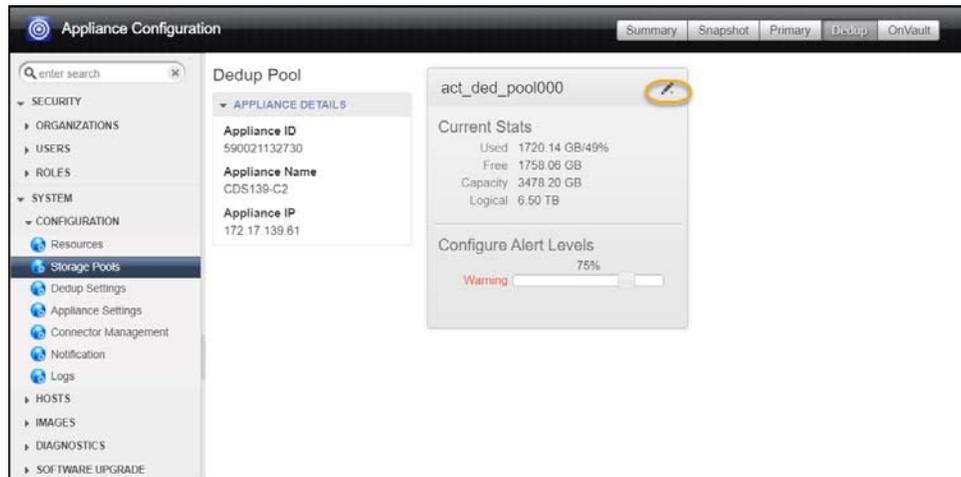
To physically add an SSD, use the hypervisor vendor's best practices for adding an SSD. Once the SSD has been added to the hypervisor, see either:

- [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.



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 Actifio 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 slot status
- pci-0000:00:10.0-scsi-0:0:4:0 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 warnpct modifydate name safepct mdiskgrp
71 80 2015-07-30 17:19:25.459 act_pri_pool000 90 act_pri_pool000
72 88 2015-07-30 17:19:25.462 act_ded_pool000 100 act_ded_pool000/
act_ded_vdk0000
73 80 2015-07-30 17:19:25.463 act_per_pool000 90 act_per_pool000
```

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-0:0:4:0 None act_ded_pool000
```

