

---

# Installing an Actifio Sky Appliance on a VMware Server

## Copyright, Trademarks, and other Legal Matter

Copyright © 2009 - 2020 Actifio, Inc. All rights reserved.

Actifio®, AnyIT®, Dedup Async®, OnVault®, Enterprise Data-as-a-Service®, FlashScan®, AppFlash DEVOPS Platform®, Copy Data Cloud®, and VDP® are registered trademarks of Actifio, Inc.

Actifio Sky™, Actifio One™, and Virtual Data Pipeline™ are trademarks of Actifio, Inc.

All other brands, product names, goods and/or services mentioned herein are trademarks or property of their respective owners.

Actifio, Inc., is a provider of data protection and availability products. Actifio's technology is used in products sold by the company and products and services sold and offered by its commercial partners. The current list of Actifio patents is available online at: <http://www.actifio.com/patents/>

Actifio believes the information in this publication is accurate as of its publication date. Actifio reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

THE INFORMATION IN THIS PUBLICATION IS PROVIDED "AS IS." ACTIFIO, INC. MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WITH RESPECT TO THE INFORMATION IN THIS PUBLICATION, AND SPECIFICALLY DISCLAIMS IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

This software and the associated documentation are proprietary and confidential to Actifio. Use, copying, and distribution of any Actifio software described in this publication requires an applicable software license. Any unauthorized use or reproduction of this software and the documentation may be subject to civil and/or criminal liability.

Actifio strives to produce quality documentation and welcomes your feedback. Please send comments and suggestions to [docs@actifio.com](mailto:docs@actifio.com).

# Contents

<b>Chapter 1 - Requirements for Installing an Actifio Sky Appliance on VMware .....</b>	<b>1</b>
vSphere Server Requirements .....	1
Sky Appliances on Licensed/Unlicensed vSphere Host.....	1
vSphere Host Power Management Off .....	2
vSphere NTP.....	2
Requirements for Sky Appliances That WILL Use Dedup Policies.....	3
Requirements for Sky Appliances That WILL NOT Use Dedup Policies .....	4
Actifio Sky Appliance Storage Requirements .....	5
Actifio Sky Appliance Networking Requirements.....	6
<b>Chapter 2 - Actifio Appliance VMware vSAN Requirements .....</b>	<b>7</b>
<b>Chapter 3 - Deploying the Actifio Sky Appliance OVA .....</b>	<b>9</b>
Deploying the Sky Appliance OVA.....	9
Configuring CPUs, Cores, and Memory .....	13
Adding SCSI Controllers.....	14
Adding Disks.....	16
Adding Network Interfaces.....	17
Worker Thread Errors .....	17
Turning the Balloon Driver Off .....	18
Deleting an Actifio Sky Appliance VM .....	20
<b>Chapter 4 - Configuring an Actifio Sky Appliance .....</b>	<b>21</b>
<b>Appendix A - Adding and Configuring Additional Network Interfaces .....</b>	<b>23</b>
Adding a New Network Adapter .....	23
Configuring a Sky Appliance VM Network Adapter.....	25
<b>Appendix B - Adding an SSD to an Actifio Sky Appliance .....</b>	<b>27</b>
Adding an SSD to a Sky Appliance.....	28



# 1 Requirements for Installing an Actifio Sky Appliance on VMware

---

The following sections provide the requirements for installing an Actifio Sky Appliance on a VMware server:

- [vSphere Server Requirements](#) on page 1
- [Requirements for Sky Appliances That WILL Use Dedup Policies](#) on page 3
- [Requirements for Sky Appliances That WILL NOT Use Dedup Policies](#) on page 4
- [Actifio Sky Appliance Storage Requirements](#) on page 5
- [Actifio Sky Appliance Networking Requirements](#) on page 6

## vSphere Server Requirements

An Actifio Sky Appliance must be installed on a vSphere server configured specifically for a Sky Appliance.

Ensure the vSphere host has **sufficient memory and CPUs/Cores reserved** to accommodate your Actifio Sky model. See [Requirements for Sky Appliances That WILL Use Dedup Policies](#) on page 3 and [Requirements for Sky Appliances That WILL NOT Use Dedup Policies](#) on page 4 for details.

Do not share the Actifio Sky Appliance's resources with other VMs. See the *A VMware vCenter Administrator's Guide to Actifio Copy Data Management* section on Permissions.

### Sky Appliances on Licensed/Unlicensed vSphere Host

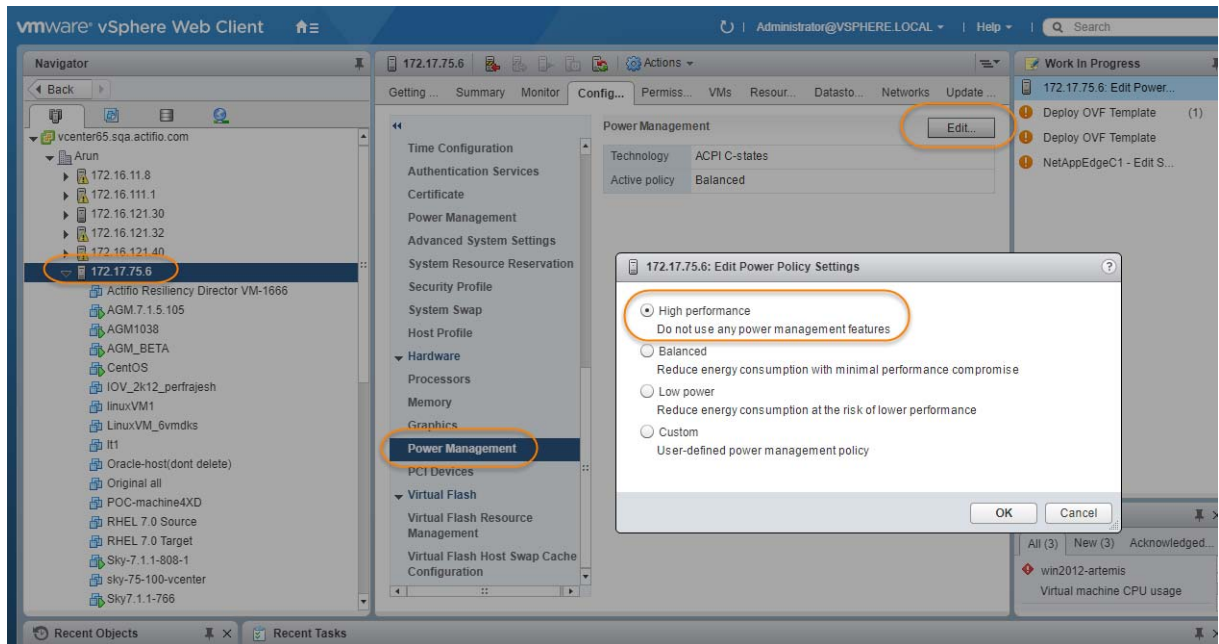
If an appliance is installed on an unlicensed (free) vSphere host, the Policy Templates for that Sky Appliance **CANNOT** capture other VMs and applications installed on that vSphere host.

If an appliance is installed on an unlicensed (free) vSphere host, the Policy Templates for that Sky Appliance **CAN** capture and access VMs and applications on licensed vSphere hosts and applications on physical servers.

If an appliance is installed on a licensed vSphere host, the Policy Templates for that Sky Appliance **CAN** capture VMs and applications on the vSphere host on which the Sky Appliance is installed. Policy Templates for that Sky Appliance can also capture VMs and applications on other licensed vSphere hosts and applications on physical servers.

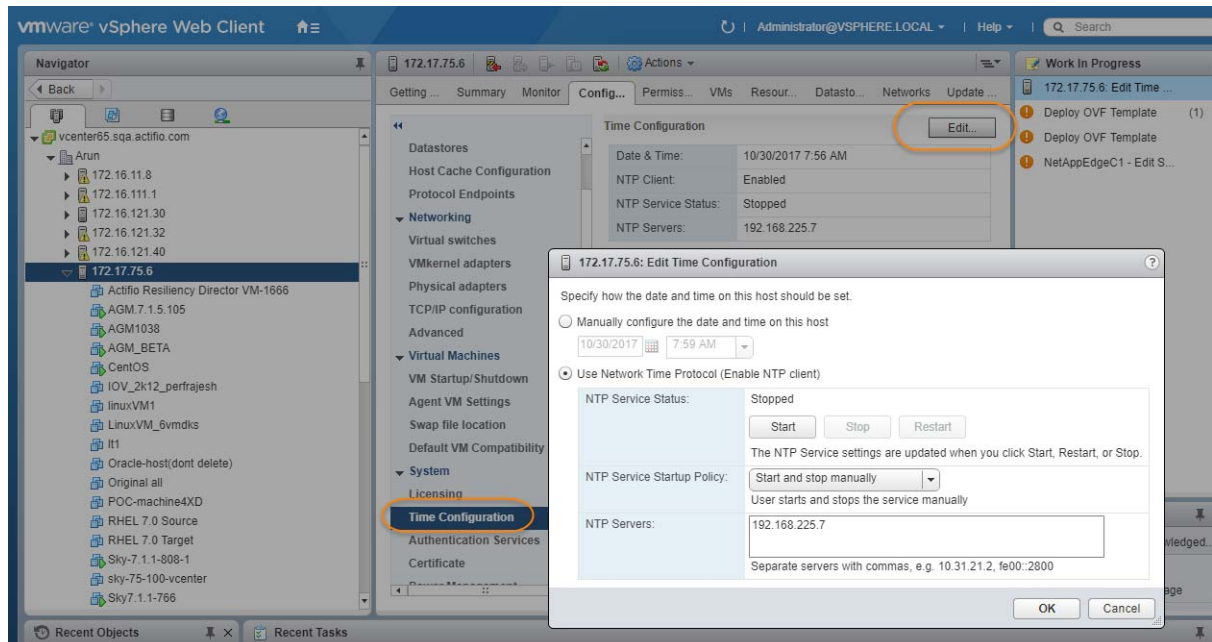
## vSphere Host Power Management Off

Power management can interfere with the operation of a Sky Appliance. Ensure that power management for the ESX host is set to **High Performance**.



## vSphere NTP

Do not use VMware Tools periodic time synchronization for the Sky Appliance's VM. Use NTP instead.



## 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
Cores required. <sup>a b</sup>	1	2	4	8 <sup>c</sup>	12 <sup>c</sup>
Cores required for encryption at rest. <sup>a b</sup>	2	4	6	10 <sup>c</sup>	15 <sup>c</sup>
Minimum Reserved Memory	6GB	10GB	16GB	48GB	72GB
Minimum Disk Space for Primary Pool. <sup>d</sup>	200GB				
Minimum Disk Space for Snapshot Pool. <sup>d</sup>	10GB				
Minimum Disk Space for Dedup Pool. <sup>d</sup>	100GB				
SSD Minimums <sup>e</sup>	Optional: 11GB	Optional: 53GB	Optional: 103GB	Required: 308GB	Required: 512GB
Maximum VDisks	1000			3000	5000

- a. Minimum 2 GHz per core. Required cores can be spread across multiple CPUs, with multiple CPUs providing slightly better performance. The cores and CPU must be reserved and the balloon driver must be tuned off. Any paging or swapping will cause significant performance impact and in some cases result in the appliance deadlocking.
- b. Sockets have a multiplying effect on the number of cores. Depending on how your VMware license is configured, select a combination of sockets and cores to achieve the required number of cores.
- c. Requires vSphere Host and vCenter 5.1 or later.
- d. See [Actifio Sky Appliance Storage Requirements](#) on page 5. Must be Thick Provision Eager Zeroed.
- e. See [Adding an SSD to an Actifio Sky Appliance](#) on page 27 for details on adding SSDs.

## 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
Cores required. <sup>a b</sup>	4	6	8
Cores required for encryption at rest. <sup>a b</sup>	6	8	10
Minimum Reserved Memory	16GB	32GB	48GB
Minimum Disk Space for Primary Pool <sup>c</sup>	200GB		
Minimum Disk Space for Snapshot Pool	10GB		
Required Disk Space for Dedup Pool if appliance WILL NOT use dedup policies.	100GB		
Maximum VDisks	10,000		

a. Minimum 2 GHz per core. Required cores can be spread across multiple CPUs, with multiple CPUs providing slightly better performance. The cores and 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. Sockets have a multiplying effect on the number of cores. Depending on how your VMware license is configured, select a combination of sockets and cores to achieve the required number of cores.

c. See [Actifio Sky Appliance Storage Requirements](#) on page 5. Must be Thick Provision Eager Zeroed.



## Actifio Sky Appliance Storage Requirements

The Sky Appliance uses three storage pools: Primary Pool, Snapshot Pool, and the Dedup Pool. The appliance uses the Dedup Pool even if it does not support Dedup policies. Each pool **MUST**:

- Reside on a separate RAID-6 array.
- Reside on a RAID-6 array that supports at least 100 IOPS per disk.
- Use 7200 RPM disks, 10,000 RPM disks are preferred.
- Have a performance profile of 35 random reads per second per TB with 64KB read size or 10 random writes per second per TB with 64 KB write size.

---

**Note:** Run the *IOPerf* tool prior to Sky Appliance installation to ensure adequate performance. Actifio representatives have access to a document that details how to run IOP.

---

- Use **Thick Provision Eager Zero** disks.

---

**Note:** Using thin provisioned disks can result in data loss.

---

To size a Sky Appliance, you must consider the amount of data to be captured, its type, change rate, growth, and how long it will be retained. These variables and others are considered in the VDP solution sizing tool.

The sizing tool will recommend how to allocate space for at least three **Thick Provisioned Eager Zero** disks:

- **Primary Pool:** One 200 GB disk used by the Actifio Sky Appliance.
- **Snapshot Pool:** Accommodates the full copies (snapshots) to be retained, plus enough space for future growth. A minimum of 10 GB is required. You can add additional disks in vSphere to accommodate growth. The Snapshot Pool requires its own SCSI controller set to VMware Paravirtual. See [Adding SCSI Controllers](#) on page 14 for details.
- **Dedup Pool:** Accommodates the deduplicated data to be retained, plus enough space for future growth. A minimum of 1TB is required. You can add additional disks in vSphere to accommodate growth. The Dedup Pool requires its own SCSI controller set to VMware Paravirtual. See [Adding SCSI Controllers](#) on page 14 for details.

For Sky Appliance models that are not configured for deduplication, you must still add a Dedup Pool disk of 100GB. Such configurations however do not require a separate SCSI controller.

---

**Note:** Do not resize disks for Snapshot and Dedup Pools. If additional storage is needed, add disks.

---

When creating disks, ensure that the **Mode** is set to **Independent** and **Persistent**.

## Actifio Sky Appliance Networking Requirements

Sky Appliances require the following network settings:

- **Static IPs:** You must provide static IPs for all NICs on Sky Appliances.
- **VMXNET3:** Sky Appliance models 30, 50, 120, and 200 must use the VMXNET3 Ethernet adapter. These adapters enable 10GB performance.
- **Adding NICs:** By default, the Sky Appliance comes with a single NIC. To add additional NICs, see [Adding and Configuring Additional Network Interfaces](#) on page 23.
- **iSCSI:** The Sky Appliance uses iSCSI to mount data. Ensure that iSCSI is turned on for the Sky Appliance's vSphere host, and for the servers that host the data the Sky Appliance will capture and manage.

When capturing an entire vSphere VM, iSCSI does not need to be configured on the vSphere host that hosts the VM to be captured. Once the VM has been captured, to present the VM to another vSphere host, including the vSphere host from which it was captured, the vSphere host must have iSCSI configured.

When capturing individual applications on a VM, rather than capturing the entire VM, iSCSI must be configured on the VM's vSphere host.

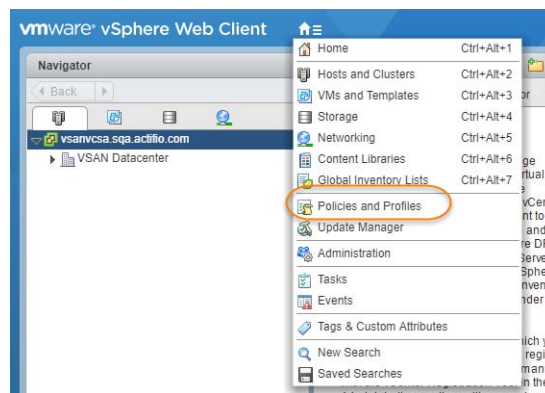
The Snapshot pool and the Dedup pool must each have their own SCSI controller set to **VMware Paravirtual**.

## 2 Actifio Appliance VMware vSAN Requirements

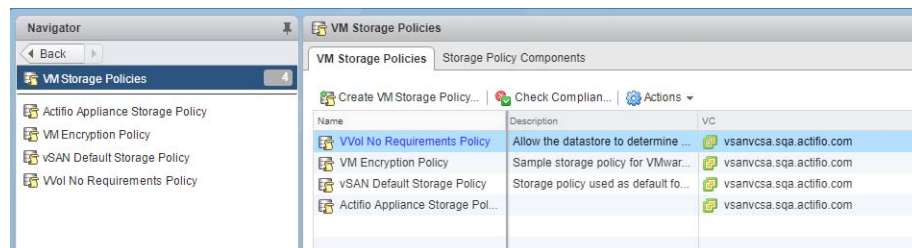
If the Actifio Sky Appliance will use VMware's vSAN storage, then you must consider the VMware vSAN storage policy used when you deploy the Sky Appliance OVA. The best practice is to use the vSAN Default Storage Policy.

VMware provides detailed step-by-step instructions on how to create and modify VMware vSAN storage policies.

1. From a vSAN data center's top bar drop down menu, select Policies and Profiles:



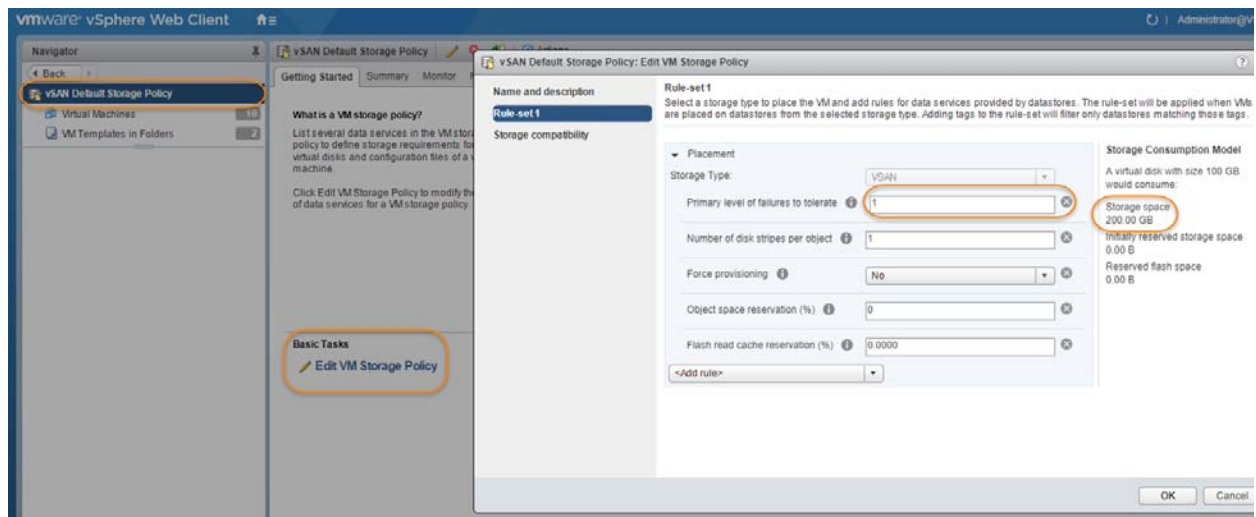
2. From VM Storage Policies, either create a new policy or select and edit an existing policy:



3. The vSAN policy sets the rules for fault tolerance (Primary level of failures to tolerate). You must consider how the fault tolerance settings will impact storage.

A policy with a Primary level of failures to tolerate set to 1 or more will allow the Sky Appliance fault tolerant operations across the ESX cluster. Setting the value of Primary level of failures to tolerate to a value of “n” will increase the storage requirements “n” times. For example, if a policy has 100 GB of storage and a level of 1, then it will require 200 GB of storage.

From the policy editor, set Primary level of failures to tolerate to the required level. Pay attention to how your setting impacts storage.



4. Make other settings as needed.
5. Click OK and the policy is complete.

# 3 Deploying the Actifio Sky Appliance OVA

This chapter provides instructions for deploying and configuring the Sky Appliance Open Virtual Appliance (OVA) using the best practices detailed in [Requirements for Installing an Actifio Sky Appliance on VMware](#) on page 1.

[Deploying the Sky Appliance OVA](#) on page 9

[Configuring CPUs, Cores, and Memory](#) on page 13

[Adding SCSI Controllers](#) on page 14

[Adding Disks](#) on page 16

[Adding Network Interfaces](#) on page 17

[Turning the Balloon Driver Off](#) on page 18

---

**Note:** At this point the VM must be powered down. Later on, you will power on the VM.

---

## Deploying the Sky Appliance OVA

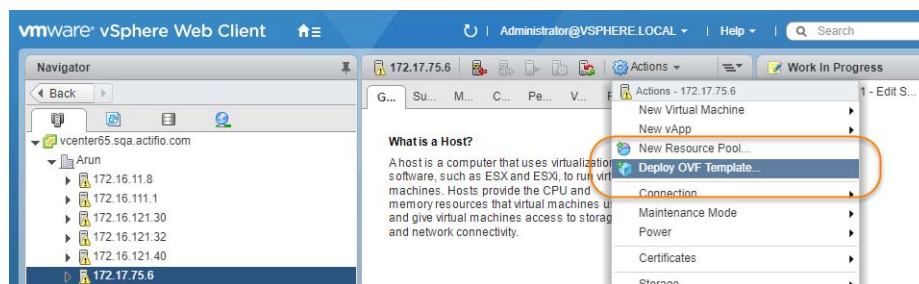
Once you have obtained a copy of the Sky Appliance OVA from your Actifio representative:

---

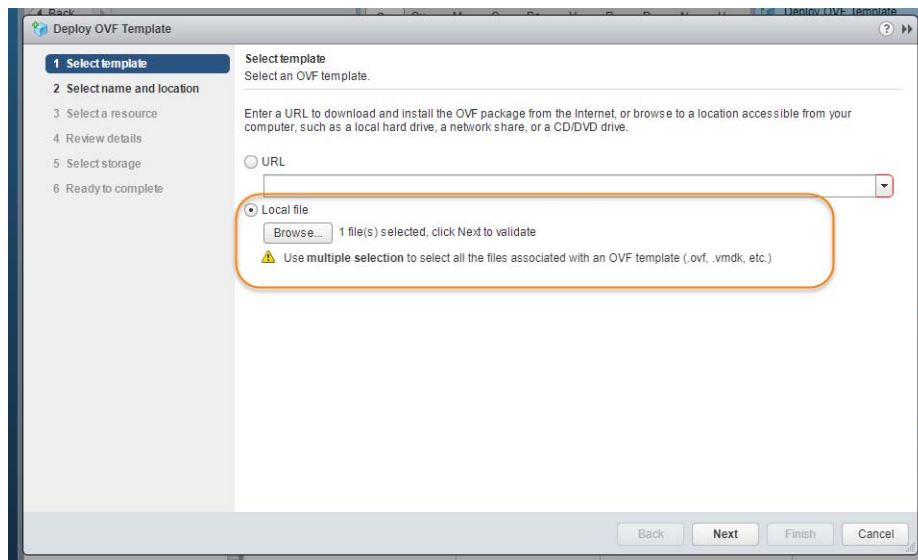
**Note:** Sky models 30 and 50 require vCenter 5.1 or later.

---

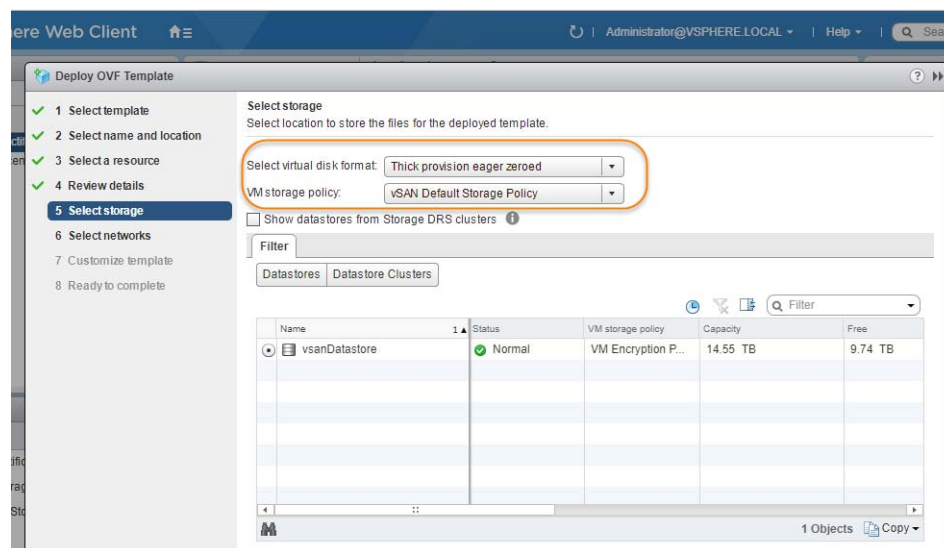
1. From the vSphere web client, select the host for the Sky Appliance VM.
2. From the vSphere web client's Actions drop down menu, select Deploy OVF Template:



3. Browse to the OVA file:

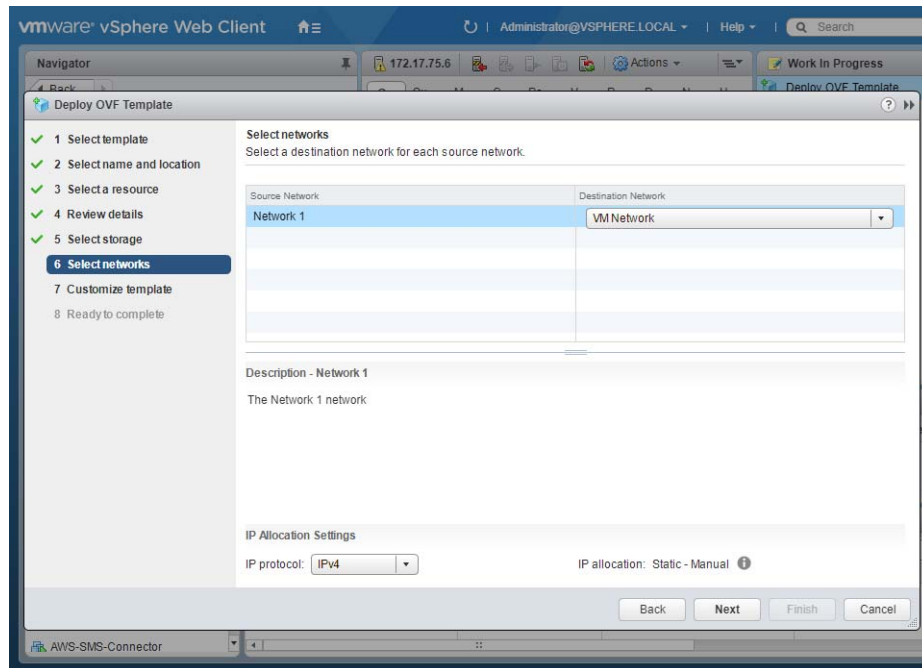


4. Complete the deployment like any other OVF template including:
  - o Enter a name for the Sky Appliance.
  - o Select the cluster/host to store the Sky Appliance.

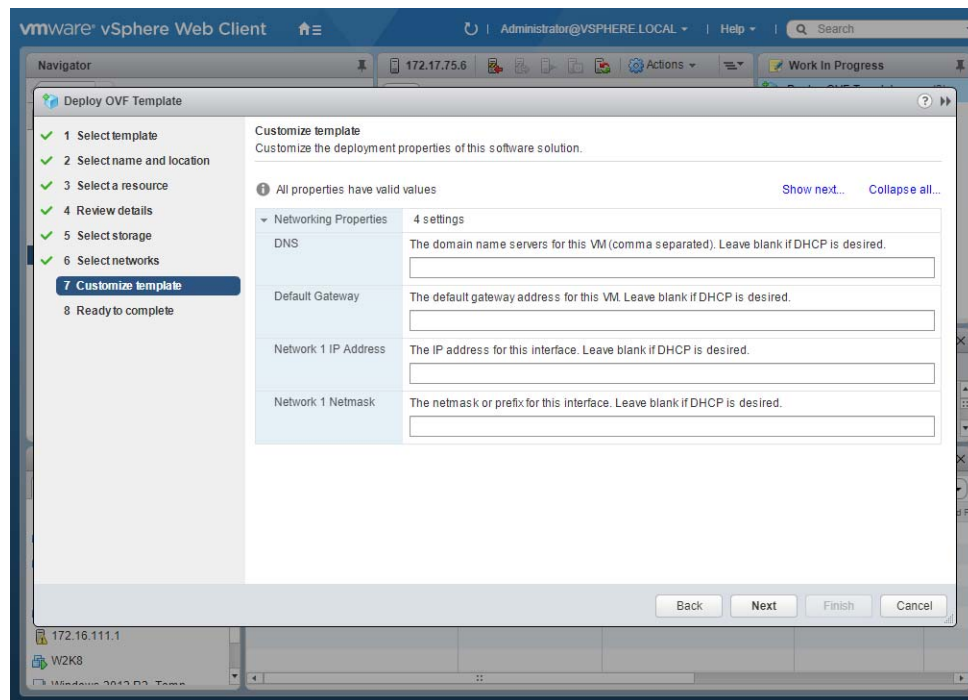


5. When selecting storage: Select *Thick provisioned eager zero* and ensure that the storage selected has enough room to accommodate the 130GB OS Volume.

6. If the Sky Appliance will use VMware vSAN (recommended), then select the vSAN policy created for the appliance's fault tolerance requirements. See [Actifio Appliance VMware vSAN Requirements](#) on page 7 for details.

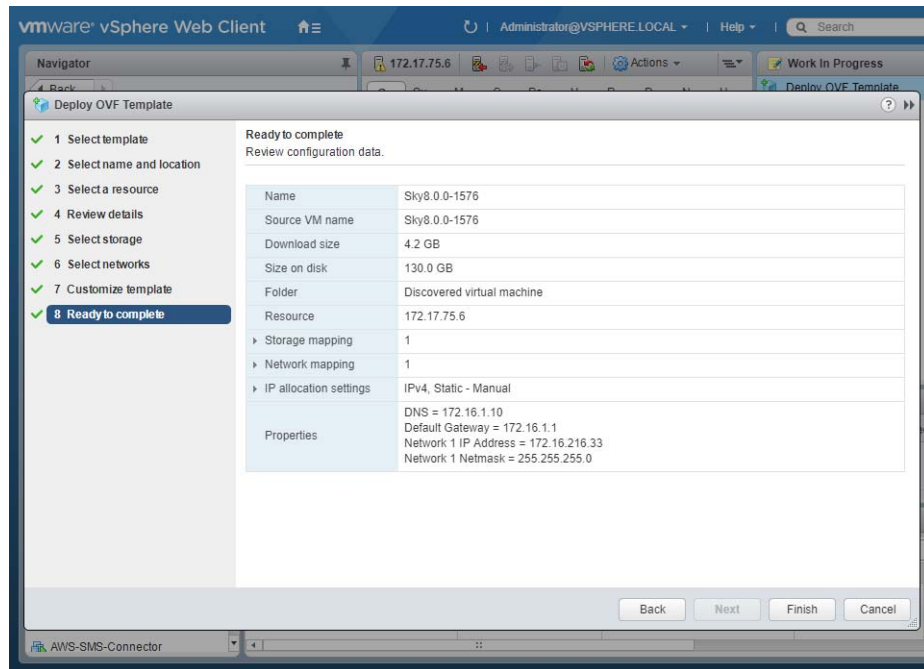


7. Select the network for the management interface. For appliances that require multiple networks, you will add those networks after the Sky Appliance is completely installed.



8. For network settings, enter a static IP, Gateway, DNS, and Netmask. DO NOT use DHCP.

9. Click Next and review your settings:



You can use the Back button to go back and make changes.

10. Click Finish and your Sky Appliance VM will be deployed.

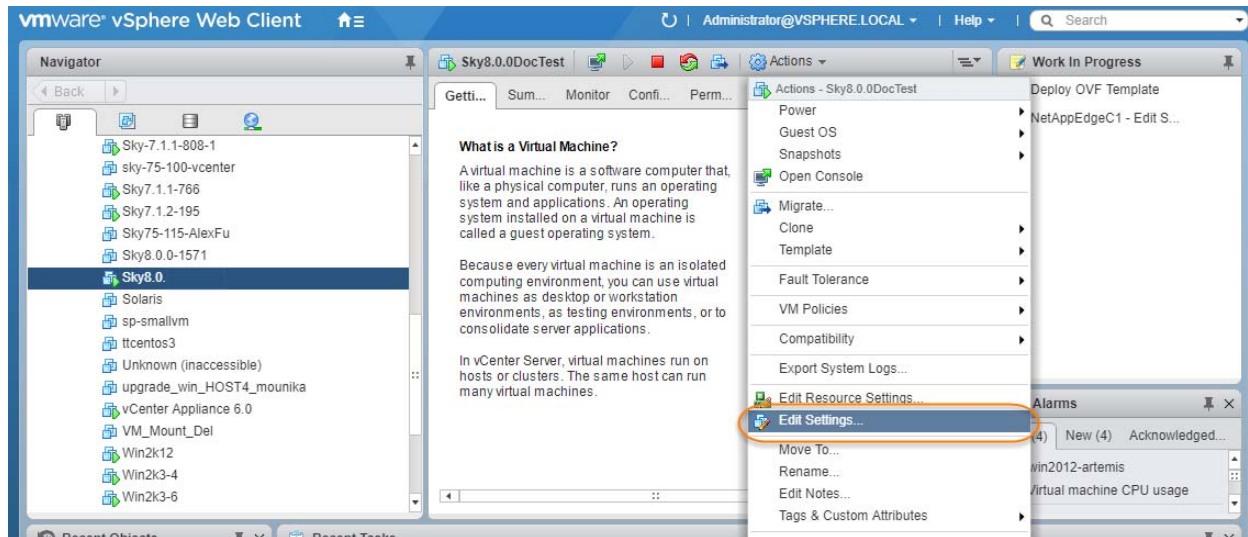


## Configuring CPUs, Cores, and Memory

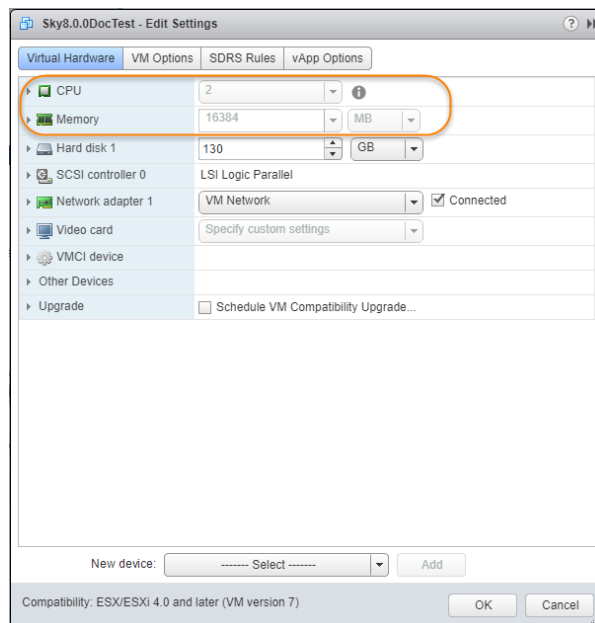
Once the VM has been deployed, reserve and configure its CPUs, cores, and memory according to your Sky model requirements. See [Requirements for Sky Appliances That WILL Use Dedup Policies](#) on page 3 or [Requirements for Sky Appliances That WILL NOT Use Dedup Policies](#) on page 4 for details.

To configure CPUs, cores, and memory:

1. Select the Sky Appliance VM.



2. From the **Actions** drop down menu, select **Edit Settings**. The Edit Settings dialog box is open to the Virtual Hardware tab:



3. Reserve the memory, CPUs, and cores to meet the requirements of your Actifio Sky model. See [Requirements for Actifio Sky Appliances That WILL Use Dedup Policies](#) on page 3 for details.
4. Review the Hardware Summary to ensure you have properly reserved memory, CPUs, and cores.

## Adding SCSI Controllers

The Sky Appliance VM requires three disks, each with its own SCSI controller:

1. The VM's operating system and the Primary pool disk can both use the 0:0 controller.
2. The Snapshot Pool uses the 1:0 controller. Disks assigned to the Snapshot Pool will use 1:x
3. The Dedup Pool uses the 2:0 controller. Disks assigned to the Dedup Pool will use 2:x.

The controllers for the Snapshot Pool and Dedup Pool must be set to VMware Paravirtual.

---

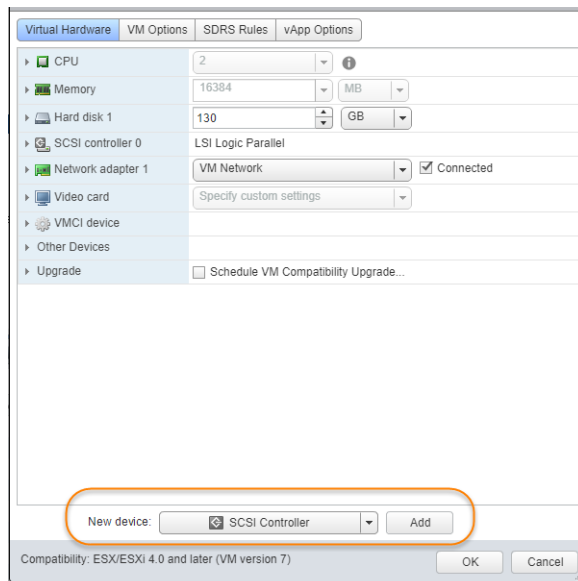
**Note:** Sky Appliance models that are not using deduplication do not require a separate SCSI controller for the Dedup Pool disk(s).

---

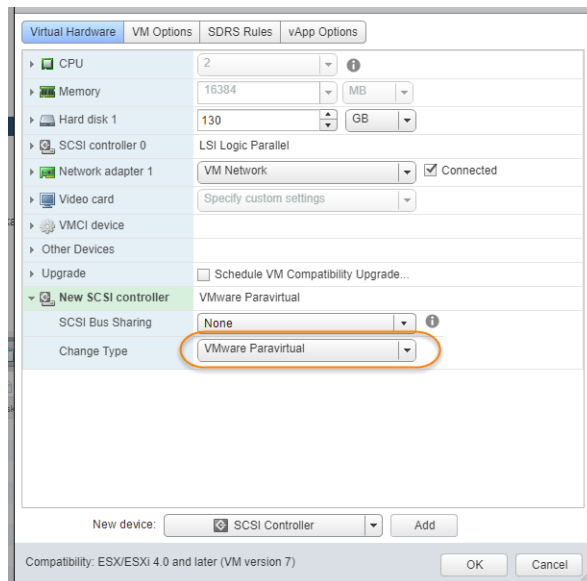
A controller can accommodate up to 16 disks. If you find it necessary to create more than 15 disks for a Snapshot or Dedup Pool, you will need to define a new controller.

To add SCSI controllers as VMware Paravirtual:

1. Select the Sky Appliance VM.
2. From the Actions drop down menu, select Edit Settings. The Edit Settings dialog box is open to the Virtual Hardware tab.
3. From the New Device drop down menu at the bottom of the dialog box, select SCSI controller.



4. Click Add and the options for the SCSI controller are displayed.
5. Expand the options under the New SCSI Controller
6. Select VMware Paravirtual and then click OK.



7. Add another SCSI Controller as needed.
8. Click OK to close the Edit Settings dialog box.

Once you have defined the controllers, you can add disks and assign them to their respective controllers. See [Adding Disks](#) on page 16.

## Adding Disks

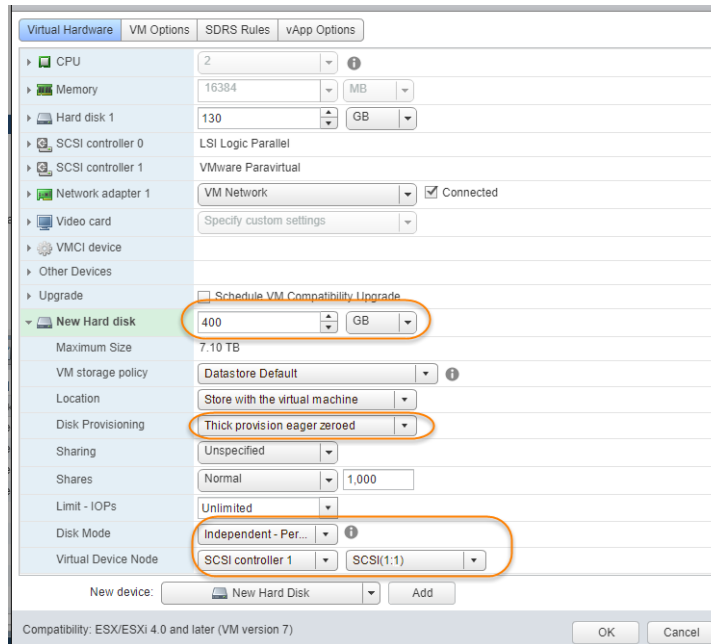
Once the SCSI controllers are created and are configured, configure the VM's disks as follows.

---

**Note:** The disks defined here will be placed into storage pools later.

---

1. On the Hardware tab, select **Add**:



2. In the Add Hardware dialog, select **Hard Disk**.

---

**Note:** Disks **MUST BE THICK PROVISIONED EAGER ZEROED**. Thin provisioned disks will cause capture operations to fail and the loss of data.

---

3. Your Sky Appliance requires at least three **Thick Provision Eager Zeroed** 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 Sky Appliance's disks.

- o One 400GB disk for the Primary Pool. This disk is used by the Sky Appliance.
- o One disk for the Snapshot Pool. Allocate enough space to accommodate the full copies (snapshots) to be retained, plus enough space for growth. A minimum of 10 GB is required. You can add additional disks in vSphere to accommodate growth.
- o One disk for the Dedup Pool. Allocate enough space to accommodate the deduplicated data to be retained, plus enough space for growth. A minimum of 1TB is required. You can add additional disks in vSphere to accommodate growth.

For Sky Appliance models that are not configured for deduplication, you must still add a Dedup Pool disk of 100GB. Such configurations however do not require a separate SCSI controller.

---

**Note:** The pool names associated with these disks are used in [Configuring an Actifio Sky Appliance](#).

---

4. For the disks that will be assigned to the Snapshot Pool and Dedup Pool, from the Virtual Device Node drop down menu, select the SCSI controller you created to which this disk will be assigned.
  - o Disks for the Snapshot Pool use 1:x
  - o Disks for the Dedup Pool use 2:x.
5. Under Mode, check **Independent** and accept the default of **Persistent**.
6. Click **OK** and the disk is configured.

Once you have finished configuring all of the disks, you can power up the VM.

---

**Note:** Do not resize disks for Snapshot and Dedup Pools. If additional storage is needed, add disks.

---

## Adding Network Interfaces

Once the Sky Appliance is up and running, you can add additional network interfaces. For environments that require multiple NICs (for example, one NIC for data storage and another NIC for management), you must manually add network adapters to the Sky Appliance VM and then configure the additional adapters through the System Management user interface. See [Adding and Configuring Additional Network Interfaces](#) on page 23 for details.

For Sky Appliance network requirements, see [Actifio Sky Appliance Networking Requirements](#) on page 6.

## Worker Thread Errors

Worker Thread errors such as:

```
2016-05-26 13:21:39.138 INFO Worker_Thread_Job_0593710 SC6164: Error: 1732: Worker thread failed: write failed for "\\?\C:\Windows\act\Staging_584181\SPARK CRM04\F_2016-03-01T211433.vhd": The storage device is unresponsive [0x8003020a]
```

Indicate either:

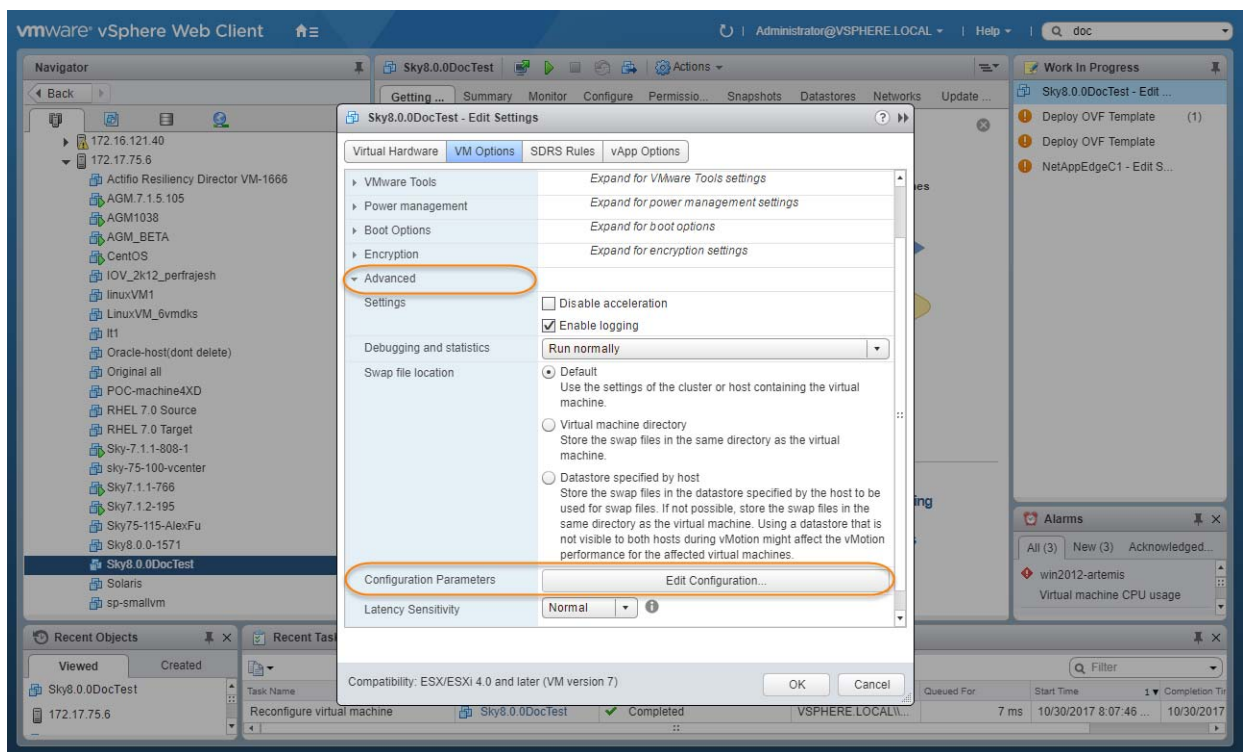
- Memory for the Sky Appliance has been incorrectly allocated.
- The bandwidth for the network on which the Sky Appliance resides is consumed by other devices.

## Turning the Balloon Driver Off

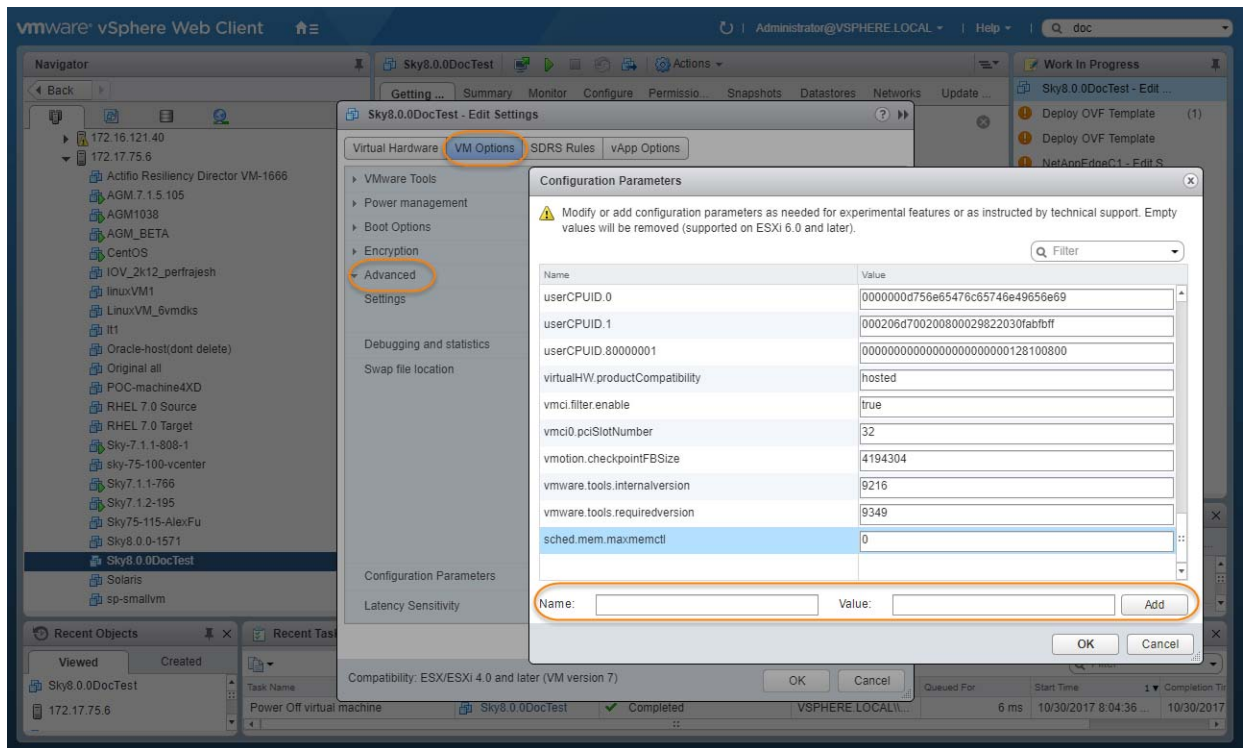
Once the VM has been configured, before you can configure the Sky Appliance, you must power down the Sky Appliance VM and turn off the Ballooning Driver. The balloon driver must be turned off because any paging or swapping will cause significant performance impact, and in some cases result in the Sky Appliance deadlocking.

To turn off the ballooning driver:

1. Log into the vSphere host as a user with administrative rights.
2. Shut down the Sky Appliance.
3. From the Actions drop down menu, select Edit Settings.
4. Click the VM Options tab.
5. On the left-hand side of the VM Options tab, click Advanced.
6. Click Edit Configuration.



- In the space provided for Name, enter **sched.mem.maxmemctl**.
- In the space provided for Value, enter **0**.
- Click **Add**. Ballooning is turned off.

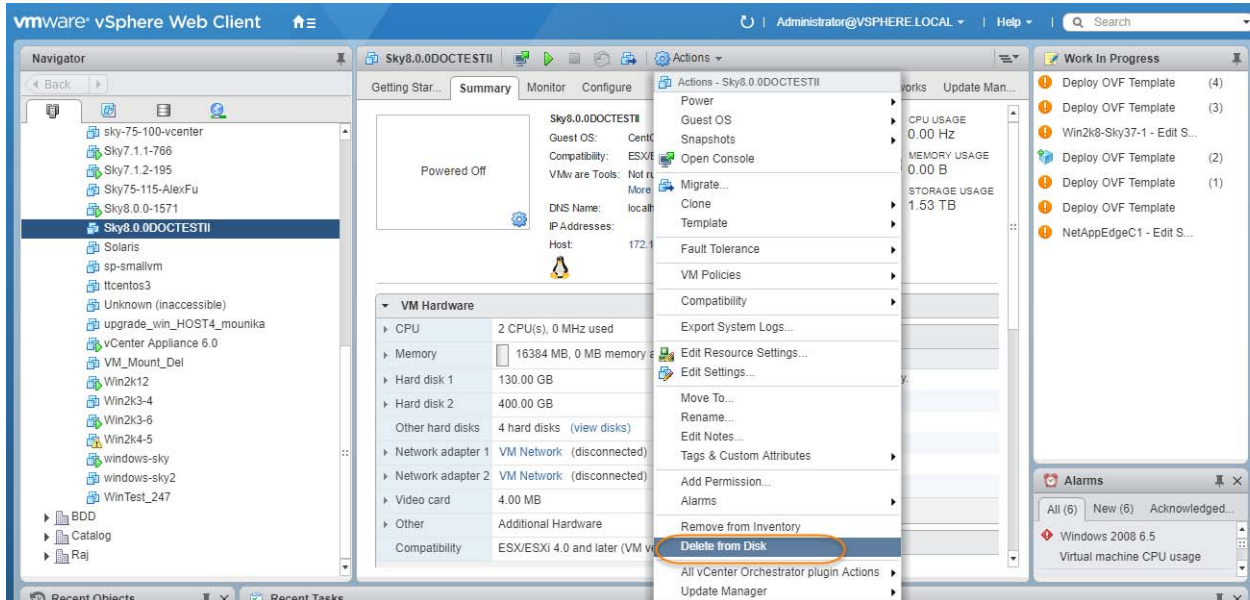


- Click **OK** and exit out of the Edit Settings dialog boxes.
- Power up the Sky Appliance VM and continue on to [Chapter 4, Configuring an Actifio Sky Appliance](#).

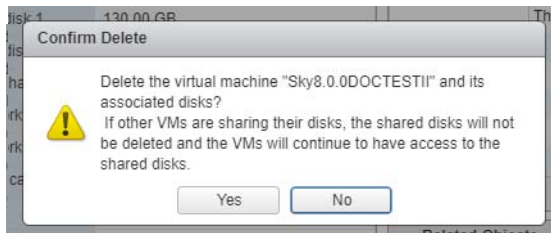
## Deleting an Actifio Sky Appliance VM

To delete an Actifio Sky Appliance VM:

1. From the vSphere Web Client's left-hand navigation frame, select the Sky Appliance VM to be deleted.
2. Power down the Sky Appliance VM.



3. From the VMware Web Client's Action drop down menu, select **Delete from Disk**. This option is only available if the VM is powered down.
4. When you click Delete from Disk, a confirmation message is displayed. Ensure that the VM name displayed in the confirmation message is the name of the Sky Appliance VM you want to delete.



5. If the name in the confirmation message matches the name of the Sky Appliance VM that you want to delete, then click **Yes** and the Sky Appliance VM and its disks will be deleted.



# 4 Configuring an Actifio Sky Appliance

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

**Note:** For the following procedure you will need the IP address of the VM. The VM's IP is on the VM's vSphere Summary page.

1. Open a browser and in the address space, enter the IP of the newly configured Sky Appliance VM: `http://<VM IP address>/.`
2. The installer opens the first of three tabs:

The screenshot shows the 'STEP 1: Setup Network Configuration' tab of the Actifio Sky Appliance installer. The interface includes a header with three tabs: 'STEP 1: Setup Network Configuration', 'STEP 2: Setup Storage Configuration', and 'STEP 3: Review and Complete Installation'. Below the tabs, a note states: 'All Items marked with (\*) are required.' The configuration fields are as follows:

- Public IP:** Four input boxes for IP address configuration.
- IPv4 address for cloud configuration:** A label for the next field.
- Appliance IP (\*):** Four input boxes containing the values 172, 17, 205, and 106.
- IPv4 address on port 1 for Actifio Desktop and CLI clients. Also used for joining this appliance with other PAS appliances:** A label for the next field.
- Appliance Name (\*):** A text input field containing 'localhost.localdom'.
- DNS Server:** A text input field containing '172.17.1.10'.
- Subnet Mask:** Four input boxes containing the values 255, 255, 0, and 0.
- Gateway:** Four input boxes containing the values 172, 17, 1, and 1.
- NTP Server:** Four input boxes for NTP server configuration.
- Infrastructure:** A dropdown menu with 'VMWare' selected.
- Timezone:** A dropdown menu with 'Africa/Abidjan' selected.
- System uuid (\*):** A text input field containing the UUID '1415068751:c222a0bd-e7bd-37cc-913a-04a9cfd86f4b:a4b7b9d7'.
- License:** A 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 (\*):** A text input field.
- Confirm Admin Password (\*):** A text input field.
- Next >** A button at the bottom right.

3. If your Sky Appliance will sit behind a firewall, then in the spaces provided enter the Public IP.
4. Ensure that the auto-discovered Sky Appliance IP address is correct.
5. In the space provided, enter a name for the Sky Appliance.
6. Ensure that the auto discovered network IP addresses are correct.
7. From the Infrastructure drop down menu, select VMware.

8. Set the time zone as needed.
9. If you are installing the Sky Appliance as an evaluation, leave the License field set to the default setting and go to [Step 14](#).

---

**Note:** The Sky 5 model is used for evaluation. If you decide to purchase a Sky Appliance, you may keep the Sky 5 appliance, or contact your Actifio representative to resize the Sky Appliance to match the new model.

---

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.

10. In the space provided, paste the license key you obtained from the Actifio representative.
11. Click **Validate License** to ensure the validity of the license entered.
12. If you are using a Sky model encryption license, a Pass phrase field is displayed. Enter a pass phrase, record the pass phrase and keep it in a secure location.
13. In the spaces provided create a password for the first Admin user of the Sky Appliance.
14. Click **Next**, and the Step 2 tab contents are displayed:

The screenshot displays the 'STEP 2: Setup Storage Configuration' tab. It features three storage pools on the left and a list of available disks on the right. The PRIMARY POOL requires 400 GB and has a disk 'sdb' of 400.00 GB assigned. The SNAPSHOT POOL requires 100 GB and has a disk 'sdd' of 100.00 GB assigned. The DEDUP POOL requires 1024 GB and has a disk 'sdc' of 1024.00 GB assigned. The available disks section on the right lists 'sdb' (400.00 GB), 'sdd' (100.00 GB), and 'sdc' (1024.00 GB). A 'Validate Installation' button is located at the bottom right of the interface.

15. Select and drag the Available Disks to the pools for which they were created.
16. 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 the page 2.
17. The third tab provides the opportunity to review choices and go back to make changes as needed.

The screenshot displays the 'STEP 3: Review and Complete Installation' tab. It contains a confirmation message: "Your settings have been validated successfully. Once you click 'Complete Installation', the system will complete the installation and reboot. You will be redirected to 'Actifio Resource Page' but must wait approximately 30 minutes before the system is back online." At the bottom, there are two buttons: 'Back' and 'Complete Installation'.

18. Once choices are verified, click Complete Installation and the Sky Appliance will reboot. 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 and Configuring Additional Network Interfaces

Adding additional network interfaces to an Actifio Sky Appliance requires:

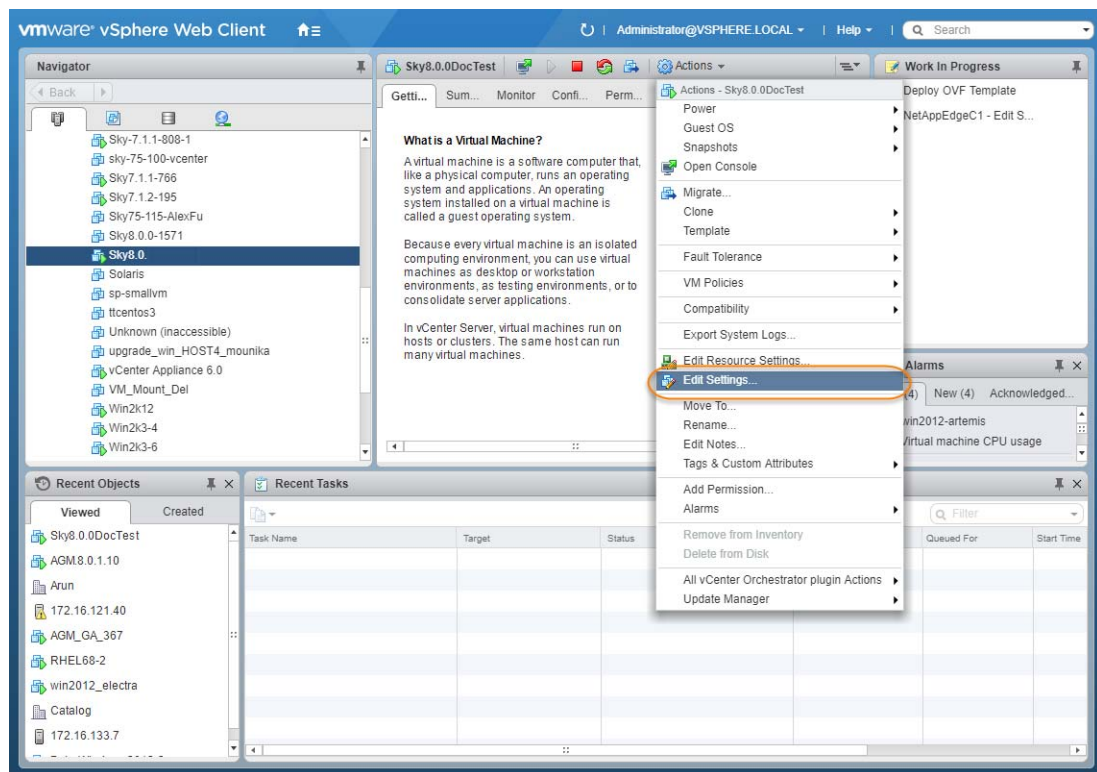
[Adding a New Network Adapter](#)

[Configuring a Sky Appliance VM Network Adapter](#)

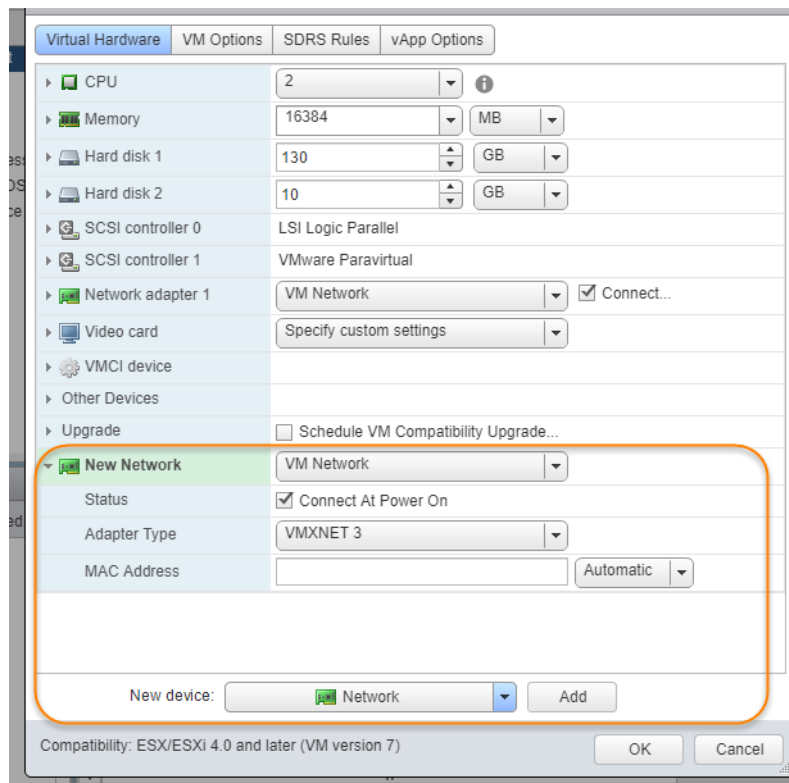
## Adding a New Network Adapter

To add a new network adapter to an Sky Appliance VM:

1. In vSphere, select the Sky Appliance VM.



2. From the Actions drop down menu, select Edit Settings. The Edit Settings dialog box is open to the Virtual Hardware tab.
3. From the New Device drop down menu at the bottom of the page, select Network.



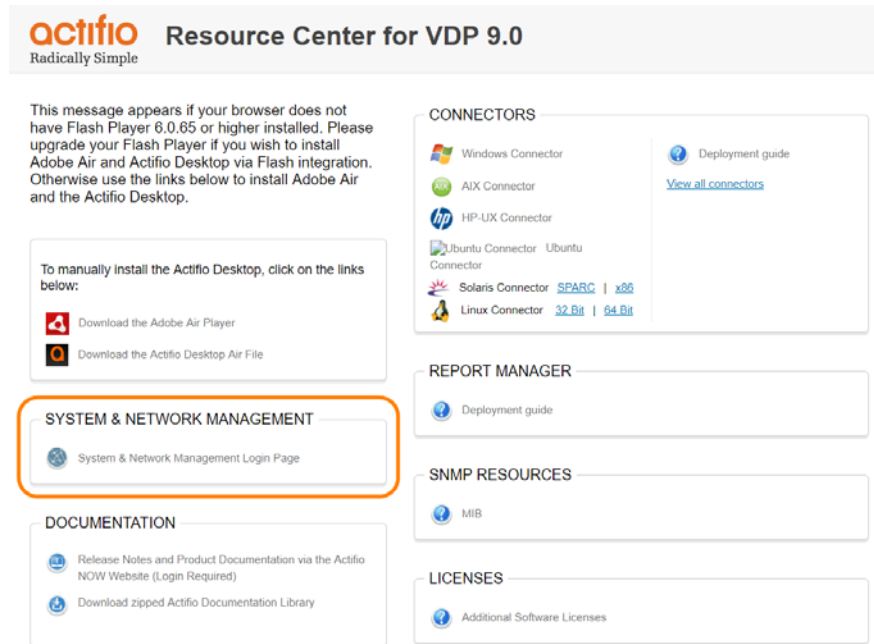
4. Click **Add**.
5. Expand the options under the New Network and ensure it is using the **VMXNET3** option.
6. Click **OK** on the Edit Settings dialog box and the new network adapter is added.
7. Once the network adapter is added, use the System Management user interface to configure the network. You can reach the System Management user interface from the Actifio Resource Center (at the IP address of the Sky Appliance).

## Configuring a Sky Appliance VM Network Adapter

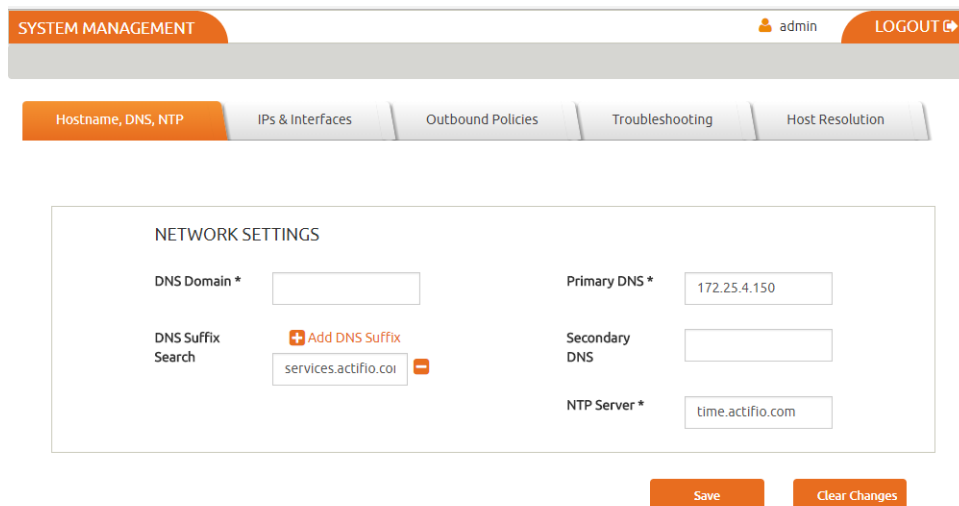
The System Management user interface is used to configure Sky Appliance network adapters. You access the System Management user interface from the Actifio Resource Center.

To display the Sky Appliance's resource page:

1. Open a browser to the Sky Appliance's Resource Center `HTTP://<appliance IP address>/`.



2. Click System & Network Management Login Page.
3. Log in using the Sky Appliance's administrator credentials, and the System Management interface is displayed.



4. Ensure that the DNS and NTP settings are correct.

- Click the IPs and Interfaces tab, and the IP and Interfaces settings are displayed:

SYSTEM MANAGEMENT admin LOGOUT

Hostname, DNS, NTP **IPs & Interfaces** Outbound Policies Troubleshooting Host Resolution

Default Interface none Save ?

Add Modify Delete

Configured IPs							
	Type	Node	Interface	IP Address	Network Mask	Gateway	MTU
<input type="checkbox"/>	node	node0	eth0	172.25.2.250	255.255.0.0	172.25.1.1	1500

- Click **Add** and the Configure IP dialog box is displayed:

SYSTEM MANAGEMENT admin LOGOUT

Hostname, DNS, NTP Host Resolution

Default Interface

**CONFIGURE IP**

Type node

Node \* node0

Interface \* eth1

IP Address \*

Network Mask \*

Gateway

MTU

Add Cancel

- Ensure Type is set to Node.
- Ensure Node is set to Node0.
- Select the interface you created on the Actifio Sky Appliance VM. In this example it is eth1.
- In the spaces provided enter:
  - A static IP address
  - A network mask
  - A Gateway
  - MTU (Maximum Transmission Unit) can be used to tune the performance characteristics of traffic on an interface. There are many dependencies to consider when adjusting the MTU, as all network devices and servers involved in passing network traffic must support the specified MTU, and there must be space reserved for protocol overhead. If you are not sure what value to use, it is best to leave this at the default value of 1500.
- Click **Add** and the interface is configured.

## B Adding an SSD to an Actifio Sky Appliance

Sky Appliances that have a dedup pool of 30 TB and greater must use an SSD.

### Actifio Sky Appliance SSD Requirements

Dedup Pool	SSD Size	Optional/Required
50TB	512GB	Required
30TB	308GB	Required
10TB	103GB	Optional
5TB	53GB	Optional
1TB	11GB	Optional

**Note:** If the dedup pool is built entirely from an SSD, then there is no need to add an SSD.

1. You need the Sky Appliance configuration to configure the SSD from AGM. To install AGM, see [Installing the Actifio Global Manager on a VMware Server](#).
2. Use the hypervisor vendor's best practices to physically add an SSD to a hypervisor.
3. Once the SSD has been added, see [Adding an SSD to a Sky Appliance](#) on page 28.

### VMware Versions

Sky Appliances are delivered with VMware Virtual Machine Compatibility Level 7. This allows Sky Appliances to work with older versions of ESX.

For a Sky Appliance to identify SSDs automatically, both of the following must be true:

- o The vSphere hosting environment must be version 5.5.0 or greater.
- o The VM Compatibility must be updated to version 10.

## Adding an SSD to a Sky Appliance

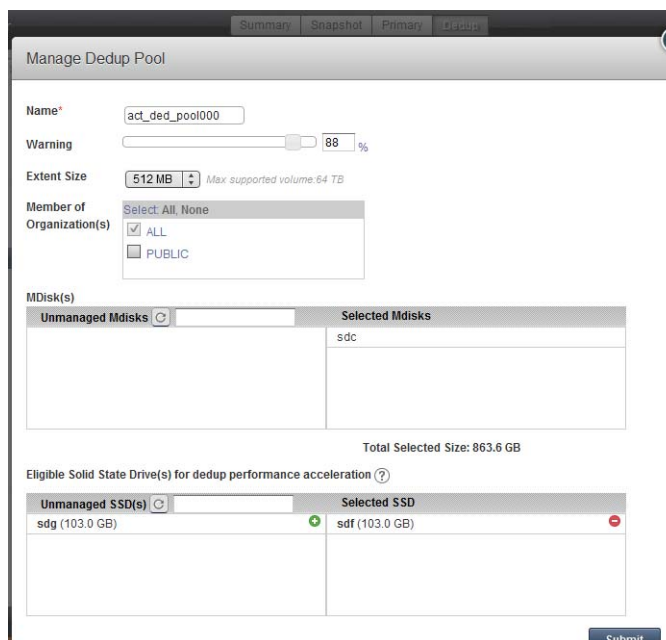
Once a hypervisor has been updated with the required SSD, modify the Sky Appliance's Dedup Pool as follows:

1. Open the AGM to the **Domain Manager** and right-click the appliance that will get the SSD. Select **Configure Appliance**.
2. The Appliance Configuration page opens. Under System/Configuration, select **Storage Pools**.
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. If necessary, scroll down until the SSD section of the window is visible.
5. In the Unmanaged SSDs column, click the + sign next to the SSD you added for the Actifio Sky Appliance, and it will move to the Selected SSD(s) column.

**Note:** If the SSD you installed is under unmanaged MDisks and not under Unmanaged SSDs, select the SSD and click the Tag link. This tags the selected disk as an SSD; it will appear in the Selected SSD column.



6. Click **Submit** and the SSD is added to the Sky Appliance.

**Note:** Only SSDs large enough to meet your Sky Appliance's model requirements appear in the dialog box.