Installing Actifio Global Manager (AGM) on a VMware ESXi Server

Actifio GO

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1 Introduction

Actifio Global Manager (AGM) is a virtual appliance. AGM provides centralized management capabilities that can be deployed on standard VMware ESX servers and in Google Cloud. From the AGM control plane, you manage multiple Sky appliances and perform day-to-day copy data operations. Sky appliances are the highly scalable data movers that virtualize data to improve the resiliency and agility of your business.
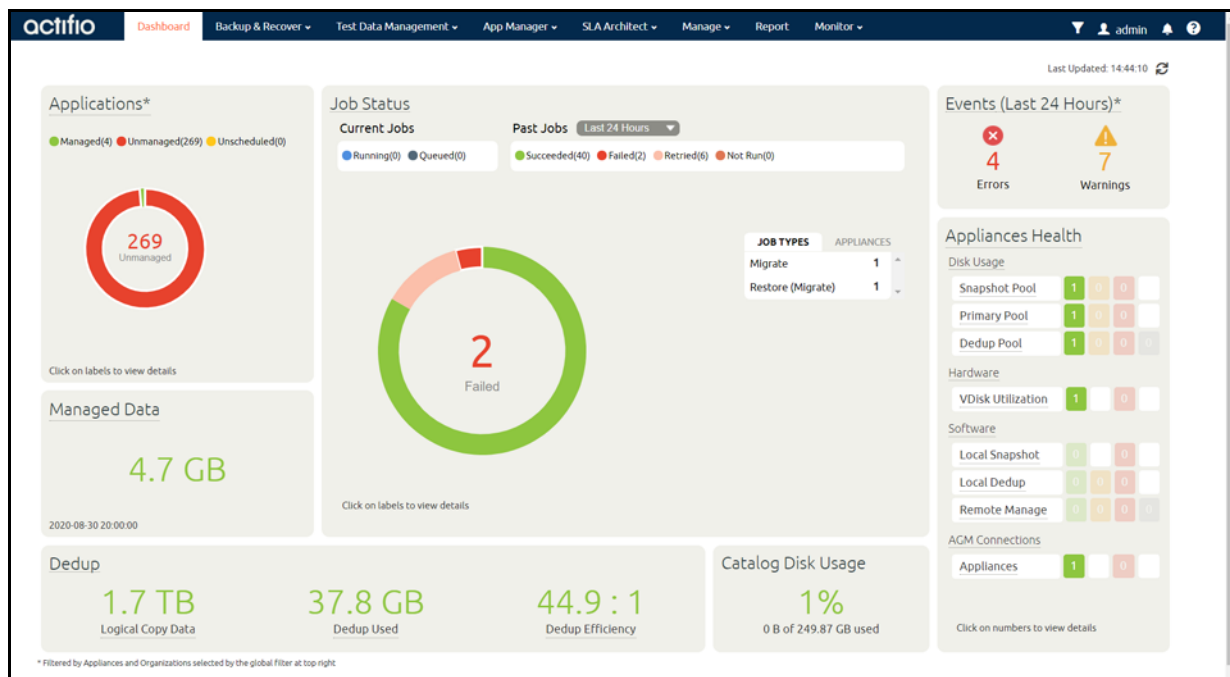
Report Manager (RM) Integration with AGM

Report Manager (RM) can now be installed as part of AGM and run in the same virtual machine (additional memory and CPU are required). This simplifies deployment and streamlines ongoing management. When deployed in this integrated configuration:

- User authentication to RM is via AGM, so any AGM user can log in to RM.
- Organization membership information is pulled from AGM.
- All appliances managed by AGM are automatically added to RM. Additional appliances can be manually added to RM.
- All upgrades are done through the AGM.
- The AGM version is always listed, even from the **RM Help > About** dialog.

2 Actifio Global Manager Requirements

This chapter details the system requirements for Actifio Global Manager and for AGM and RM installation:

AGM VM Requirements

During deployment, AGM will come up with additional services for Report Manager if the resources have been allocated to the VM.

| AGM Only (without RM)	
Reserved 4 virtual CPUs*	Reserved 6 virtual CPUs*
Reserved 8 GB of memory*	Reserved 16 GB of memory*
50 GB free datastore space	50 GB free datastore space 250 GB free datastore space for Report Manager data
One (1) virtual network interface card (vNIC)	One (1) virtual network interface card (vNIC)
A static (and unique) IPv4 address	A static (and unique) IPv4 address

*Both the virtual CPU as well as virtual RAM allocation should be reserved.

Supported AGM Configurations

Configuration	Cores (Virtual CPUs)	RAM (GB)	Base Partition Size (GB)	Additional Partitions (Minimum Size)
AGM (without RM)	4	8	50	-
AGM with RM	6	16	50	One 250 GB partition

vSphere NTP

Do not use VMware Tools periodic time synchronization for the AGM VM. You must use NTP.
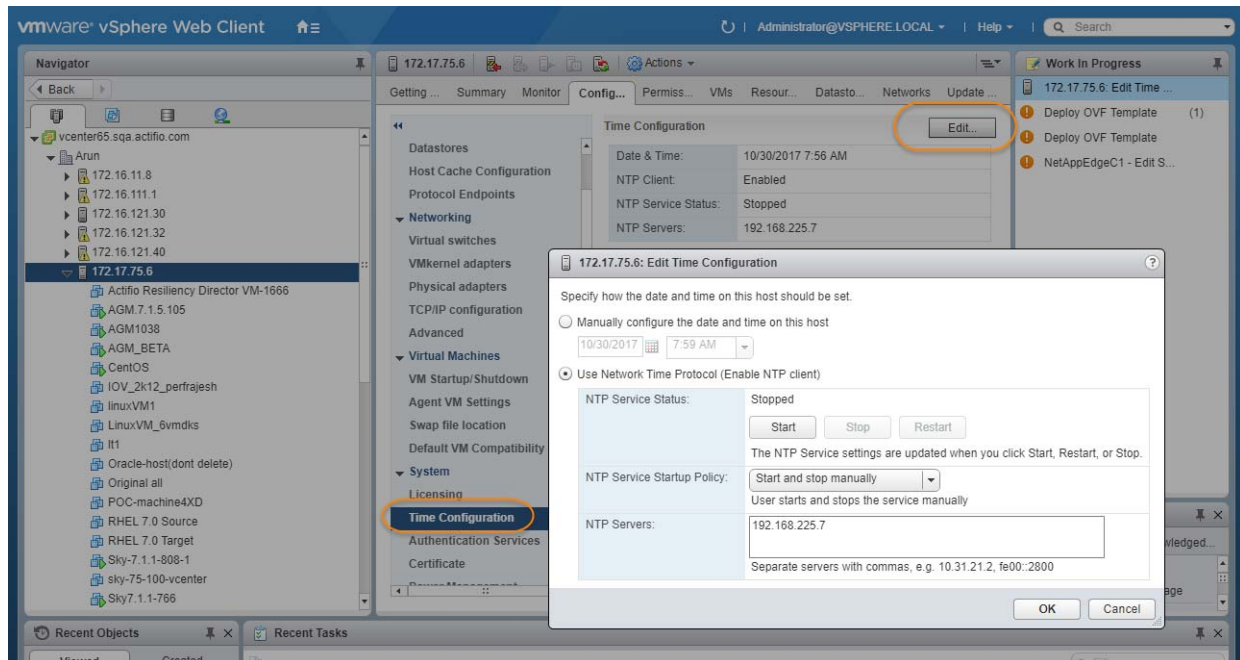
Port Requirements

The following table details the required AGM port settings:*

Description	Port	Initial Connection Request*
Management of Sky appliances by AGM	TCP-5103 and TCP-443 if there is a firewall in the network	Outbound
Web browser access to AGM	TCP-443	Inbound
Remote CLI access to AGM	TCP-26 and, optionally, port TCP-22	Inbound
LDAP server authentication/ authorization	Plain text LDAP: TCP-389 LDAP over SSL: TCP-636	Outbound

*Once the connection is established, data flow is bidirectional.

Web Browser Requirements

The AGM UI supports the following minimum web browsers:

- Google Chrome version 46.0 and higher
- Microsoft Internet Explorer version 11.0 and higher
- Mozilla Firefox version 41 and higher

The recommended minimum display screen resolution is 1280 x 1024 to run the AGM UI in a web browser.

3 Best Practices for AGM High Availability

VMware HA provides high availability for virtual machines by pooling them and the hosts they reside on into a cluster. Hosts in the cluster are monitored and in the event of a failure, the virtual machines on a failed host are restarted on alternate hosts.

There are two primary failover use cases with an Actifio Global Manager VM that require VMware's HA capabilities:

- Planned Failover: This includes DRS, DPM, and vMotion migrations of the AGM VM to other clusters due to operational requirements, maintenance windows, and so on. These operations should be expected to succeed and running jobs will continue and complete during the AGM VM migration. AGM will continue to operate normally during this operation. During failover you may encounter some performance issues.

- Host Failure: For any scenario where the host was not cleanly shut down, including host failure. VMware HA can perform a restart of the AGM VM on another host in the HA cluster.

This chapter details

Distributed Resource Scheduler (DRS) and Distributed Power Management (DPM)

Using VMware HA with DRS combines automatic failover with load balancing. This combination can result in faster rebalancing of virtual machines after VMware HA has moved virtual machines to different hosts.

In some scenarios, VMware HA might not be able to fail over virtual machines because of resource constraints. This can occur if HA admission control is disabled and DPM is enabled. This can result in DPM consolidating virtual machines onto fewer hosts and placing the empty hosts in standby mode leaving insufficient powered-on capacity to perform a failover.

In such cases, VMware HA will use DRS to try to adjust the cluster (for example, by bringing hosts out of standby mode or migrating virtual machines to defragment the cluster resources) so that HA can perform the failovers.

If DPM is in manual mode, you might need to confirm host power-on recommendations. Similarly, if DRS is in manual mode, you might need to confirm migration recommendations.

Affinity Rules

An affinity rule is a setting that establishes a relationship between two or more VMware virtual machines (VMs) and hosts. Affinity rules and anti-affinity rules tell the vSphere hypervisor platform to keep virtual entities together or separated.

If you are using VM-Host affinity rules, VMware HA will not perform a failover if doing so violates one of those rules.

Resource Pools

One of the benefits of resource pools is that they allow you to separate memory and CPU allocations from hardware. For example, if you are using clusters enabled for DRS, the resources of all hosts are always assigned to the cluster. That means administrators can perform resource management independently of the actual hosts that contribute to the resources. If a VM uses resource pools, the resources in its pools follow the VM, regardless of where in the cluster the VM is moved.

For more information on VMware and HA, consult your VMware documentation.

Configuring VMware for AGM HA Failover

AGM supports VMware HA and DRS/DPM. To use these features to use VMware HA to failover AGM you must consider the following:

Note: There will be some performance degradation after the VM has failed over and restarted. Once an AGM VM has failed over and is running on a new ESX host in the cluster, performance will return to normal levels.

- Storage Accessibility: Movement of an AGM VM from one ESX host or storage system to another using vMotion and/or DRS/DPM is supported. For this reason, Actifio recommends that the AGM VM disk devices reside on storage that is accessible to all hosts in the ESX cluster.

- Host vMotion: Host vMotion is supported provided you meet all of VMware's requirements for host vMotion. There is no need to shut down the AGM VM for a host vMotion operation. Host vMotion has minimal impact on performance.

- Storage vMotion: Storage vMotion is supported provided you meet all of VMware's requirements for Storage vMotion. Keep in mind that CPU utilization can trigger CPU alarms when running multiple Storage vMotion jobs in parallel. Actifio recommends not performing a Storage vMotion while the AGM VM is powered on.

Note: The AGM user interface does not allow you to shut down AGM. To shut down AGM you must power down the AGM VM from the vSphere interface.

- VMware Fault Tolerance Configurations: AGM does not support the VMware Fault Tolerance feature.

- Use of Resource Pools with AGM VMs: Manage AGM VM's resources with reserved resource pools. This ensures that the allocated (reserved) memory and CPUs for the AGM VM follow the AGM VM regardless of where VMware moves the VM. See AGM VM Requirements on page 3 for memory and CPU requirements.

- Networking Considerations: Network implementation and capacity for the HA cluster must allow for seamless failover of the AGM VMs and the entire Actifio appliance-managed network infrastructure must be accessible to the AGM VMs during failover (for example, DNS and NTP).

- Resource Pools: When adding an AGM VM to a Resource Pool, do not over-commit the pool resources. Configure a dedicated resource pool for the AGM VM. Ensure that the VMware HA cluster nodes have sufficient resources to handle all moved or recovered AGM VMs.

- VMware Slot Calculations: Ensure VMware HA slot calculations for the AGM's HA cluster is running.
- Frequency of Planned Failovers: Keep the frequency of planned failovers to a minimum. Only move AGM VMs between cluster hosts when necessary for maintenance operations or long term migrations. Ensure DRS and DPM only move the AGM VM when it is absolutely necessary and performed during periods the AGM VM is least busy.

Protecting the AGM VM

The AGM VM can be protected like any other VM. As a best practice, always protect your AGM VM before upgrading its software.

The AGM Online Help provides step-by-step instructions that walk you through:

- Adding the server on which the VM resides.

- Discovering VMs. In this case the AGM VM.

- Protecting VMs. You will need to select one of the Actifio appliances that the AGM VM manages to perform the actual protection.

- Restoring VMs.

When protecting the AGM VM you have several options for where the protected image(s) will reside:

- Local to the data center in which the AGM VM resides.

- Local to the data center in which the AGM VM resides and another data center where the AGM VM manages a Sky appliance.

- Local to the data center in which the AGM VM resides and in a cloud object store (OnVault).

- In a cloud object store only (Direct to OnVault).

Where captured images reside depends on your business needs and the risks you are willing to assume. For example:

- AGM VM images that reside in your local data center ensure that your AGM VM is recoverable as quickly as possible if you encounter issues with your VMware environment.

- AGM VM images kept at a remote site or in the cloud ensure that your AGM VM is recoverable if your data center experiences a catastrophic event.

4 Installing Actifio Global Manager
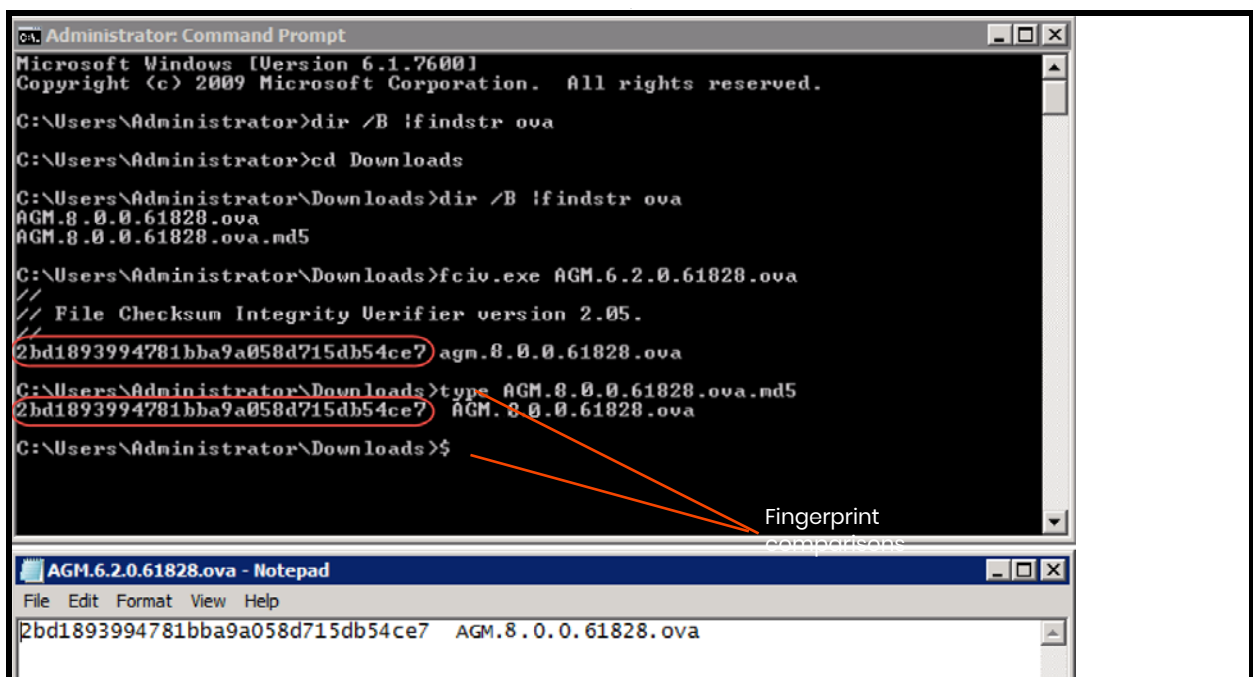
This chapter details:

The AGM OVA File

The AGM deployment and installation process can take approximately 30 minutes. Your Actifio representative will provide you with access to the latest AGM release OVA and MD5 files. The `AGM.x.x.x.xxxxx.ova.md5` file is the digital fingerprint of the installation file and is used to verify the integrity of the `AGM.x.x.x.xxxxx.ova` file.

Verifying the Integrity of the AGM.OVA File

Before you deploy the AGM.ova file, verify that its MD5 digital fingerprint matches the fingerprint file. You can use a checksum utility such as File Checksum Integrity Verifier (FCIV) or md5sum to perform the verification. The example show below uses FCIV to perform the comparison. If the fingerprints are different, the AGM installation file is corrupted. Contact Support if this occurs.

Deploying and Installing the AGM OVA

This section describes how to deploy and install the AGM OVA file in your VMware ESX server environment using the VMware vSphere Web Client. Deployment and installation of the AGM OVA is also supported with the VMware vSphere 5.1 and later versions. The deployment and installation of the AGM OVA using a standalone ESXi host is not supported.

> **Note:** *The deployment and installation of the AGM OVA using a standalone ESXi host is not supported.*

Your Actifio field representative will help you in deploying the solution in your environment. They will provide you with the latest AGM release OVA file and will place it in a location that is easily accessible by the vSphere Web Client that will host AGM. You will deploy the Actifio OVA like any other VMware OVA.

Based on your supported version of the VMware vSphere Web Client, refer to:

Deploying and Installing the AGM OVA Using VMware vSphere 6.7 Web Client

This procedure describes how to deploy and install the AGM OVA file using the VMware vSphere 6.7 Web Client using HTML5. You can also deploy AGM using Flash deployment.

To deploy and install AGM OVA using VMware vSphere 6.7 Web Client:

1. Open the vSphere 6.7 Web Client. Select Actions > Deploy OVF Template. The Deploy Template wizard opens showing the Select Template option.

2. In the Select Template window, browse to or enter the path to the AGM OVA file, then click **Next** to continue.

3. Select a name for the installation instance as well as its location, then click **Next** to continue.

4. Select the resource pool where the deployment should be run, then click **Next** to continue.

5. In the Review Details window, review the details of the AGM OVF template, then click **Next**.

6. Select the deployment option, AGM with or without Report Manager, then click **Next**.

7. In the Select Storage page, select a datastore with sufficient free space to meet the minimum storage requirements for the AGM VM. From the Select virtual disk format option, choose **Thick Provision**, then click **Next**.

8. In the Setup Networks page, make any required network changes for the AGM VM, then click **Next**.

9. In the Customize Template page, customize the deployment using the information below:

Application

- o Hostname - Enter the name or fully qualified domain name of the host. The name of a host should start with a letter, and can contain letters, digits (0-9), and an underscore ('_').

- o Timezone Setting - Enter the Java Timezone ID of where the AGM is located (for example: US/Eastern, not GMT -4).

- o Password - The password for the admin account. It can be any alphanumeric string to a maximum of 128 characters.

Networking Properties

Note: *AGM deployment supports DHCP in addition to static IP support.*

- o Network 1 IP Address - The IP address for this virtual machine. Copy the IP address for use when accessing the AGM (see Accessing Actifio Global Manager on page 17).

- o Network 1 Netmask - The subnet mask or prefix for this virtual machine.

- o Default Gateway - The default gateway for this virtual machine.

- o DNS - The domain name server for this virtual machine.

10. Click **Next.** In the Ready to Complete window, review the deployment settings for the AGM OVF template.

11. If you need to make any changes, click **Back** and modify the settings. Click **Finish.**

12. The Deploying OVF Template message box opens listing the AGM deployment status. The AGM will reboot one additional time after deployment is completed to complete the configuration. You may need to manually power on AGM. Copy the IP address for use when accessing the AGM (see Accessing Actifio Global Manager on page 17).

   Once deployment is complete, you can manually change the configuration to run AGM. See Adding Resources for Report Manager on page 15 for more information.

Deploying and Installing the AGM OVA Using VMware vSphere 6.5 Web Client

This procedure describes how to deploy and install the AGM OVA file using the VMware vSphere 6.5 Web Client. You will see the AGM installation options for Flash deployment only if you are using VMware vSphere 6.5 Web Client (HTML5) update1d or later.

Note: *For VMware vSphere 6.5 Flash deployment, you will not have the option to deploy and power up the VM. You will have to manually power it up. For more information, see https://kb.vmware.com/s/ article/2148007.*

To deploy and install AGM OVA using VMware vSphere 6.5 Web Client:

1. Open the vSphere 6.5 Web Client. Select Actions > Deploy OVF Template. The Deploy Template wizard opens showing the Select Template option.

2. In the Select Template window, browse to or enter the path to the AGM OVA file.

3. Click **Next** to open the select name and location dialog.

4. Select a name for the installation instance as well as its location and click **Next**.

5. Select the resource pool where the deployment should be run and click **Next**.

6. Review the details of the AGM OVF template and click **Next.**

7. Select the deployment option, AGM only or AGM with Report Manager, then click **Next**.

8. In the Select Storage page, select a datastore with sufficient free space to meet the minimum storage requirements for the AGM VM.

9. From the Select virtual disk format option, choose **Thick Provision**, then click **Next**.

10. In the Setup Networks page, make any required network changes for the AGM VM, then click **Next**.

11. In the Customize Template page, customize the deployment as needed and click **Next**.

Application

- o Hostname: Enter the name or fully qualified domain name of the host. The name of a host should start with a letter, and can contain letters, digits (0-9), and an underscore ('_').

- o Timezone Setting: Enter the Java Timezone ID of where the AGM is located (for example: US/Eastern, not GMT -4).

- o Password: The password for the admin account. It can be any alphanumeric string to a maximum of 128 characters.

Networking Properties

Note: *AGM deployment supports DHCP in addition to static IP support.*

- o Network 1 IP Address - The IP address for this virtual machine. Copy the IP address for use when accessing the AGM.

- o Network 1 Netmask - The subnet mask or prefix for this virtual machine.

- o Default Gateway - The default gateway for this virtual machine.

- o DNS - The domain name server for this virtual machine.

12. Click **Next.** In the Ready to Complete window, review the deployment settings for the AGM OVF template. If you need to make any changes, click Back and modify the settings. Then click **Finish**.

13. The Deploying OVF Template message box opens listing the AGM deployment status. The AGM will reboot one additional time after deployment is completed to complete the configuration. If you had selected Power on after deployment, AGM is fully powered on and ready for use. Otherwise manually power on AGM. Copy the IP address for use when accessing the AGM.

Replacing a Previously Installed AGM OVA

In case you need to replace a previously installed AGM VM, follow the sequence outlined below prior to deploying and installing the new AGM OVA. This procedure will help ensure a smooth installation and operational transition to the new AGM VM:

1. Remove all managed Sky appliances from the existing AGM through the Domain Manager service (see "Removing an Appliance from AGM" in the AGM Online Help System). Removing each Sky appliance from the AGM server completely removes the management of the Sky appliance by AGM. All resources associated with the managed Sky appliance will be removed from AGM.

2. Power down and remove the existing AGM VM from the VMware ESX server.

3. Deploy the new AGM OVA file (see Deploying and Installing the AGM OVA on page 10).

Note: *If you encounter issues during the deployment and installation of the new AGM OVA, please contact your Support representative.*

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4. After you successfully complete deploying the AGM OVA file and launch AGM, your next step will be to add all managed Sky appliances to AGM through the Domain Manager service (see "Adding a Sky appliance to AGM" in the AGM Online Help System).

    As a deployment best practice, we recommend that you first import a baseline Sky appliance before adding the other Sky appliances to be managed by the new AGM (see Adding Appliances to an AGM Deployment on page 29). This AGM and Sky appliance deployment best practice will import all SLA templates (and policies) and security objects (organizations, roles, users) from the Sky appliances to become AGM-level objects. This object importing sequence includes SLA templates created in your original AGM and had been pushed to the managed Sky appliances. These are SLA templates that were used to manage applications on the appliance.

5 Adding Resources for Report Manager

This section explains how to manually add resources to the AGM VM to enable RM. Adding the resources may take a long time (over an hour). While the resources are being added, AGM will not be available.

Note: *Do not remove the disk you will be adding for RM (step 6) under any circumstances. This will corrupt your AGM database.*

1. Verify that the AGM VM is powered off.

2. Select the AGM VM and click **Edit Settings**. The Edit Settings page opens.

3. Increase virtual CPUs, for AGM, increase virtual CPUs from 4 to 6.

4. Increase Memory size from 8 GB to 16 GB.

5. From the **Add New Device** drop-down, select **Hard Disk** and click **Add**.

6. Configure the new hard disk for 250 GB and click **OK**. The new disk is added.
    Do not remove the disk; it will corrupt AGM.

7. Click **OK** to close the Virtual Machines Properties page.

8. Power on AGM with RM.

9. Continue launching AGM and RM in a web browser. See Accessing Actifio Global Manager on page 17. After you launch AGM, continue to launch RM in a web browser. For more information, see Accessing Report Manager on page 19.

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6 Accessing Actifio Global Manager

After the AGM is configured and powered up, you can launch AGM in a web browser:

Note: *You can find the IP address of the AGM on the AGM VM's Summary tab.*

1. Open a browser and in the address space, enter the IP address of the AGM VM:

    `https://<AGM IP address>/`

2. In the AGM Login window, enter the login credentials you specified during deployment. If you did not specify anything, enter the default login credentials: USERNAME `admin` and PASSWORD `password`

3. Click **Login**.

Note: *If you are using a Microsoft Internet Explorer browser to log in to AGM and the Username and Password fields are disabled in the Login window, access the Compatibility View Settings dialog box (select **Tools > Compatibility View settings**) and ensure that the **Display intranet site in Compatibility View** check box is checked.*

The AGM application opens and prompts you to change your password.

4. Enter a new password of at least six (6) characters (it can be the same as your old password).

5. Click **Save** to save the new password. You are taken back to the login screen.

6. Enter your user name and new password.

7. Click **Login**. The AGM application opens and shows the EULA.

8. Read the license agreement in its entirety, and click **Agree**. The UI opens.

   Click the ? in the upper right corner of the AGM browser to launch the AGM Online Help system. You can read up about the Dashboard, Domain Manager, SLA Architect, Application Manager, Monitor, and Upgrade services in the Help.

9. To logout of AGM or to change users, click the active user listed at the top of AGM and select Logout.

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7 Accessing Report Manager

After you have launched AGM in a web browser, launch RM.

Note: RM uses the same IP address as AGM.

To access RM:

1. Open a browser and in the address space enter the IP address of the RM.
   `https://<AGM IP address>/rm` or `https://<AGM IP address>/report`

2. Enter your AGM user name and password.

Note: AGM users with Administrator role can perform administrative tasks in RM.

3. Click **Login**.

8 Upgrading Actifio Global Manager

This chapter details the upgrade instructions for the Actifio Global Manager. It includes:

- Before You Begin on page 21
- Upgrading AGM on page 21

Note: During an upgrade there will be a period of time when AGM synchronizes new data with the appliances. This may lead to incorrect values being shown on the AGM Dashboard. Wait one to two hours for the inconsistencies to resolve. If they persist even after that time, contact Support for help.

Before You Begin

Take a Snapshot of the current AGM VM

If you encounter an issue while upgrading, a snap shot will allow you to revert back to the previous state of your AGM VM.

Obtain the AGM.gpg upgrade file

Your Support representative will provide you with the latest AGM upgrade file. Place a copy of that file in a location that is easily accessible from the AGM.

Upgrading AGM

To upgrade the AGM software:

1. Open a browser to **https://<*VM IP address*>/**
2. In the AGM Login page, enter the username and password, then click **Log In**.

3. From the Dashboard, click the **Manage** tab. Select **Upgrade** from the drop-down menu. The Upgrade page opens.

4. From the Upgrade page, you can either:

   o Browse to the location of the AGM.gpg upgrade file and upload it into this window.

   o Drag and drop the AGM.gpg upgrade file into this window.

5. AGM begins the upload process. A Progress bar shows the status of the upload. The file upload sequence undergoes three phases: file upload, file unpack, and file extraction.

6. When the file upload is complete and the upgrade image has been extracted, a Success dialog opens.

7. Click **Okay** and the Upgrade page opens.

8. From the Upgrade page, click Update AGM to initiate the software upgrade sequence. AGM will always select and install the latest upgrade software even if there are multiple upgrade versions listed in the Upgrade window.

   The Update confirmation dialog opens.

9. Click Update AGM again to confirm that you want to upgrade the AGM software. The software upgrade process begins and the AGM Upgrade page displays its progress.

10. After the software upgrade is completed, log back into the AGM UI and confirm that the upgrade was successful. Click **Okay** to resume operation of all AGM activities.

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