Deploying Actifio Sky in the Microsoft® Azure Cloud

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Preface

The information presented in this guide is intended for users who are configuring Actifio Sky for the Azure Cloud. If you are installing Actifio Sky for the Azure Cloud in a production environment, before proceeding, consult with your Actifio representative to properly size your Actifio Sky appliance.

When you have finished configuring Actifio Sky for the Azure Cloud, consult *Introduction to Actifio Copy Data Management.* It introduces basic concepts, processes and procedures for an Actifio appliance.

After you have familiarized yourself with the Actifio appliance, see *SQL DBA's Guide to Actifio Copy Data Management.* This guide provides detailed instructions on how to best use your Actifio appliance to capture and manage Microsoft SQL Server databases.

In addition, the following guides provide general step-by-step instructions for using an Actifio appliance:

- *Configuring Resources and Settings With the Domain Manager*
- *Setting Up Users and Roles With the Domain Manager*
- *Virtualizing and Protecting Copy Data with the Application Manager*
- *Managing Copy Data with the Application Manager*
- *Planning and Developing Service Level Agreements*

Copies of these guides can be found in the *ActifioNOW Customer Portal*, *Doctifio Public Documentation Library,* and the Actifio user interface,

The ActifioNOW Customer Portal

Actifio customers can access to the entire Actifio documentation set as well as the portal's knowledge base.

To log into the ActifioNOW Customer Portal:

1. Go to: *https://now.actifio.com*
2. When prompted, enter your user name and password you were provided when you purchased your Actifio appliance.

The Doctifio Public Documentation Library

The Doctifio Public Documentation Library provides a limited number of Actifio documents and is open to the public.

To access the Doctifio Public Documentation Library, in a web browser enter the address: *docs.actifio.com* and the library is displayed.

1 Introduction

An Actifio Sky appliance for Microsoft® Azure is a virtual server designed to capture and manage data. An Actifio Sky appliance can be installed in Microsoft Azure. Captured data can be replicated between Actifio appliances in your data center, between appliances in Azure, and between appliances in your data center and in Azure. Replicating to another Actifio appliance ensures a solid disaster recovery solution.

Actifio Sky allows an enterprise to leverage Microsoft Azure as a flexible hybrid cloud infrastructure to build higher quality applications faster and improve business resiliency and availability.

Data in Microsoft Azure is instantly accessible and can be re-used for the following key use cases:

- **Accelerates DevOps, CI/CD, and application dev/test processes:** Provision virtual copies of databases instantly, in self-service manner with secure, role-based access controls. This enables developers to perform development, test, QA and integrate with continuous integration and continuous deployment tools.

- **Leverages instant access to data:** Actifio appliances allows user to failover to their Microsoft Azure environment delivering business resilience for on-premises enterprise applications.

- **On-Demand analytics:** The ability to capture, manage and re-use Microsoft SQL Server databases and other databases and file systems enables data warehousing and analytics applications.

- **Secure migration to the Microsoft® Azure Cloud:** Securely migrating applications to Microsoft Azure. Using an Actifio appliance's instant access, users can create a sandbox environment in Microsoft Azure, conduct security, performance and scalability validation, before turning on the application in Microsoft Azure.

- **Global, standardized, Hybrid Cloud Data Management:** For Microsoft Azure-resident applications, Actifio appliances can manage their data life cycle and deliver the same benefits as for the on-premises applications; accelerate high quality application development, enhanced business resilience, meet compliance requirements and drive out infrastructure costs.

Actifio Sky for Microsoft Azure delivers the following benefits:

Build Higher Quality Apps Faster: Actifio appliance's database virtualization in Microsoft Azure enables Dev, QA and UAT teams to self-service provision on-demand virtual copies of production databases with secure data masking. This helps catch defects earlier in QA cycles, enabling the release of higher quality products, faster.

Improve Business Resiliency: By replicating on-premises and cloud-based data to any Microsoft Azure location for instant recovery of mission critical applications, Actifio appliances eliminate the fear of downtime for critical applications, thereby eliminating potential losses in revenue, reputation, and employee productivity.

Outsource Infrastructure: By delivering a modern data management platform in hybrid cloud environments, Actifio appliances help accelerate business transformation by making it easy for enterprises to leverage cloud technologies, allowing them to outsource costly infrastructure.

Data Warehouse, ETL, Analytics: Actifio appliances make it very easy for enterprises to provision virtual copies of production data in Microsoft Azure, while feeding data into on-demand data warehousing, ETL, or analytics solutions. This accelerates the speed at which business analytics can be achieved in the cloud, while simultaneously eliminating the need to invest more in software tools and on premise infrastructure.

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2 Obtaining the Actifio Sky VM Image

This chapter assumes that the reader has a valid Microsoft® Azure Cloud account and is familiar with basic Azure Cloud processes and procedures.

Actifio provides an Actifio Sky VM for the Azure Cloud. To obtain an Actifio Sky for Azure Cloud image from the Microsoft Cloud Marketplace, from your Azure account:
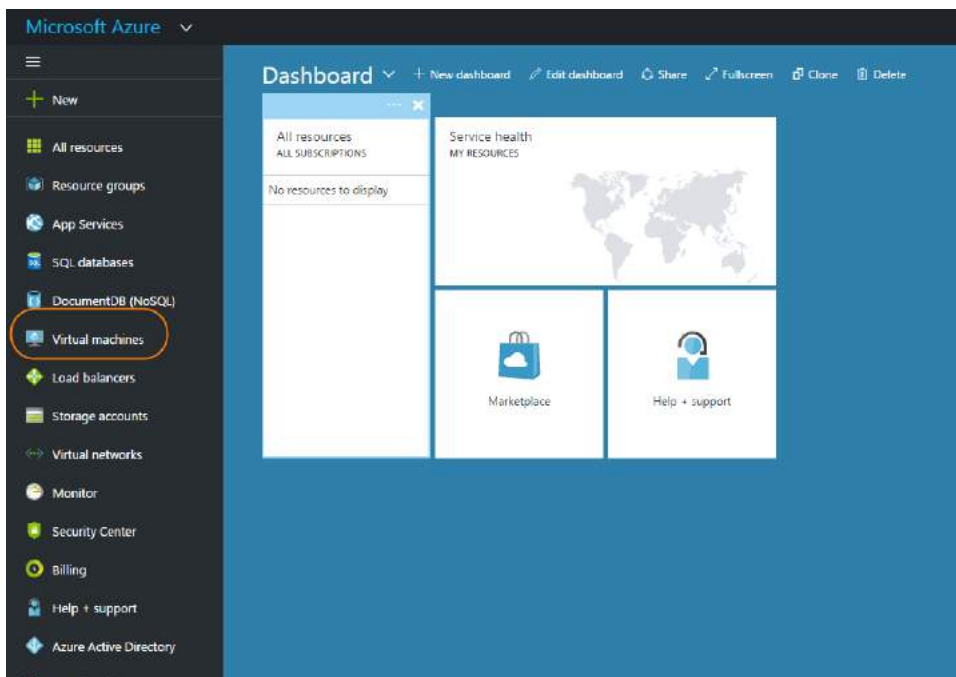
Azure Dashboard

1. Click **Virtual Machines** in the left-hand menu and the Virtual Machines page is displayed:
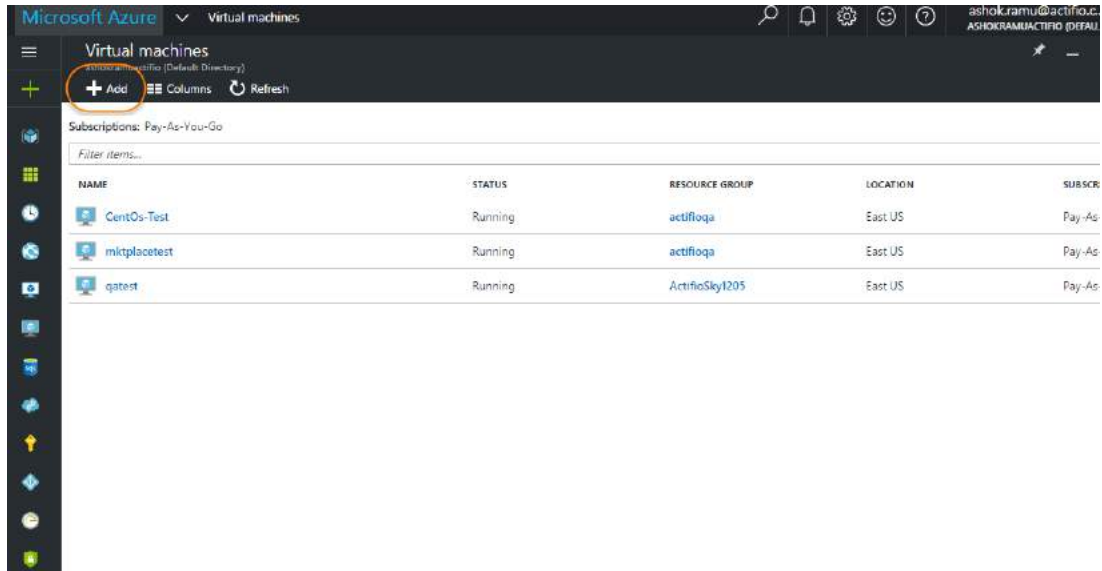
VMs Available

2. From the top menu, click **Add** and the Azure market Place is displayed.

3. In the Search space provided, enter **Actifio**.

4. Click Search and Actifio VM image is displayed:

Select the Actifio Sky VM Image

5. Click **Get it Now** and follow the Microsoft Azure instructions to add the Actifio image to your account.

Next step: Configure the Actifio Sky VM. See Configuring the Actifio Sky VM on page 5 for details.

3 Configuring the Actifio Sky VM

This chapter assumes that the reader has a valid Microsoft® Azure Cloud account, has obtained the Actifio Sky VM, and is familiar with basic Azure Cloud processes and procedures.

> **Note:** *Before you begin setting up your Actifio VM, you must obtain sizing information from your Actifio representative.*
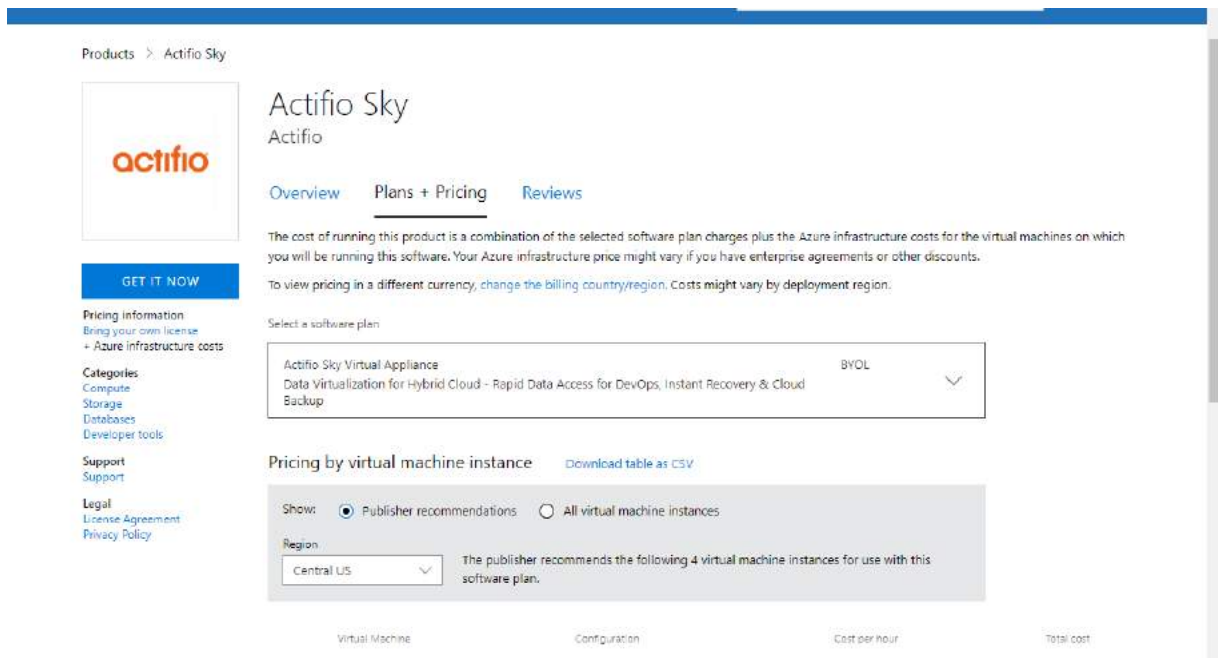
To configure a new Actifio Sky VM, from your Azure account:
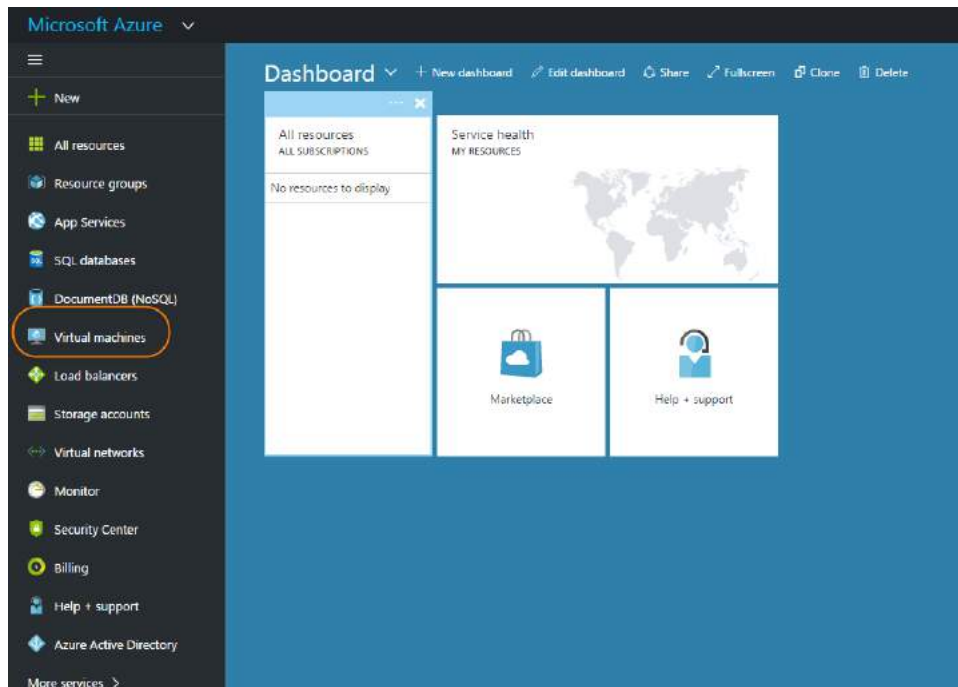
Azure Dashboard

1. Click **Virtual Machines** in the left-hand menu and the Virtual Machines page is displayed:
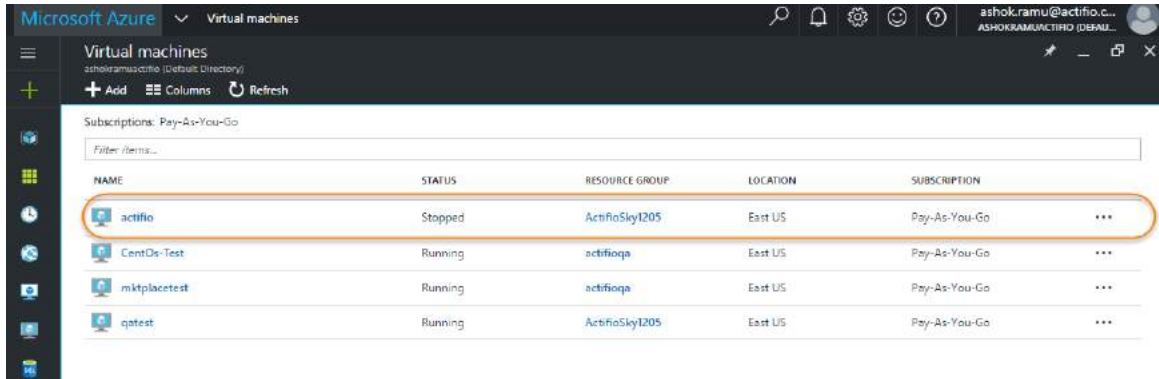
Select the Actifio Sky VM to be Configured

2. The list of available VMs is displayed.

3. Click the Actifio image and the configuration wizard will start:

Note: If you have a lot of VMs available, you can use the filter to display the Actifio VM.
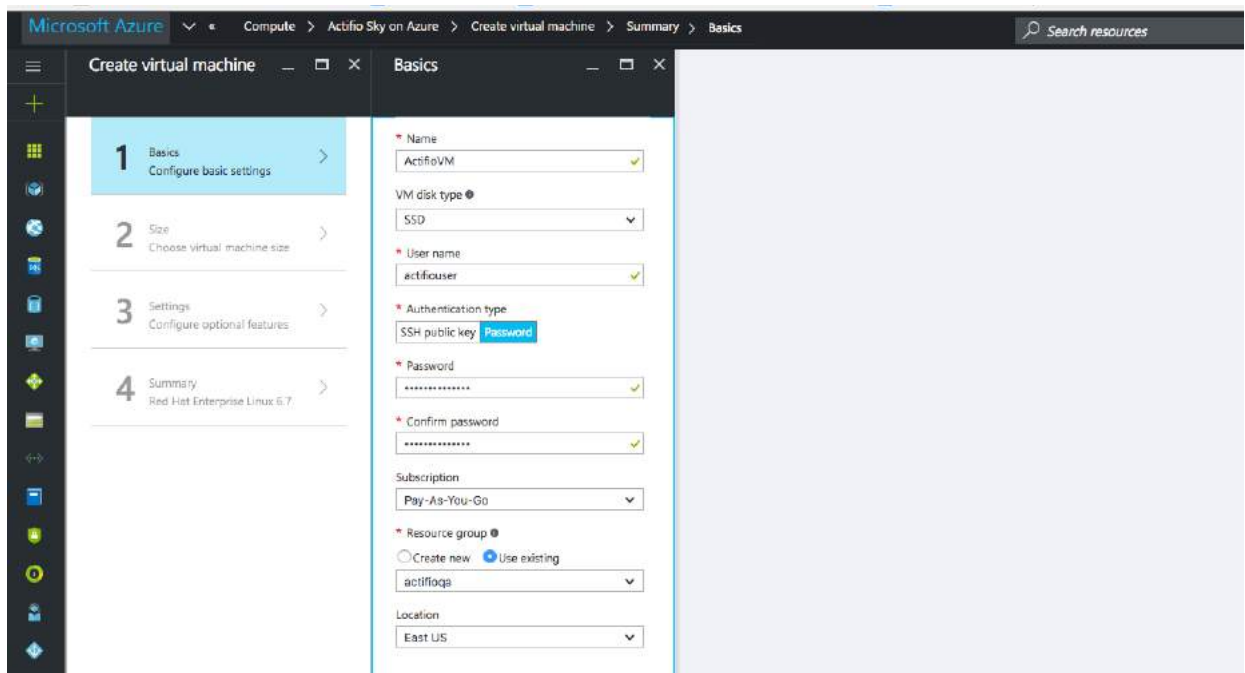
Step 1 - Basic Settings

4. For Step 1, There are no settings required by Actifio. However Azure requires that you:

   o Enter a **Name** for the Actifio VM.

   o Select a **VM disk type** for the VM.

   o Enter a **User Name** in the space provided. The user name is required by Microsoft Azure but is not used by the Actifio appliance.

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o   Select an **Authentication Type**. The Authentication Type is required by Microsoft Azure but is not used by the Actifio appliance. If you select **SSH Public Key**, then in the space provided enter a public key generated by Linux ssh-keygen or Windows PuttyGen. If you select **Password**, in the fields displayed, enter a password and then re-enter it to confirm.

o   Select a **Subscription** type.

o   Under **Resource group**, select either **Create New** and enter a name for a new resource Group or select **Use Existing** to select an existing Resource Group.

o   From the drop down menu, select the **Location** for this Actifio VM.

5.   Click **OK** and **Step 2 Size** page is displayed:
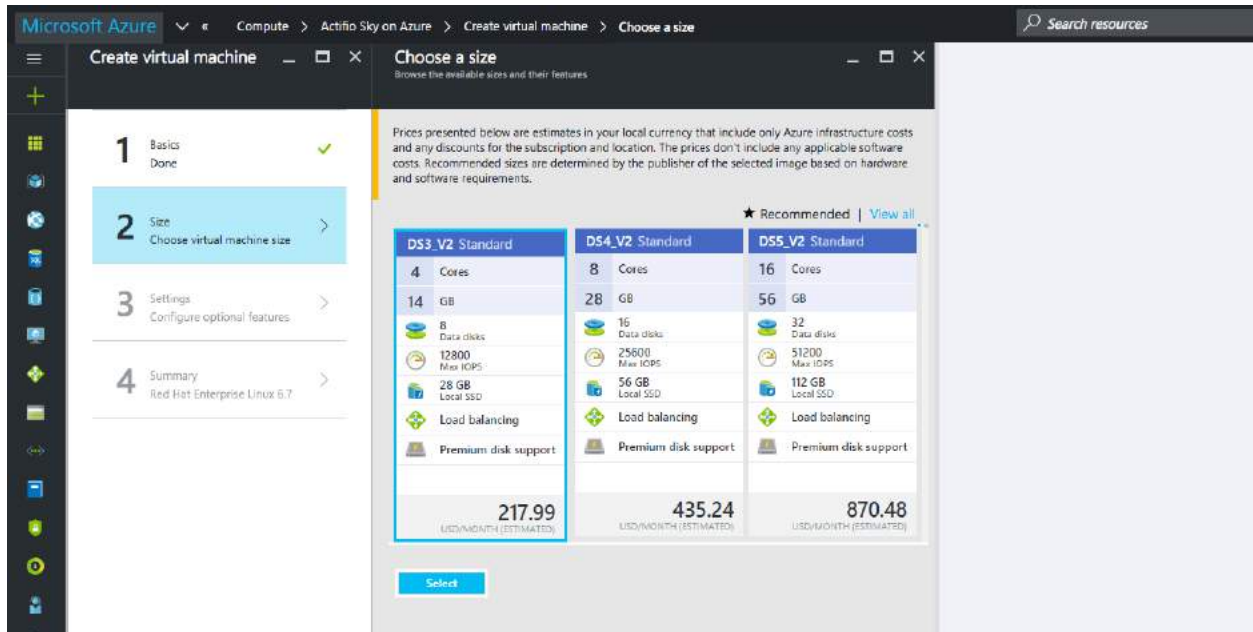
Step 2 - Select Size

6.   Select the Azure size that corresponds to your Actifio Sky license:

Deduplication Policies Used	
Azure Size	**Actifio Sky License**
DS3_V2	Sky 5
DS4_V2	Sky 10
DS5_V2	Sky 30

Deduplication Policies NOT Used	
Azure Size	**Actifio Sky License**
DS3_V2	Sky 60
DS4_V2	Sky 120
DS5_V2	Sky 200

Note: The sizing definitions are subject to change by Microsoft®.

7.   Click **Select**, and **Step 3**, **Configure Optional Features** page is displayed:
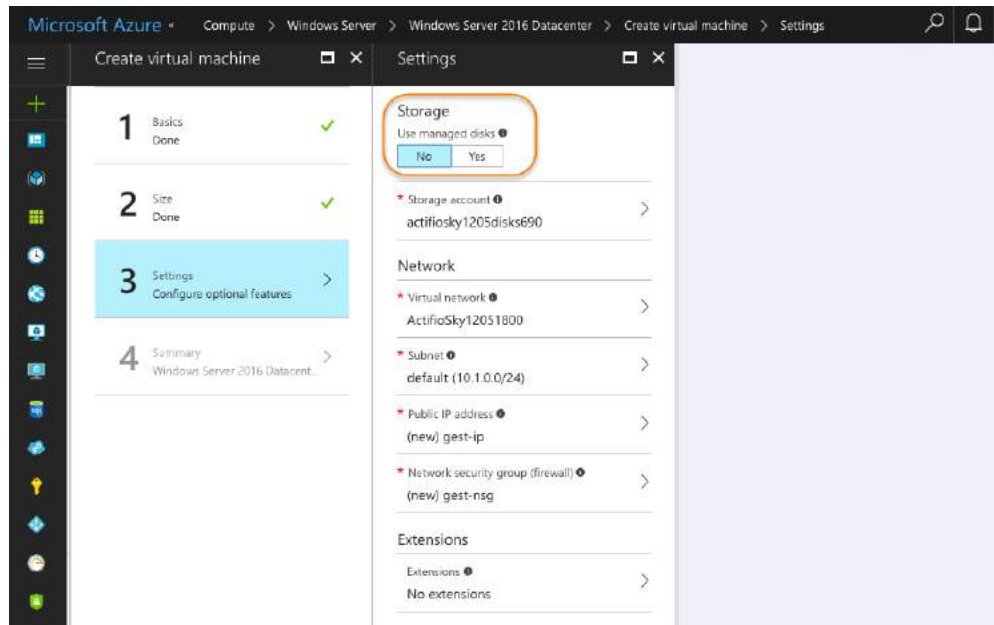
Step 3 - Configure Optional Settings

8.   Under Storage, select **YES** to use **managed disks**.

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9.   Make other selections in Step 3 as needed.

10.   Click **OK** and the Step 4 Purchase page is displayed:

11.   Click **Purchase** to purchase the configured Actifio VM.

Next step - Add disks to the Actifio VM. See Adding Disks to the Actifio Sky VM on page 11.

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4 Adding Disks to the Actifio Sky VM

This chapter assumes that the reader has a valid Azure Cloud account, is familiar with basic Microsoft® Azure processes and procedures, and has configured their Actifio Sky for Azure VM.

You must define disk space to accommodate the Actifio Sky VM's operating needs as well as to accommodate the data the Actifio Sky appliance will capture.

The amount of disk required is based on your Actifio Sky license and recommendations from your Actifio representative.

During the Actifio Sky appliance installation, each disk defined will be assigned to one of three Actifio storage pools:

- **Primary Pool:** Contains Actifio Sky system data. One 200 GB disk is required.

- **Snapshot Pool:** Contains the retained Snapshots (full copies). The actual size required for this disk will be calculated by your Actifio representative. It will define enough disk storage to accommodate the number of full snapshots of data you plan to retain. You can at a later date add additional disk storage to accommodate growth. A minimum of 10 GB is required.

- **Dedup Pool:** Contains the retained deduplicated data. The actual size required for this disk will be calculated by your Actifio representative. It will contain enough disk storage to accommodate the number of deduped copies of data you plan to retain. A minimum of 110 GB is required.

  If your Actifio appliance will not use deduplication policies, then you must create a 110 GB disk for the Dedup Pool.

Note: If your Actifio Sky appliance will use dedup policies, the disks used for the Dedup Pool, must be added as SSDs.

To add disks to an Actifio Sky appliance's pools:

1. Log in to your Microsoft Azure dashboard.
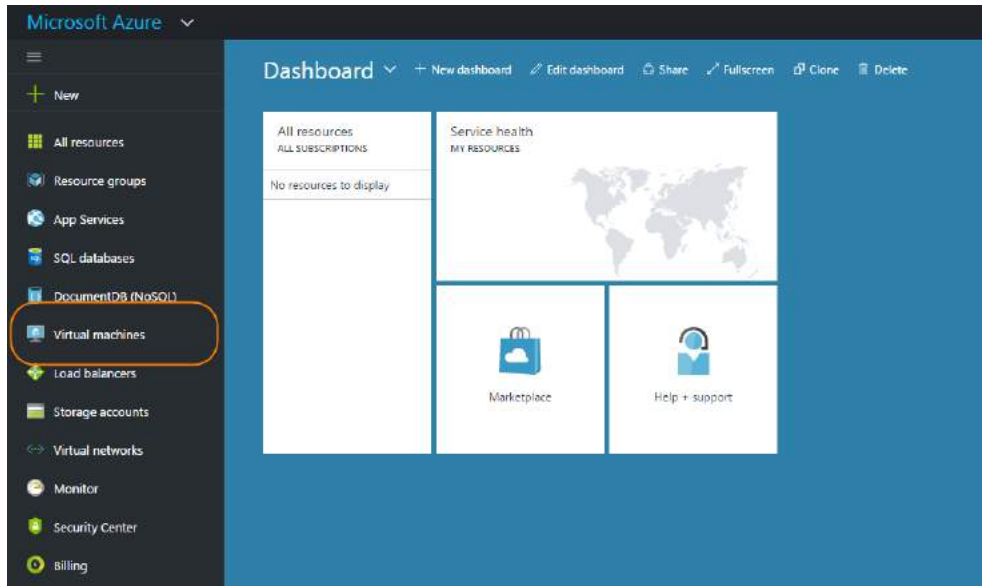
Select Virtual Machines

2. From your Azure dashboard's left-hand menu, select **Virtual Machines** and a list of available VMs are displayed.

3. Select the Actifio Sky appliance VM to which you will add the disks.

4. From the list of VM options click **Disks** and the disks attached to the VM are displayed.

5. To add a disk to the VM, click the **Add Data Disk** tab and the options for attaching a new disk are displayed:
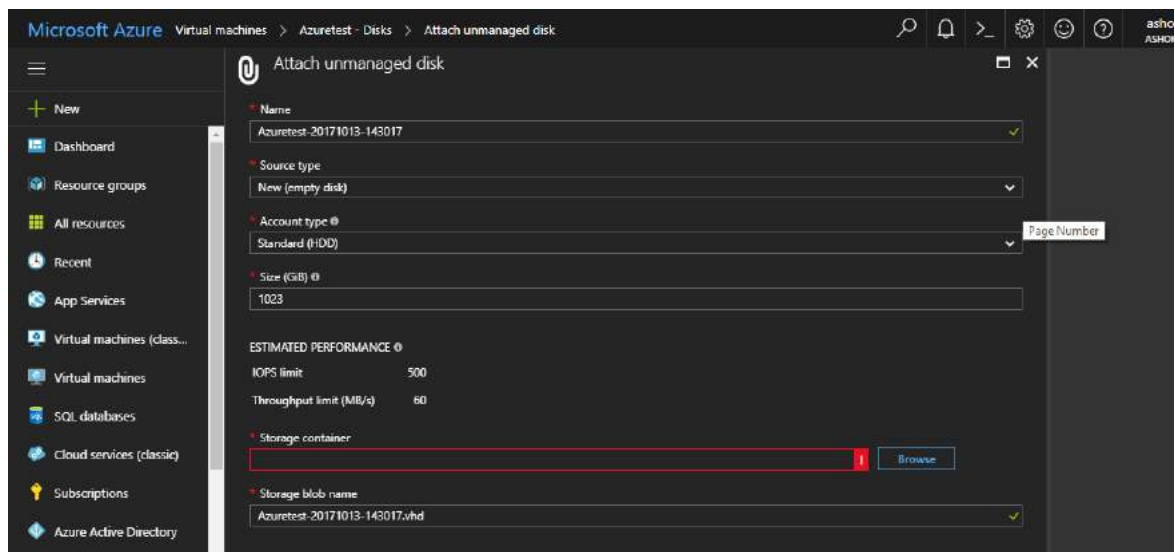
Add Data Disk

6. Use a **Name** that clearly identifies in which pool the disk will reside. Doing so will make the Actifio Sky appliance installation easier to follow.

7. For **Type**, You can use either HDD or SSD for the Primary and Snapshot pools. If your Actifio Sky appliance will use dedup policies, then use SSD disks for the dedup pool.

8. Make other settings as needed.

9. Browse to a storage container by first selecting an account that owns the container:

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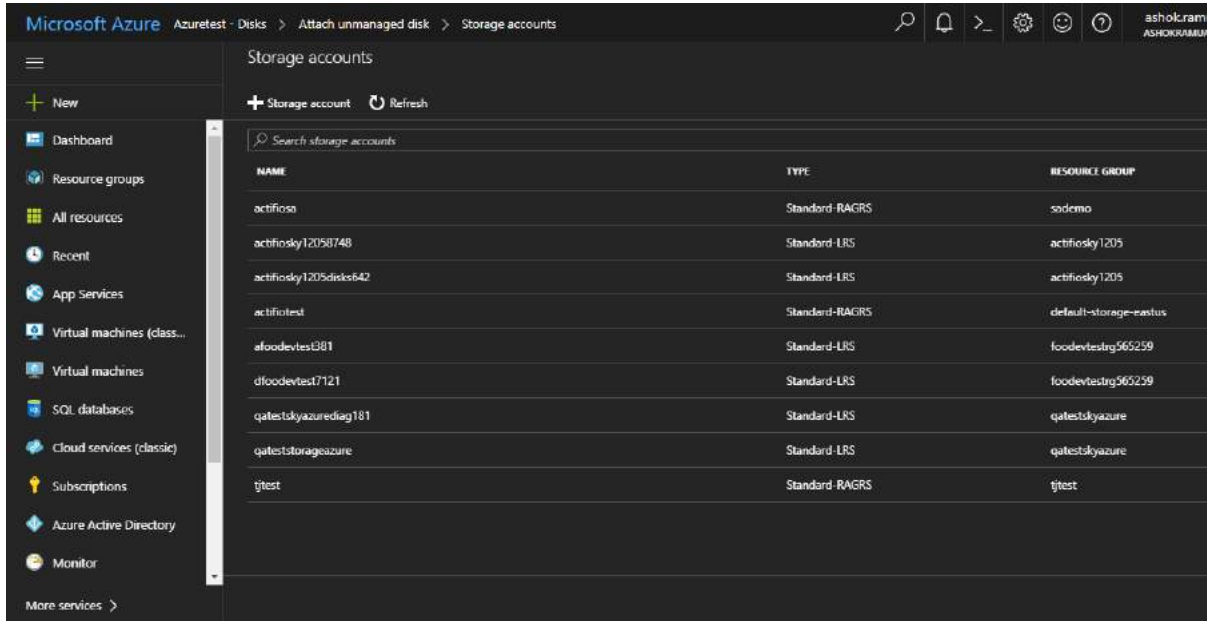
Storage Accounts

10. Select as account and the available containers are displayed:
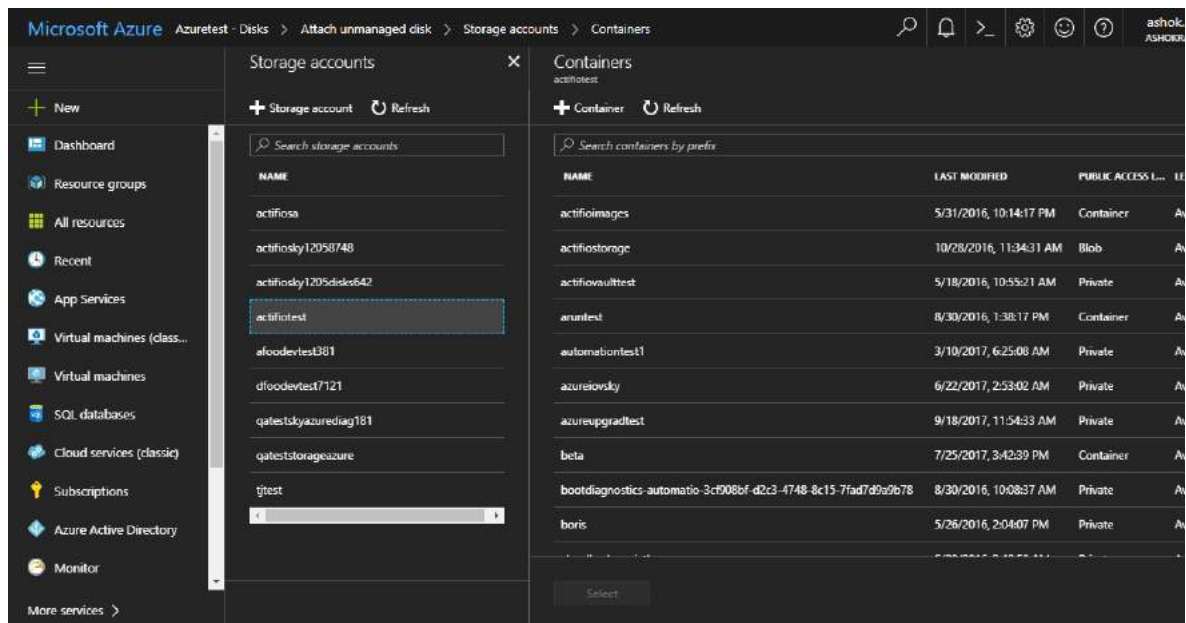
Available Containers

11. Select a container as needed.

12. Click **Submit** and the disk is created.
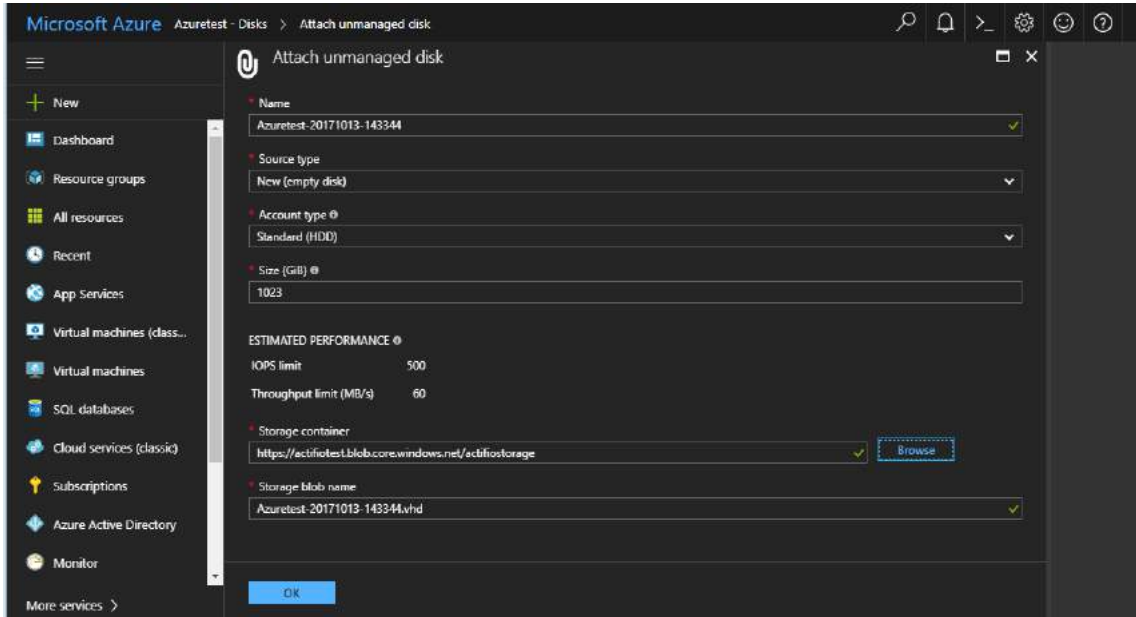
Disk Created

13. Repeat the process to populate each Actifio pool with the required storage. Storage requirements for each pool are defined at the beginning of this chapter.

14. Once you have created all of the required disks, you are ready to install the Actifio Sky appliance. See Installing the Actifio Sky Appliance on page 15 for details.

5 Installing the Actifio Sky Appliance

When the Microsoft Azure instance is ready, you can enter the instance's Public IP in a browser and begin installing the Actifio Sky appliance in the instance. To obtain the Public IP, select the VM from the list of available VMs, click **Overview** and the Public IP will be displayed under Essentials:
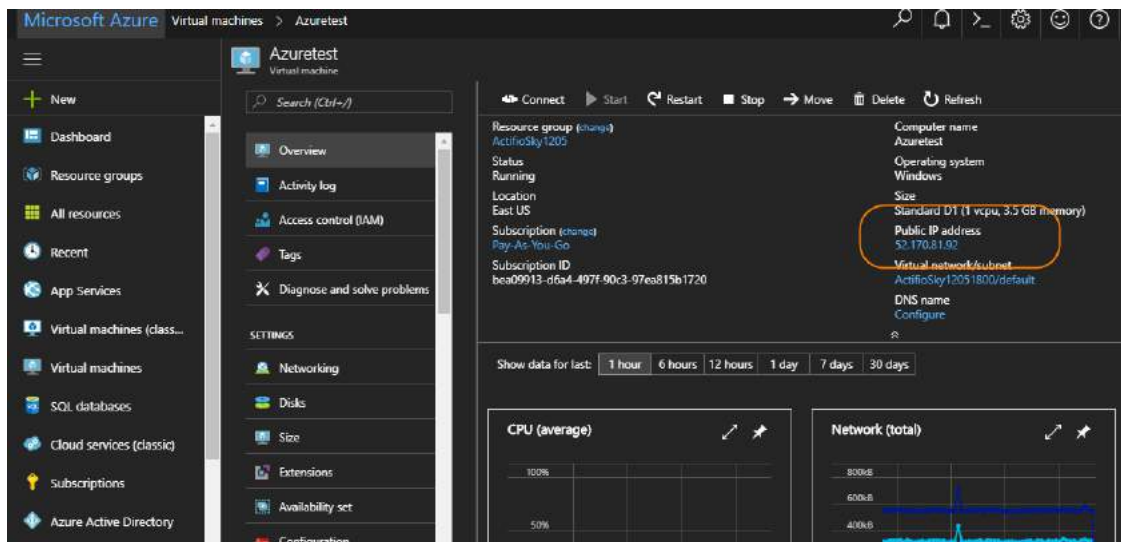
Display Public IP

Once you have the Public IP, you are ready to install the Actifio Sky appliance:

1. Enter the Azure Cloud **Public IP** address in a browser's address space and the Actifio Appliance Installer is displayed:

Actifio Sky Appliance Installer Step One

2. In the spaces provided enter the instance's Public IP.

3. Ensure that the auto discovered Actifio Sky appliance IP address is correct.

4. In the space provided, enter a name for the Actifio Sky appliance.

5. Ensure that the auto discovered network IP addresses are correct.

6. From the Infrastructure drop down menu, select **Azure**.

7. Set the time zone as needed.

8. If you are installing the Actifio Sky appliance as an evaluation, leave the **License Number** field set to the default setting.:

    Note: The 5TB license is used for evaluations. If you decide to purchase a Actifio Sky appliance you will either keep the current 5TB appliance or your Actifio representative can work with you to increase the size of your Actifio Sky configuration.

9. If you are NOT installing this Actifio Sky appliance as an evaluation:

o   Capture the System UUID and pass it on to the Actifio representative. The Actifio representative will use the UUID to generate the Actifio Sky appliance license key.

o   In the space provided, paste a copy of the license key you obtained from the Actifio representative.

o   Click **Validate License** to ensure the validity of the license entered.

o   If the license is valid, the Managed Data License (MDL) size will be displayed in a popup window. If there are any optional add-ons included in the license they will also be shown here.

o   If you are using an encryption license, a Pass phrase field is displayed. Enter a pass phrase, record the pass phrase and keep it in a secure location.

10.   In the spaces provided, enter (create) a password for the first Admin user of the Actifio Sky appliance. Record the password.

11.   Click **Next** and the Step 2 tab contents are displayed:
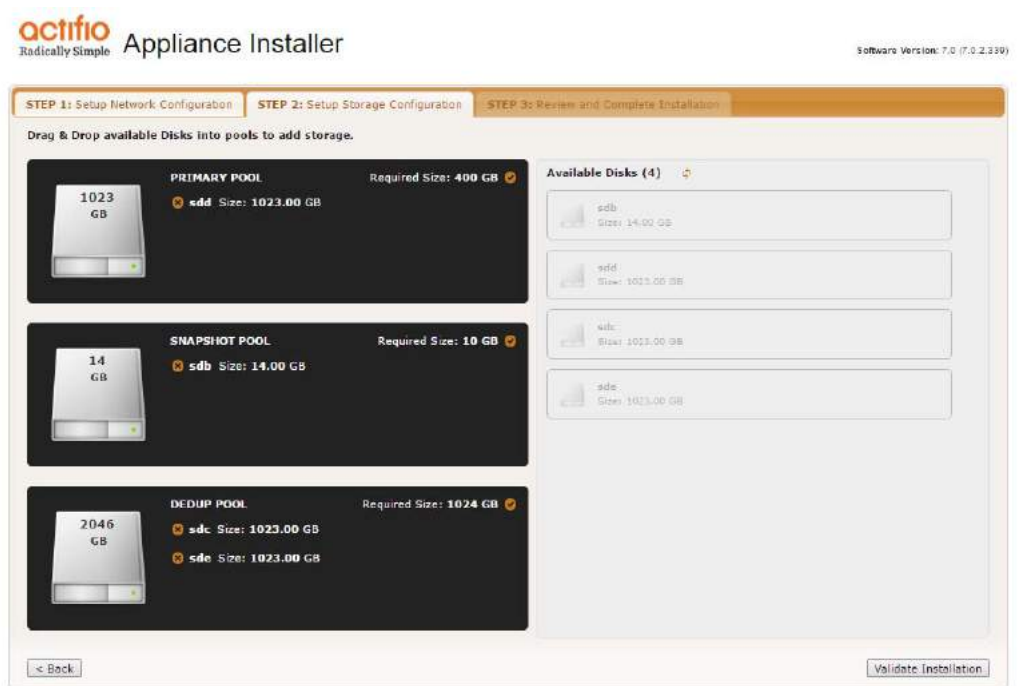
Actifio Sky Appliance Installer Step Two

12.   Select and drag the Available Disks to their associated pools. These are the disks you created when you configured the Actifio VM in Azure. Drag them to their corresponding pool.

o   **Primary Pool:** Contains Actifio Sky system data. One 200 GB disk is required.

o   **Snapshot Pool:** Contains the retained Snapshots (full copies). The actual size required for this disk will be calculated by your Actifio representative. It will define enough disk storage to accommodate the number of full snapshots of data you plan to retain. You can at a later date add additional disk storage to accommodate growth. A minimum of 10 GB is required.

o   **Dedup Pool:** Contains the retained deduplicated data. The actual size required for this disk will be calculated by your Actifio representative. It will define enough disk storage to accommodate the number of deduped copies of data you plan to retain. A minimum of 110 GB is required.

13.   Click **Validate Installation**. The Actifio Sky installer validates the settings. Any issues will appear in a yellow field at the top of the page 2. If no issues are encountered, the third tab is displayed:

Actifio Sky Appliance Installer Step Three

14. The third tab provides the opportunity to review choices and go back and make changes as needed.

15. Once choices are verified, click **Complete Installation** and the Actifio Sky appliance will reboot. The reboot may take several minutes.

When the reboot finishes continue on to

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6 Installing the Actifio Desktop Client

When you have finished installing the Actifio Sky appliance you must install the Actifio Desktop Client (user interface) on your local system.

The Actifio Desktop Client is downloaded and installed from the Actifio Sky appliance's Resource Center.

Note: After the Actifio for Sky appliance is installed it may take up to ten minutes for the Actifio Resource Center to become activated.

The Actifio Desktop user interface runs on Adobe Air Player. When you install the Actifio Desktop client, you will also install a copy of Adobe Air Player.

Installing the Actifio Desktop Client

The Actifio Desktop Client is downloaded and installed from the Actifio Sky Resource Center.

To display the Actifio Sky Resource Center:

1. In a web browser, enter the **Public IP** for the Actifio Sky for Azure Cloud Instance and the Actifio Resource Center is displayed:
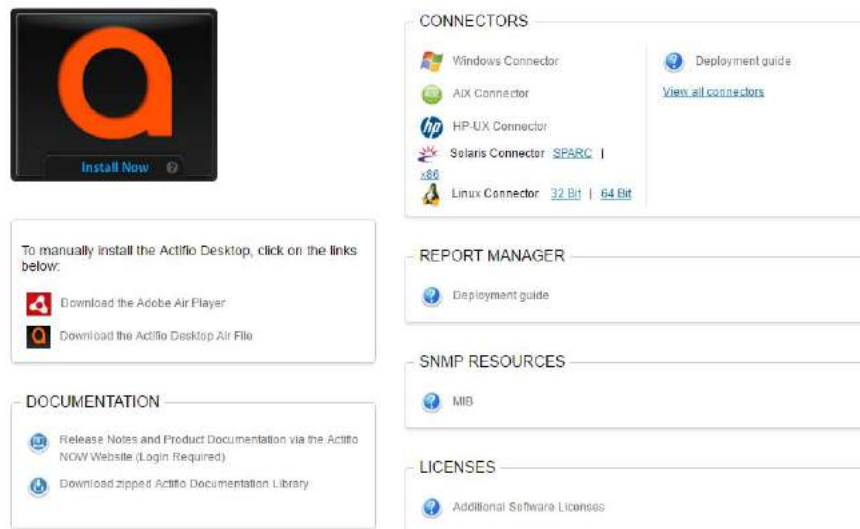
Actifio Resource Center

2. Install the Adobe Air Player and Actifio Desktop (UI):

    o   Click **Download the Adobe Air Player**. Follow the prompts to install Adobe Air Player. Wait for the Adobe Air Player installation to complete.

    o   Click **Download Actifio Desktop Air File**. Follow the prompts to install the Actifio Desktop Air File.

    When the Actifio Desktop installation is complete, the Actifio Desktop log in page is displayed:

Desktop Login page

3. In the **Username** space: enter the username: **admin**

4. In the **Password** space enter the password you created when you installed the Actifio Sky appliance. See Installing the Actifio Sky Appliance on page 15.

5. In the **Appliance** space: Enter the **Public IP** for the Actifio Sky Instance. See Installing the Actifio Sky Appliance on page 15 for details on how to obtain the Public IP.

6. Click **Sign in** and the Actifio Dashboard is displayed:
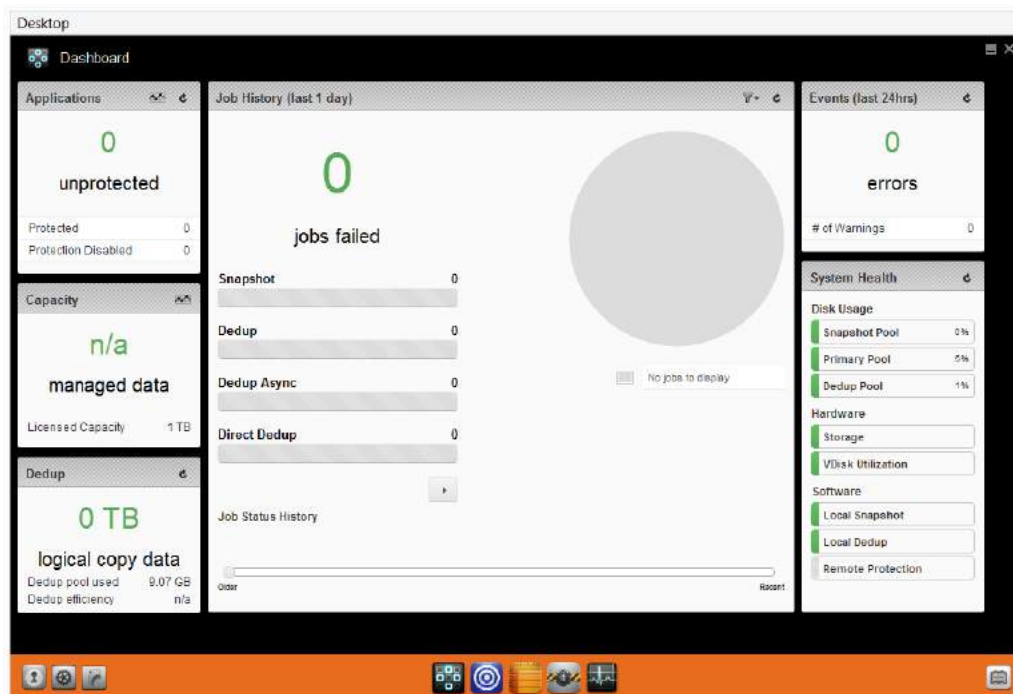
Actifio Desktop Dashboard

The Actifio Desktop Dashboard displays a high-level view of your Actifio appliance's status.

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Next Steps

Before using Actifio Sky for the Azure Cloud, consult **Getting Started with Actifio Copy Data Management**. It provides an overview of the basic Actifio concepts and procedures as well as an introduction to the Actifio user interface.

A copy of this guide can be found in the Actifio Now customer portal or by clicking the book icon in the lower right-hand corner of the Actifio Desktop user interface.

After you have familiarized yourself with the basic concepts and use of the Actifio Sky appliance:

- Install the Actifio Connector on the servers whose application data you want to capture. See Installing Actifio Connectors on page 23 for details.

- Configure the Actifio Sky for the Azure Cloud appliance's alerting capabilities. See **Configuring Resources and Settings With the Domain Manager** for details. A copy of this guide can be found in the Actifio Now customer portal or by clicking the book icon in the lower right-hand corner of the Actifio Desktop user interface.

- If you have a license for a second Actifio Sky appliance, install and configure the appliance in a separate region.

- If you will replicate data to another Actifio Sky appliance, see Enabling Replication on page 27

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7 Installing Actifio Connectors

Before you can capture application data from servers running in your Microsoft® Azure Cloud, you must install the Actifio connector on those servers.

The Actifio Connector is a small-footprint process installed on servers that host applications. The Actifio Connector is used to capture the data that resides on the application servers in your Azure environment

Specifically, Actifio Connectors:

- Discover applications

- Capture individual and groups of applications including:

    o Microsoft® SQL Server clusters

    o Microsoft Exchange Database Availability Groups (DAGs)

- Quiesce applications, for application consistency during capture

- Enable change block tracking for Actifio's incremental forever capture strategy.

- Capture and manage transaction logs:

    o Capture database(s) and logs with one Policy Template

    o Truncate database transaction logs

    o Roll database transaction logs forward for point-in-time recovery when accessing virtual copies.

- Rescan storage buses, brings new devices on-line, assigns drive letters, imports volume groups, and mounts file systems, based on the operating system of the application host.

- Prepare application volumes for restore operations.

- Enable directory and file browsing, and packages selected files into a ZIP archive when restoring one or more files from a mounted backup.

Actifio Connectors are operating system specific. For details see:

-
-

The Actifio Windows Connector

The Actifio Connector for Microsoft® Windows® runs as a Windows service under the Local System account. The Connector writes logs to a log file in its installation directory and writes significant events to the Windows application event log as well.
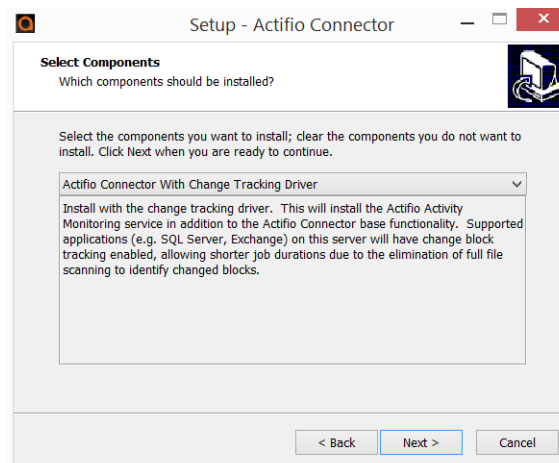
Actifio Change Tracking Driver Option for Windows

When installing the Windows connector you will be given the option of installing the Actifio Change Tracking Driver. For Actifio Sky for the Azure Cloud, always select the **Actifio Connector With Change Tracking Driver** option. The Change Tracking Driver enables Actifio's initial full then incremental forever approach to data capture.

Installing the Actifio Windows Connector

To install the Actifio Connector on a Windows host:

1. Log on to the host as administrator.
2. Open a browser to `http://<ACTIFIO_APPLIANCE_IP>` to access the Actifio Resource Center.
3. Click the **Windows Connector** to download `connector-Win32.exe`. Save the file.
4. Launch `connector-Win32.exe`.
5. Click **Run** and follow the setup wizard instructions.

6. When prompted to select components, from drop down menu select **Actifio Connector With Change Tracking Driver**.
7. Click **Next**.
8. Follow the rest of the installation instructions.
9. Once the installation is complete, to verify that the Actifio Connector is installed and running correctly run the standard windows tool: services.msc on the server on which you installed the Actifio Connector.

If after the first full backup of an application, the Actifio appliance will perform incremental backups. If your backups are still always full backups, then check for the following:

- The Actifio Activity Monitor (change tracking driver) service may be stopped. In this case, check your Windows services and start the Actifio appliance's Activity Monitor service.

- The change tracking driver may be incorrectly configured or not installed. In this case, uninstall and then make a full install of the Actifio Connector.

Uninstalling the Actifio Windows Connector

To uninstall the Connector from a Windows host:

1. From the `c:\program files\Actifio` folder select and double-click the uninstaller executable: `unins000.exe`.
2. Click **Yes** to confirm and then click **OK** to finish.

The Actifio Linux Connector

The Actifio Connector for Linux runs as a daemon process under the username **root**. It listens on a TCP port 56789 for communication from the Actifio system. The Connector writes to a log file in the installation directory (`/var/act/log/UDSAgent.log`) and posts significant events to the `/var/log/` messages repository.

On Linux systems, the installer takes the form of an RPM package. Use the `rpm` utility to install the Connector. The installer creates `Init` RC scripts to start and stop the Connector that runs as a daemon. After the installation completes, use the RC script to start Connector for the first time.

Installing the Actifio Connector on a Linux Host

On Linux systems, the installer takes the form of an RPM package. Use the `rpm` utility to install the Actifio Connector. The installer creates `Init` RC scripts to start and stop the Actifio Connector that runs as a daemon. After the installation completes, use the RC script to start the Actifio Connector for the first time.

To install the Actifio Connector on a Linux host:

1. Log on to the host as root.

2. Open a browser to `https://<ACTIFIO_APPLIANCE_IP>` to access the Actifio Resource Center.

3. Click the **Linux Connector** icon to download the Actifio Connector.

4. Click **OK** in the information dialog.

5. To check the RPM package before proceeding with installation, run `rpm --checksig <connector_filename>.rpm`

6. To install the Actifio Connector, run `rpm -ivh <connector_filename>.rpm`
   or `rpm -ivh <connector_filename>.rpm` (for the CentOS 5.7 32-bit installation)

   Note: *The Actifio Connector is always installed at* `'/opt/act'`.

   ---

7. Run `/etc/init.d/udsagent status` to verify that the Actifio Connector is running.

Uninstalling the Actifio Connector from a Linux Host

To uninstall the Actifio Connector from a Linux host:

1. Stop the Actifio Connector by running `/etc/init.d/udsagent stop`.

2. Learn the currently installed Linux Connector RPM name:

   `[Azure@vq-AzureAzure ~]$ rpm -qa udsagent`

   This returns the package name and version, such as: `udsagent-6.1.1-43975.x86_64`

3. Uninstall the package using `rpm -e udsagent` with the package name you obtained from the query. For example:

   `rpm -e udsagent-6.1.1-43975.x86_64`

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8 Enabling Replication

*Note: Before proceeding, familiarize yourself with the concepts, processes and procedures in the **Getting Started with Actifio Copy Data Management** guide.*

To replicate data, Actifio Sky appliances must first exchange certificates and then be joined.

Exchanging Certificates

Use the Actifio Domain Manager to exchange security certificates between Actifio Sky appliances:
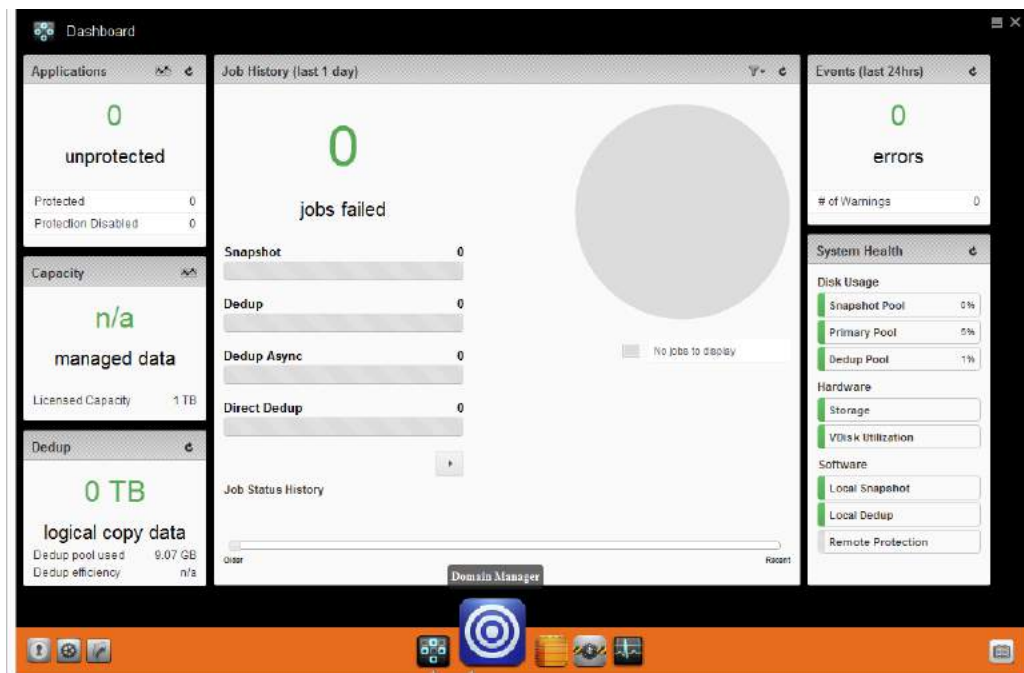

Domain Manager Service Button

1. From an Actifio Sky for the Azure Cloud appliance, on the bottom strip of the Actifio Desktop, click the **Domain Manager** button and the Domain Manager is displayed.
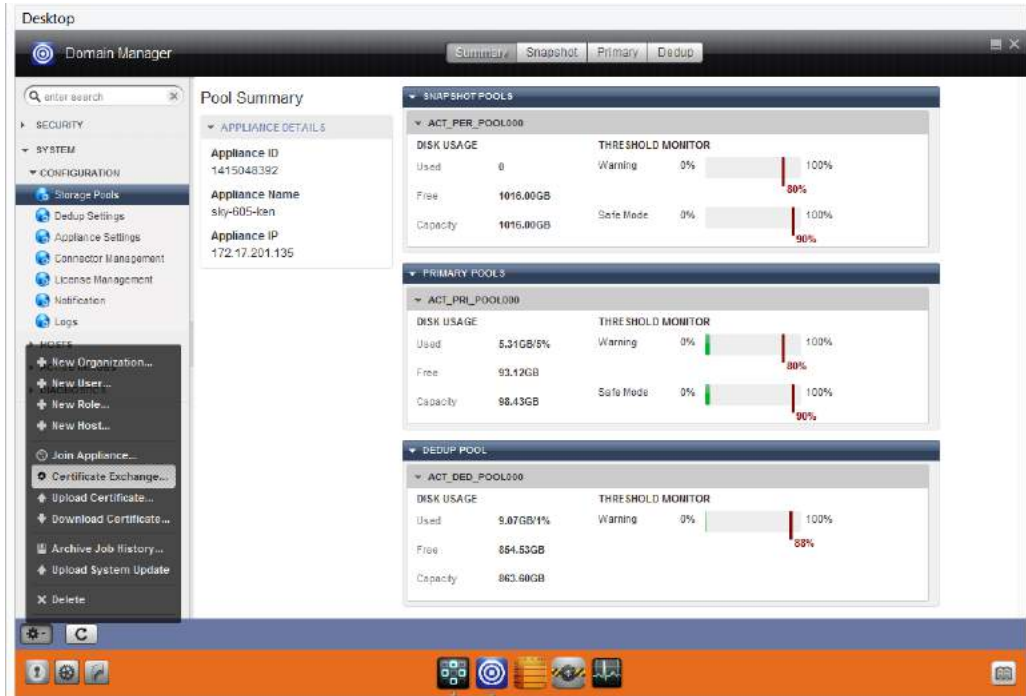
The Domain Manager Service Menu with Certificate Exchange Selected

2. In the left-hand corner of the Domain Manager, click the gear button and the Domain Manager's service menu is displayed.

3. From the service menu, click **Certificate Exchange...** and the Exchange Certificate dialog box is displayed:
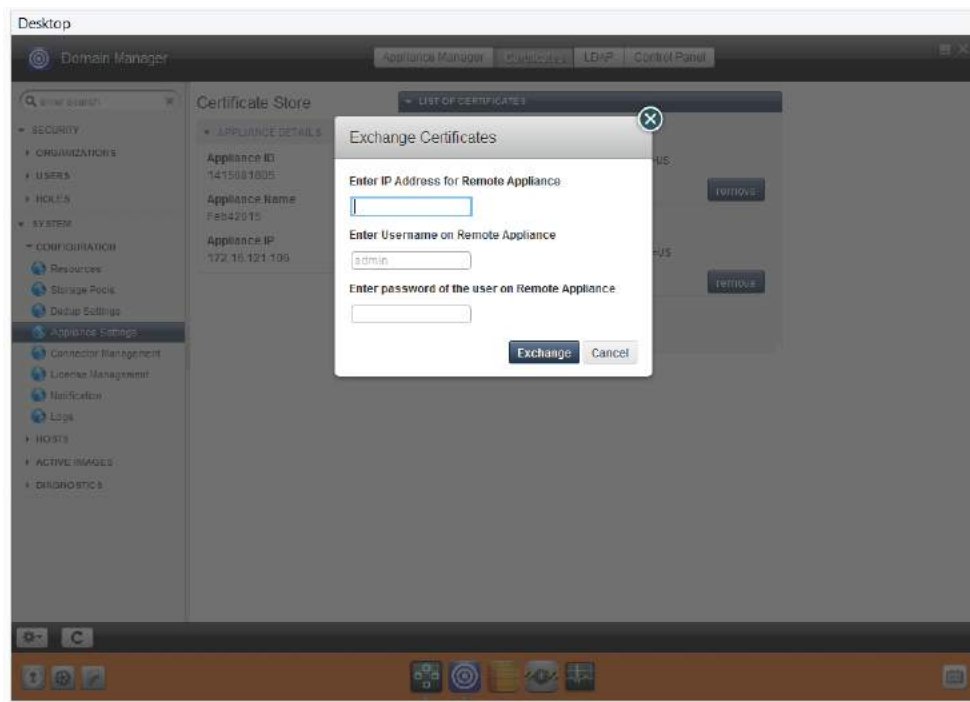

The Exchange Certificate Dialog Box

4. In the spaces provided, for the Actifio Sky appliance to be replicated to, enter:

   o The Public IP address

   o The username: **admin**.

   o The password for the Actifio Sky appliance

5. Click **Exchange**. The security certificates are exchanged between the Actifio Sky appliances.

Once security certificates have been exchanged, the Actifio appliances are ready to be joined.
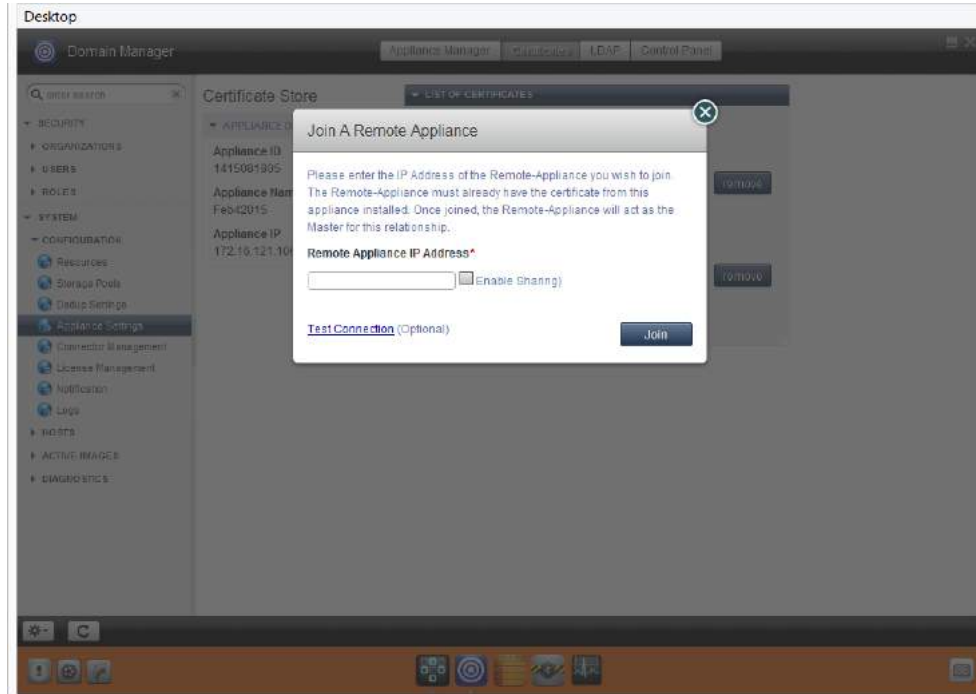
Joining Actifio Appliances

To join the Actifio appliances:
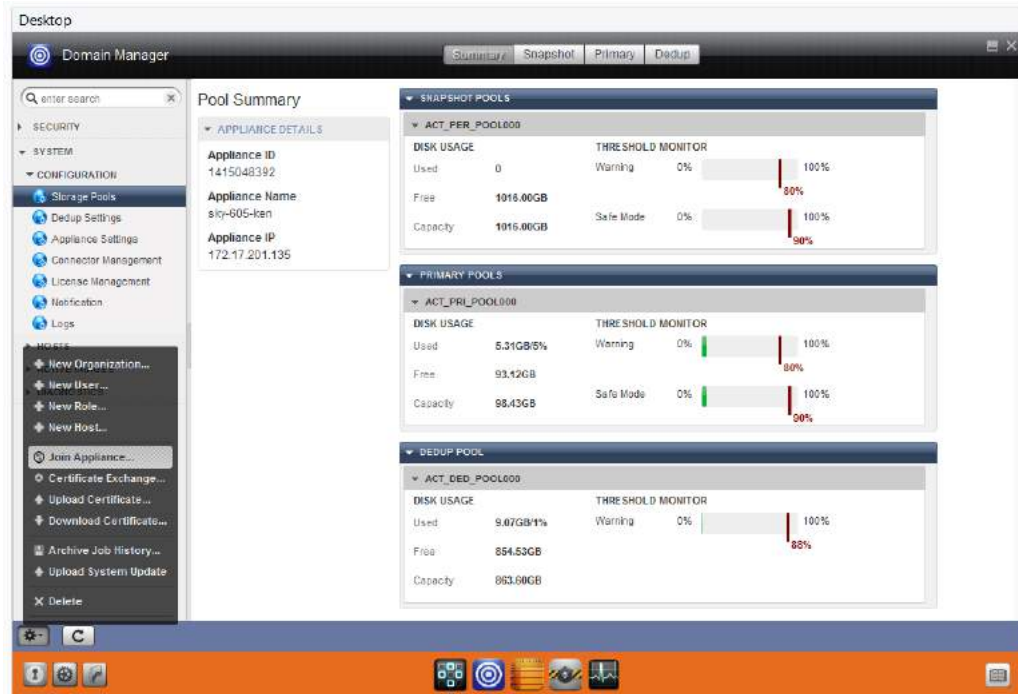
The Domain Manager with Service Menu Displayed and Join Appliance... Selected

1. From the Domain Manager's service menu select **Join Appliance...**. The **Join a Remote Appliance** dialog box appears:

Join Remote Appliance Dialog Box

2. Enter the Public IP address of the Actifio Sky appliance to which the current Actifio Sky appliance will replicate.

3. Ensure **Enable Sharing** is **NOT** checked.

4. Click **Join** and the Actifio appliances are joined.

Note: Before data can be captured and replicated, you must create a Resource Profile to define where to replicate data. For details, see **Virtualizing and Protecting Copy Data with the Application Manager.** *This guide can be found in the Actifio Sky online library or in the Actifio Now customer portal.*