Deploying Actifio Sky in the Google Cloud Platform

Actifio 7.1.1 and later

actifio

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Preface

The information presented in this guide is intended for users who are configuring Actifio Sky for the Google Cloud Platform. If you are installing Actifio Sky for the Google Cloud Platform 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 Google Cloud Platform, consult *Introducing Actifio Copy Data Management.* It introduces basic concepts, processes and procedures for an Actifio appliance.

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.

Contents

1 Introduction

An Actifio Sky appliance is a virtual server designed to capture and manage data. Actifio Sky appliances can be installed on servers in the Google Cloud Platform. Captured data can be replicated between Actifio appliances in your data center, between appliances in the Google Cloud Platform, and between appliances in your data center and in the Google Cloud Platform. Replicating to another Actifio appliance ensures a solid disaster recovery solution.

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

Data in Google Cloud Platform 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 Google Cloud Platform environment delivering business resilience for on-premises enterprise applications.

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

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

- **Global, standardized, Hybrid Cloud Data Management:** For Google Cloud Platform-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.

An Actifio Sky appliance installed in a Google Cloud Platform delivers the following benefits:

Build Higher Quality Apps Faster: Actifio appliance's database virtualization in aGoogle Cloud Platform 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 Google Cloud Platform 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 a Google Cloud Platform 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 Configuring an Actifio Sky Instance

This chapter assumes that you have a valid Google Cloud Platform account, and you are familiar with basic Google Cloud Platform processes and procedures.

This chapter contains the following sections:

Sizing the Actifio Sky Solution

Actifio representative will use a sizing tool to determine the size requirements for your Actifio Sky solution. The sizing tool takes in to account such things as:

- Amount of data

- Whether you will use deduplication

- Data type

- Change rate

- Growth

- Retention

When complete, the sizing tool recommends a license size for the Actifio instance. The size of the license will dictate the number of CPUs and the amount of memory required for the solution. The sizing tool will also recommend the number and size of disks needed.

CPU and Memory Requirements

The following table details the CPU and Memory requirements for each Actifio Sky solution.

CPU and Memory Required by License		
License	Minimum Memory	*Cores
60 TB Sky	16 GB	4 for a Non-Encryption License 6 for an Encryption License
120 TB Sky	32 GB	6 for a Non-Encryption License 8 for an Encryption License
200 TB Sky	48 GB	8 for a Non-Encryption License 10 for an Encryption License

* Required cores can be spread across multiple CPUs, with multiple CPUs providing slightly better performance.

Obtain the Actifio Sky Solution

To obtain an Actifio Sky solution:

1. From the Google Cloud Platform's left-hand navigation, click **Cloud Launcher** and the Cloud Launcher page is displayed.

2. In the **Search For Solutions** text box type: **Actifio** and the Actifio Sky icon is displayed:

3. Click on the Actifio icon and the Launch Actifio Sky on Compute Engine page is displayed:

4. Click **Launch On Compute Engine** and the **New Actifio Sky Deployment** page is displayed:

5. In the space provided, enter a name for the Actifio Sky deployment

6. From the drop down menu, select a region.

7. Under **Machine Type**, click **Customize** and the custom machine type options are displayed:

8. Select the Cores and Memory required by your Actifio Sky license

9. Scroll down to the bottom of the page and click **Deploy** and the Actifio Sky solution will be deployed.

Storage Requirements

When configuring the Actifio instance you must create at least three disks, These disks must use storage that meets the following performance profile:

- 35 random reads per second per TB with 64KB read size,

- 10 random write per second per TB with 64 KB write size

The instance's disks will be used to create storage pools for the Actifio Sky appliance. The Actifio pools are the:

- **Primary Pool:** One 400 GB 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 20 GB is required. You can at a later date, add additional disks to accommodate growth.

- **Dedup Pool:** A minimum of 1TB is required.

Configuring an Instance

To configure a new Actifio Sky solution:

1. Log into your Google Cloud Platform account and your dashboard is displayed:

2. In the left-hand navigation menu, mouse over **Compute Engine** and a pop up menu is displayed:

3. From the pop up menu, select **VM Instances**. and all available instances are displayed:

4. Select the Actifio instance (solution) you just uploaded and the Instance Details page is displayed.

5. Scroll down to the Boot Disk and Local Disk section.

6. In the top menu bar click **Edit**.

7. Click **+Add Item**.and the Create Disk popup is displayed.

8. Enter a name for the disk

9. Click **Create Disk** and the Create disk page is displayed:

You must create at least 3 disks. See Storage Requirements on page 5 for details. Depending on your license.

10. In the **Name** field enter a name that will allow you to determine which Actifio pool will use the disk.

11. In the **Description** field, enter text that will further describe the disk's use with the Actifio instance

12. For **Disk type**, Actifio recommends **Standard persistent disk**, When creating the disk for deduplication performance, you must select **SSD persistent disk**.

13. **Source type** must be **None (blank disk)**.

14. Size is determined by which Actifio pool will use the disk. See Storage Requirements on page 5 for details.

15. For Encryption, keep the default Automatic (recommended).

16. Click **Create** and the disk is created.

17. Repeat this process until you have created all disks, for example:

18. Once all disks are created

19. Review the settings for the instance.

20. If all of your settings are correct, click **Save** and the Actifio instance will be created.

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3 Installing an Actifio Sky Appliance

When the Actifio instance is ready, obtain the instance's Public IP. Once you have the IP you are ready to install the Actifio Sky appliance in to the instance.

1. Enter the instance's **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 **Google Cloud Platform**.

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.:

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 instance. Drag them to their corresponding pool:

> o	Drag the 400GiB disk to the Primary Pool.
>
> o	Drag at least 100GiB (minimum) to the Snapshot Pool.
>
> o	Drag at least 1024GiB (minimum) disk to the Dedup Pool.

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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4 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.*
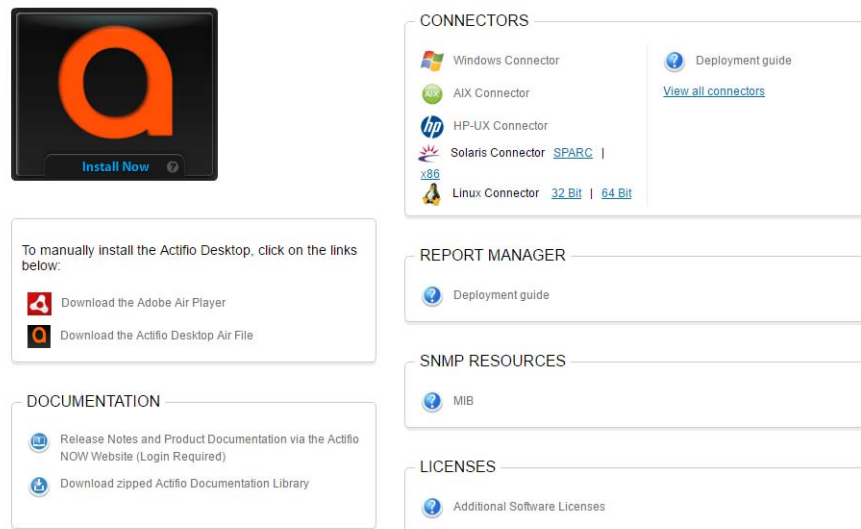
The Actifio Desktop user interface runs on Adobe Air Player. When you install the Actifio Desktop client, you will also install a copy of Adobe Air Player.

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 appliance in the Google Cloud Platform and the Actifio Resource Center is displayed:
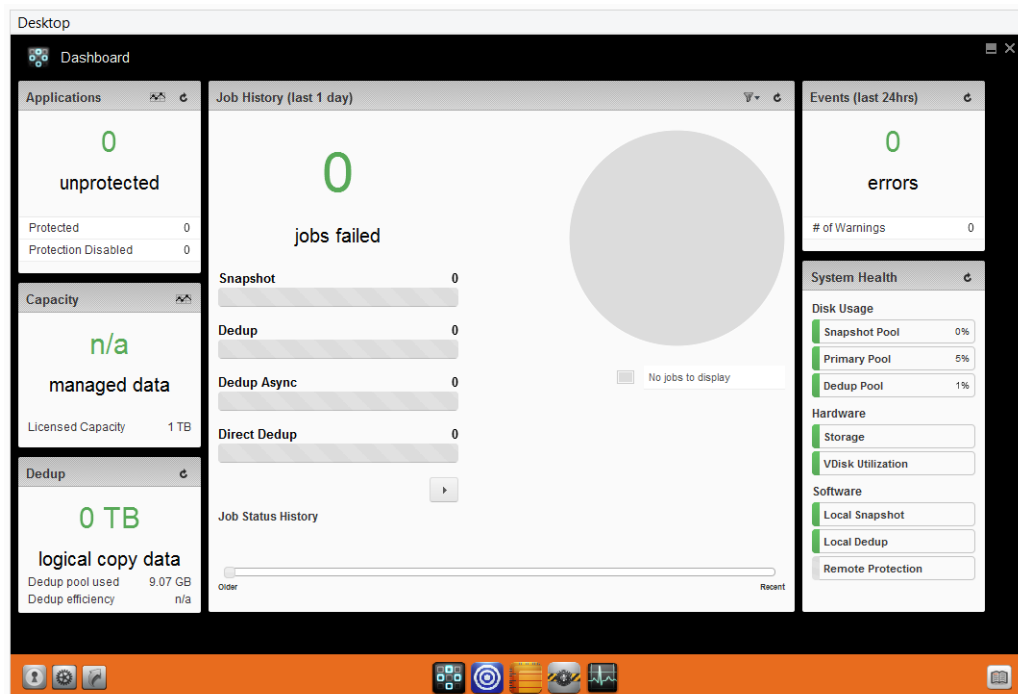

Actifio Resource Center

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 an Actifio Sky Appliance on page 7.

5.   In the **Appliance** space: Enter the **Public IP** for the Actifio Sky appliance int the Google Cloud Instance. See Installing an Actifio Sky Appliance on page 7 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.

Next Steps

Before using the Actifio Sky appliance, 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 ActifioNOW 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:

- Add an SSD to your Deduplication Pool. See Adding an SSD to an Actifio Sky Dedup Pool on page 21 for details.

- Install the Actifio Connector on the servers whose application data you want to capture. See Installing Actifio Connectors on page 15 for details.

- Configure the Actifio Sky 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 ActifioNOW customer portal or by clicking the book icon in the lower right-hand corner of the Actifio Desktop user interface.

- If you will replicate data to another Actifio Sky appliance, see Enabling Replication on page 19

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5   Installing Actifio Connectors

Before you can capture application data from servers running in your Google Cloud Platform, 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 Google Cloud Platform

Specifically, Actifio Connectors:

- Discover applications

- Capture individual and groups of applications including:

    o   Microsoft$^{®}$ SQL Server instances and 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 on page 16
- The Actifio Linux Connector on page 17

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.
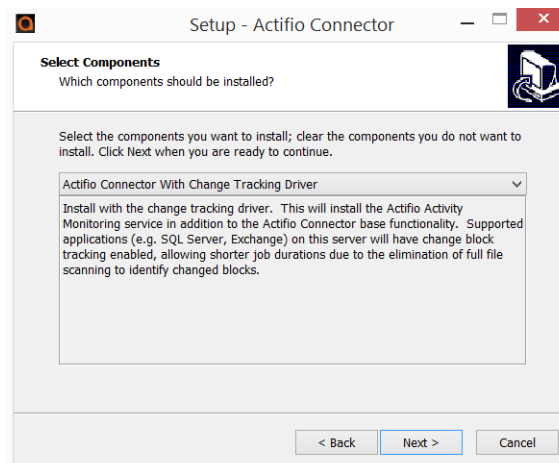
Actifio Change Tracking Driver Option for Windows

When installing the Windows connector you will be given the option of installing the Actifio Change Tracking Driver. Aways 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:

     `[Google@vq-GoogleGoogle ~]$ 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:

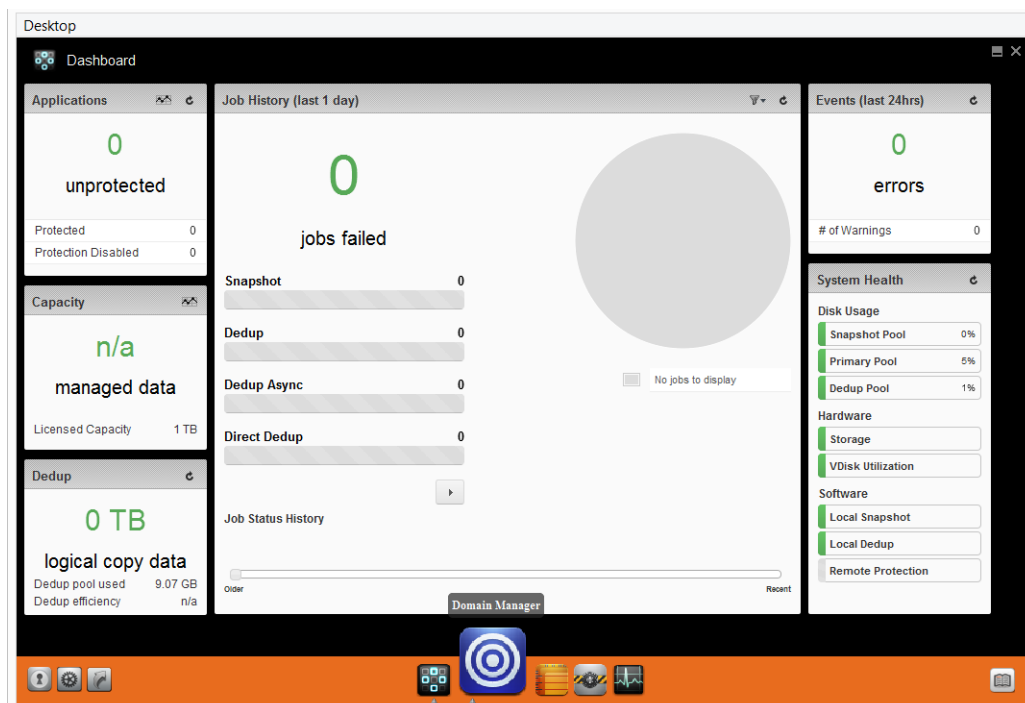   `rpm -e udsagent-6.1.1-43975.x86_64`

6 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.
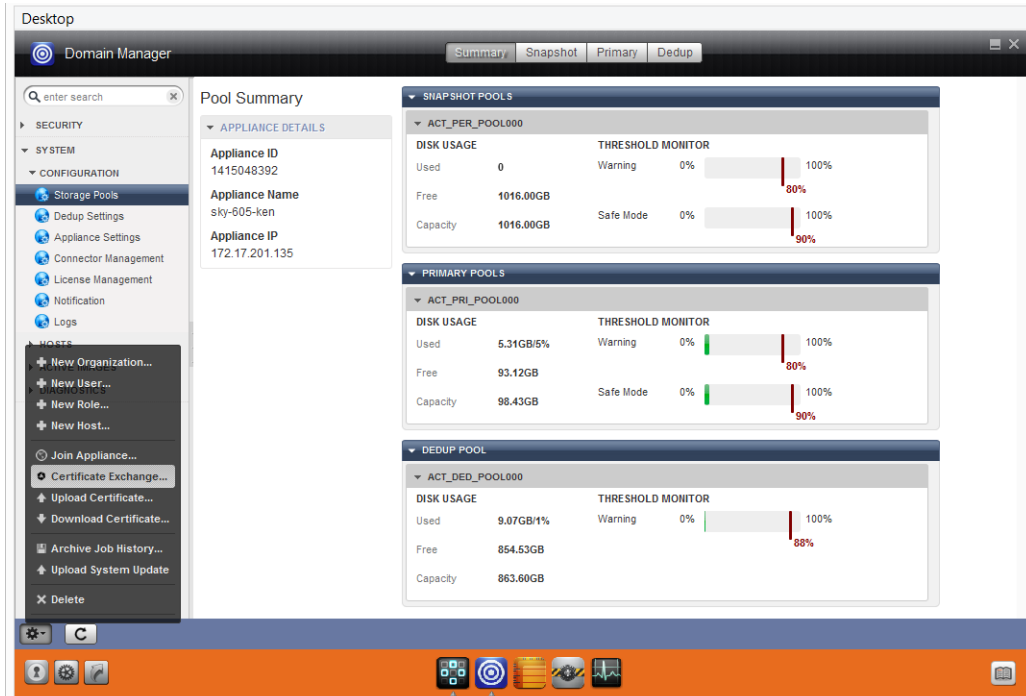
Exchanging Certificates

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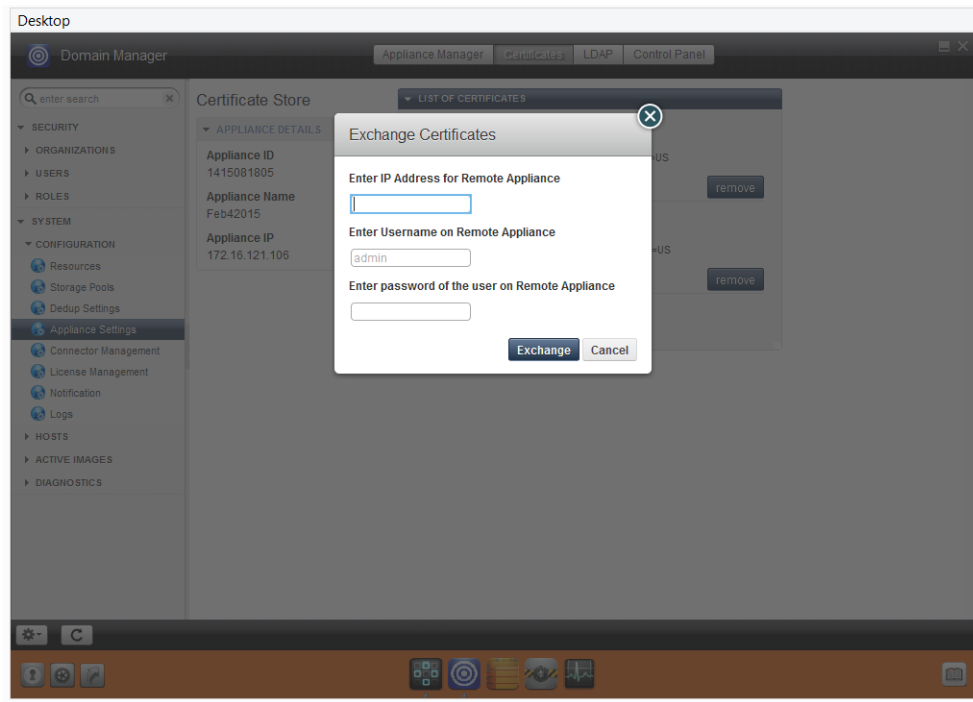

Domain Manager Service Button

1. From an Actifio Sky 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:
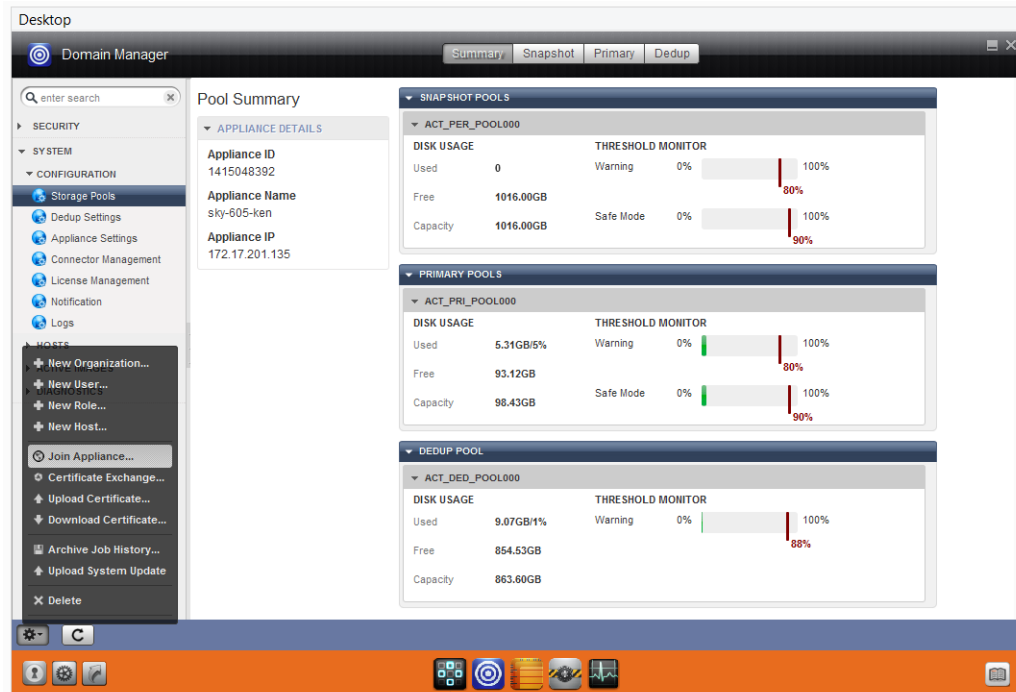

The Exchange Certificate Dialog Box

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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.

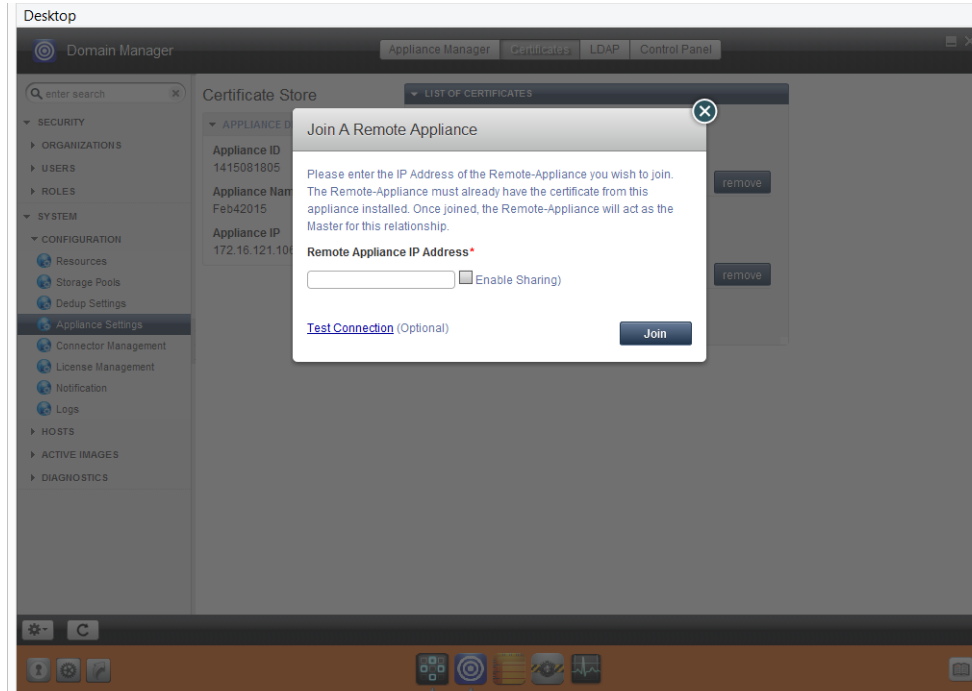Once security certificates have been exchanged, the Actifio appliances are ready to be joined.

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 ActifioNOW customer portal.*