MongoDB DBA's Guide to Actifio Copy Data Management

actifio

Actifio Sky and CDS 8.0

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Preface

The information presented in this guide is intended for users who are familiar with basic Actifio processes and procedures as described in ***Getting Started with Actifio Copy Data Management*** and who are qualified to administer MongoDB databases.

Your Actifio appliance's Documentation Library contains detailed, step-by-step, application-specific instructions on how to protect and access your data. Each guide is in PDF format and may be viewed online, downloaded, or printed on demand. The following guides will be of particular interest:

- ***Connecting Hosts to Actifio Appliances***
- ***Virtualizing and Protecting Copy Data with the Application Manager***
- ***Accessing and Recovering Copy Data with the Application Manager***
- ***Restoring Copy Data with the Application Manager***

The ActifioNOW Customer Portal

During the configuration and initialization of your Actifio appliance your Actifio representative provided you with a user name and password for the ActifioNOW customer portal.

From the customer portal you can obtain detailed reports about your Actifio appliance as well as search the portal's knowledge base for answers to specific questions.

To log into the ActifioNOW customer portal:

1. Go to: **https://now.actifio.com**
2. When prompted, enter the user name and password provided by your Actifio representative.

Actifio Support Centers

To contact an Actifio support representative, you can:

- Send email to: support@actifio.com
- Call:

  From anywhere: +1.315.261.7501

  US Toll-Free: +1.855.392.6810

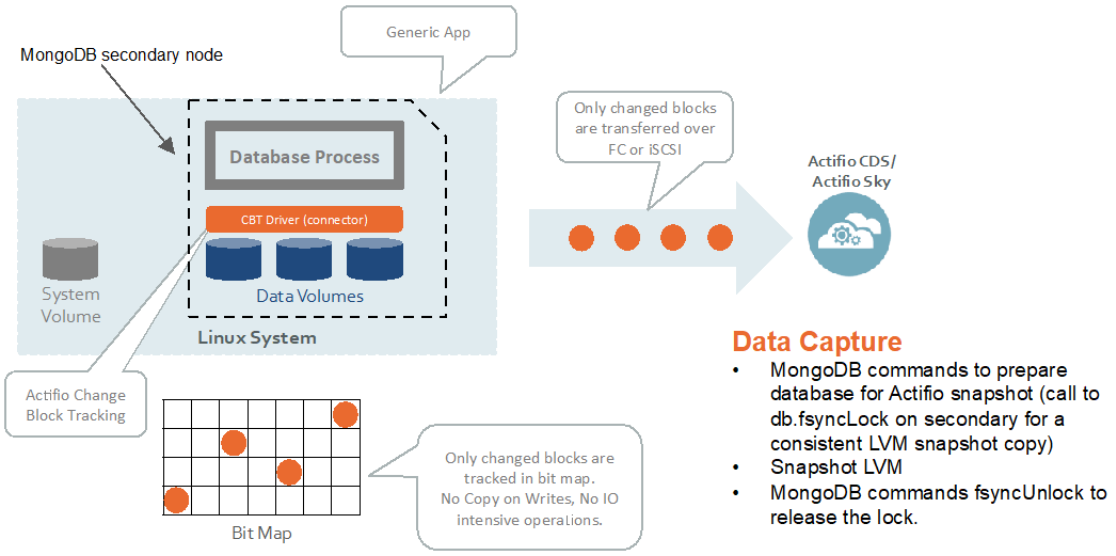
  Australia: 0011 800-16165656

  Germany: 00 800-16165656

  New Zealand: 00 800-16165656

  UK: 0 800-0155019

1 Introducing Actifio Copy Data Management for MongoDB Databases



MongoDB with Actifio Out-of-Band Linux CBT

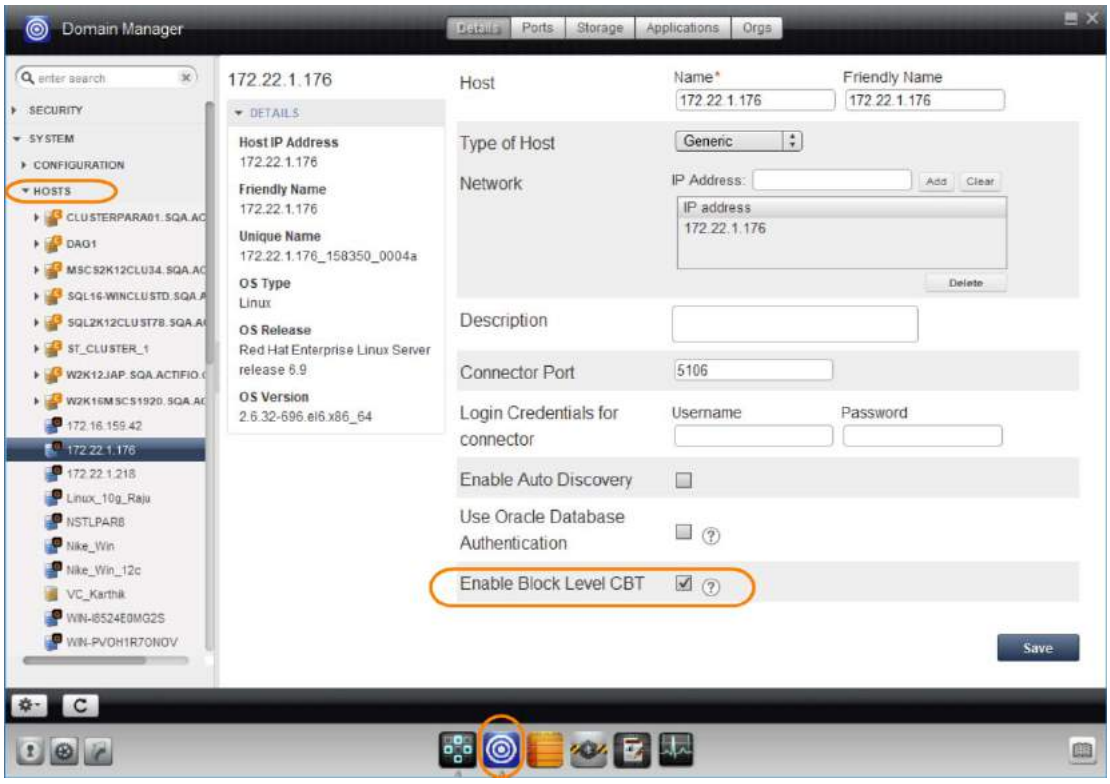
Actifio protection is required to be set from secondary node of MongoDB replica set. This creates a MongoDB database snapshot in incremental for ever data capture using fsynclock from the secondary node without impacting the primary production node.

Operation	Benefit
Backup	Manual and/or scheduled online backups (incremental-forever full snapshots)
Recovery	Recovery of a database to its most recent state, a specific point in time of time of data backup or log backup Recovery to the original host or an alternate host
Test/Dev Copy	Migration of MongoDB from a physical to a virtualized environment Multiple point in time copies and instant Test/Dev refresh Accelerate and automate Test/Dev provisioning
Backup Catalog view	Actifio Desktop

2 Preparing the MongoDB Database

Prerequisites

- Target node should be accessible from the primary replicaset node.
- Make sure MongoDB database data and log volumes (ex: /mongodata) are managed by LVM and it must not be the boot volume. MongoDB data path can be checked by running (ps -ef | grep mongo)
- Install the Actifio Connector on the MongoDB server host (see ***Connecting Hosts to Actifio Appliances***.)
- Enable Linux change block tracking on the database server from the Actifio Desktop > Domain Manager > Host > Details:



Enabling Linux CBT for the MongoDB Server

3 Protecting a MongoDB Database

This section includes:

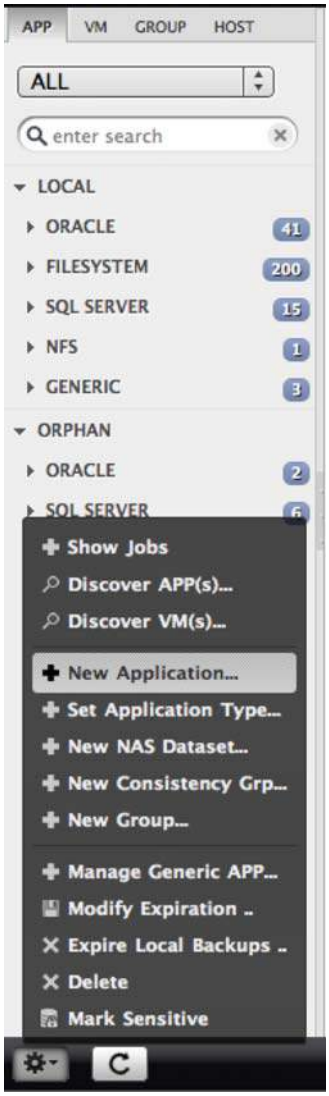
Protecting a MongoDB Database on page 5

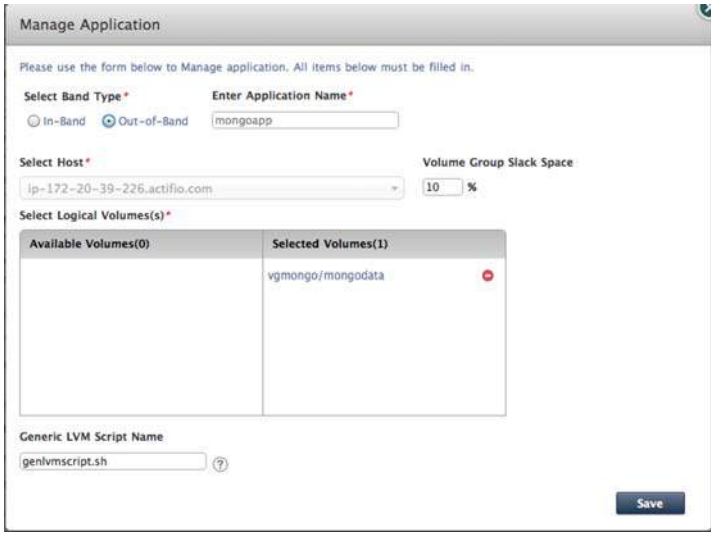
Protecting MongoDB Logs on page 7

Protecting a MongoDB Database

To protect a MongoDB database:

1. From Actifio Desktop > Application Manager Service Menu > New Application, create a new application to protect data and log volumes of MongoDB database. This will open the Add an Application window.
2. From Add an Application:
   a. Select **Out-of-Band** as an application type and enter an Application Name to identify this database in the Actifio Desktop.
   b. From Select Host drop down, select the MongoDB database secondary server.
   c. Under Select logical volume, use the green + to add the data and log volume to Selected volumes on the right.
   d. Put "genlvmscript.sh" under "Generic LVM Script Name".
   e. Click **Save** to add this application as a generic application.





The new application will appear in the Actifio Desktop Application Manager under Generic.

The New Application Is Listed Under Generic

3. Set up the scripts.Login to the database server as root and cd to /act: `cd /act`

   Create an /act/scripts directory if it does not already exist:

   ```
   mkdir scripts
   cd /act/scripts
   ```

4. Copy Actifio provided script /act/act_scripts/mongodb/outofband to /act/scripts. This contains 3 scripts:

   - genlvmscript.sh
   - mongoquiesce.js
   - mongodbbackup.conf

   Provide 755 permission: `chmod 755 *`

5. Edit and modify the mongodbbackup.conf configuration file to set the hostip and port

   ```
   vi mongodbbackup.conf
   ```

6. Replace the line:

   ```
   hostip='<IP of protected mongo DB server>'
   mport='<port of mongo DB server>'
   ```

7. With:

   ```
   hostip=ip-172-20-39-226.actifio.com port=27017
   ```

8. Where hostip is the protected secondary node IP and mport is the MongoDB database port on the secondary node.

   To get the port number, run:

   ```
   ps -ef | grep mongo
   ```

9. Save the file.

10. To protect the database:

    a. Select an SLA template from Template drop-down list.

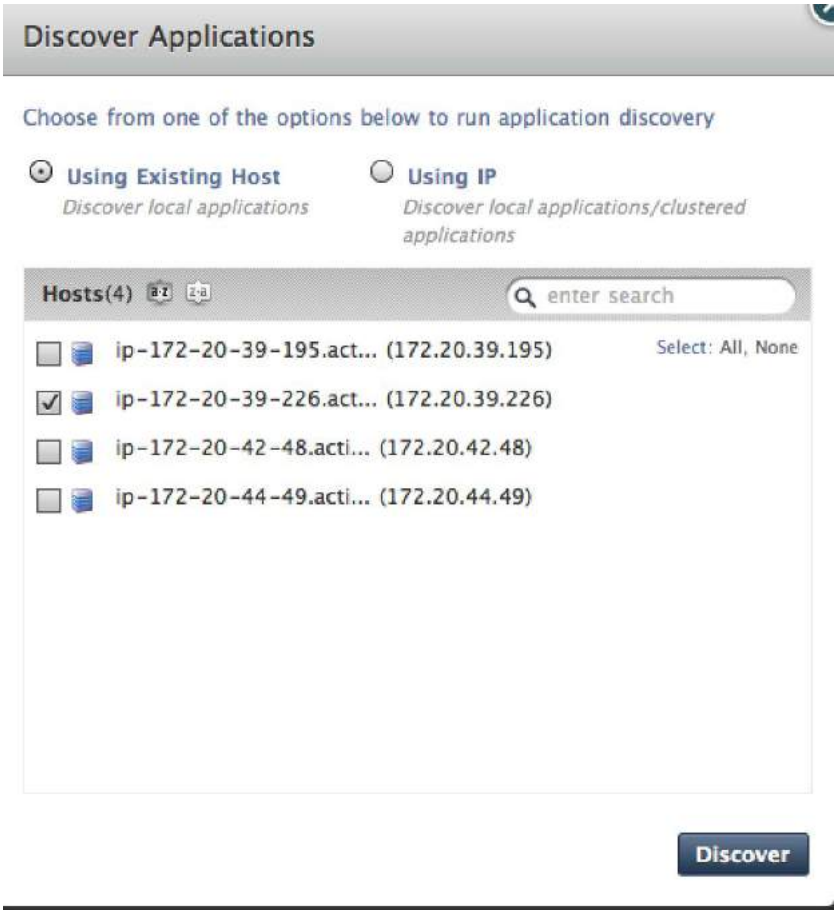
    b. Select a resource profile from Profile drop-down list.

    You can run the snapshot job immediately as an on-demand job, or wait for the scheduler to run the job during the time period specified in the template.

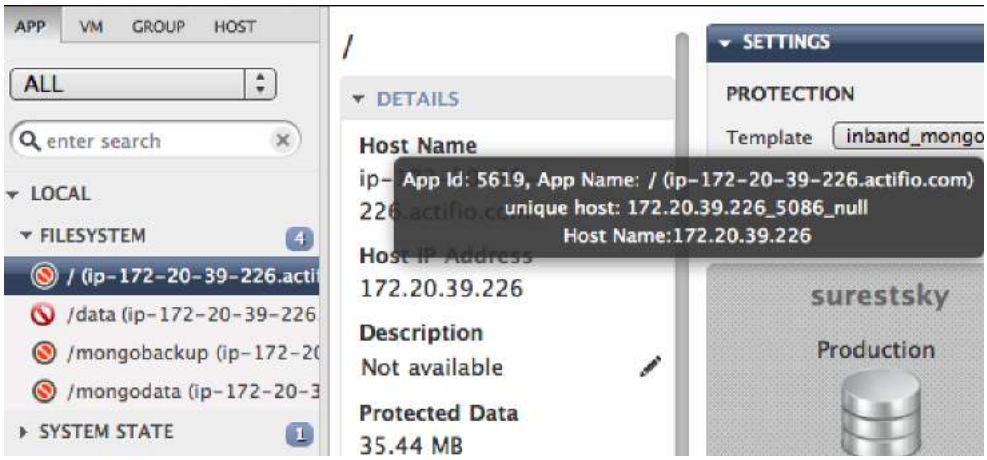
Protecting MongoDB Logs

1. Provide a log backup directory.
2. Discover the log backup directory mount point.

   For example: backupdir=/mongologbackup from the protected MongoDB secondary host.



3. Get the applicationid for the protected filesystem application. From application manager mouse over and get the application id:



4. Set up the scripts for log backup.

a. Login to protected database node as root: cd to /act (`cd /act`)

b. Create /act/scripts directory if not there:

```
mkdir scripts
cd /act/scripts
```

c. Copy Actifio provided script /act/act_scripts/mongodb/outofband/log to /act/scripts

This contains 3 scripts

- mongologbackup.sh
- appid.xxx
- freeze.xxx

d. chmod 755 *

5. Edit and modify the mongodbbackup.conf configuration file copied for database backup to set the hostip and port

```
vi mongodbbackup.conf
```

Replace the line:

```
logbackupdir=<MongoDB oplog backup directory>
```

With:

```
backupdir=/mongologbackup
```

Where logbackupdir is the MongoDB log backup directory provisioned above.

6. Save the file.

7. Modify freeze and appid script extension from "xxx" to application id from Step 3 (ex: 5619)

From the command line:

```
mv freeze.xxx freeze.5619
mv appid.xxx appid.5619
```

8. Protect the log backup directory in Actifio under Actifio Desktop > Application Manager > FILESYSTEM.

9. To protect: Select an SLA template from Template drop-down list. Select a resource profile from Profile drop-down list.

4 Accessing, Recovering, or Restoring a MongoDB Database

Use cases:

- Mount and Refresh Target MongoDB Database to Database Backup Point in Time and/or roll-forward the log to a specific point in time.
- Mount and Refresh Target MongoDB Database with Roll-forward of Log and or roll-forward the log to a specific point in time:
- Mount and Refresh as New Secondary to the Source Primary: To add a virtual copy as the secondary node to the Primary MongoDB database.

Mount and Refresh Target MongoDB Database to Database Backup Point in Time

To mount and refresh the target MongoDB database to a database backup point in time, and/or roll-forward the log to a specific point in time:

1. On the target node set up the scripts:
    a. Login to target database node as root.
    b. cd to /act (`cd /act`)
    c. Create /act/scripts directory if not there

    ```
    mkdir scripts
    cd /act/scripts
    ```

    d. Copy Actifio provided script from /act/act_scripts/mongodb/outofband/clone to /act/scripts:
    o act_Pre_Target_Primary.sh
    o act_Conf_Target_Primary.conf
    o act_Post_Target_Primary.sh
    o act_mongo_recovery.sh
2. Edit and update the parameter of the configuration file **`act_Conf_Target_Primary.conf`** for the target clone operation:

    TARGET_PRIMARY_NODE: This is hostname/IP of the target.

    TARGET_PRIMARY_PORT: This is Port Number to be used by MongoDB on the target.

    MONGO_REPLICASET: This is unique replicaset name for mongoDB on the target.

    TARGET_PRIMARY_MOUNTPOINT: This is the mount point specified during mount for the mount of data and log volume image on target.

To Unmount and Delete any Previously Mounted Copy

To unmount and delete any previously mounted copy:

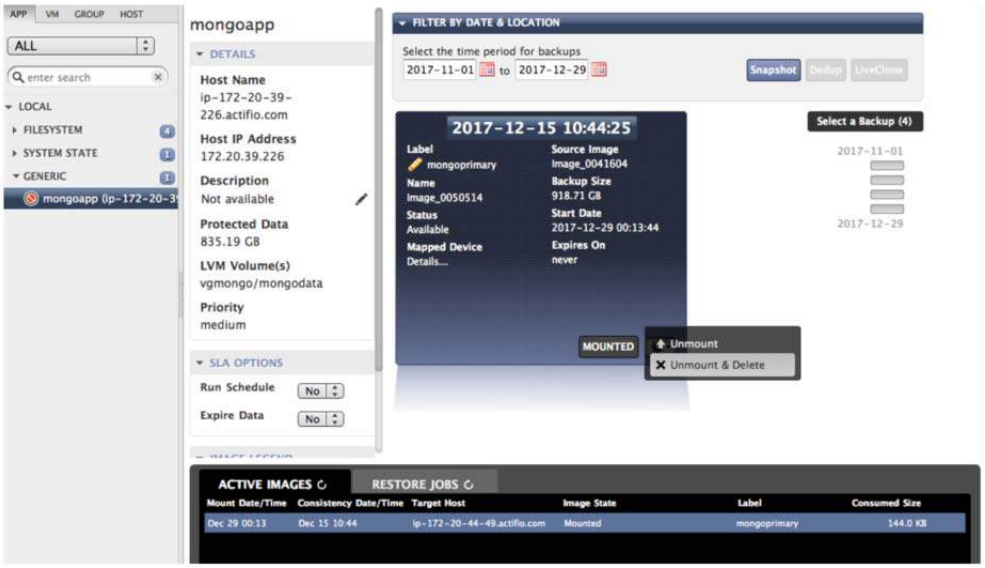
1. `cd /act/scripts`
2. Run the pre script to stop and cleanup any previously mounted image:

   Uncomment the 2 lines below to run this script from command line:

   ```
   #export ACT_JOBTYPE="unmount"
   #export ACT_PHASE="pre"
   ```

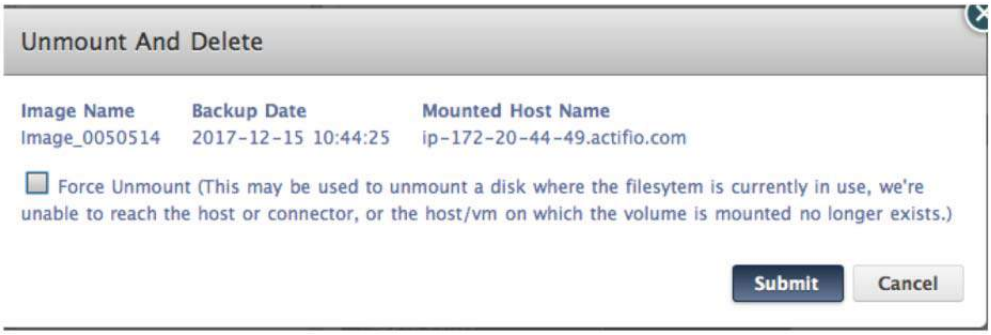
   Run the act_Pre_Target_Primary.sh script:

   `./act_Pre_Target_Primary.sh`
3. From Actifio Desktop, go to the Application Manager and select the mounted image under the Active Image panel at the bottom.



Unmounting the Image for Deletion

4. From the gear icon dropdown menu, select **Unmount & Delete**. The Unmount window opens.



Submitting the Image Deletion Job

5. **Submit** the Unmount and Delete job. This will clean up any previously mounted copy.

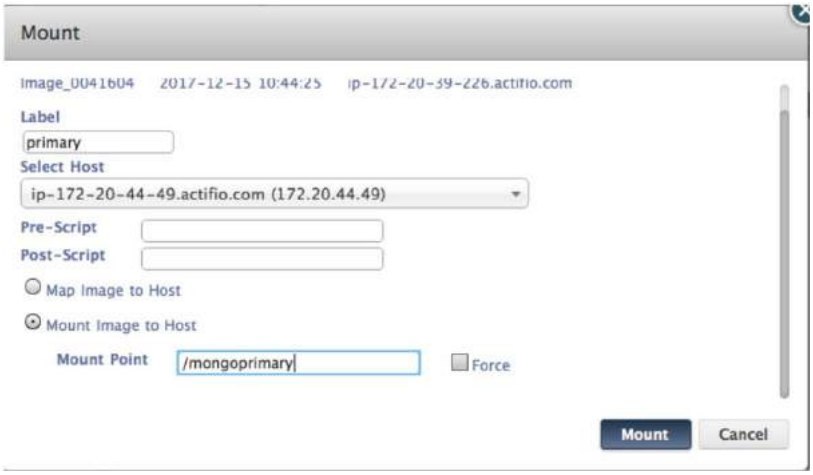
Mounting a New Image Copy

To mount a new image copy:

1. Open the Actifio Desktop to the Application Manager and select the protected MongoDB generic application. Choose the snapshot image to mount.

Mounting a New Image

2. From the gear icon dropdown menu, select Mount. The Mount window opens:



Mounting a New Image, Detail

3. Provide a label as needed. This is optional.
4. In the Select Host drop down list, select the target MongoDB database node.
5. Add a mount point to mount the data and log volume, for example, /mongoprimary.
6. Click **Mount**.
7. Once the mount is complete, login to target node and cd to /act/scripts folder: `cd /act/scripts`
8. Open the act_Post_Target_Primary.sh script and uncomment the 2 lines below to run this script from command line:

```
#export ACT_JOBTYPE="mount"
#export ACT_PHASE="post"
```

9. Run the post script ("act_Post_Target_Primary.sh") to bring up the MongoDB database:

```
./act_Post_Target_Primary.sh
```

Mount and Refresh Target MongoDB Database with Roll-forward of Log

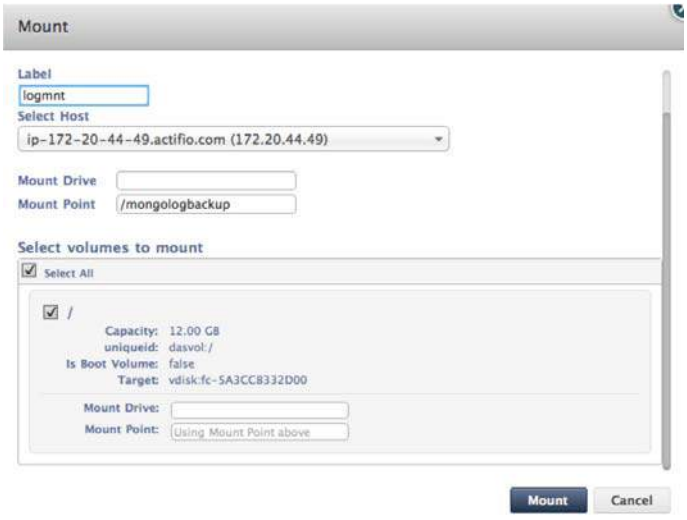
Follow the steps below to roll-forward the MongoDB database to a specified point in time after completing the steps of Mount and Refresh Target MongoDB Database to Database Backup Point in Time above.

From the protected log backup file system application mount the log backup snapshot:

1. Go to Actifio Desktop > Application Manager > Filesystem > protected log backup file system. Select the required snapshot image.

Mounting an Image

2. From the gear icon dropdown menu, select Mount. The Mount window opens:



Mounting a New Image, Detail

3. Provide a label as needed. This is optional.

4. In the Select Host drop down list, select target MongoDB Database node.
5. Add a mount point to mount the log backup filesystem, for example /mongologbackup.
6. Click Mount.

Roll-Forward MongoDB Database

7. On the target node:

   ```
   cd /act/scripts
   ```

8. Run the act_mongo_recovery.sh script. This needs four arguments:
   - MongoDB database Host IP/name: This is the target node hostname/IP
   - MongoDB database port: This is the target node database port
   - MongoDB log mountpoint: The log backup filesystem mount from Step 5 above
   - Mongo recovery stamp value: This is an optional argument. If this is not provided. MongoDB database will be recovered with the latest point in time by applying oplogs available in the log mountpoint.

Usage

```
act_mongo_recovery.sh <MongoDB database host ip/name> <MongoDB database port> <mongo log mountpoint> <mongo recovery stamp value>
```

Example: `ip-172-20-44-49.actifio.com 27018 /mongologbackup 1510865999`

Run the script to recover/roll-forward:

```
./act_mongo_recovery.sh ip-172-20-44-49.actifio.com 27018 /mongologbackup 1513932330
```

Mount and Refresh as New Secondary to the Source Primary

To add a new secondary MongoDB database to the source primary:

1. On the target node set up the scripts.

   Login to target database node as root and cd to /act:

   ```
   cd /act
   ```

   Create /act/scripts directory if not there:

   ```
   mkdir scripts
   cd /act/scripts
   ```

   Copy Actifio-provided script from /act/act_scripts/mongodb/outofband/clone to /act/scripts

   - act_Pre_AddToPrimary_Replica.sh
   - act_Conf_AddToPrimary_Replica.conf
   - act_Post_AddToPrimary_Replica.sh

2. Edit and update the parameter of the configuration file `act_Conf_AddToPrimary_Replica.conf` for the target clone operation as new secondary to the primary:

   SOURCE_PRIMARY_NODE: This is source MongoDB Primary database hostname/IP

   SOURCE_PRIMARY_PORT: This is Source MongoDB Primary database Port Number

   TARGET_REPLICA_NODE: This is Target node hostname/IP

   TARGET_REPLICA_PORT: This is Target node Port Number

   MONGO_REPLICASET: This is Source MongoDB Primary database Replicaset name

   TARGET_REPLICA_MOUNTPOINT: This is the mount point of image provided during the mount operation

Steps to unmount and delete any previously mounted copy from the command line

To unmount and delete a previously mounted image:

1. Login to target node and cd to /act/scripts folder:

   ```
   cd /act/scripts
   ```

2. Uncomment the 2 lines below to run this script from command line:

   ```
   #export ACT_JOBTYPE="unmount"
   #export ACT_PHASE="pre"
   ```

3. Run the pre script to stop and clean up any previously mounted image:

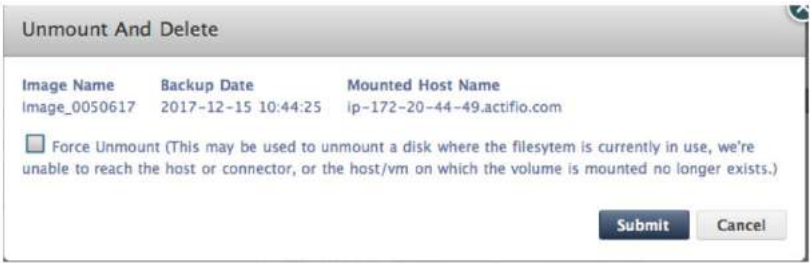
   ```
   ./act_Pre_AddToPrimary_Replica.sh
   ```

Steps to unmount and delete any previously mounted copy from the Actifio Desktop

1. Open the Actifio Desktop, go to the Application Manager and select the mounted Image under the Active Image panel at the bottom.

Unmounting an Image

2. From the gear icon dropdown menu, select Unmount & Delete. The Unmount window opens.



Submitting the Unmount & Delete Job

3. **Submit** the Unmount & Delete job.

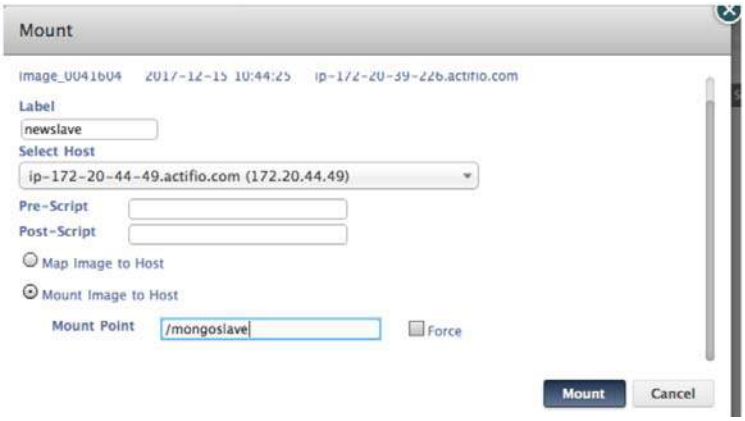
Mounting a New Image Copy

To mount a new image copy:

1. Open the Actifio Desktop to the Application Manager to the protected MongoDB generic application.
2. Select the Snapshot Image to mount:

Mounting an Image

3. From the gear icon dropdown menu, select **Mount**. The Mount window opens:



Mounting a New Image, Detail

4. Provide a label as needed. This is optional.
5. In the Select Host drop down list, select the target MongoDB database node.
6. Add a mount point to mount the data and log volume, for example: /mongoslave.
7. Click **Mount**.
8. Once the mount is complete, login to target node and cd to /act/scripts folder: `cd /act/scripts`
9. Open the act_Post_AddToPrimary_Replica.sh script and uncomment the 2 lines below to run this script from the command line:

```
#export ACT_JOBTYPE="mount"
#export ACT_PHASE="post"
```

10. Run the post script (`act_Post_AddToPrimary_Replica.sh`) to bring up the MongoDB database:

```
./act_Post_AddToPrimary_Replica.sh
```