

Actifio Sky Tech Brief

Preventing and Dealing with Major Environmental Failures with Actifio Sky

This document details the most serious ways in which an Actifio Sky appliance can fail, the impact of each failure type, and corrective action. There are two broad classes of major failures for a Sky appliance:

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Actifio Sky Appliance Storage Failures

There are three ways that storage can fail on an Actifio Sky appliance:

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Actifio Sky Storage Disks and Pools

Your storage pools should meet these requirements. Use enterprise-class storage, RAID 5 or better, with a UPS.

Actifio Sky Storage Disks and Pools

Disk	Size	Remarks
OS	130 GB	The partition is split into 30GB of OS and 100GB for holding crash dump. Standard fsck to be run in the case the Sky VM fails to boot.
Primary pool	400 GB	This contains the backup metadata and application logs.
Snap pool	10GB min. up to 50TB	This contains the backup of the database, typically with short term retention.
Dedup pool	200GB min. up to 50TB	This contains the backup of the database, typically with medium term retention.
Dedup Cache (optional)	512 GB, Flash	This contains the dedup index for faster access. This metadata is present on the dedup pool as well; if the flash drive fails, the system recovers over time.

Storage Failure - OS Disk

Description and Notification

No event is sent.

Impact

The appliance is lost. All connections to the appliance will fail. the Actifio Desktop and AGM cannot communicate with the appliance. All backups will fail and mounted images will become inaccessible.

Recovery Process

Contact Actifio Support to investigate the cause of failure.

- If the ESX crashed due a faulty RAID controller then replace the RAID controller.
- If ESX lost connection to storage please check connectivity between ESX and storage.

Prevention and Remarks

To prevent this from happening, and to mitigate the effects, build enough redundancy the underlying storage so it can tolerate individual drive failure. RAID5 or RAID6 is recommended.

Storage Failure - Primary Pool

The Primary Pool contains no application data. It is used by Sky, and it contains backup metadata and application logs.

Saving the Contents of the Actifio Internal Postgres Database

Backups of the primary pool are stored in `/var/crash/dbbackup.dmp.gz`. Have a script that extracts the postgres database dumps from Actifio periodically and save the dumps outside of the Actifio appliance.

Description and Notification

The Primary pool health indicator turns red on the AGM Dashboard.

If you have enabled Actifio Call Home, then Actifio Support will be notified automatically and will automatically open a case that you can monitor through the ActifioNOW customer portal. Historical data on latencies and errors on the pool is also dispatched.

Impact

All backups and mounts from the appliance will fail.

If the pool went down due to hardware related issue, then the appliance is down until the hardware issue is rectified followed by a recovery process from Actifio. Recovery from Actifio can take anywhere from a few minutes (when a drive is accidentally removed and re-added) to many hours if the underlying storage has had corruption. In case of major corruption, Actifio Support may recommend recovering data from the remote appliance.

Recovery Process

Contact Actifio Support. The failed storage must be replaced and the pool initialized before you can resume operation.

- If a disk was accidentally detached from the VM, then reattach the disk and then call Actifio Support.
- If the ESX crashed due a faulty RAID controller then replace the RAID controller.
- If ESX lost connection to storage please check connectivity between ESX and storage
- In a Hyper-V environment, if you added a new disk it may have used the SCSI id for an existing disk, thereby disconnecting it from the VM. Remove the latest disk and re-add the old disk, then call Actifio Support.

Prevention and Remarks

Some common-sense measures will help to prevent this from happening, and to mitigate the effects:

- Build enough redundancy the underlying storage so it can tolerate individual drive failure. RAID5 or RAID6 recommended.
- Make sure the appliance is replicating data to the cloud or to another appliance so data can be recovered in the event of a major corruption.

Storage Failure - Snapshot and Dedup Pools

The snapshot pool contains snapshot images of application data created when a protection job runs. This data may be deduplicated or replicated to another appliance via StreamSnap.

The dedup pool contains deduplicated image data. This data may be replicated to another appliance via DAR.

Description and Notification

The Snapshot or Dedup pool health indicator turns red on the AGM Dashboard.

If you have enabled Actifio Call Home, then Actifio Support is notified automatically and will automatically open a case that you can monitor through the ActifioNOW customer portal.

Impact

All backup data in the affected pool may be lost.

Recovery Process

Contact Actifio Support.

The failed storage must be replaced and the storage pools initialized before you can resume operation. Data that was replicated to another Actifio appliance will continue to be available.

- If a disk was accidentally detached from the VM, then reattach the disk and then call Actifio Support.
- If the ESX crashed due a faulty RAID controller, then replace the RAID controller.
- If ESX lost connection to storage, check connectivity between ESX and storage
- In a Hyper-V environment, if you added a new disk it may have used the SCSI id for an existing disk. This disconnects it from the VM. Remove the latest disk and re-add the old disk, then call CSE.

Prevention and Remarks

Some common-sense measures will help to prevent this from happening, and to mitigate the effects:

- Use RAID5 or RAID6 to ensure enough redundancy in the storage to tolerate individual drive failure.
- If you have another Actifio appliance, then replicate the backup data to the other Actifio appliance using:
 - o StreamSnap - to replicate data between Snap pools of joined Actifio appliances.
 - o Dedup - to replicate data between Dedup pools of joined Actifio appliances.

Data replication is detailed in **Replicating Data Using Actifio Appliances** in your Documentation Library and in the user portal at ActifioNOW.

Sky Virtual Machine Crashes

For Guest OS corruption due to bugs, Sky takes a crash dump into /var/crash and then automatically reboots. This does not cause corruption. Backups are interrupted during the reboot. A trap is generated. and if you have enabled Actifio Call Home, then Actifio Support is notified automatically and will automatically open a case that you can monitor through the ActifioNOW customer portal.

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[ESX server where the Sky VM is running crashed](#) on page 4

Sky VM Crashes and the OS Fails to Reboot

Description and Notification

There is no event sent.

Impact

All backups to the Actifio appliance are impacted until recovery.

Recovery process

Contact Actifio Support to investigate and recover the boot partition.

Prevention and Remarks

AGM allows you to distribute SLAs to other Actifio appliances. Then you can have another Actifio Sky appliance in the datacenter take over SLAs until the affected appliance is recovered.

Sky VM Crashes and the OS Successfully Reboots

Description and Notification

Event message: Appliance rebooted

Impact

Backup jobs running at the time of the crash will fail. After the OS crash, the Sky VM reboots. Backup jobs resume after the Sky VM has rebooted. The dedup pool can take a few minutes to an hour to return to service.

Recovery process

Open a case. Send the OS dump in /var/crash and all log files in /dumps and in /var/log to Actifio to analyze the failure.

Prevention and Remarks

This can be caused by an overloaded ESX server. Keep your ESX server in a good state by following best practices.

ESX server where the Sky VM is running crashed

Impact

Any backup job running at the time of the crash will fail.

Recovery process

When the ESX server is back online, contact Actifio Support to recover the Sky appliance.

Prevention and Remarks

If you have VMware HA in cluster mode, then VMware DRS will bring up the VM on the alternate ESX server.