

Oracle Backup & Recovery in Amazon Web Services

Rapid Backup & Recovery for Oracle Databases in Amazon Web Services

Oracle is a high-performance database that powers many of today's most critical business applications. The AWS IaaS platform offers a scalable, secure, and highly available infrastructure for running Oracle Database applications.

Many enterprises run Oracle on AWS platform and they expect a scalable enterprise-grade backup, disaster recovery, and database cloning solution in AWS.

Common Challenges

Most enterprises typically face the following challenges for backup and recovery of Oracle Databases in AWS:

- 1. Large Backup Window** because of recurring full backups using traditional backup tools.
- 2. Large Recovery Time** because of no instant mount and recovery of Oracle databases in AWS using traditional backup tools.
- 3. Crash Consistent Snapshots and Long Recoveries** using AWS EBS snapshots. Recoveries from EBS snapshots are slow because data has to be transferred from S3 to EBS.
- 4. Large Database Cloning Time** because of physical clones with complex scripts, and no automation.

Actifio Virtual Data Pipeline

Actifio's Virtual Data Pipeline (VDP) software solves these challenges for enterprises running large multi-TB Oracle workloads in AWS. Actifio VDP software is packaged as Actifio Sky virtual machine appliance. Actifio Sky can be provisioned, on-demand, in AWS using an AWS AMI or from the AWS marketplace.

Key Features & Benefits

1. Fast Incremental Forever Backups:



BENEFIT » Eliminate recurring full backups and reduce backup window and IO impact on databases by up to 20x

Actifio does not use the traditional RMAN dump to disk. Instead, Actifio performs incremental forever backups*. Each point-in-time incremental backup is synthesized to be a full virtual copy so no extra storage is consumed for the virtual full copy. Recoveries take place instantly without having to apply incremental backups.

Compare this approach with native EBS snapshots** which, though incremental forever in nature, are not application-consistent backups and have no database awareness.

BENEFIT » Reduce Bandwidth and Storage costs by 20x by avoiding transfer of full system images between two different AWS accounts

- 2. Replication between AWS accounts:** Administrators in AWS, as a best practice, want to separate production and backups in different AWS accounts to protect from a rogue user deleting production and backup data. Actifio enables admins to setup replication from one AWS account in one AWS region to another AWS account in another AWS region for DR purposes.

Compare this approach with native AWS snapshots which requires the transfer of full system images between two different AWS accounts, thus increasing bandwidth and storage utilization by 20x.

BENEFIT » Reduce downtime risk for mission-critical databases in AWS with rapid recovery in minutes...even for 50+ TB databases

- 3. Rapid Recovery in Minutes:** A DBA/user can recover multi-TB databases in AWS from any point-in-time in just minutes.



Actifio Sky mounts the point-in-time backup image (which is in native Oracle format and not a traditional RMAN backup) to an AWS EC2 instance over iSCSI/ NFS and recovers the database in minutes. Based on the specified point in time, it automatically replays any archive logs that are needed.

Compare this approach with native AWS snapshots which has to restore data from S3 to EBS, thus increasing recovery time to many hours or even days for multi-TB databases.

4. Multiple Restore Options: The following restore options are available:

- a. Automated RMAN restore to the original host
- b. Mount near-instantly and RMAN restore/duplicate to an alternate host
- c. Mount near-instantly and RMAN recovery of tablespace and data files
- d. Mount near-instantly and logical recovery of schema and tables, and import over DB link

5. ASM Switch & Rebalance: A DBA/user can not only recover a multi-TB DB near-instantly but also seamlessly migrate the database back to production storage without any downtime.



Actifio automates this by integrating with ASM rebalance where the changed blocks, post-recovery, are transparently replicated back to production storage in the background.

6. Migration from File-system to ASM: Protect Oracle databases using the file system and migrate it into an ASM environment in AWS with Actifio's near-instant mount recovery and automated ASM rebalance capability.

7. On-Premises to AWS recovery/migration: A DBA/admin can configure SLAs to protect on-premises Oracle databases, including the entire physical machine, and replicate to Actifio Sky running in AWS EC2. DBAs can use Actifio Sky in AWS to recover full machines and databases to on-demand AWS EC2 instance, in minutes.

BENEFIT » Full control for DBAs via UI, APIs, CLIs including when to back up and how often to recover from any point-in-time in just minutes.

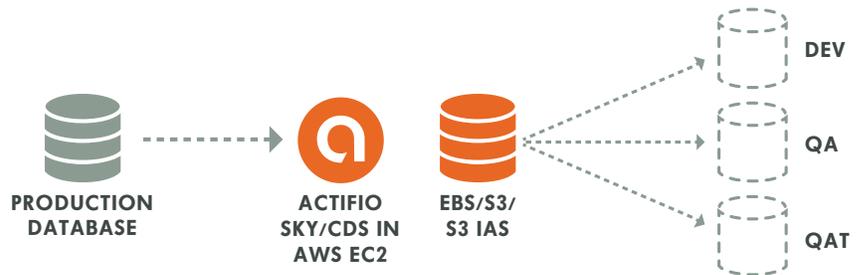
BENEFIT » Accelerate application test and release cycles in AWS and reduce time to market

BENEFIT » Satisfy compliance needs with multi-year retention and get peace of mind that data in AWS can be accessed in minutes even from many years ago.

8. DBA Controls: DBAs can retain control using the Actifio UI or CLI. The CLI syntax is very similar to the familiar RMAN syntax. Using the UI or CLI, in a self-service manner, DBAs can run backup jobs and perform on-demand recoveries from any point in time, in minutes. They can even run (or script) the CLI commands directly on their Oracle server.

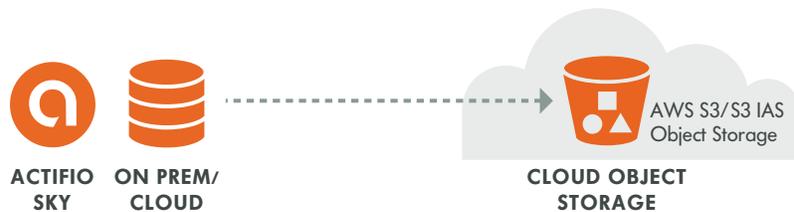
9. SLA Driven Architecture: With a centralized, single pane of glass, DBAs/admins can setup SLAs such as how often to backup, replicate, and how long to retain backups. DBAs/admins can easily apply consistent SLAs across all workloads in data centers or in AWS.

10. Clone Multi-Terabyte Database Copies in Minutes: DBAs can provision dozens of thin-clones of the database, in minutes, to Dev / QA / UAT / Analytics environments in AWS. Actifio does this by reusing backups efficiently to provision thin clones, in minutes, to test environments with any configuration such as file system or ASM.



Alternatively, DBAs can enable end users to provision DB clones in a self-service manner.

11. Long-Term Data Retention: DBAs/administrators can use AWS S3 / S3 IAS object storage for long-term data retention. Actifio can replicate backups in an incremental forever manner to a cloud object storage such as AWS S3.



DBAs/admins can mount and spin up a multi-TB DB online, in minutes, from any point-in-time backup stored in AWS S3 object storage.

For further information view the whitepaper, *The Very Large Oracle Database Problem*. Get it [here](#).

Supported Storage Tiers in AWS

- **Block Storage:** EBS (HDD and SSD)
- **Object Storage:** S3, S3- IAS

Supported Oracle Platforms & Configurations

(includes on-premises and various public clouds)

- **Platform Support:** RHEL, OEL, SLES, AIX, HP-UX, Solaris, and Windows Platform support
- **Cloud Support:** AWS, Azure, Google, IBM, Oracle
- **Network Protocol Support:** Backup and mount multi-TB databases, in minutes, over Fibre Channel, iSCSI, and NFS protocols.
- **Oracle Certified:** RAC, ASM, Exadata, In-Memory, 12c Support, including Multi-tenancy
- **Configuration:** Standalone Filesystem, standalone ASM, RAC with ASM, Data Guard (physical standby database), Exadata, SuperCluster
- **Supported Database Versions:** 10g, 11g, 12c

Notes:

*With Oracle Enterprise Edition, Actifio leverages Oracle's native Change Block Tracking (CBT) technology to capture changed blocks efficiently. After the first backup, which is an Image Copy (RMAN 'BACKUP AS COPY'), Actifio does an incremental backup and Incremental merge.

**A detailed explanation of challenges of using native AWS snapshots for mission-critical Oracle databases is explained in detail here.

About Actifio

Actifio virtualizes the data that's the lifeblood of businesses in more than 35 countries around the world. Its Virtual Data Pipeline™ technology enables businesses to manage, access, and protect their data faster, more efficiently, and more simply by decoupling data from physical storage, much the same way a hypervisor decouples compute from physical servers. For enterprise-class backup modernization, self-serve instant data access, or service provider business transformation, Actifio is the first and only enterprise class copy data virtualization platform.

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