



Using ESVA Snapshot to Protect Oracle Database 10g

Application Note

Abstract

This application note provides step-by-step instructions about how to protect Oracle Database 10g with the storage-based snapshot feature provided by Infortrend ESVA storage systems.

Infotrend ESVA (Enterprise Scalable Virtualized Architecture)

Data Protection

The Infotrend ESVA family is a leading-edge storage solution designed for mid-range enterprise SAN. At affordable price, it meets mission-critical storage demands for performance, scalability and reliability with advanced hardware designs and comprehensive data services. On the innovative Enterprise Scalable Virtualized Architecture, various features, including storage virtualization, thin provisioning, distributed load balancing, automatic data migration, prioritized volume accessibility, and storage-based snapshot and replication, are consolidated to realize optimal business benefits.

For companies of all sizes, downtime poses challenges to business continuity. Each hour of downtime can cost millions of dollars and prolonged downtime can even lead to end of business. Given time and efforts, normal business operations can be restored, but a damaged reputation may never be re-consolidated. To help users meet the challenges of downtime and data loss, ESVA provides comprehensive data protection features.

ESVA Snapshot allows users to perform instant, low-impact backups with space-efficient differential copies. In the instant of snapshot creation, a point-in-time data image is taken without disrupting online applications. Based on the image, data changes will be copied to the snapshot volume when new writes occur. With copy-on-write design, ESVA Snapshot protects production data from accidental modifications, deletions and corruptions with minimal capacity requirements and performance overhead. By accessing a snapshot copy as the desired recovery point, users can immediately restore system availability from data disruption.

With ESVA Replication users can copy data within a single storage pool or between storage pools in IP or FC SAN at different sites. Users can flexibly choose to deploy synchronous or asynchronous replication. When source data fail due to drive failure, system malfunction or disasters, users can leverage the disk-based copy to restart service in minutes. Later if users would like to make source take back its responsibility, it can be quickly synced with the copy for only differentials. To further ensure the integrity of the remote data, ESVA Replication allows users to protect the remote copy with snapshot technology. Granular snapshot images can help restore the corrupt remote copy in seconds when it is required to resume business service.

To know more about Infortrend ESVA family, please visit <http://esva.infortrend.com/>.

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To ensure the integrity of snapshot copies, before taking a snapshot for a database, users should make sure that all data in the cache memory are flushed to the storage system. For databases ESVA provides dedicated DB Flush Agents for¹, the flushing task can be automatically done. However for other databases, the flushing task has to be done manually. In the section below, we will illustrate step-by-step how users can use ESVA Snapshot to protect Oracle Database 10g without installing the DB Flush Agent.

NOTE The configuration example below assumes that the Oracle database, including its data, log and control files, are all stored in virtual volumes on the ESVA storage system.

Step 1. Suspend or Shutdown the Database

Depending on whether you would like to perform snapshot protection online or offline, you can choose to suspend or shutdown the database.

To perform snapshot online, you should suspend the database with the following SQL*PLUS² commands.

```
c:\sqlplus /nolog
SQL>conn / as sysdba
SQL>alter system suspend;
```

To perform snapshot offline, you should shutdown the database with the following SQL*PLUS commands.

```
c:\sqlplus /nolog
SQL>conn / as sysdba
SQL>shutdown immediate;
SQL>startup mount
SQL>exit
```

¹ ESVA currently provides DB Flush Agents for SQL, Exchange and Oracle databases. For the latest information, please check our website or contact our sales representatives.

² SQL*PLUS is an Oracle command-line utility program. For its user's manual, please refer to http://download-west.oracle.com/docs/cd/B12037_01/server.101/b12170.pdf

Step 2. Take Snapshots

In SANWatch GUI, take snapshots for the virtual volumes storing the database. For detailed procedures, please refer to ESVA's *Virtualization Manager User's Guide*.

NOTE If files of the Oracle database are stored in more than virtual volumes, to ensure data consistency, please be sure to use the Group Snapshot feature to simultaneously take snapshots for them.

Step 3. Resume or Restart Database Service

If you just suspended the database, resume its service with the following SQL*PLUS commands.

```
c:\sqlplus /nolog
SQL>conn / as sysdba
SQL>alter system resume;
```

If you just shutdown the database, restart its service with the following SQL*PLUS commands.

```
c:\sqlplus /nolog
SQL>conn / as sysdba
SQL>shutdown immediate;
SQL>startup;
SQL>exit
```

Then restart the service on your host server.

When necessary, you can use the snapshots to rollback data or restore files. The operations can be easily done in SANWatch.

Conclusion

ESVA Snapshot is accessible through the user-friendly GUI. Compared with full data copies, snapshot images as differential copies are much more space-efficient. They can be frequently created to serve as multiple recovery points with minimized burden on storage capacity and performance. Based on the recovery points, both file-level and block-level recovery can be achieved. With ESVA Snapshot, instantaneous data protection at fine granularity is only few clicks away.

