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Using Flashback Database

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Objectives

After completing this lesson, you should be able to:

- Describe the Flashback Database architecture
- Configure your database to support Flashback Database
- Perform the Flashback Database operation

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Preparing Your Database for Flashback

- Grant FLASHBACK privileges.
- Relevant undo settings:
  - `UNDO_TABLESPACE='UNDOTBS1'`
  - `UNDO_MANAGEMENT='AUTO'`
  - `UNDO_RETENTION=900`
  - Guaranteeing undo retention

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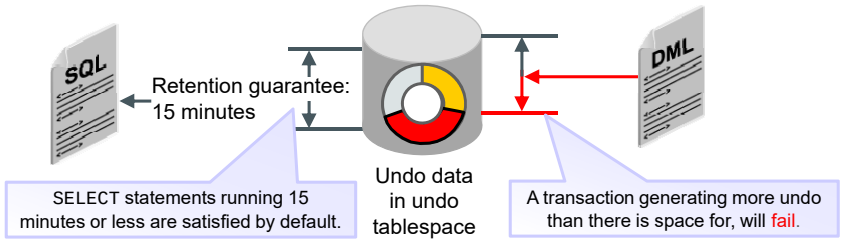
Guaranteeing Undo Retention




```
SQL> ALTER TABLESPACE undotbs1 RETENTION GUARANTEE;
```

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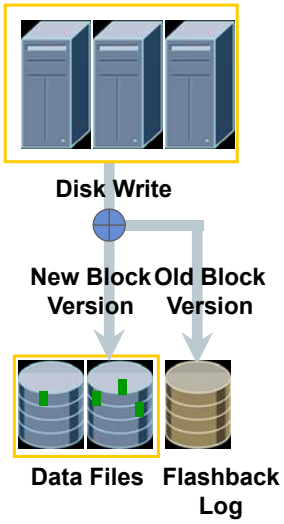
Flashback Database: Continuous Data Protection

- Is a fast point-in-time recovery strategy
- Eliminates the need to restore a whole database backup
- Provides continuous data protection for the database
- Optimized: Restores just changed blocks
- Replays log to restore the database to the desired time
- Provides fast recovery: Minutes, not hours
- Requires a single command to restore:

```
FLASHBACK DATABASE TO '2:05 PM'
```



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Flashback Database

The Flashback Database operation:

- Works like a rewind button for the database
- Can be used in cases of logical data corruptions made by users

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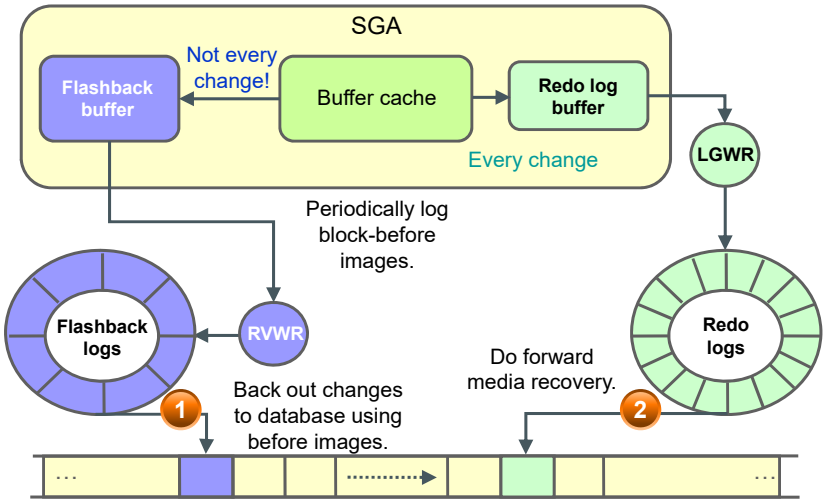
Flashback Database Architecture



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Configuring Flashback Database

1. Configure the FRA.
2. Set the retention target.
3. Enable Flashback Database.

```
SQL> ALTER SYSTEM SET
  2   DB_FLASHBACK_RETENTION_TARGET=2880 SCOPE=BOTH;
SQL> ALTER DATABASE FLASHBACK ON;
```

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Flashback Database: Examples

- To flash back: Mount (in exclusive mode) the database.

```
RMAN> FLASHBACK DATABASE TO TIME =
   2> "TO_DATE('2009-05-27 16:00:00',
   3> 'YYYY-MM-DD HH24:MI:SS')";
```

```
RMAN> FLASHBACK DATABASE TO SCN=23565;
```

```
RMAN> FLASHBACK DATABASE
   2> TO SEQUENCE=223 THREAD=1;
```

```
SQL> FLASHBACK DATABASE
  2  TO TIMESTAMP(SYSDATE-1/24);
SQL> FLASHBACK DATABASE TO SCN 53943;
SQL> FLASHBACK DATABASE TO RESTORE POINT b4_load;
```

- To review changes: Open in read-only mode.
- To finalize: Open in read/write mode with RESETLOGS.

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CDB and PDB Flashback

- You cannot flash back the CDB root without flashing back the entire CDB.
- PDB flashback is similar to CDB flashback.

```
RMAN> CONN sys@pdb1
RMAN> ALTER PLUGGABLE DATABASE CLOSE;
RMAN> FLASHBACK PLUGGABLE DATABASE pdb1 TO SCN 411010;
RMAN> ALTER PLUGGABLE DATABASE pdb1 OPEN RESETLOGS;
```

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Flashback Database Considerations

- When the Flashback Database operation completes, open the database:
  - In read-only mode, to verify that the correct target time or SCN was used
  - With a RESETLOGS operation to allow DML
- You cannot use Flashback Database in the following situations:
  - The control file has been restored or re-created.
  - A tablespace has been dropped.
  - A data file has been reduced in size.

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Monitoring Flashback Database Information

To monitor the ability to meet your retention target:

- View the fast recovery area disk quota:

```
SQL> SELECT estimated_flashback_size,
  2         flashback_size
  3  FROM   V$FLASHBACK_DATABASE_LOG;
```

- Determine the current flashback window:

```
SQL> SELECT oldest_flashback_scn,
  2  oldest_flashback_time
  3  FROM   V$FLASHBACK_DATABASE_LOG;
```

- Monitor logging in the Flashback Database logs:

```
SQL> SELECT *
  2  FROM   V$FLASHBACK_DATABASE_STAT;
```

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Guaranteed Restore Points

A guaranteed restore point ensures that you can perform a FLASHBACK DATABASE command to that SCN at any time.

```
SQL> CREATE RESTORE POINT before_upgrade
  2  GUARANTEE FLASHBACK DATABASE;
```

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Flashback Database and Guaranteed Restore Points

To use guaranteed restore points, the database must satisfy the following prerequisites:

- The database must be in ARCHIVELOG mode.
- FLASHBACK DATABASE requires the use of archived redo logs starting from the time of the restore point.
- A fast recovery area must be configured.

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PDB Flashback and Clean Restore Point

- Clean PDB restore points can be created after a PDB is closed and ONLY in shared undo mode.
- The benefits of clean PDB restore points include:
  - Faster than other types of PDB flashback
    - No restore of any backup
    - No clone instance created
  - No need to take a new backup

```
SQL> CONNECT / AS SYSDBA
SQL> ALTER PLUGGABLE DATABASE pdb1 CLOSE;
SQL> CREATE CLEAN RESTORE POINT start_step1 FOR PLUGGABLE DATABASE pdb1
                                            GUARANTEE FLASHBACK DATABASE;
SQL> ALTER PLUGGABLE DATABASE pdb1 OPEN;
SQL> @script_patch_step1
SQL> ALTER PLUGGABLE DATABASE pdb1 CLOSE;
```

```
$ rman target /
RMAN> FLASHBACK PLUGGABLE DATABASE pdb1 TO RESTORE POINT start_step1;
RMAN> ALTER PLUGGABLE DATABASE pdb1 OPEN RESETLOGS;
```

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Summary

In this lesson, you should have learned how to:

- Describe Flashback Database architecture
- Configure your database to support Flashback Database
- Perform the Flashback Database operation

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Practice Overview

- Enabling Flashback Logging
- Performing Flashback Database

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