2

Backup and Recovery Configuration

Objectives

After completing this lesson, you should be able to:

- Configure the fast recovery area
- Multiplex the control file
- Multiplex redo log files
- Configure `ARCHIVELOG` mode

Configuring for Recoverability

Configure your database for maximum recoverability by:

- Scheduling regular backups
- Multiplexing control files
- Multiplexing redo log groups
- Retaining archived copies of redo logs

Configuring the Fast Recovery Area

- Fast recovery area:
  - Strongly recommended for simplified backup storage management
  - Storage space (separate from working database files)
  - Location specified by the `DB_RECOVERY_FILE_DEST` parameter
  - Size specified by the `DB_RECOVERY_FILE_DEST_SIZE` parameter
  - Large enough for backups, archived logs, flashback logs, multiplexed control files, and multiplexed redo logs
  - Automatically managed according to your retention policy
- Configuration of the fast recovery area includes specifying the location, size, and retention policy.

```
ALTER SYSTEM SET db_recovery_file_dest = directory | disk group
ALTER SYSTEM SET db_recovery_file_destsize = integer [K | M | G]
```

Monitoring the Fast Recovery Area

- Monitor the fast recovery area to ensure that it does not reach its capacity.
- Query the V$RECOVERY_FILE_DEST view to determine the current location, disk quota, space in use, space reclaimable by deleting files, and total number of files in the fast recovery area.
- Query the V$RECOVERY_AREA_USAGE view to determine the percentage of the total disk quota used by different types of files.
- You can also use GUI tools such as Enterprise Manager Cloud Control to monitor the space usage.

Multiplexing Control Files

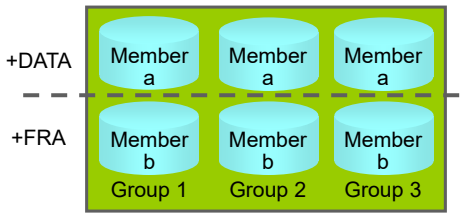
To protect against database failure, your database should have multiple copies of the control file.

	ASM Storage	File System Storage
Best Practice	One copy on each disk group (such as +DATA and +FRA)	At least two copies, each on a separate disk (at least one on a separate disk controller)
Steps to create additional control files	No additional control file copies required	1. Alter the SPFILE with the ALTER SYSTEM SET control_files command. 2. Shut down the database. 3. Copy the control file to a new location. 4. Open the database and verify the addition of the new control file.

Redo Log Files

Multiplex redo log groups to protect against media failure and loss of data. This increases database I/O. It is suggested that redo log groups have:

- At least two members (files) per group
- Each member:
  - On a separate disk or controller if using file system storage
  - In a separate disk group (such as +DATA and +FRA) if using ASM



Note: Multiplexing redo logs may impact overall database performance.

Multiplexing the Redo Log

Add a member to an existing log group:

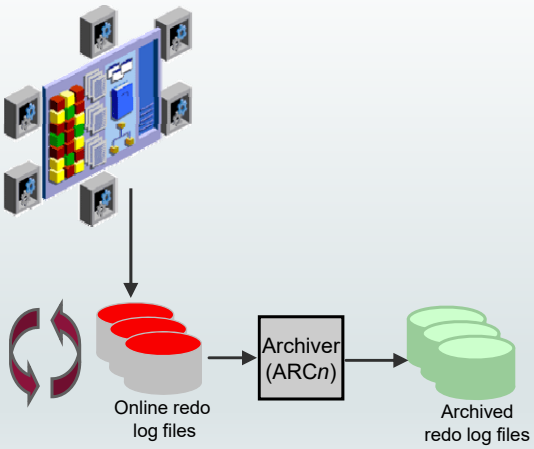
- Navigate to the Redo Log Groups page in Enterprise Manager Database Express.
- Use the ALTER DATABASE command:

```
SQL> ALTER DATABASE
  2  ADD LOGFILE MEMBER '/u01/app/oracle/oradata/orcl/redo1a.log'
  3  TO GROUP 1;
```

Creating Archived Redo Log Files

To preserve redo information, create archived copies of redo log files by performing the following steps:

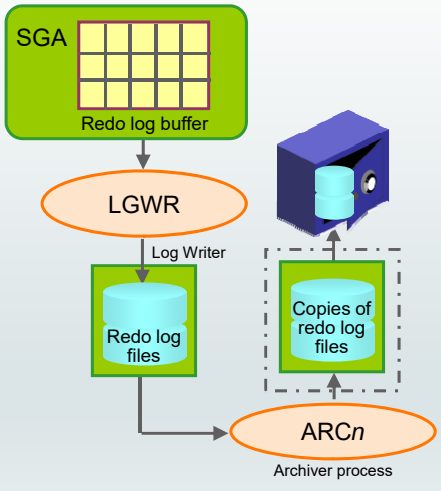
1. Specify the archived redo log file-naming convention.
2. Specify one or more archived redo log file locations.
3. Place the database in `ARCHIVELOG` mode.



Archiver (ARC*n*) Process

Archiver (ARC*n*):

- Automatically archives online redo log files when the database is in `ARCHIVELOG` mode
- Preserves a record of all changes made to the database



Archived Redo Log Files: Naming and Destinations

- Use the LOG_ARCHIVE_DEST initialization parameter to specify a single destination.
- Use the LOG_ARCHIVE_DEST_n initialization parameters to archive to two or more locations.
- If you are using file system storage, it is recommended that you add multiple locations across different disks.
- If the fast recovery area is enabled, USE_DB_RECOVERY_FILE_DEST is specified by default as an archived redo log file destination.

Configuring ARCHIVELOG Mode

- You can use SQL commands as follows:
  1. Shut down the database instance if it is open.
  2. Mount the database.
  3. Issue the ALTER DATABASE ARCHIVELOG command.
  4. Open the database.

```
SQL> shutdown immediate
SQL> startup mount
SQL> alter database archivelog;
SQL> alter database open;
```

- You can also use Enterprise Manager Cloud Control to place the database in ARCHIVELOG mode.

Summary

In this lesson, you should have learned how to:

- Configure the Fast Recovery Area
- Multiplex the control file
- Multiplex redo log files
- Configure `ARCHIVELOG` mode

Practice Overview

- Verifying that the Control File is Multiplexed
- Configuring the Size of the Fast Recovery Area
- Verifying that the Redo Log File Is Multiplexed
- Configuring `ARCHIVELOG` Mode