Performing Recovery Part I - Performing Full Recovery

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Objectives

In this lecture, you will learn how to do the following:

- Perform the common pre-recovery actions
- Recover the whole database when running in NOARCHIVELOG mode
- Recover the whole database when running in ARCHIVELOG mode
- Perform full recovery on a user tablespace

When is Recovery Needed?

- Physical issues are usually known from the returned error. For example:

```
ORA-00205: error in identifying control file, check alert log
for more info
```

- Logical issues are normally reported by client users
- Identify lost data files with RMAN:

```
RMAN> VALIDATE DATABASE;
RMAN> VALIDATE PLUGGABLE DATABASE pdb1;
RMAN> VALIDATE TABLESPACE users;
RMAN> VALIDATE DATAFILE '…';

..
RMAN-06056: could not access datafile 5
..
```

Previewing Backups Used in Restoring

- To list the backup files that will be used in recovery:
  - **`RESTORE ... PREVIEW`**
    - Accesses the RMAN repository to retrieve the list
  - **`RESTORE ... VALIDATE HEADER`**
    - Validates the backup file headers and confirm their existence
- Examples:

```
RESTORE DATABASE PREVIEW;
RESTORE DATABASE PREVIEW SUMMARY;
```

Validating Backups Before Restoring Them

- To validate that the backup files are usable for restore:
  - **`RESTORE ... VALIDATE`**
  - **`VALIDATE BACKUPSET`**
- All blocks in the backup files are read

About Performing Recovery of the Whole Database

- Database running in **NOARCHIVELOG**:
  - No incremental backup available
    - database can be recovered only to the last taken consistent backup
  - Incremental backup available
    - Incremental backup can be applied if they are consistent
    - **RECOVER** command must be used with **NOREDO** option
- Database running in **ARCHIVELOG**:
  - If the online redo log groups and the archived redo log files are available, you can perform complete and incomplete recovery

Performing Complete Recovery of the Whole Database in NOARCHIVELOG Mode

- **Scenario**: one or more database datafiles are lost
- **Assumption**: database running in **NOARCHIVELOG** mode, no incremental backup is available
- **Solution**:

```
STARTUP MOUNT;
RESTORE DATABASE;
RECOVER DATABASE [UNTIL CANCEL];
ALTER DATABASE OPEN RESETLOGS;
```


Notes:

- Temporary tablespaces will be automatically re-created when you open the database

Performing Complete Recovery of the Whole Database in `ARCHIVELOG` Mode

- **Scenario**: all or most database datafiles are lost
- **Assumption**: database is running in **`ARCHIVELOG`**, online redo log files are available
- **Solution**:

```
STARTUP MOUNT;
RESTORE DATABASE;
RECOVER DATABASE;
ALTER DATABASE OPEN;
```

Performing Complete Recovery of the Whole Database: to New Location

- **Scenario**:
  - All or most database datafiles are lost
  - Original datafiles destination is not available
- **Solution**:

```
RUN
{ SET NEWNAME FOR DATAFILE 2 TO '/disk2/df1.dbf';
  SET NEWNAME FOR DATAFILE 3 TO '/disk2/df2.dbf';
  SET NEWNAME FOR DATAFILE 4 TO '/disk2/df3.dbf';
  RESTORE DATABASE;
  SWITCH DATAFILE ALL;
  RECOVER DATABASE; }
..
RMAN> ALTER DATABASE OPEN;
```

Performing Complete Recovery of a User Tablespace Loss

- **Scenario**: one or more user tablespace datafiles are lost
- **Assumption**: the database is open
- **Solution**:

```
ALTER TABLESPACE hrtbs OFFLINE IMMEDIATE;
RESTORE TABLESPACE hrtbs ;
RECOVER TABLESPACE hrtbs ;
ALTER TABLESPACE hrtbs  ONLINE;
```

Performing Complete Recovery of a User Tablespace to New Location

- **Solution**:

```
ALTER TABLESPACE hrtbs OFFLINE IMMEDIATE;
RUN
{
 SET NEWNAME FOR DATAFILE '/disk1/hrtbs01.f' TO
                          '/disk2/hrtbs01.f';
 SET NEWNAME FOR DATAFILE '/disk1/hrtbs02.f' TO
                          '/disk2/hrtbs02.f';
 RESTORE TABLESPACE hrtbs;
 SWITCH DATAFILE ALL;
 RECOVER TABLESPACE hrtbs;
}

ALTER TABLESPACE hrtbs ONLINE;
```

Summary

In this lecture, you should have learnt how to do the following:

- Perform the common pre-recovery actions
- Recover the whole database when running in NOARCHIVELOG mode
- Recover the whole database when running in ARCHIVELOG mode
- Perform full recovery on a user tablespace