

Performing RMAN Backups - Part II

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Objectives

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

- Use multiple options to backup control files
- Backup SPFILE
- Backup archived redo logs
- Take backups as image copies
- Define device type in **BACKUP** commands
- Use TAGs in RMAN backups

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Backing Up Control Files

- Control files can be backed up as backupset or image copy
 - For backupset, a snapshot control file is first created for read consistency.
- Automatic: setting **CONTROLFILE AUTOBACKUP** is set to **ON**.

```
CONFIGURE CONTROLFILE AUTOBACKUP ON;
```

- Manual:

```
BACKUP TABLESPACE users INCLUDE CURRENT CONTROLFILE;
```

```
BACKUP CURRENT CONTROLFILE;
```

```
BACKUP AS COPY CURRENT CONTROLFILE FORMAT '/tmp/control01.bk';
```

About the Snapshot Control File

- Generated in two cases:
 - Take back up the control file
 - Generated every time RMAN synchronizes the recovery repository
- Its default location is under **ORACLE_HOME**
- Snapshot control file is not a backup of the control file
- To show the current location and name of the control file snapshot:

```
RMAN> SHOW SNAPSHOT CONTROLFILE NAME;
```

```
CONFIGURE SNAPSHOT CONTROLFILE NAME TO  
'/u01/app/oracle/product/19.0.0/db_1/dbs/snapcf_oradb.f';
```

Backing Up the Control File to a Trace File

- A control file trace backup contains the SQL statement required to re-create the control files in the event that all control files are lost

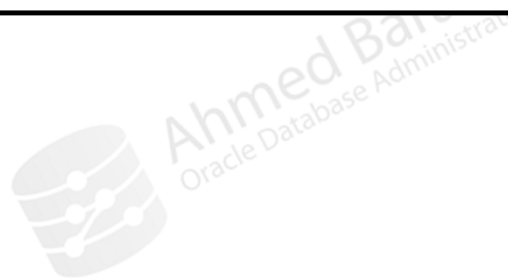
```
ALTER DATABASE BACKUP CONTROLFILE TO TRACE;
```

- Trace backup is created in the location specified by the **DIAGNOSTIC_DEST** parameter:
<DIAGNOSTIC_DEST>/diag/rdbms/<dbname>/<instname>/trace

Backing Up Server Parameter Files with RMAN

- Automatically included in the `CONTROLFILE AUTOBACKUP`
- Can be explicitly taken (provided the instance started with SPFILE):

```
BACKUP SPFILE;
```



Backing Up Archived Redo Logs using BACKUP ARCHIVELOG

- All the available archived logs:

```
BACKUP ARCHIVELOG ALL;  
BACKUP ARCHIVELOG ALL DELETE ALL INPUT;
```

- Based on SCN

- FROM value is inclusive, UNTIL value is exclusive

```
BACKUP ARCHIVELOG FROM SCN 1000;  
BACKUP ARCHIVELOG FROM SCN 1000 UNTIL SCN 2000;  
BACKUP ARCHIVELOG UNTIL SCN 2000;  
BACKUP ARCHIVELOG SCN BETWEEN 1000 AND 2000;
```

Backing Up Archived Redo Logs using BACKUP ARCHIVELOG (cont)

- Based on sequence number:

```
BACKUP ARCHIVELOG FROM SEQUENCE 100;  
BACKUP ARCHIVELOG FROM SEQUENCE 100 UNTIL SEQUENCE 200;  
BACKUP ARCHIVELOG SEQUENCE BETWEEN 100 AND 200;
```

- Based on time (of the contents):
 - Time of the transactions inside the logs

```
BACKUP ARCHIVELOG FROM TIME 'SYSDATE-1';  
BACKUP ARCHIVELOG UNTIL TIME  
  "TO_DATE('01/10/2018','DD/MM/YYYY')";  
...
```

- No error if no archive log to backup (except in case of **SEQUENCE**)

Backing Up Archived Redo Logs using **BACKUP . . . PLUS ARCHIVELOG**

- To include the archive redo logs in the backup:

```
BACKUP DATABASE PLUS ARCHIVELOG;
```

- The execution will be as follows:
 1. Run an **ALTER SYSTEM ARCHIVE LOG CURRENT** statement
 2. Run the **BACKUP ARCHIVELOG ALL** command
 3. Back up the files specified in the **BACKUP** command
 4. Run an **ALTER SYSTEM ARCHIVE LOG CURRENT** statement
 5. Back up any remaining archived redo log files

RMAN Backup as Image Copies

- Use `BACKUP AS COPY` command.
- Can be used on data files, archived redo logs, or control file.

```
BACKUP AS COPY DATABASE;
```

```
BACKUP AS COPY  
  DB_FILE_NAME_CONVERT ( '/u01/oradata/users',  
    '/backups/users_ts' )  
TABLESPACE users;
```

```
BACKUP AS COPY [NOCHECKSUM]  
  DATAFILE '/ORADATA/users_tbs01.dbf'  
  FORMAT '/BACKUP/users01.dbf';
```

More BACKUP Options: Defining Device Type

- Supported device types: **DISK** and **SBT** (system backup to tape)
- SBT requires media management software
- Default device is Disk; can be changed

```
CONFIGURE DEFAULT DEVICE TYPE TO disk;  
CONFIGURE DEFAULT DEVICE TYPE TO sbt;
```

- Setting the device type in **BACKUP** command:

```
BACKUP DEVICE TYPE sbt DATABASE;  
BACKUP DEVICE TYPE DISK DATABASE;
```

More BACKUP Options: Using Tags

- A name that you can assign to a backup set or image copy
- You can develop you own naming convention.
For example: WHOLE10012023
- Can be used with **LIST**, **RESTORE** and **SWITCH**
- The default tag uses the format **TAGYYYYMMDDTHHMMSS**
- Same tag can be used for multiple backup sets or file copies:

```
BACKUP DATAFILE 1,2,3,4 TAG 'month_whole_backup';
```
- In some recovery scenarios, they are a must.

BACKUP Command Options (covered so far)

- Target files:
 - DATABASE
 - TABLESPACE
 - DATAFILE
 - ARCHIVELOG
 - CURRENT CONTROLFILE
 - SPFILE
- Command options:
 - FORMAT
 - PLUS ARCHIVELOG
 - DELETE INPUT
 - AS COPY
 - DEVICE TYPE
 - TAG



Summary

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

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- Backup SPFILE
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- Define device type in **BACKUP** commands
- Use TAGs in RMAN backups

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