# **TECHNICAL WHITE PAPER**

# **Complete Datafile Recovery in Oracle RDBMS**

## Date: Mar 4, 2015Author: Devisingh Rajput (Devi)

# Abstract

While working with Oracle Database there could be scenario where we need to recover datafiles since Oracle server does not start due to missing or corrupted data files.

Data files contains customer data, also these are essential for database to save data in those files these shall present for database started properly.

There could be multiple reason for media failure and that lead to situation when data files are deleted or moved or corrupted and hence cause oracle server not to start properly or problem with table space or other problems.

We can get some of error listed below ORA error that indicate problem with data file.

ORA-01157: cannot identify/lock data file 6 - see DBWR trace file

ORA-01116: error in opening database file 6

ORA-01110: data file 6: '/u01/oradata/avayaiq/avayaiq'

ORA-27041: unable to open file

To recover situation we shall have working copy of database, we can use RMAN to recover files.

# Solution Details:

We will use RMAN to return database to normal operation after the loss of one or more datafiles.

We have organized to includes the following topics:

* Overview of RMAN Environment
* Overview of Complete Datafile Recovery
* Preparing for Complete Datafile Recovery
* Performing Complete Datafile Recovery

# Overview of the RMAN Environment:

Recovery Manager (RMAN) is an Oracle Database client that performs backup and

recovery tasks on your databases and automates administration of your backup

strategies. It greatly simplifies backing up, restoring, and recovering database files.

The RMAN environment consists of the utilities and databases that play a role in

backing up your data. At a minimum, the environment for RMAN must include the

following components:

■ A target database

An Oracle database to which RMAN is connected with the TARGET keyword. A

target database is a database on which RMAN is performing backup and recovery

operations. RMAN always maintains metadata about its operations on a database

in the control file of the database. The RMAN metadata is known as the RMAN

repository.

■ The RMAN client

An Oracle Database executable that interprets commands, directs server sessions

to execute those commands, and records its activity in the target database control

file. The RMAN executable is automatically installed with the database and is

typically located in the same directory as the other database executables. For

example, the RMAN client on Linux is located in $ORACLE\_HOME/bin.

■ A fast recovery area

A disk location in which the database can store and manage files related to backup

and recovery. You set the fast recovery area location and size with the DB\_

RECOVERY\_FILE\_DEST and DB\_RECOVERY\_FILE\_DEST\_SIZE initialization

parameters.

■ A media manager

An application required for RMAN to interact with sequential media devices such

as tape libraries. A media manager controls these devices during backup and

recovery, managing the loading, labeling, and unloading of media. Media

management devices are sometimes called SBT (system backup to tape) devices.

■ A recovery catalog

A separate database schema used to record RMAN activity against one or more

target databases. A recovery catalog preserves RMAN repository metadata if the

control file is lost, making it much easier to restore and recover following the loss

of the control file. The database may overwrite older records in the control file, but

RMAN maintains records forever in the catalog unless the records are deleted by

the user.

# Overview of Complete Datafile Recovery

This section explains the purpose of complete restore and recovery of the datafile.

We assume that some or all of your datafiles are lost or damaged. Typically, this situation is caused by a media failure or accidental deletion. Your goal is to return the database to normal operation by restoring the damaged files from RMAN backups and recovering all database changes.

This explains how to use complete recovery to fix the most common database problems.

We are taking following assumptions:

* You have lost some or all datafiles and your goal is to recover all changes, but you have not lost all current control files or an entire online redo log group.
* You have the complete set of archived redo logs and incremental backups needed for recovery of your datafile backups. Every datafile either has a backup, or a complete set of online and archived redo logs goes back to the creation of a datafile with no backup.
* Your database runs in a single-instance configuration.

# Preparing for Complete Datafile Recovery

While RMAN simplifies most database restore and recovery tasks, you must still plan your database restore and recovery strategy based on which database files have been lost and your recovery goal. This section contains the following topics:

* Identifying the Database Files to Restore or Recover
* Previewing Backups Used in Restore Operations
* Validating Backups Before Restoring Them
* Restoring Archived Redo Logs Needed for Recovery

## Identifying the Database Files to Restore or Recover

The techniques for determining which files require restore or recovery depend upon the type of file that is lost.

### Identifying Datafiles with RMAN

An easy technique for determining which datafiles are missing is to run a VALIDATE DATABASE command, which attempts to read all specified datafiles. For example, start the RMAN client and run the following commands to validate the database (sample output included).

RMAN> VALIDATE DATABASE;

Starting validate at 20-OCT-06

allocated channel: ORA\_DISK\_1

channel ORA\_DISK\_1: SID=90 device type=DISK

could not read file header for datafile 7 error reason 4

RMAN-00571: ===========================================================

RMAN-00569: =============== ERROR MESSAGE STACK FOLLOWS ===============

RMAN-00571: ===========================================================

RMAN-03002: failure of backup command at 10/20/2007 13:05:43

RMAN-06056: could not access datafile 7

The output indicates that datafile 7 is inaccessible. You can then run the REPORT SCHEMA command to obtain the tablespace name and filename for datafile 7 as follows (sample output included):

RMAN> report schema;

Report of database schema for database with db\_unique\_name AVAYAIQ

List of Permanent Datafiles

===========================

File Size(MB) Tablespace RB segs Datafile Name

---- -------- -------------------- ------- ------------------------

1 780 SYSTEM \*\*\* /u01/app/oracle/oradata/avayaiq/system01.dbf

2 1413 SYSAUX \*\*\* /u01/app/oracle/oradata/avayaiq/sysaux01.dbf

3 1480 UNDOTBS1 \*\*\* /u01/app/oracle/oradata/avayaiq/undotbs01.dbf

4 5 USERS \*\*\* /u01/app/oracle/oradata/avayaiq/users01.dbf

5 128 AVAYAIQRCL \*\*\* /u02/oradata/avayaiq/avayaiqrcl

6 1024 AVAYAIQ \*\*\* /u01/oradata/avayaiq/avayaiq

7 1024 AVAYAIQDIM \*\*\* /u01/oradata/avayaiq/avayaiqdim

8 1024 AVAYAIQFACT1 \*\*\* /u01/oradata/avayaiq/avayaiqfact1

9 1024 AVAYAIQFACT2 \*\*\* /u01/oradata/avayaiq/avayaiqfact2

10 1024 AVAYAIQFACT3 \*\*\* /u01/oradata/avayaiq/avayaiqfact3

11 256 AVAYAIQRPT \*\*\* /u01/oradata/avayaiq/avayaiqrpt

12 1387 AVAYAIQSDS \*\*\* /u01/oradata/avayaiq/avayaiqsds

13 1024 AVAYAIQRT \*\*\* /u01/oradata/avayaiq/avayaiqrt

14 1024 AVAYAIQINDEX1 \*\*\* /u01/oradata/avayaiq/avayaiqindex1

15 1024 AVAYAIQINDEX2 \*\*\* /u01/oradata/avayaiq/avayaiqindex2

16 1024 AVAYAIQINDEX3 \*\*\* /u01/oradata/avayaiq/avayaiqindex3

List of Temporary Files

=======================

File Size(MB) Tablespace Maxsize(MB) Tempfile Name

---- -------- -------------------- ----------- --------------------

1 95 TEMP 20480 /u01/app/oracle/oradata/avayaiq/temp01.dbf

RMAN>

### Identifying Datafiles with SQL

Although VALIDATE DATABASE is a good technique for determining whether files are inaccessible, you may want to use SQL queries to obtain more detailed information.

To determine whether datafiles require media recovery:

Start SQL\*Plus and connect to the target database instance with administrator privileges.

Determine the status of the database by executing the following SQL query:

SELECT STATUS FROM V$INSTANCE;

If the status is OPEN, then the database is open. Nevertheless, some datafiles may require media recovery.

Query V$DATAFILE\_HEADER to determine the status of your datafiles. Run the following SQL statements to check the datafile headers:

SELECT FILE#, STATUS, ERROR, RECOVER, TABLESPACE\_NAME, NAME

FROM V$DATAFILE\_HEADER

WHERE RECOVER = 'YES'

OR (RECOVER IS NULL AND ERROR IS NOT NULL);

Each row returned represents a datafile that either requires media recovery or has an error requiring a restore. Check the RECOVER and ERROR columns. RECOVER indicates whether a file needs media recovery, and ERROR indicates whether there was an error reading and validating the datafile header.

If ERROR is not NULL, then the datafile header cannot be read and validated. Check for a temporary hardware or operating system problem causing the error. If there is no such problem, you must restore the file or switch to a copy.

If the ERROR column is NULL and the RECOVER column is YES, then the file requires media recovery (and may also require a restore from backup).

Note:

Because V$DATAFILE\_HEADER only reads the header block of each datafile, it does not detect all problems that require the datafile to be restored. For example, this view cannot tell whether a datafile contains corrupt data blocks.

Optionally, query V$RECOVER\_FILE to list datafiles requiring recovery by datafile number with their status and error information. For example, execute the following query:

SELECT FILE#, ERROR, ONLINE\_STATUS, CHANGE#, TIME

FROM V$RECOVER\_FILE;

Note:

You cannot use V$RECOVER\_FILE with a control file restored from backup or a control file that was re-created after the time of the media failure affecting the datafiles. A restored or re-created control file does not contain the information needed to update V$RECOVER\_FILE accurately.

To find datafile and tablespace names, you can also perform useful joins using the datafile number and the V$DATAFILE and V$TABLESPACE views. For example:

SELECT r.FILE# AS df#, d.NAME AS df\_name, t.NAME AS tbsp\_name,

 d.STATUS, r.ERROR, r.CHANGE#, r.TIME

FROM V$RECOVER\_FILE r, V$DATAFILE d, V$TABLESPACE t

WHERE t.TS# = d.TS#

AND d.FILE# = r.FILE#;

The ERROR column identifies the problem for each file requiring recovery.

### Below flowchart will help to take decision which piece having problem and needs recovery.



## Previewing Backups Used in Restore Operations

You can apply RESTORE ... PREVIEW to any RESTORE operation to create a detailed list of every backup to be used in the requested RESTORE operation, as well as the necessary target SCN for recovery after the RESTORE operation is complete. This command accesses the RMAN repository to query the backup metadata, but does not actually read the backup files to ensure that they can be restored.

As an alternative to RESTORE ... PREVIEW, you can use the RESTORE ... VALIDATE HEADER command. In addition to listing the files needed for restore and recovery, the RESTORE ... VALIDATE HEADER command validates the backup file headers to determine whether the files on disk or in the media management catalog correspond to the metadata in the RMAN repository.

When planning your restore and recovery operation, use RESTORE ... PREVIEW or RESTORE ... VALIDATE HEADER to ensure that all required backups are available or to identify situations in which you may want to direct RMAN to use or avoid specific backups.

To preview backups to be used in a restore operation:

Run a RESTORE command with the PREVIEW option.

For example, run following commands:

RMAN> restore datafile 6 preview;

RMAN> restore datafile 6 preview summary;

RMAN> RESTORE ARCHIVELOG FROM TIME 'SYSDATE-7' PREVIEW;

If the report produced by RESTORE ... PREVIEW provides too much information, then specify the SUMMARY option as shown above.

You shall get satisfied with the output if having valid backup present for recovery.

**RESTORE ... PREVIEW Output**

RMAN> restore datafile 6 preview summary;

Starting restore at 27-FEB-15

using channel ORA\_DISK\_1

List of Backups

===============

Key TY LV S Device Type Completion Time #Pieces #Copies Compressed Tag

------- -- -- - ----------- --------------- ------- ------- ---------- ---

23818 B F A DISK 21-FEB-15 1 1 YES TAG20150221T044632

23910 B 1 A DISK 22-FEB-15 1 1 YES TAG20150222T044633

23974 B 1 A DISK 23-FEB-15 1 1 YES TAG20150223T044623

24038 B 1 A DISK 24-FEB-15 1 1 YES TAG20150224T044634

24132 B 1 A DISK 25-FEB-15 1 1 YES TAG20150225T044634

24222 B 1 A DISK 26-FEB-15 1 1 YES TAG20150226T044645

List of Backups

===============

Key TY LV S Device Type Completion Time #Pieces #Copies Compressed Tag

------- -- -- - ----------- --------------- ------- ------- ---------- ---

24233 B A A DISK 26-FEB-15 1 1 YES TAG20150226T051757

24235 B A A DISK 26-FEB-15 1 1 YES TAG20150226T060415

24237 B A A DISK 26-FEB-15 1 1 YES TAG20150226T070412

24239 B A A DISK 26-FEB-15 1 1 YES TAG20150226T080011

24241 B A A DISK 26-FEB-15 1 1 YES TAG20150226T090010

24243 B A A DISK 26-FEB-15 1 1 YES TAG20150226T100010

24245 B A A DISK 26-FEB-15 1 1 YES TAG20150226T110010

24247 B A A DISK 26-FEB-15 1 1 YES TAG20150226T120011

24249 B A A DISK 26-FEB-15 1 1 YES TAG20150226T130011

24251 B A A DISK 26-FEB-15 1 1 YES TAG20150226T140010

24253 B A A DISK 26-FEB-15 1 1 YES TAG20150226T140525

24255 B A A DISK 26-FEB-15 1 1 YES TAG20150226T150010

24257 B A A DISK 26-FEB-15 1 1 YES TAG20150226T150526

24259 B A A DISK 26-FEB-15 1 1 YES TAG20150226T160010

24261 B A A DISK 26-FEB-15 1 1 YES TAG20150226T160525

24263 B A A DISK 26-FEB-15 1 1 YES TAG20150226T170011

24265 B A A DISK 26-FEB-15 1 1 YES TAG20150226T170526

24267 B A A DISK 26-FEB-15 1 1 YES TAG20150226T180010

24269 B A A DISK 26-FEB-15 1 1 YES TAG20150226T180525

24271 B A A DISK 26-FEB-15 1 1 YES TAG20150226T190010

24273 B A A DISK 26-FEB-15 1 1 YES TAG20150226T190525

24275 B A A DISK 26-FEB-15 1 1 YES TAG20150226T200010

24277 B A A DISK 26-FEB-15 1 1 YES TAG20150226T200525

24279 B A A DISK 26-FEB-15 1 1 YES TAG20150226T210011

24281 B A A DISK 26-FEB-15 1 1 YES TAG20150226T210525

24283 B A A DISK 26-FEB-15 1 1 YES TAG20150226T220013

24285 B A A DISK 26-FEB-15 1 1 YES TAG20150226T220526

24287 B A A DISK 26-FEB-15 1 1 YES TAG20150226T230014

24289 B A A DISK 27-FEB-15 1 1 YES TAG20150227T000012

24291 B A A DISK 27-FEB-15 1 1 YES TAG20150227T010014

24293 B A A DISK 27-FEB-15 1 1 YES TAG20150227T020012

24295 B A A DISK 27-FEB-15 1 1 YES TAG20150227T030011

Media recovery start SCN is 372413542

Recovery must be done beyond SCN 372413542 to clear datafile fuzziness

Finished restore at 27-FEB-15

## Validating Backups Before Restoring Them

While the procedures in "Previewing Backups Used in Restore Operations" indicate which backups will be restored, they do not verify that the backups are actually usable. You can run RMAN commands to test the availability of usable backups for any RESTORE operation, or test the contents of a specific backup for use in RESTORE operations. The contents of the backups are actually read and checked for corruption. You have the following validation options:

* RESTORE ... VALIDATE tests whether RMAN can restore a specific object from a backup. RMAN chooses which backups to use.
* VALIDATE BACKUPSET tests the validity of a backup set that you specify.

RMAN> restore datafile 6 validate;

Starting restore at 27-FEB-15

using channel ORA\_DISK\_1

channel ORA\_DISK\_1: starting validation of datafile backup set

channel ORA\_DISK\_1: reading from backup piece /IQBackup/AVAYAIQ/backupset/2015\_02\_21/o1\_mf\_nnndf\_TAG20150221T044632\_bgjyrmf3\_.bkp

channel ORA\_DISK\_1: piece handle=/IQBackup/AVAYAIQ/backupset/2015\_02\_21/o1\_mf\_nnndf\_TAG20150221T044632\_bgjyrmf3\_.bkp tag=TAG20150221T044632

channel ORA\_DISK\_1: restored backup piece 1

channel ORA\_DISK\_1: validation complete, elapsed time: 00:00:15

Finished restore at 27-FEB-15

## Restoring Archived Redo Logs Needed for Recovery

RMAN restores archived redo log files from backup automatically as needed to perform recovery. You can also restore archived redo logs manually to save the time needed to restore these files later during the RECOVER command, or if you want to store the restored archived redo log files in some new location.

By default, RMAN restores archived redo logs with names constructed using the LOG\_ARCHIVE\_FORMAT and the LOG\_ARCHIVE\_DEST\_1 parameters of the target database. These parameters are combined in a platform-specific fashion to form the name of the restored archived log.

### Restoring Archived Redo Logs to a New Location

You can override the default location for restored archived redo logs with the SET ARCHIVELOG DESTINATION command. This command manually stages archived logs to different locations while a database restore is occurring. During recovery, RMAN knows where to find the newly restored archived logs; it does not require them to be in the location specified in the initialization parameter file.

To restore archived redo logs to a new location:

Start RMAN and connect to a target database.

Ensure that the database is mounted or open.

Perform the following operations within a RUN command:

Specify the new location for the restored archived redo logs using SET ARCHIVELOG DESTINATION.

Either explicitly restore the archived redo logs or execute commands that automatically restore the logs.

The following example sets the archived log destination and then uses RECOVER to restore archived logs from this destination automatically:

RUN

{

 SET ARCHIVELOG DESTINATION TO '/oracle/temp\_restore';

 RESTORE datafile 6;

 RECOVER datafile 6; # restores and recovers logs automatically

}

### Restoring Archived Redo Logs to Multiple Locations

You can specify restore destinations for archived logs multiple times in one RUN block, in order to distribute restored logs among several destinations. (You cannot, however specify multiple destinations simultaneously to produce multiple copies of the same log during the restore operation.) You can use this feature to manage disk space used to contain the restored logs.

This example restores 300 archived redo logs from backup, distributing them across the directories /fs1/tmp, /fs2/tmp, and /fs3/tmp:

RUN

{

 # Set a new location for logs 1 through 100.

 SET ARCHIVELOG DESTINATION TO '/fs1/tmp';

 RESTORE ARCHIVELOG FROM SEQUENCE 1 UNTIL SEQUENCE 100;

 # Set a new location for logs 101 through 200.

 SET ARCHIVELOG DESTINATION TO '/fs2/tmp';

 RESTORE ARCHIVELOG FROM SEQUENCE 101 UNTIL SEQUENCE 200;

 # Set a new location for logs 201 through 300.

 SET ARCHIVELOG DESTINATION TO '/fs3/tmp';

 RESTORE ARCHIVELOG FROM SEQUENCE 201 UNTIL SEQUENCE 300;

 # restore and recover datafiles as needed

 .

 .

 .

}

When you issue a RECOVER command, RMAN finds the needed restored archived logs automatically across the destinations to which they were restored, and applies them to the datafiles.

# Performing Complete Datafile Recovery

This section assumes that you have already performed the tasks in "Preparing for Complete Datafile Recovery". This section describes the basic outline of complete datafile recovery, which is intended to encompass a wide range of different scenarios.

## About Complete Datafile Recovery

You use the RESTORE and RECOVER commands to restore and recover the datafile. During the recovery, RMAN automatically restores backups of any needed archived redo logs. If backups are stored on a media manager, then channels must be configured in advance or a RUN block with ALLOCATE CHANNEL commands must be used to enable access to backups stored there.

## Restoring Datafiles to a Nondefault Location

If you cannot restore datafiles to their default locations, then you must update the control file to reflect the new locations of the datafiles. Use the RMAN SET NEWNAME command within a RUN command to specify the new filename. Afterward, use a SWITCH command, which is equivalent to using the SQL statement ALTER DATABASE RENAME FILE, to update the names of the datafiles in the control file. SWITCH DATAFILE ALL updates the control file to reflect the new names for all datafiles for which a SET NEWNAME has been issued in a RUN command.

### Performing Datafile Recovery

If you are restoring all datafiles to their original locations, then execute RESTORE DATAFILE and RECOVER DATAFILE sequentially at the RMAN prompt.

RMAN> SQL 'ALTER DATABASE DATAFILE 6 offline';

sql statement: ALTER DATABASE DATAFILE 6 offline

RMAN> restore datafile 6;

Starting restore at 27-FEB-15

using channel ORA\_DISK\_1

channel ORA\_DISK\_1: starting datafile backup set restore

channel ORA\_DISK\_1: specifying datafile(s) to restore from backup set

channel ORA\_DISK\_1: restoring datafile 00006 to /u01/oradata/avayaiq/avayaiq

channel ORA\_DISK\_1: reading from backup piece /IQBackup/AVAYAIQ/backupset/2015\_02\_21/o1\_mf\_nnndf\_TAG20150221T044632\_bgjyrmf3\_.bkp

channel ORA\_DISK\_1: piece handle=/IQBackup/AVAYAIQ/backupset/2015\_02\_21/o1\_mf\_nnndf\_TAG20150221T044632\_bgjyrmf3\_.bkp tag=TAG20150221T044632

channel ORA\_DISK\_1: restored backup piece 1

channel ORA\_DISK\_1: restore complete, elapsed time: 00:00:35

Finished restore at 27-FEB-15

RMAN> recover datafile 6;

Starting recover at 27-FEB-15

using channel ORA\_DISK\_1

channel ORA\_DISK\_1: starting incremental datafile backup set restore

channel ORA\_DISK\_1: specifying datafile(s) to restore from backup set

destination for restore of datafile 00006: /u01/oradata/avayaiq/avayaiq

channel ORA\_DISK\_1: reading from backup piece /IQBackup/AVAYAIQ/backupset/2015\_02\_22/o1\_mf\_nnnd1\_TAG20150222T044633\_bgmklngo\_.bkp

channel ORA\_DISK\_1: piece handle=/IQBackup/AVAYAIQ/backupset/2015\_02\_22/o1\_mf\_nnnd1\_TAG20150222T044633\_bgmklngo\_.bkp tag=TAG20150222T044633

channel ORA\_DISK\_1: restored backup piece 1

channel ORA\_DISK\_1: restore complete, elapsed time: 00:00:01

channel ORA\_DISK\_1: starting incremental datafile backup set restore

channel ORA\_DISK\_1: specifying datafile(s) to restore from backup set

destination for restore of datafile 00006: /u01/oradata/avayaiq/avayaiq

channel ORA\_DISK\_1: reading from backup piece /IQBackup/AVAYAIQ/backupset/2015\_02\_23/o1\_mf\_nnnd1\_TAG20150223T044623\_bgp5l4l8\_.bkp

channel ORA\_DISK\_1: piece handle=/IQBackup/AVAYAIQ/backupset/2015\_02\_23/o1\_mf\_nnnd1\_TAG20150223T044623\_bgp5l4l8\_.bkp tag=TAG20150223T044623

channel ORA\_DISK\_1: restored backup piece 1

channel ORA\_DISK\_1: restore complete, elapsed time: 00:00:01

channel ORA\_DISK\_1: starting incremental datafile backup set restore

channel ORA\_DISK\_1: specifying datafile(s) to restore from backup set

destination for restore of datafile 00006: /u01/oradata/avayaiq/avayaiq

channel ORA\_DISK\_1: reading from backup piece /IQBackup/AVAYAIQ/backupset/2015\_02\_24/o1\_mf\_nnnd1\_TAG20150224T044634\_bgrt2753\_.bkp

channel ORA\_DISK\_1: piece handle=/IQBackup/AVAYAIQ/backupset/2015\_02\_24/o1\_mf\_nnnd1\_TAG20150224T044634\_bgrt2753\_.bkp tag=TAG20150224T044634

channel ORA\_DISK\_1: restored backup piece 1

channel ORA\_DISK\_1: restore complete, elapsed time: 00:00:01

channel ORA\_DISK\_1: starting incremental datafile backup set restore

channel ORA\_DISK\_1: specifying datafile(s) to restore from backup set

destination for restore of datafile 00006: /u01/oradata/avayaiq/avayaiq

channel ORA\_DISK\_1: reading from backup piece /IQBackup/AVAYAIQ/backupset/2015\_02\_25/o1\_mf\_nnnd1\_TAG20150225T044634\_bgvgjqjz\_.bkp

channel ORA\_DISK\_1: piece handle=/IQBackup/AVAYAIQ/backupset/2015\_02\_25/o1\_mf\_nnnd1\_TAG20150225T044634\_bgvgjqjz\_.bkp tag=TAG20150225T044634

channel ORA\_DISK\_1: restored backup piece 1

channel ORA\_DISK\_1: restore complete, elapsed time: 00:00:01

channel ORA\_DISK\_1: starting incremental datafile backup set restore

channel ORA\_DISK\_1: specifying datafile(s) to restore from backup set

destination for restore of datafile 00006: /u01/oradata/avayaiq/avayaiq

channel ORA\_DISK\_1: reading from backup piece /IQBackup/AVAYAIQ/backupset/2015\_02\_26/o1\_mf\_nnnd1\_TAG20150226T044645\_bgy306wy\_.bkp

channel ORA\_DISK\_1: piece handle=/IQBackup/AVAYAIQ/backupset/2015\_02\_26/o1\_mf\_nnnd1\_TAG20150226T044645\_bgy306wy\_.bkp tag=TAG20150226T044645

channel ORA\_DISK\_1: restored backup piece 1

channel ORA\_DISK\_1: restore complete, elapsed time: 00:00:01

starting media recovery

channel ORA\_DISK\_1: starting archived log restore to default destination

channel ORA\_DISK\_1: restoring archived log

archived log thread=1 sequence=10478

channel ORA\_DISK\_1: reading from backup piece /IQBackup/AVAYAIQ/backupset/2015\_02\_26/o1\_mf\_annnn\_TAG20150226T051757\_bgy3qoj3\_.bkp

channel ORA\_DISK\_1: piece handle=/IQBackup/AVAYAIQ/backupset/2015\_02\_26/o1\_mf\_annnn\_TAG20150226T051757\_bgy3qoj3\_.bkp tag=TAG20150226T051757

channel ORA\_DISK\_1: restored backup piece 1

channel ORA\_DISK\_1: restore complete, elapsed time: 00:00:03

archived log file name=/u01/app/oracle/archivelog/1\_10478\_823244788.dbf thread=1 sequence=10478

channel ORA\_DISK\_1: starting archived log restore to default destination

channel ORA\_DISK\_1: restoring archived log

archived log thread=1 sequence=10479

channel ORA\_DISK\_1: reading from backup piece /IQBackup/AVAYAIQ/backupset/2015\_02\_26/o1\_mf\_annnn\_TAG20150226T060415\_bgy6gj31\_.bkp

channel ORA\_DISK\_1: piece handle=/IQBackup/AVAYAIQ/backupset/2015\_02\_26/o1\_mf\_annnn\_TAG20150226T060415\_bgy6gj31\_.bkp tag=TAG20150226T060415

channel ORA\_DISK\_1: restored backup piece 1

channel ORA\_DISK\_1: restore complete, elapsed time: 00:00:03

archived log file name=/u01/app/oracle/archivelog/1\_10479\_823244788.dbf thread=1 sequence=10479

channel ORA\_DISK\_1: starting archived log restore to default destination

channel ORA\_DISK\_1: restoring archived log

archived log thread=1 sequence=10480

channel ORA\_DISK\_1: reading from backup piece /IQBackup/AVAYAIQ/backupset/2015\_02\_27/o1\_mf\_annnn\_TAG20150227T040525\_bh0mvomm\_.bkp

channel ORA\_DISK\_1: piece handle=/IQBackup/AVAYAIQ/backupset/2015\_02\_27/o1\_mf\_annnn\_TAG20150227T040525\_bh0mvomm\_.bkp tag=TAG20150227T040525

channel ORA\_DISK\_1: restored backup piece 1

channel ORA\_DISK\_1: restore complete, elapsed time: 00:00:01

Finished recover at 27-FEB-15

RMAN> SQL 'ALTER DATABASE DATAFILE 6 online';

sql statement: ALTER DATABASE DATAFILE 6 online

RMAN>

Multiple datafiles can be recovered with same command.

For example, enter the following commands if automatic channels are configured (sample output included):

RMAN> sql 'alter database datafile 12, 14 offline';

RMAN> recover datafile 12, 14;

RMAN> sql 'alter database datafile 12, 14 online';

Examine the output to see if media recovery was successful. If so, open the database.

For example, enter the following command:

ALTER DATABASE OPEN;

SQL> select name from v$datafile where status = 'RECOVER';

SQL> select file#,name,status,enabled from v$datafile where status = 'OFFLINE';

### Performing Complete Recovery After Switching to a Copy

If you have image copies of the inaccessible datafiles in the flash recovery area, then you can use the SWITCH DATAFILE ... TO COPY command to point the control file at the datafile copy and then use RECOVER to recover lost changes. You can also use the SWITCH DATABASE TO COPY command to point the control file at a copy of the whole database. Because you do not need to restore backups, this recovery technique takes less time than traditional restore and recovery.

Note:

A SWITCH TABLESPACE ... TO COPY command is also supported for cases when all datafiles in a tablespace are lost and copies of all datafiles exist. The same restriction exists for SWITCH DATABASE TO COPY.

#### Switching to a Datafile Copy

In the basic scenario, the database is open, and some but not all of the datafiles are damaged. During the course of the day, a datafile goes missing due to storage failure. You need to repair this file, but cannot afford the time to do a restore and recovery from a backup. You decide to use a recent image copy backup as the new file, thus eliminating restore time. This scenario assumes that database trgt has lost datafile 4.

To switch to a datafile copy and perform recovery:

Start RMAN and connect to a target database.

If the database is open, then take the tablespace requiring recovery offline.

Enter the following command to take datafile 4 offline:

SQL "ALTER DATABASE DATAFILE 4 OFFLINE";

Switch the offline datafile to the latest copy.

Enter the following command to point the control file to the latest image copy of datafile 4:

SWITCH DATAFILE 4 TO COPY;

Recover the datafile with the RECOVER DATAFILE command.

Enter the following command:

RECOVER DATAFILE 4;

RMAN automatically restores archived redo logs and incremental backups. Because the database uses a flash recovery area, RMAN automatically deletes them after they have been applied.

Examine the output to see if recovery was successful. If so, bring the recovered datafile back online.

Enter the following command to bring datafile 4 online:

SQL "ALTER DATABASE DATAFILE 4 ONLINE";

# Conclusion

Complete datafile recovery is possible using RMAN having valid backup and required redo logs are in place before any media failure reported, so have best practice to have periodic backups.