

Full RMAN Restore (New Server)

This scenario assumes everything on the current server has been lost.

It assumes that the Recovery Catalog is still available.

The below is an example of restoring data from DUBELIVE.

Information taken from Oracle 11gR2 RMAN documentation

http://docs.oracle.com/cd/E11882_01/backup.112/e10642/rcmadvre.htm#i1007814

The stages of the restore are ...

1. Configure new database server
2. Copy backup files to new server
3. Connect to Recovery Catalog
4. Restore SPFILE
5. Restore Control File
6. Restore Data Files
7. Open Database

Configure New Database Server

Install 11.2.0.4 Oracle Software and create a listener.

Confirm that new server is at same patch level as before.

Create backup directories on server and set environment variables

```
mkdir /backup/fast_recovery_area/DUBELIVE
mkdir /backup/fast_recovery_area/DUBELIVE/autobackup
mkdir /backup/fast_recovery_area/DUBELIVE/backupset
export ORACLE_SID=DUBELIVE
```

Copy Backup Files to New Server

Infrastructure will now need to copy the RMAN backup files from tape to the new server. Full backups are done daily on leopard so we only need the latest directory in date format.

For this example I will copy files directly from the production database server.

```
cd /backup/fast_recovery_area/DUBELIVE/autobackup
scp -r 2013_05_09 172.16.79.66:/backup/fast_recovery_area/DUBELIVE/autobackup
cd /backup/fast_recovery_area/DUBELIVE/backupset
scp -r 2013_05_09 172.16.79.66:/backup/fast_recovery_area/DUBELIVE/backupset
```

Connect To Recovery Catalog

Connect to the target database and recovery catalog using rman.

```
rman target / catalog rman/<pwd>@//sheffield/rman11g
```

Now set the DBID and startup nomount the instance.

In this case as the server parameter file is not available, RMAN will start the instance with a dummy spfile.

```
set DBID=1682235201;
STARTUP FORCE NOMOUNT;
```

Restore SPFILE

When restoring the spfile we will have to tell RMAN the location of the Fast Recovery Area and the

Database Name. Then remount the database.

```
RESTORE SPFILE FROM AUTOBACKUP  
db_recovery_file_dest='/backup/fast_recovery_area' db_name='DUBELIVE';  
STARTUP FORCE NOMOUNT;
```

At this point you may hit the following 2 errors ...

ORA-00845: MEMORY_TARGET not supported on this system

Change parameter value memory_target so that it is less than space in /dev/shm

Or increase space in /dev/shm so that it is more than value in memory_target parameter

ORA-09925: Unable to create audit trail file

Check audit_file_dest parameter and create directory that matches parameter value

Restore Control File

Set the DBID again and restore the control file.

```
set DBID=1682235201;  
RESTORE CONTROLFILE FROM AUTOBACKUP;  
exit
```

After the above commands have been executed, I now have to disconnect from the recovery catalog for the purposes of this test. Otherwise it will bugger it up for live. In a real disaster I would remain connected to the recovery catalog and would not have to catalog the backup files.

Restore Data Files

Reconnect to the target database using rman, catalog the backup files and restore/recover the database. For this example we are only recovering to sequence number 1410. In a real world disaster we would recover all possible archive logs.

```
rman target /  
STARTUP FORCE MOUNT;  
CATALOG START WITH '/backup/fast_recovery_area/DUBELIVE/backupset/2013_05_09';  
RUN {  
  SET UNTIL SEQUENCE 1410;  
  RESTORE DATABASE;  
  RECOVER DATABASE;  
}
```

This process took approximately 1 hour for the Unit-e live database on 10th May 2013.

Open Database

The database must be opened using the resetlogs clause as we have done a partial restore.

```
ALTER DATABASE OPEN RESETLOGS;
```

Example Restore Scenario

```
[oracle@nazca DUBELIVE]$ rman target / catalog rman/<PWD>@//sheffield/rman11g
```

Recovery Manager: Release 11.2.0.3.0 - Production on Fri May 10 12:14:32 2013

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connected to target database (not started)

connected to recovery catalog database

```
RMAN> STARTUP FORCE NOMOUNT;
```

startup failed: ORA-01078: failure in processing system parameters

LRM-00109: could not open parameter file '/u01/app/oracle/product/11.2.0/dbhome_1/dbs/initDUBELIVE.ora'

starting Oracle instance without parameter file for retrieval of spfile

Oracle instance started

Total System Global Area 158662656 bytes

Fixed Size 2226456 bytes

Variable Size 92276456 bytes

Database Buffers 58720256 bytes

Redo Buffers 5439488 bytes

```
RMAN> set DBID=1682235201;
```

executing command: SET DBID

database name is "DUBELIVE" and DBID is 1682235201

```
RMAN> RESTORE SPFILE FROM AUTOBACKUP db_recovery_file_dest='/backup/fast_recovery_area'  
db_name='DUBELIVE';
```

Starting restore at 10-MAY-13

allocated channel: ORA_DISK_1

channel ORA_DISK_1: SID=111 device type=DISK

recovery area destination: /backup/fast_recovery_area

database name (or database unique name) used for search: DUBELIVE

channel ORA_DISK_1: AUTOBACKUP

/backup/fast_recovery_area/DUBELIVE/autobackup/2013_05_09/o1_mf_s_815009621_8rr925x2_.bkp found in the recovery area

channel ORA_DISK_1: looking for AUTOBACKUP on day: 20130510

channel ORA_DISK_1: looking for AUTOBACKUP on day: 20130509

channel ORA_DISK_1: restoring spfile from AUTOBACKUP

/backup/fast_recovery_area/DUBELIVE/autobackup/2013_05_09/o1_mf_s_815009621_8rr925x2_.bkp

channel ORA_DISK_1: SPFILE restore from AUTOBACKUP complete

Finished restore at 10-MAY-13

```
RMAN> STARTUP FORCE NOMOUNT;
```

```
RMAN> set DBID=1682235201;
```

executing command: SET DBID

database name is "DUBELIVE" and DBID is 1682235201

RMAN> RESTORE CONTROLFILE FROM AUTOBACKUP;

Starting restore at 10-MAY-13

allocated channel: ORA_DISK_1

channel ORA_DISK_1: SID=10 device type=DISK

recovery area destination: /backup/fast_recovery_area

database name (or database unique name) used for search: DUBELIVE

channel ORA_DISK_1: AUTOBACKUP

/backup/fast_recovery_area/DUBELIVE/autobackup/2013_05_09/o1_mf_s_815009621_8rr925x2_.bkp found in the recovery area

channel ORA_DISK_1: looking for AUTOBACKUP on day: 20130510

channel ORA_DISK_1: looking for AUTOBACKUP on day: 20130509

channel ORA_DISK_1: restoring control file from AUTOBACKUP

/backup/fast_recovery_area/DUBELIVE/autobackup/2013_05_09/o1_mf_s_815009621_8rr925x2_.bkp

channel ORA_DISK_1: control file restore from AUTOBACKUP complete

output file name=/u02/oradata/DUBELIVE/controlfile/o1_mf_8ht0n1rs_.ctl

output file name=/backup/fast_recovery_area/DUBELIVE/controlfile/o1_mf_8ht0n219_.ctl

Finished restore at 10-MAY-13

RMAN> EXIT

Recovery Manager Complete

[oracle@nazca DUBELIVE]\$ **rman target /**

Recovery Manager: Release 11.2.0.3.0 - Production on Fri May 10 15:32:56 2013

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connected to target database: DUBELIVE (DBID=1682235201, not open)

RMAN> STARTUP FORCE MOUNT;

Oracle instance started

database mounted

Total System Global Area 2137886720 bytes

Fixed Size 2230072 bytes

Variable Size 1375733960 bytes

Database Buffers 754974720 bytes

Redo Buffers 4947968 bytes

RMAN> CATALOG START WITH '/backup/fast_recovery_area/DUBELIVE/backupset/2013_05_09';

using target database control file instead of recovery catalog

searching for all files that match the pattern /backup/fast_recovery_area/DUBELIVE/backupset/2013_05_09

List of Files Unknown to the Database

=====

File Name: /backup/fast_recovery_area/DUBELIVE/backupset/2013_05_09/o1_mf_nnndf_TAG20130509T225601_8rr6vmrb_.bkp

File Name: /backup/fast_recovery_area/DUBELIVE/backupset/2013_05_09/o1_mf_annnn_TAG20130509T233224_8rr8zshr_.bkp

Do you really want to catalog the above files (enter YES or NO)? **YES**

cataloging files...

cataloging done

List of Cataloged Files

=====

File Name: /backup/fast_recovery_area/DUBELIVE/backupset/2013_05_09/o1_mf_nnndf_TAG20130509T225601_8rr6vmrb_.bkp

File Name: /backup/fast_recovery_area/DUBELIVE/backupset/2013_05_09/o1_mf_annnn_TAG20130509T233224_8rr8zshr_.bkp

```
RMAN> RUN {  
2> set until sequence 1410;  
3> restore database;  
4> recover database;  
5> }
```

executing command: SET until clause

Starting restore at 13-MAY-13

using target database control file instead of recovery catalog

allocated channel: ORA_DISK_1

channel ORA_DISK_1: SID=773 device type=DISK

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 00001 to /u02/oradata/DUBELIVE/datafile/o1_mf_system_8rt2zmgs_.dbf

channel ORA_DISK_1: restoring datafile 00002 to /u02/oradata/DUBELIVE/datafile/o1_mf_sysaux_8rt2zmkg_.dbf

channel ORA_DISK_1: restoring datafile 00003 to /u02/oradata/DUBELIVE/datafile/o1_mf_undotbs1_8rt2zmjo_.dbf

channel ORA_DISK_1: restoring datafile 00004 to /u02/oradata/DUBELIVE/datafile/o1_mf_users_8rt2zmlw_.dbf

channel ORA_DISK_1: restoring datafile 00005 to /u02/oradata/DUBELIVE/datafile/o1_mf_unite_ar_8rt2zmjy_.dbf

channel ORA_DISK_1: restoring datafile 00006 to /u02/oradata/DUBELIVE/datafile/o1_mf_unite_da_8rt2zm9o_.dbf

channel ORA_DISK_1: restoring datafile 00007 to /u02/oradata/DUBELIVE/datafile/o1_mf_unite_in_8rt2zmcq_.dbf

channel ORA_DISK_1: restoring datafile 00008 to /u02/oradata/DUBELIVE/datafile/o1_mf_unite_in_8rt2zmcy_.dbf

channel ORA_DISK_1: reading from backup piece

/backup/fast_recovery_area/DUBELIVE/backupset/2013_05_09/o1_mf_nnndf_TAG20130509T225601_8rr6vmrb_.bkp

channel ORA_DISK_1: piece

handle=/backup/fast_recovery_area/DUBELIVE/backupset/2013_05_09/o1_mf_nnndf_TAG20130509T225601_8rr6vmrb_.bkp

tag=TAG20130509T225601

channel ORA_DISK_1: restored backup piece 1

channel ORA_DISK_1: restore complete, elapsed time: 00:51:26

Finished restore at 13-MAY-13

Starting recover at 13-MAY-13

using channel ORA_DISK_1

starting media recovery

archived log for thread 1 with sequence 1398 is already on disk as file

/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1398_8rrdj7fs_.arc

archived log for thread 1 with sequence 1399 is already on disk as file

/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1399_8rrj0ov0_.arc

archived log for thread 1 with sequence 1400 is already on disk as file

/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1400_8rrmk7m1_.arc

archived log for thread 1 with sequence 1401 is already on disk as file

/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1401_8rrq1qwn_.arc

archived log for thread 1 with sequence 1402 is already on disk as file

/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1402_8rrtl8f9_.arc

archived log for thread 1 with sequence 1403 is already on disk as file

/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1403_8rry2sty_.arc

archived log for thread 1 with sequence 1404 is already on disk as file

/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1404_8rs1m9v8_.arc

archived log for thread 1 with sequence 1405 is already on disk as file

/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1405_8rs53tg1_.arc

archived log for thread 1 with sequence 1406 is already on disk as file

/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1406_8rs8nc02_.arc

archived log for thread 1 with sequence 1407 is already on disk as file

/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1407_8rsd4v3r_.arc

archived log for thread 1 with sequence 1408 is already on disk as file

/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1408_8rshocbp_.arc

archived log for thread 1 with sequence 1409 is already on disk as file
/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1409_8rsm5wx5_.arc
channel ORA_DISK_1: starting archived log restore to default destination
channel ORA_DISK_1: restoring archived log
archived log thread=1 sequence=1396
channel ORA_DISK_1: restoring archived log
archived log thread=1 sequence=1397
channel ORA_DISK_1: reading from backup piece
/backup/fast_recovery_area/DUBELIVE/backupset/2013_05_09/o1_mf_annnn_TAG20130509T233224_8rr8zshr_.bkp
channel ORA_DISK_1: piece
handle=/backup/fast_recovery_area/DUBELIVE/backupset/2013_05_09/o1_mf_annnn_TAG20130509T233224_8rr8zshr_.bkp
tag=TAG20130509T233224
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:01:45
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_13/o1_mf_1_1396_8s16spoj_.arc thread=1
sequence=1396
channel default: deleting archived log(s)
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_13/o1_mf_1_1396_8s16spoj_.arc RECID=2680
STAMP=815302275
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_13/o1_mf_1_1397_8s16wo87_.arc thread=1
sequence=1397
channel default: deleting archived log(s)
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_13/o1_mf_1_1397_8s16wo87_.arc
RECID=2681 STAMP=815302309
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1398_8rrdj7fs_.arc thread=1
sequence=1398
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1399_8rrj0ov0_.arc thread=1
sequence=1399
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1400_8rrmk7m1_.arc thread=1
sequence=1400
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1401_8rrq1qwn_.arc thread=1
sequence=1401
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1402_8rrtl8f9_.arc thread=1
sequence=1402
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1403_8rry2sty_.arc thread=1
sequence=1403
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1404_8rs1m9v8_.arc thread=1
sequence=1404
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1405_8rs53tg1_.arc thread=1
sequence=1405
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1406_8rs8nc02_.arc thread=1
sequence=1406
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1407_8rsd4v3r_.arc thread=1
sequence=1407
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1408_8rshocbp_.arc thread=1
sequence=1408
archived log file name=/backup/fast_recovery_area/DUBELIVE/archivelog/2013_05_10/o1_mf_1_1409_8rsm5wx5_.arc thread=1
sequence=1409
media recovery complete, elapsed time: 00:01:24
Finished recover at 13-MAY-13

RMAN> ALTER DATABASE OPEN RESETLOGS;

database opened

RMAN>