How to Recover Tables to a Specified Point in Time in Oracle

Recovering tables to a specific point in time is a common task in Oracle Database administration, especially when an accidental update or deletion occurs. Oracle's RMAN (Recovery Manager) provides a feature called **Tablespace Point-In-Time Recovery (TSPITR)** that allows you to recover tables efficiently without affecting the rest of the database.

This guide outlines the steps and addresses common challenges based on a real-world recovery log.

Prerequisites

Before performing table recovery, ensure the following:

1. **RMAN Configuration**: Verify that RMAN is properly configured and that you have valid backups.
2. **Privileges**: The user performing the recovery must have sufficient privileges on the required tablespaces.
3. **Disk Space**: Ensure there is enough disk space for auxiliary instance creation.
4. **Backup Files**: Locate the necessary backup files (datafiles, control files, and archived logs).

Example Scenario

We want to recover the table SOE.ADDRESSES to a point in time 2024-12-23 19:22:44. The recovered table will be remapped to another schema as KHALED.ADDRESSES_NEW.

Steps for Table Recovery

1. Prepare the Auxiliary Instance

RMAN creates a temporary auxiliary instance to perform the recovery. The initialization parameters for the auxiliary instance should be specified in a parameter file (e.g., initaux.ora):

SET AUXILIARY INSTANCE PARAMETER FILE TO '/u01/backup/restore_table/initaux.ora';

2. Run the RMAN Recovery Command

Use the following RMAN block to initiate the recovery process:

This file initaux.ora contain

```
SGA_target=2048M

SGA_MAX_SIZE=2048M
```

```
RUN {
  SET AUXILIARY INSTANCE PARAMETER FILE TO '/u01/backup/restore_table/initaux.ora';
  RECOVER TABLE SOE.ADDRESSES
  UNTIL TIME "TO_DATE('2024-12-23 19:22:44', 'YYYY-MM-DD HH24:MI:SS')"
  AUXILIARY DESTINATION '/u01/DUMP/test'
  REMAP TABLE 'SOE'.'ADDRESSES':'KHALED'.'ADDRESSES_NEW';
}
```

Key Components:

- UNTIL TIME: Specifies the point in time to which the table should be recovered.
- AUXILIARY DESTINATION: Directory for creating temporary files for the auxiliary instance.
- REMAP TABLE: Remaps the recovered table to a new schema and name.

3. RMAN Actions

During recovery, RMAN performs the following:

- **Restore Control File**: Restores the control file to the auxiliary instance.
- **Mount Auxiliary Instance**: Mounts the auxiliary database for recovery.
- **Restore Datafiles**: Restores datafiles containing the target table.
- **Media Recovery**: Applies archived logs to bring the datafiles to the desired point in time.
- **Export Table Data**: Exports the table using Data Pump.
- **Import Table Data**: Imports the table into the specified schema using Data Pump.

4. Addressing Common Errors

Error: ORA-01950: No Privileges on Tablespace

This error occurs if the target schema lacks privileges on the required tablespace. Grant the necessary quota:

ALTER USER KHALED QUOTA UNLIMITED ON SOETBS;

Alternatively, grant a specific quota:

ALTER USER KHALED QUOTA 100M ON SOETBS;

Error: Auxiliary Instance Setup Failure

Ensure the AUXILIARY DESTINATION directory exists and has sufficient space for datafiles and log files.

5. Verify the Recovery

After the import completes, verify the table in the target schema:

SELECT * FROM KHALED.ADDRESSES_NEW;

Detailed Recovery Log Insights

From the provided recovery log:

- **Auxiliary Instance Creation**:
  - Temporary database instance created with db_name=ORADB and diagnostic_dest=/u01/app/oracle.
- **Control File and Datafile Restoration**:
  - Restored control file and datafiles to /u01/DUMP/test.
- **Data Pump Export**:
  - Exported table SOE.ADDRESSES to /u01/DUMP/test/tspitr_jdbd_67168.dmp.
- **Data Pump Import**:
  - Imported the table as KHALED.ADDRESSES_NEW with no errors after resolving quota issues.

Best Practices

1. **Test Recovery Procedures**: Perform recovery in a test environment to validate the steps.
2. **Monitor Disk Space**: Ensure adequate space for auxiliary instance and Data Pump files.
3. **Backup Validation**: Regularly validate RMAN backups using RESTORE VALIDATE.

4. **Grant Necessary Privileges**: Ensure the target schema has appropriate tablespace quotas.

Recovering tables using RMAN's TSPITR is an efficient and powerful method for point-in-time table recovery. By following these steps and addressing common issues, you can minimize downtime and ensure data integrity during the recovery process.

Output >>

```
RMAN> run {
SET AUXILIARY INSTANCE PARAMETER FILE TO '/u01/backup/restore_table/initaux.ora';
  RECOVER TABLE SOE.ADDRESSES
  UNTIL TIME "TO_DATE('2024-12-23 19:22:44', 'YYYY-MM-DD HH24:MI:SS')"
  AUXILIARY DESTINATION '/u01/DUMP/test'
  REMAP TABLE 'SOE'.'ADDRESSES':'KHALED'.'ADDRESSES_NEW';
}
2> 3> 4> 5> 6> 7>
executing command: SET auxiliary parameter file

Starting recover at 2024-12-23:19:30:14
using channel ORA_DISK_1
RMAN-05026: warning: presuming following set of tablespaces applies to specified point-in-time

List of tablespaces expected to have UNDO segments
Tablespace SYSTEM
Tablespace UNDOTBS1

Creating automatic instance, with SID='jdbd'
```

using contents of file /u01/backup/restore_table/initaux.ora

initialization parameters used for automatic instance:

db_name=ORADB

db_unique_name=jdbd_pitr_ORADB

compatible=12.2.0

db_block_size=8192

db_files=200

diagnostic_dest=/u01/app/oracle

_system_trig_enabled=FALSE

sga_target=1664M

processes=200

db_create_file_dest=/u01/DUMP/test

log_archive_dest_1='location=/u01/DUMP/test'

ifile=/u01/backup/restore_table/initaux.ora

starting up automatic instance ORADB

Oracle instance started

Total System Global Area 2147483648 bytes

Fixed Size 8622776 bytes

Variable Size 520097096 bytes

Database Buffers 1610612736 bytes

Redo Buffers 8151040 bytes

Automatic instance created

contents of Memory Script:

{

set requested point in time

set until time "TO_DATE('2024-12-23 19:22:44', 'YYYY-MM-DD HH24:MI:SS')";

restore the controlfile

restore clone controlfile;

mount the controlfile

sql clone 'alter database mount clone database';

archive current online log

sql 'alter system archive log current';

}

executing Memory Script

executing command: SET until clause

Starting restore at 2024-12-23:19:30:22

allocated channel: ORA_AUX_DISK_1

channel ORA_AUX_DISK_1: SID=244 device type=DISK

channel ORA_AUX_DISK_1: starting datafile backup set restore

channel ORA_AUX_DISK_1: restoring control file

channel ORA_AUX_DISK_1: reading from backup piece
/u01/app/oracle/fra/ORADB/ORADB/autobackup/2024_12_23/o1_mf_s_1188501641_mp
m6z9k0_.bkp

channel ORA_AUX_DISK_1: piece handle=/u01/app/oracle/fra/ORADB/ORADB/autobackup/2024_12_23/o1_mf_s_1188501641_mpm6z9k0_.bkp tag=TAG20241223T192041

channel ORA_AUX_DISK_1: restored backup piece 1

channel ORA_AUX_DISK_1: restore complete, elapsed time: 00:00:01

output file name=/u01/DUMP/test/ORADB/controlfile/o1_mf_mpm7kh9p_.ctl

Finished restore at 2024-12-23:19:30:24

sql statement: alter database mount clone database

sql statement: alter system archive log current

contents of Memory Script:

```
{
# set requested point in time
set until  time "TO_DATE('2024-12-23 19:22:44', 'YYYY-MM-DD HH24:MI:SS')";
# set destinations for recovery set and auxiliary set datafiles
set newname for clone datafile  1 to new;
set newname for clone datafile  4 to new;
set newname for clone datafile  3 to new;
set newname for clone tempfile  1 to new;
# switch all tempfiles
switch clone tempfile all;
# restore the tablespaces in the recovery set and the auxiliary set
restore clone datafile  1, 4, 3;

switch clone datafile all;
}
```

executing Memory Script

executing command: SET until clause

executing command: SET NEWNAME

executing command: SET NEWNAME

executing command: SET NEWNAME

executing command: SET NEWNAME

renamed tempfile 1 to /u01/DUMP/test/ORADB/datafile/o1_mf_temp_%u_.tmp in control file

Starting restore at 2024-12-23:19:30:28

using channel ORA_AUX_DISK_1

channel ORA_AUX_DISK_1: starting datafile backup set restore

channel ORA_AUX_DISK_1: specifying datafile(s) to restore from backup set

channel ORA_AUX_DISK_1: restoring datafile 00001 to /u01/DUMP/test/ORADB/datafile/o1_mf_system_%u_.dbf

channel ORA_AUX_DISK_1: restoring datafile 00004 to /u01/DUMP/test/ORADB/datafile/o1_mf_undotbs1_%u_.dbf

channel ORA_AUX_DISK_1: restoring datafile 00003 to /u01/DUMP/test/ORADB/datafile/o1_mf_sysaux_%u_.dbf

channel ORA_AUX_DISK_1: reading from backup piece /u01/app/oracle/fra/ORADB/ORADB/backupset/2024_12_23/o1_mf_nnndf_TAG20241223T192033_mpm6z19z_.bkp

channel ORA_AUX_DISK_1: piece handle=/u01/app/oracle/fra/ORADB/ORADB/backupset/2024_12_23/o1_mf_nnndf_TAG20241223T192033_mpm6z19z_.bkp tag=TAG20241223T192033

channel ORA_AUX_DISK_1: restored backup piece 1

channel ORA_AUX_DISK_1: restore complete, elapsed time: 00:00:07

Finished restore at 2024-12-23:19:30:36

datafile 1 switched to datafile copy

input datafile copy RECID=7812 STAMP=1188502236 file name=/u01/DUMP/test/ORADB/datafile/o1_mf_system_mpm7ko3o_.dbf

datafile 4 switched to datafile copy

input datafile copy RECID=7813 STAMP=1188502236 file name=/u01/DUMP/test/ORADB/datafile/o1_mf_undotbs1_mpm7ko3s_.dbf

datafile 3 switched to datafile copy

input datafile copy RECID=7814 STAMP=1188502236 file name=/u01/DUMP/test/ORADB/datafile/o1_mf_sysaux_mpm7ko3p_.dbf

contents of Memory Script:

```
{
# set requested point in time
set until  time "TO_DATE('2024-12-23 19:22:44', 'YYYY-MM-DD HH24:MI:SS')";
# online the datafiles restored or switched
sql clone "alter database datafile  1 online";
sql clone "alter database datafile  4 online";
sql clone "alter database datafile  3 online";
# recover and open database read only
recover clone database tablespace  "SYSTEM", "UNDOTBS1", "SYSAUX";
sql clone 'alter database open read only';
}
```

executing Memory Script

executing command: SET until clause

sql statement: alter database datafile 1 online

sql statement: alter database datafile 4 online

sql statement: alter database datafile 3 online

Starting recover at 2024-12-23:19:30:36

using channel ORA_AUX_DISK_1

starting media recovery

archived log for thread 1 with sequence 63 is already on disk as file /u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_63_mpm6z8bj_.arc

archived log for thread 1 with sequence 64 is already on disk as file /u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_64_mpm741xk_.arc

archived log file name=/u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_63_mpm6z8bj_.arc thread=1 sequence=63

archived log file name=/u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_64_mpm741xk_.arc thread=1 sequence=64

media recovery complete, elapsed time: 00:00:01

Finished recover at 2024-12-23:19:30:38

sql statement: alter database open read only

contents of Memory Script:

{

sql clone "create spfile from memory";

shutdown clone immediate;

startup clone nomount;

sql clone "alter system set control_files =

''/u01/DUMP/test/ORADB/controlfile/o1_mf_mpm7kh9p_.ctl'' comment=

''RMAN set'' scope=spfile";

shutdown clone immediate;

startup clone nomount;

mount database

sql clone 'alter database mount clone database';

}

executing Memory Script

sql statement: create spfile from memory

database closed

database dismounted

Oracle instance shut down

connected to auxiliary database (not started)

Oracle instance started

Total System Global Area 2147483648 bytes

Fixed Size 8622776 bytes

Variable Size 520097096 bytes

Database Buffers 1610612736 bytes

Redo Buffers 8151040 bytes

sql statement: alter system set control_files = ''/u01/DUMP/test/ORADB/controlfile/o1_mf_mpm7kh9p_.ctl'' comment= ''RMAN set'' scope=spfile

Oracle instance shut down

connected to auxiliary database (not started)

Oracle instance started

Total System Global Area 2147483648 bytes

Fixed Size 8622776 bytes

Variable Size 520097096 bytes

Database Buffers 1610612736 bytes

Redo Buffers 8151040 bytes

sql statement: alter database mount clone database

contents of Memory Script:

{

set requested point in time

set until time "TO_DATE('2024-12-23 19:22:44', 'YYYY-MM-DD HH24:MI:SS')";

set destinations for recovery set and auxiliary set datafiles

```
set newname for datafile  5 to new;
# restore the tablespaces in the recovery set and the auxiliary set
restore clone datafile  5;

switch clone datafile all;
}
executing Memory Script

executing command: SET until clause

executing command: SET NEWNAME

Starting restore at 2024-12-23:19:31:28
allocated channel: ORA_AUX_DISK_1
channel ORA_AUX_DISK_1: SID=244 device type=DISK

channel ORA_AUX_DISK_1: starting datafile backup set restore
channel ORA_AUX_DISK_1: specifying datafile(s) to restore from backup set
channel ORA_AUX_DISK_1: restoring datafile 00005 to
/u01/DUMP/test/JDBD_PITR_ORADB/datafile/o1_mf_soetbs_%u_.dbf
channel ORA_AUX_DISK_1: reading from backup piece
/u01/app/oracle/fra/ORADB/ORADB/backupset/2024_12_23/o1_mf_nnndf_TAG20241223
T192033_mpm6z19z_.bkp
channel ORA_AUX_DISK_1: piece
handle=/u01/app/oracle/fra/ORADB/ORADB/backupset/2024_12_23/o1_mf_nnndf_TAG20
241223T192033_mpm6z19z_.bkp tag=TAG20241223T192033
channel ORA_AUX_DISK_1: restored backup piece 1
channel ORA_AUX_DISK_1: restore complete, elapsed time: 00:00:03
Finished restore at 2024-12-23:19:31:31
```

datafile 5 switched to datafile copy

input datafile copy RECID=7816 STAMP=1188502291 file name=/u01/DUMP/test/JDBD_PITR_ORADB/datafile/o1_mf_soetbs_mpm7mjqf_.dbf

contents of Memory Script:

{

set requested point in time

set until time "TO_DATE('2024-12-23 19:22:44', 'YYYY-MM-DD HH24:MI:SS')";

online the datafiles restored or switched

sql clone "alter database datafile 5 online";

recover and open resetlogs

recover clone database tablespace "SOETBS", "SYSTEM", "UNDOTBS1", "SYSAUX" delete archivelog;

alter clone database open resetlogs;

}

executing Memory Script

executing command: SET until clause

sql statement: alter database datafile 5 online

Starting recover at 2024-12-23:19:31:32

using channel ORA_AUX_DISK_1

starting media recovery

archived log for thread 1 with sequence 63 is already on disk as file /u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_63_mpm6z8bj_.arc

archived log for thread 1 with sequence 64 is already on disk as file /u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_64_mpm741xk_.arc

archived log file name=/u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_63_mpm6z8bj_.arc thread=1 sequence=63

archived log file name=/u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_64_mpm741xk_.arc thread=1 sequence=64

media recovery complete, elapsed time: 00:00:01

Finished recover at 2024-12-23:19:31:33

database opened

contents of Memory Script:

{

create directory for datapump import

sql "create or replace directory TSPITR_DIROBJ_DPDIR as ''

/u01/DUMP/test''";

create directory for datapump export

sql clone "create or replace directory TSPITR_DIROBJ_DPDIR as ''

/u01/DUMP/test''";

}

executing Memory Script

sql statement: create or replace directory TSPITR_DIROBJ_DPDIR as ''/u01/DUMP/test''

sql statement: create or replace directory TSPITR_DIROBJ_DPDIR as ''/u01/DUMP/test''

Performing export of tables...

EXPDP> Starting "SYS"."TSPITR_EXP_jdbd_jydk":

EXPDP> Processing object type TABLE_EXPORT/TABLE/TABLE_DATA

EXPDP> Processing object type TABLE_EXPORT/TABLE/STATISTICS/TABLE_STATISTICS

EXPDP> Processing object type TABLE_EXPORT/TABLE/STATISTICS/MARKER

EXPDP> Processing object type TABLE_EXPORT/TABLE/TABLE

EXPDP> . . exported "SOE"."ADDRESSES" 1.360 MB 18740 rows

EXPDP> Master table "SYS"."TSPITR_EXP_jdbd_jydk" successfully loaded/unloaded

EXPDP>

****

EXPDP> Dump file set for SYS.TSPITR_EXP_jdbd_jydk is:

EXPDP> /u01/DUMP/test/tspitr_jdbd_67168.dmp

EXPDP> Job "SYS"."TSPITR_EXP_jdbd_jydk" successfully completed at Mon Dec 23 19:31:49 2024 elapsed 0 00:00:11

Export completed

contents of Memory Script:

{

shutdown clone before import

shutdown clone abort

}

executing Memory Script

Oracle instance shut down

Performing import of tables...

IMPDP> Master table "SYS"."TSPITR_IMP_jdbd_gaEi" successfully loaded/unloaded

IMPDP> Starting "SYS"."TSPITR_IMP_jdbd_gaEi":

IMPDP> Processing object type TABLE_EXPORT/TABLE/TABLE

IMPDP> ORA-39083: Object type TABLE:"KHALED"."ADDRESSES_NEW" failed to create with error:

ORA-01950: no privileges on tablespace 'SOETBS'

Failing sql is:

CREATE TABLE "KHALED"."ADDRESSES_NEW" ("ADDRESS_ID" NUMBER(12,0) CONSTRAINT "ADDRESS_ID_NN" NOT NULL ENABLE, "CUSTOMER_ID" NUMBER(12,0) CONSTRAINT "ADDRESS_CUST_ID_NN" NOT NULL ENABLE, "DATE_CREATED" DATE CONSTRAINT "ADDRESS_DATEC_NN" NOT NULL ENABLE, "HOUSE_NO_OR_NAME" VARCHAR2(60 BYTE), "STREET_NAME" VARCHAR2(60 BYTE), "TOWN" VARCHAR2(60 BYTE), "COUNTY" VARCHAR2(60 BYTE), "COUNTRY" VARCHAR2(60 BYTE), "POST_CODE" VARCHAR2(12 BYTE), "ZIP_CODE" VARCHAR2(12 BYTE)) SEGMENT CREATION IMMEDIATE PCTFREE 10 PCTUSED 40 INITRANS 16 MAXTRANS 255 NOCOMPRESS LOGGING STORAGE(INITIAL 8388608 NEXT 8388608 MINEXTENTS 1 MAXEXTENTS 2147483645 PCTINCREASE 0 FREELISTS 1 FREELIST GROUPS 1 BUFFER_POOL DEFAULT FLASH_CACHE DEFAULT CELL_FLASH_CACHE DEFAULT) TABLESPACE "SOETBS"

IMPDP> Processing object type TABLE_EXPORT/TABLE/TABLE_DATA

IMPDP> Processing object type TABLE_EXPORT/TABLE/STATISTICS/TABLE_STATISTICS

IMPDP> Processing object type TABLE_EXPORT/TABLE/STATISTICS/MARKER

IMPDP> Job "SYS"."TSPITR_IMP_jdbd_gaEi" completed with 1 error(s) at Mon Dec 23 19:31:52 2024 elapsed 0 00:00:01

import completed with errors; Oracle Data Pump dump file tspitr_jdbd_67168.dmp is retained

Removing automatic instance

Automatic instance removed

auxiliary instance file /u01/DUMP/test/ORADB/datafile/o1_mf_temp_mpm7kyxx_.tmp deleted

auxiliary instance file /u01/DUMP/test/JDBD_PITR_ORADB/onlinelog/o1_mf_3_mpm7mok6_.log deleted

auxiliary instance file /u01/DUMP/test/JDBD_PITR_ORADB/onlinelog/o1_mf_2_mpm7mojv_.log deleted

auxiliary instance file /u01/DUMP/test/JDBD_PITR_ORADB/onlinelog/o1_mf_1_mpm7mojd_.log deleted

auxiliary instance file /u01/DUMP/test/JDBD_PITR_ORADB/datafile/o1_mf_soetbs_mpm7mjqf_.dbf deleted

auxiliary instance file /u01/DUMP/test/ORADB/datafile/o1_mf_sysaux_mpm7ko3p_.dbf deleted

auxiliary instance file /u01/DUMP/test/ORADB/datafile/o1_mf_undotbs1_mpm7ko3s_.dbf deleted

auxiliary instance file /u01/DUMP/test/ORADB/datafile/o1_mf_system_mpm7ko3o_.dbf deleted

auxiliary instance file /u01/DUMP/test/ORADB/controlfile/o1_mf_mpm7kh9p_.ctl deleted

Finished recover at 2024-12-23:19:31:53

RMAN>

```
RMAN> run {
SET AUXILIARY INSTANCE PARAMETER FILE TO '/u01/backup/restore_table/initaux.ora';
  RECOVER TABLE SOE.ADDRESSES
  UNTIL TIME "TO_DATE('2024-12-23 19:22:44', 'YYYY-MM-DD HH24:MI:SS')"
  AUXILIARY DESTINATION '/u01/DUMP/test'
  REMAP TABLE 'SOE'.'ADDRESSES':'KHALED'.'ADDRESSES_NEW';
}
2> 3> 4> 5> 6> 7>
executing command: SET auxiliary parameter file
```

Starting recover at 2024-12-23:19:39:56

using channel ORA_DISK_1

RMAN-05026: warning: presuming following set of tablespaces applies to specified point-in-time

List of tablespaces expected to have UNDO segments

Tablespace SYSTEM

Tablespace UNDOTBS1

Creating automatic instance, with SID='wopE'

using contents of file /u01/backup/restore_table/initaux.ora

initialization parameters used for automatic instance:

db_name=ORADB

db_unique_name=wopE_pitr_ORADB

compatible=12.2.0

db_block_size=8192

db_files=200

diagnostic_dest=/u01/app/oracle

_system_trig_enabled=FALSE

sga_target=1664M

processes=200

db_create_file_dest=/u01/DUMP/test

log_archive_dest_1='location=/u01/DUMP/test'

ifile=/u01/backup/restore_table/initaux.ora

starting up automatic instance ORADB

Oracle instance started

Total System Global Area 2147483648 bytes

Fixed Size 8622776 bytes

Variable Size 520097096 bytes

Database Buffers 1610612736 bytes

Redo Buffers 8151040 bytes

Automatic instance created

contents of Memory Script:

{

set requested point in time

set until time "TO_DATE('2024-12-23 19:22:44', 'YYYY-MM-DD HH24:MI:SS')";

restore the controlfile

restore clone controlfile;

mount the controlfile

sql clone 'alter database mount clone database';

archive current online log

sql 'alter system archive log current';

}

executing Memory Script

executing command: SET until clause

Starting restore at 2024-12-23:19:40:04

allocated channel: ORA_AUX_DISK_1

channel ORA_AUX_DISK_1: SID=244 device type=DISK

channel ORA_AUX_DISK_1: starting datafile backup set restore

channel ORA_AUX_DISK_1: restoring control file

channel ORA_AUX_DISK_1: reading from backup piece
/u01/app/oracle/fra/ORADB/ORADB/autobackup/2024_12_23/o1_mf_s_1188501641_mp
m6z9k0_.bkp

channel ORA_AUX_DISK_1: piece
handle=/u01/app/oracle/fra/ORADB/ORADB/autobackup/2024_12_23/o1_mf_s_11885016
41_mpm6z9k0_.bkp tag=TAG20241223T192041

channel ORA_AUX_DISK_1: restored backup piece 1

channel ORA_AUX_DISK_1: restore complete, elapsed time: 00:00:01

output file name=/u01/DUMP/test/ORADB/controlfile/o1_mf_mpm83o75_.ctl

Finished restore at 2024-12-23:19:40:06

sql statement: alter database mount clone database

sql statement: alter system archive log current

contents of Memory Script:

{

set requested point in time

set until time "TO_DATE('2024-12-23 19:22:44', 'YYYY-MM-DD HH24:MI:SS')";

```
# set destinations for recovery set and auxiliary set datafiles
set newname for clone datafile  1 to new;
set newname for clone datafile  4 to new;
set newname for clone datafile  3 to new;
set newname for clone tempfile  1 to new;
# switch all tempfiles
switch clone tempfile all;
# restore the tablespaces in the recovery set and the auxiliary set
restore clone datafile  1, 4, 3;

switch clone datafile all;
}
executing Memory Script

executing command: SET until clause

executing command: SET NEWNAME

executing command: SET NEWNAME

executing command: SET NEWNAME

executing command: SET NEWNAME

renamed tempfile 1 to /u01/DUMP/test/ORADB/datafile/o1_mf_temp_%u_.tmp in control
file
```

Starting restore at 2024-12-23:19:40:10

using channel ORA_AUX_DISK_1

channel ORA_AUX_DISK_1: starting datafile backup set restore

channel ORA_AUX_DISK_1: specifying datafile(s) to restore from backup set

channel ORA_AUX_DISK_1: restoring datafile 00001 to
/u01/DUMP/test/ORADB/datafile/o1_mf_system_%u_.dbf

channel ORA_AUX_DISK_1: restoring datafile 00004 to
/u01/DUMP/test/ORADB/datafile/o1_mf_undotbs1_%u_.dbf

channel ORA_AUX_DISK_1: restoring datafile 00003 to
/u01/DUMP/test/ORADB/datafile/o1_mf_sysaux_%u_.dbf

channel ORA_AUX_DISK_1: reading from backup piece
/u01/app/oracle/fra/ORADB/ORADB/backupset/2024_12_23/o1_mf_nnndf_TAG20241223
T192033_mpm6z19z_.bkp

channel ORA_AUX_DISK_1: piece
handle=/u01/app/oracle/fra/ORADB/ORADB/backupset/2024_12_23/o1_mf_nnndf_TAG20
241223T192033_mpm6z19z_.bkp tag=TAG20241223T192033

channel ORA_AUX_DISK_1: restored backup piece 1

channel ORA_AUX_DISK_1: restore complete, elapsed time: 00:00:07

Finished restore at 2024-12-23:19:40:18

datafile 1 switched to datafile copy

input datafile copy RECID=7812 STAMP=1188502818 file
name=/u01/DUMP/test/ORADB/datafile/o1_mf_system_mpm83v2o_.dbf

datafile 4 switched to datafile copy

input datafile copy RECID=7813 STAMP=1188502818 file
name=/u01/DUMP/test/ORADB/datafile/o1_mf_undotbs1_mpm83v2s_.dbf

datafile 3 switched to datafile copy

input datafile copy RECID=7814 STAMP=1188502818 file
name=/u01/DUMP/test/ORADB/datafile/o1_mf_sysaux_mpm83v2p_.dbf

contents of Memory Script:

{

set requested point in time

set until time "TO_DATE('2024-12-23 19:22:44', 'YYYY-MM-DD HH24:MI:SS')";

online the datafiles restored or switched

sql clone "alter database datafile 1 online";

sql clone "alter database datafile 4 online";

sql clone "alter database datafile 3 online";

recover and open database read only

recover clone database tablespace "SYSTEM", "UNDOTBS1", "SYSAUX";

sql clone 'alter database open read only';

}

executing Memory Script

executing command: SET until clause

sql statement: alter database datafile 1 online

sql statement: alter database datafile 4 online

sql statement: alter database datafile 3 online

Starting recover at 2024-12-23:19:40:18

using channel ORA_AUX_DISK_1

starting media recovery

archived log for thread 1 with sequence 63 is already on disk as file /u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_63_mpm6z8bj_.arc

archived log for thread 1 with sequence 64 is already on disk as file /u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_64_mpm741xk_.arc

archived log file name=/u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_63_mpm6z8bj_.arc thread=1 sequence=63

archived log file name=/u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_64_mpm741xk_.arc thread=1 sequence=64

media recovery complete, elapsed time: 00:00:01

Finished recover at 2024-12-23:19:40:20

sql statement: alter database open read only

contents of Memory Script:

```
{
  sql clone "create spfile from memory";
  shutdown clone immediate;
  startup clone nomount;
  sql clone "alter system set  control_files =
  ''/u01/DUMP/test/ORADB/controlfile/o1_mf_mpm83o75_.ctl'' comment=
 ''RMAN set'' scope=spfile";
  shutdown clone immediate;
  startup clone nomount;
# mount database
sql clone 'alter database mount clone database';
}
```

executing Memory Script

sql statement: create spfile from memory

database closed

database dismounted

Oracle instance shut down

connected to auxiliary database (not started)

Oracle instance started

Total System Global Area 2147483648 bytes

Fixed Size 8622776 bytes

Variable Size 520097096 bytes

Database Buffers 1610612736 bytes

Redo Buffers 8151040 bytes

sql statement: alter system set control_files =
''/u01/DUMP/test/ORADB/controlfile/o1_mf_mpm83o75_.ctl'' comment= ''RMAN set''
scope=spfile

Oracle instance shut down

connected to auxiliary database (not started)

Oracle instance started

Total System Global Area 2147483648 bytes

Fixed Size 8622776 bytes

Variable Size 520097096 bytes

Database Buffers 1610612736 bytes

Redo Buffers 8151040 bytes

sql statement: alter database mount clone database

contents of Memory Script:

{

set requested point in time

set until time "TO_DATE('2024-12-23 19:22:44', 'YYYY-MM-DD HH24:MI:SS')";

set destinations for recovery set and auxiliary set datafiles

set newname for datafile 5 to new;

restore the tablespaces in the recovery set and the auxiliary set

restore clone datafile 5;

switch clone datafile all;

}

executing Memory Script

executing command: SET until clause

executing command: SET NEWNAME

Starting restore at 2024-12-23:19:41:10

allocated channel: ORA_AUX_DISK_1

channel ORA_AUX_DISK_1: SID=244 device type=DISK

channel ORA_AUX_DISK_1: starting datafile backup set restore

channel ORA_AUX_DISK_1: specifying datafile(s) to restore from backup set

channel ORA_AUX_DISK_1: restoring datafile 00005 to /u01/DUMP/test/WOPE_PITR_ORADB/datafile/o1_mf_soetbs_%u_.dbf

channel ORA_AUX_DISK_1: reading from backup piece /u01/app/oracle/fra/ORADB/ORADB/backupset/2024_12_23/o1_mf_nnndf_TAG20241223T192033_mpm6z19z_.bkp

channel ORA_AUX_DISK_1: piece handle=/u01/app/oracle/fra/ORADB/ORADB/backupset/2024_12_23/o1_mf_nnndf_TAG20241223T192033_mpm6z19z_.bkp tag=TAG20241223T192033

channel ORA_AUX_DISK_1: restored backup piece 1

channel ORA_AUX_DISK_1: restore complete, elapsed time: 00:00:03

Finished restore at 2024-12-23:19:41:14

datafile 5 switched to datafile copy

input datafile copy RECID=7816 STAMP=1188502874 file name=/u01/DUMP/test/WOPE_PITR_ORADB/datafile/o1_mf_soetbs_mpm85q55_.dbf

contents of Memory Script:

{

set requested point in time

set until time "TO_DATE('2024-12-23 19:22:44', 'YYYY-MM-DD HH24:MI:SS')";

online the datafiles restored or switched

sql clone "alter database datafile 5 online";

recover and open resetlogs

recover clone database tablespace "SOETBS", "SYSTEM", "UNDOTBS1", "SYSAUX" delete archivelog;

alter clone database open resetlogs;

}

executing Memory Script

executing command: SET until clause

sql statement: alter database datafile 5 online

Starting recover at 2024-12-23:19:41:14

using channel ORA_AUX_DISK_1

starting media recovery

archived log for thread 1 with sequence 63 is already on disk as file /u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_63_mpm6z8bj_.arc

archived log for thread 1 with sequence 64 is already on disk as file /u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_64_mpm741xk_.arc

archived log file name=/u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_63_mpm6z8bj_.arc thread=1 sequence=63

archived log file name=/u01/app/oracle/fra/ORADB/ORADB/archivelog/2024_12_23/o1_mf_1_64_mpm741xk_.arc thread=1 sequence=64

media recovery complete, elapsed time: 00:00:00

Finished recover at 2024-12-23:19:41:15

database opened

contents of Memory Script:

```
{
# create directory for datapump import
sql "create or replace directory TSPITR_DIROBJ_DPDIR as ''
/u01/DUMP/test''";
# create directory for datapump export
sql clone "create or replace directory TSPITR_DIROBJ_DPDIR as ''
/u01/DUMP/test''";
}
executing Memory Script

sql statement: create or replace directory TSPITR_DIROBJ_DPDIR as ''/u01/DUMP/test''

sql statement: create or replace directory TSPITR_DIROBJ_DPDIR as ''/u01/DUMP/test''

Performing export of tables...
  EXPDP> Starting "SYS"."TSPITR_EXP_wopE_xesf":
  EXPDP> Processing object type TABLE_EXPORT/TABLE/TABLE_DATA
  EXPDP> Processing object type TABLE_EXPORT/TABLE/STATISTICS/TABLE_STATISTICS
  EXPDP> Processing object type TABLE_EXPORT/TABLE/STATISTICS/MARKER
  EXPDP> Processing object type TABLE_EXPORT/TABLE/TABLE
  EXPDP> . . exported "SOE"."ADDRESSES"                    1.360 MB   18740 rows
  EXPDP> Master table "SYS"."TSPITR_EXP_wopE_xesf" successfully loaded/unloaded
  EXPDP>
*****************************************************************************
  EXPDP> Dump file set for SYS.TSPITR_EXP_wopE_xesf is:
  EXPDP>   /u01/DUMP/test/tspitr_wopE_28995.dmp
  EXPDP> Job "SYS"."TSPITR_EXP_wopE_xesf" successfully completed at Mon Dec 23
19:41:31 2024 elapsed 0 00:00:11
```

Export completed

contents of Memory Script:

{

shutdown clone before import

shutdown clone abort

}

executing Memory Script

Oracle instance shut down

Performing import of tables...

IMPDP> Master table "SYS"."TSPITR_IMP_wopE_tlnd" successfully loaded/unloaded

IMPDP> Starting "SYS"."TSPITR_IMP_wopE_tlnd":

IMPDP> Processing object type TABLE_EXPORT/TABLE/TABLE

IMPDP> Processing object type TABLE_EXPORT/TABLE/TABLE_DATA

IMPDP> . . imported "KHALED"."ADDRESSES_NEW" 1.360 MB 18740 rows

IMPDP> Processing object type TABLE_EXPORT/TABLE/STATISTICS/TABLE_STATISTICS

IMPDP> Processing object type TABLE_EXPORT/TABLE/STATISTICS/MARKER

IMPDP> Job "SYS"."TSPITR_IMP_wopE_tlnd" successfully completed at Mon Dec 23 19:41:40 2024 elapsed 0 00:00:07

Import completed

Removing automatic instance

Automatic instance removed

auxiliary instance file /u01/DUMP/test/ORADB/datafile/o1_mf_temp_mpm8447x_.tmp deleted

auxiliary instance file /u01/DUMP/test/WOPE_PITR_ORADB/onlinelog/o1_mf_3_mpm85vpf_.log deleted

auxiliary instance file /u01/DUMP/test/WOPE_PITR_ORADB/onlinelog/o1_mf_2_mpm85vp3_.log deleted

auxiliary instance file /u01/DUMP/test/WOPE_PITR_ORADB/onlinelog/o1_mf_1_mpm85vod_.log deleted

auxiliary instance file /u01/DUMP/test/WOPE_PITR_ORADB/datafile/o1_mf_soetbs_mpm85q55_.dbf deleted

auxiliary instance file /u01/DUMP/test/ORADB/datafile/o1_mf_sysaux_mpm83v2p_.dbf deleted

auxiliary instance file /u01/DUMP/test/ORADB/datafile/o1_mf_undotbs1_mpm83v2s_.dbf deleted

auxiliary instance file /u01/DUMP/test/ORADB/datafile/o1_mf_system_mpm83v2o_.dbf deleted

auxiliary instance file /u01/DUMP/test/ORADB/controlfile/o1_mf_mpm83o75_.ctl deleted

auxiliary instance file tspitr_wopE_28995.dmp deleted

Finished recover at 2024-12-23:19:41:41

RMAN>

RMAN>