

ORACLE 19C Table Recovery

- ❖ Recover One Table from an RMAN backup.
- ❖ Recover Table using FLASHBACK_TIME EXPDP

a) Recover One Table from an RMAN backup.

- This Document explains how to do a restore of one table in a pluggable database.

- 1.) Create a table for that user.
- 2.) Take a backup
- 3.) Drop the table.
- 4.) Restore the table.
- 5.) Check that the table has been restored.

1) Create table

Create table APPUSER.RECOTABLE(id number);

```
SQL> create table APPUSER.RECOTABLE(id number);  
Table created.
```

- **Inserting data**

```
begin  
for i in 1 .. 100000 loop  
insert into APPUSER.RECOTABLE values(i);  
end loop;  
end;  
/
```

```
SQL> begin  
for i in 1 .. 100000 loop  
insert into APPUSER.RECOTABLE values(i);  
end loop;  
end;  
/ 2 3 4 5 6  
PL/SQL procedure successfully completed.  
SQL> select count(1) from APPUSER.RECOTABLE;  
  
COUNT(1)  
-----  
100000
```

➤ select to_char(sysdate,'mm/dd/yyyy hh24:mi:ss') current_time from dual;

```
select to_char(sysdate,'mm/dd/yyyy hh24:mi:ss') current_time from dual;SQL>

CURRENT_TIME
-----
05/03/2024 06:39:40
```

2) Take a backup

Rman> run

```
{
allocate channel c1 type disk;
BACKUP PLUGGABLE DATABASE PRODPDB plus archivelog;
release channel c1;
}
```

```
RMAN> run
{
allocate channel c1 type disk;
BACKUP DATABASE plus archivelog;
release channel c1;
}2> 3> 4> 5> 6>

using target database control file instead of recovery catalog
allocated channel: c1
channel c1: SID=285 device type=DISK

Starting backup at 03-MAY-24
current log archived
channel c1: starting archived log backup set
channel c1: specifying archived log(s) in backup set
input archived log thread=1 sequence=8 RECID=24 STAMP=1163984386
input archived log thread=1 sequence=9 RECID=26 STAMP=1167973587
input archived log thread=1 sequence=10 RECID=29 STAMP=1167976040
input archived log thread=1 sequence=11 RECID=30 STAMP=1167976515
input archived log thread=1 sequence=12 RECID=35 STAMP=1167976579
```

```
channel c1: starting piece 1 at 03-MAY-24
channel c1: finished piece 1 at 03-MAY-24
piece handle=/oracle/app/oracle/product/19.0.0/db_home/dbs/3e2prrie_1_1 tag=TAG20240503T062102 comment=NONE
channel c1: backup set complete, elapsed time: 00:00:01
Finished backup at 03-MAY-24
```

```
Starting Control File and SPFILE Autobackup at 03-MAY-24
piece handle=+DATA/DRCDB/AUTOBACKUP/2024_05_03/s_1167978063.327.1167978065 comment=NONE
Finished Control File and SPFILE Autobackup at 03-MAY-24
```

released channel: c1

RMAN> █

3) Drop the Table

drop table APPUSER.RECOTABLE;

```
SQL> drop table APPUSER.RECOTABLE;

Table dropped.

SQL> select count(1) from APPUSER.RECOTABLE;
select count(1) from APPUSER.RECOTABLE
*
ERROR at line 1:
ORA-00942: table or view does not exist
```

4) Recover Table using RMAN.

Rman> recover table APPUSER.RECOTABLE of pluggable database PRODPDB until time "to_date('05/03/2024 06:39:40','mm/dd/yyyy hh24:mi:ss')" auxiliary destination '/oracle/recover';

```
[oracle@node2 dbs]$ rman target /

Recovery Manager: Release 19.0.0.0.0 - Production on Fri May 3 06:44:13 2024
Version 19.3.0.0.0

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connected to target database: PRODCDB (DBID=3155342655)

RMAN> recover table APPUSER.RECOTABLE of pluggable database PRODPDB until time "to_date('05/03/2024 06:39:40','mm/dd/yyyy hh24:mi:ss')" auxiliary destination '/oracle/recover';

Starting recover at 03-MAY-24
using target database control file instead of recovery catalog
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=240 device type=DISK
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 PRODPDB:SYSTEM
Tablespace UNDOTBS1
Tablespace PRODPDB:UNDOTBS1

Creating automatic instance, with SID='Ezey'

Initialization parameters used for automatic instance:

Performing import of tables...
IMPDP> Master table "SYS"."TSPITR_IMP_Ezey_bhxr" successfully loaded/unloaded
IMPDP> Starting "SYS"."TSPITR_IMP_Ezey_bhxr":
IMPDP> Processing object type TABLE_EXPORT/TABLE/TABLE
IMPDP> Processing object type TABLE_EXPORT/TABLE/TABLE_DATA
IMPDP> .. imported "APPUSER"."RECOTABLE" 873.1 KB 100000 rows
IMPDP> Processing object type TABLE_EXPORT/TABLE/STATISTICS/TABLE_STATISTICS
IMPDP> Job "SYS"."TSPITR_IMP_Ezey_bhxr" successfully completed at Fri May 3 06:54:42 2024 elapsed 0 00:00:07
Import completed

Removing automatic instance
Automatic instance removed
auxiliary instance file /oracle/recover/DRCDB/0E027907651251AAE0636F00A8C066BA/datafile/ol_mf_temp_m39j7gvd_.tmp deleted
auxiliary instance file /oracle/recover/DRCDB/datafile/ol_mf_temp_m39j6w0b_.tmp deleted
auxiliary instance file /oracle/recover/EZEY_PITR_PRODPDB PRODCDB/online/ol_mf_3_m39jbr2j_.log deleted
auxiliary instance file /oracle/recover/EZEY_PITR_PRODPDB PRODCDB/online/ol_mf_2_m39jbr26_.log deleted
auxiliary instance file /oracle/recover/EZEY_PITR_PRODPDB PRODCDB/online/ol_mf_1_m39jbrlv_.log deleted
auxiliary instance file /oracle/recover/EZEY_PITR_PRODPDB PRODCDB/0E027907651251AAE0636F00A8C066BA/datafile/ol_mf_users_m39jbhbsb_.dbf deleted
auxiliary instance file /oracle/recover/DRCDB/0E027907651251AAE0636F00A8C066BA/datafile/ol_mf_sysaux_m39j4tg4_.dbf deleted
auxiliary instance file /oracle/recover/DRCDB/datafile/ol_mf_sysaux_m39jltqr_.dbf deleted
auxiliary instance file /oracle/recover/DRCDB/0E027907651251AAE0636F00A8C066BA/datafile/ol_mf_undotbs1_m39j4tqh_.dbf deleted
auxiliary instance file /oracle/recover/DRCDB/datafile/ol_mf_undotbs1_m39jltqr_.dbf deleted
auxiliary instance file /oracle/recover/DRCDB/0E027907651251AAE0636F00A8C066BA/datafile/ol_mf_system_m39j4tpr_.dbf deleted
auxiliary instance file /oracle/recover/DRCDB/datafile/ol_mf_system_m39jltqr_.dbf deleted
auxiliary instance file /oracle/recover/DRCDB/controlfile/ol_mf_m39jltqr_.ctl deleted
auxiliary instance file tspitr_Ezey_21893.dmp deleted
Finished recover at 03-MAY-24
```

5) Check that the table has been restored.

```

SQL> show pdbs

      CON_ID CON_NAME                                OPEN MODE  RESTRICTED
-----
          3 PRODPDB                                READ WRITE NO

SQL>
SQL>
SQL>
SQL> select count(1) from APPUSER.RECOTABLE;

      COUNT(1)
-----
      100000

SQL> select to_char(sysdate,'mm/dd/yyyy hh24:mi:ss') current_time from dual;

CURRENT_TIME
-----
05/03/2024 06:58:36

```

Table Recoverd successfully.

> RMAN performs a series of steps while automating the process of recovering tables from an RMAN backup

- 1.Determines which backup contains the tables or table partitions that need to be recovered, based on the point in time specified for the recovery.
- 2.Determines if there is sufficient space on the target host to create the auxiliary instance
- 3.Creates an auxiliary database on the target host and recovers the specified tables or table partitions, until the specified point in time, into this auxiliary database.
- 4.Creates a Data Pump export dump file that contains the recovered tables or table partitions.
- 5.(Optional) Imports the Data Pump export dump file into the target instance.
- 6.(Optional) Renames the recovered tables or table partitions in the target database.

b) Recover Table using FLASHBACK_TIME EXPDP .

Table “RECOTABLE” having values in “ID” column from 1 to 1,00,000

So, the total row count and distinct count is same (1,00,000).

```

SQL> select count(distinct(ID)) from APPUSER.RECOTABLE;

COUNT (DISTINCT (ID) )
-----
      100000

SQL> select count(ID) from APPUSER.RECOTABLE;

COUNT (ID)
-----
      100000

```

1. Wrong Update

Let's assume we mistakenly update the table without where conditions.

```
update APPUSER.RECOTABLE set ID=0;
```

```
SQL> desc APPUSER.RECOTABLE
Name                                     Null?      Type
-----
ID                                     NUMBER
SQL>
SQL>
SQL>
SQL> update APPUSER.RECOTABLE set ID=0;
100000 rows updated.
```

Now, all 'ID' values changed to '0'.

2. Check table data

```
select count(distinct(ID)) from APPUSER.RECOTABLE;
```

```
select count(ID) from APPUSER.RECOTABLE;
```

```
SQL> select count(distinct(ID)) from APPUSER.RECOTABLE;

COUNT (DISTINCT (ID) )
-----
1

SQL> select count(ID) from APPUSER.RECOTABLE;

COUNT (ID)
-----
100000
```

```
select to_char(sysdate,'mm/dd/yyyy hh24:mi:ss') current_time from dual;
```

```
SQL> select to_char(sysdate,'mm/dd/yyyy hh24:mi:ss') current_time from dual;

CURRENT_TIME
-----
05/03/2024 07:20:25
```

3. Create Export File

We need to take export backup of table RECOTABLE before incident time .

vi reco.par

dumpfile=reco_exp.dmp

logfile=reco_exp.log

directory=datapump

tables=APPUSER.RECOTABLE

FLASHBACK_TIME="TO_TIMESTAMP('03-05-2024 07:15:00', 'DD-MM-YYYY HH24:MI:SS')"

4. Start The Export :

```
[oracle@node2 datapump]$ expdp parfile=reco.par

Export: Release 19.0.0.0.0 - Production on Fri May 3 07:36:34 2024
Version 19.3.0.0.0

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Username: / as sysdba
Password:

Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Starting "SYS"."SYS_EXPORT_TABLE_01": /***** AS SYSDBA parfile=reco.par
Processing object type TABLE_EXPORT/TABLE/TABLE_DATA
Processing object type TABLE_EXPORT/TABLE/STATISTICS/TABLE_STATISTICS
Processing object type TABLE_EXPORT/TABLE/STATISTICS/MARKER
Processing object type TABLE_EXPORT/TABLE/TABLE
. . exported "APPUSER"."RECOTABLE"                        873.1 KB  100000 rows
Master table "SYS"."SYS_EXPORT_TABLE_01" successfully loaded/unloaded
*****
Dump file set for SYS.SYS_EXPORT_TABLE_01 is:
/home/oracle/datapump/reco_exp.dmp
Job "SYS"."SYS_EXPORT_TABLE_01" successfully completed at Fri May 3 07:36:55 2024 elapsed 0 00:00:10
```

Export completed.

5. Start Import

impdp \'/ as sysdba\' directory=datapump dumpfile=reco_exp.dmp logfile=reco_imp.log
remap_schema=APPUSER:APPUSER remap_table=RECOTABLE:RECOTABLE_ORG

```
[oracle@node2 datapump]$ impdp \'/ as sysdba\' directory=datapump dumpfile=reco_exp.dmp logfile=reco_imp.log remap_schema=APPUSER:APPUSER remap_table=RECOTABLE:RECOTABLE_ORG

Import: Release 19.0.0.0.0 - Production on Fri May 3 07:38:11 2024
Version 19.3.0.0.0

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Password:

Connected to: Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Master table "SYS"."SYS_IMPORT_FULL_01" successfully loaded/unloaded
Starting "SYS"."SYS_IMPORT_FULL_01": /***** AS SYSDBA" directory=datapump dumpfile=reco_exp.dmp logfile=reco_imp.log remap_schema=APPUSER:APPUSER remap_table=RECOTABLE:RECOTABLE_ORG
Processing object type TABLE_EXPORT/TABLE/TABLE
Processing object type TABLE_EXPORT/TABLE/TABLE DATA
. . imported "APPUSER"."RECOTABLE_ORG"                        873.1 KB  100000 rows
Processing object type TABLE_EXPORT/TABLE/STATISTICS/TABLE_STATISTICS
Processing object type TABLE_EXPORT/TABLE/STATISTICS/MARKER
Job "SYS"."SYS_IMPORT_FULL_01" successfully completed at Fri May 3 07:38:32 2024 elapsed 0 00:00:17
```

Import Completed successfully.

6. Check the data.

Here , We have imported all the data(before incident) into new table RECOTABLE_ORG

```
SQL> select count(distinct(ID)) from APPUSER.RECOTABLE;

COUNT(DISTINCT(ID))
-----
1

SQL> select count(ID) from APPUSER.RECOTABLE;

COUNT (ID)
-----
100000

SQL> select count(distinct(ID)) from APPUSER.RECOTABLE_ORG;

COUNT(DISTINCT(ID))
-----
100000

SQL> select count(ID) from APPUSER.RECOTABLE_ORG;

COUNT (ID)
-----
100000
```

Now, we can perform rename activity with newly created table "RECOTABLE_ORG" having previous data.

Note: This method applicable for small size table and also needs enough undo retention and undo size.

Successfully recovered table using EXPDP-IMPDP

===== END =====

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