053

(

flashback

RMAN

RMAN

RMAN

RMAN

RMAN

Oracle

Oracle

Oracle

AWR

Oracle

Oracle Linux RMAN CATALOG

1.1 :

1

2 MTBF:

3 MTTR:

1.2

1 user process failure pmon

2 instance failure: smon

3 user errors dba

4 media failure

1.3

1

2

1.4

1.4.1 -- object

1 exp/imp

2 expdp/impdp

// media failure

recover

1.4.2 -- media failure

1 OS

2 oracle rman

ASM FILE

//

//

1.4.3 --

undo

11g flashback

1.5

media failure recover

1 datafile failure

commit

2 database SCN

1.6

redo log archive log

archive log, redo log

RMAN RMAN

: yes yes yes yes yes yes yes

yes no yes no yes no no

*

1

2

3 ,RMAN

2.1

1 OS linux cp

2 sqlplus :recover

2.2 :

v$datafile\v$datafile_header\v$controlfile\v$logfile\dba_tablespaces\dba_data_files

1)

```
SQL> select name from v$datafile;
SQL> select file_id,file_name,tablespace_name from dba_data_files;
```

2

```
SQL> select name from v$controlfile;
```

3 redo

2.3 v$backup

NOARCHIVE

1 backup mode(backup

begin backup scn

scn

SQL> alter database begin backup; //
SQL> alter database end backup;

SQL> alter tablespace users begin backup; //
SQL> alter tablespace users end backup;

2 v$backup

SQL> alter tablespace test begin backup;

SQL> select file#,checkpoint change# from v$datafile header;

```
    FILE# CHECKPOINT_CHANGE#
--------- ------------------
        1            2414314
        2            2414314
        3            2414314
        4            2414314
        5            2414314
        6            2430480            //              scn
        7            2414314
```

SQL> select * from v$backup;

```
     FILE# STATUS                CHANGE# TIME
---------- ------------------ ---------- -------------------
         1 NOT ACTIVE                  0
         2 NOT ACTIVE                  0
         3 NOT ACTIVE                  0
         4 NOT ACTIVE                  0
         5 NOT ACTIVE                  0
         6 ACTIVE                2430480  2012-07-30 11:07:19
         7 NOT ACTIVE                  0
```

STATUS ACTIVE DBWN

$cp test01.dbf test01.bak

end backup

```
SQL> alter tablespace test end backup;

SQL> select * from v$backup;

     FILE# STATUS                 CHANGE# TIME
---------- ------------------ ---------- ------------------
         1 NOT ACTIVE                  0
         2 NOT ACTIVE                  0
         3 NOT ACTIVE                  0
         4 NOT ACTIVE                  0
         5 NOT ACTIVE                  0
         6 NOT ACTIVE            2430480 2012-07-30 11:07:19
         7 NOT ACTIVE                  0
```

end backup abort, mount end backup

split block

Oracle block OS block, OS cp Oracle block OS block Oracle DBWR Oracle block( ) OS Oracle Block DBWR Header block foot block cp Oracle blcok split block

oracle block split , Oracle backup mode DBWR redo buffer cp split block oracle block

*

2.4 dbv

datafile

[oracle@timran admin]$ dbv // help

DBVERIFY: Release 11.1.0.6.0 - Production on Mon Jul 30 11:11:07 2012

Copyright (c) 1982, 2007, Oracle. All rights reserved.

```
Keyword     Description                    (Default)
----------------------------------------------------
FILE        File to Verify                 (NONE)
START       Start Block                    (First Block of File)
END         End Block                      (Last Block of File)
BLOCKSIZE   Logical Block Size             (8192)
LOGFILE     Output Log                     (NONE)
FEEDBACK    Display Progress               (0)
PARFILE     Parameter File                 (NONE)
USERID      Username/Password              (NONE)
SEGMENT_ID  Segment ID (tsn.relfile.block) (NONE)
HIGH_SCN    Highest Block SCN To Verify    (NONE)
            (scn_wrap.scn_base OR scn)
[oracle@timran admin]$
```

datafile

```
[oracle@timran admin]$ dbv file=/u01/oradata/timran11g/users01.dbf feedback=50

DBVERIFY -            : FILE = /u01/oradata/timran11g/users01.dbf
-------

DBVERIFY -

            : 640
             (     ): 107
             (     ): 0
             (     ): 36
             (     ): 0
             (     ): 478
             (  )  : 0
             (  )  : 0
          : 19
                 : 0
          : 0
                   : 0
       SCN             : 695469 (0.695469)
```

3.1 current redo database failure commit

3.2

1 restore: OS datafile
2 recover SQL*PLUS redo

3.3

recover database datafile mount
recover tablespace
open
recover datafile mount open

open

1 system01.dbf, 2) undo tablespace 3 control file 4 current log file

3.4

1 v$recover_file datafile
2 v$recovery_log recover redo
3 v$archvied_log

3.5

mount
alter database clear logfile group < >. RMAN

3.6

: 1 datafile , 2 , 3
,

1 recover database

media failure datafile ,

sys:
SQL> select * from scott.test;

ID

1

OS

```
SQL> shutdown immediate

[oracle@timran ~] $cp /u01/oradata/timran11g/*.dbf /u01/back1
[oracle@timran ~] $cp /u01/oradata/timran11g/*.ctl /u01/back1

[oracle@timran ~] $startup

SQL> insert into scott.test values(2);
SQL> commit;
SQL> select * from scott.test;

        ID
----------
         2
         1

SQL> insert into scott.test values(3);
SQL> commit;
SQL> select * from scott.test;

        ID
----------
         2
         3
         1
```

1)

```
[oracle@timran ~]$ rm /u01/oradata/timran11g/*.dbf        //
          dbf
SQL> shutdown abort                    //          abort
ORACLE instance shut down.
```

2) database

```
SQL> startup
ORACLE instance started.

ORA-01157: cannot identify/lock data file 1 - see DBWR trace file
ORA-01110: data file 1: '/u01/oradata/timran11g/system01.dbf'
```

```
SQL>select file#,error from v$recover_file;

     FILE# ERROR
---------- -----------------------------------------------------------------
         1 FILE NOT FOUND
         2 FILE NOT FOUND
         3 FILE NOT FOUND
         4 FILE NOT FOUND
         5 FILE NOT FOUND
         6 FILE NOT FOUND
         7 FILE NOT FOUND

SQL> select file#,checkpoint_change# from v$datafile;

     FILE# CHECKPOINT_CHANGE#
---------- ------------------
         1            2436025
         2            2436025
         3            2436025
         4            2436025
         5            2436025
         6            2436025
         7            2436025

SQL> select file#,checkpoint_change# from v$datafile_header;

     FILE# CHECKPOINT_CHANGE#
---------- ------------------
         1            2414314
         2            2414314
         3            2414314
         4            2414314
         5            2414314
         6            2430480
         7            2414314
```

3) scn

// open OS

// scn scn +

[oracle@timran ~]$ cp /u01/back1/*.dbf /u01/oradata/timran11g

4) database

SQL> recover database;

5)

SQL> alter database open;

6

SQL> select * from scott.test;

```
        ID
----------
         2
         3
         1
```

2 recover tablespace database open)

datafile

Oracle

, tablespace

online , offline shutdown

tablespace datafile

1) test

SQL> select file_id,file_name,tablespace_name from dba_data_files;

```
   FILE_ID FILE_NAME                                          TABLESPACE_NAME
---------- -------------------------------------------------- ------------------
------------
         4 /u01/oradata/timran11g/users01.dbf                 USERS
         3 /u01/oradata/timran11g/sysaux01.dbf                SYSAUX
         2 /u01/oradata/timran11g/undotbs01.dbf               UNDOTBS1
         1 /u01/oradata/timran11g/system01.dbf                SYSTEM
         5 /u01/oradata/timran11g/example01.dbf               EXAMPLE
```

```
         7 /u01/oradata/timran11g/abcd01.dbf                    ABCD
         6 /u01/oradata/timran11g/test01.dbf                    TEST

SQL> conn scott/scott
Connected.
SQL> create table t1 (name char(10)) tablespace test;
SQL> insert into t1 values('a');
SQL> commit;
SQL> select * from t1;

NAME
----------
a

2                          open
[oracle@timran ~]$ rm /u01/oradata/timran11g/test01.dbf
[oracle@timran ~]$

3

SQL> alter system flush buffer_cache;    //     data buffer

SQL> conn / as sysdba              //     session              t1
buffer
Connected.

SQL> select * from scott.t1;
select * from scott.t1
*
ERROR at line 1:
ORA-01116: error in opening database file 6
ORA-01110: data file 6: '/u01/oradata/timran11g/test01.dbf'
ORA-27041: unable to open file
Linux Error: 2: No such file or directory
Additional information: 3

4       scn

SQL> select file#,checkpoint_change# from v$datafile;

     FILE# CHECKPOINT_CHANGE#
---------- ------------------
         1            3550907
         2            3550907
```

```
         3            3550907
         4            3550907
         5            3550907
         6            3550339

SQL> select file#,checkpoint_change# from v$datafile_header;

     FILE# CHECKPOINT_CHANGE#
---------- ------------------
         1            3550907
         2            3550907
         3            3550907
         4            3550907
         5            3550907
         6                  0
```

5 offline

```
SQL> alter tablespace test offline immediate;          //immediate
        Oracle
```

6 open

```
[oracle@timran ~]$ cp /u01/back1/test01.dbf /u01/oradata/timran11g
[oracle@timran ~]$
```

7 tablespace

```
SQL> recover tablespace test;
```

8 online

```
SQL> alter tablespace test online;          //                    open
```

9)

```
SQL> select * from scott.t1;

NAME
--------------------------------------------------
a
```

3 recover datafile database mount open

datafile, 2 UNDO : UNDO
mount

1

SQL> insert into scott.t1 values('b'); // t1

SQL> commit;
SQL> select * from scott.t1;

NAME
----
a
b

SQL> delete scott.t1; // t1 UNDO

2 open datafile
[oracle@timran ~]$ rm /u01/oradata/timran11g/undotbs01.dbf
[oracle@timran ~]$

3
SQL> shtudown abort //abort UNDO

4) mount
SQL> startup mount

ORA-01157: / 3 - DBWR
ORA-01110: 3: '/u01/oradata/timran11g/undotbs01.dbf'

5 UNDO

[oracle@timran timran11g]$ cp /u01/back1/undotbs01.dbf ./

SQL> recover datafile 3;

6 UNDO

SQL> alter database open;

7)

SQL> select * from scott.t1;

NAME

---

a

b

3.7

3.7.1 recover database (mount)

OS: cp dbf v$recover_file

SQLPLUS

1)recover database;

2)alter database open;

3.7.2 recover tablespace (open)

OS: cp XXX

SQLPLUS

1)alter tablespace XXX offline;

2)recover tablespace XXX;

3)alter tablespace XXX online;

3.6.3 recover datafile (mount open)

OS:cp (mount)

SQLPLUS

1)recover datafile 6,8;

2)alter database open;

OS:cp (open)

SQLPLUS

1)alter database datafile 6,8 offline;

2)recover datafile 6,8;

3)alter database datafile 6,8 online;

4.1

1 database

2 (

3 sysdba sysoper

4 recover database until

SCN until

4.2 Incomplete recover

1

2 online redo log

3

4

4.3

1 until time):

2 scn until change SCN

2 cancel (until cancel)

3 controlfile

4.4

1 logmnr

2 database

3 datafile

4 mount database recover

5 table exp

6

7 database imp

4.5 logminer

redo log DDL DML

scn sql

4.6 1:

table

4.6.1

1 scott test t1

```
SQL> conn scott/scott
SQL> create table t1(id int) tablespace test;
SQL> insert into t1 values(1);
SQL> insert into t1 values(2);
SQL> insert into t1 values(3);
SQL> commit;
SQL> select * from t1;

        ID
----------
         1
         2
         3
```

2 t1 purge

```
SQL> drop table t1 purge;
SQL> select * from v$log;

    GROUP#    THREAD#    SEQUENCE#      BYTES    MEMBERS ARCHIVED   STATUS
FIRST_CHANGE# FIRST_TIME
---------- ---------- ---------- ---------- ---------- -------- ----------------
------------ -----------
         1          1        131   52428800          1 YES        INACTIVE
1875893 2012-6-13 1
         2          1        132   52428800          1 YES        INACTIVE
1896385 2012-6-13 1
         3          1        133   52428800          1 NO         CURRENT
1916973 2012-7-18 1

SQL> alter system switch logfile;
SQL> /
SQL> /

SQL> select name from v$archived_log;

NAME
--------------------------------------------------------------------------------
...
```

/u01/disk1/timran/arch_1_782662700_129.log
/u01/disk1/timran/arch_1_782662700_130.log
/u01/disk1/timran/arch_1_782662700_131.log
/u01/disk1/timran/arch_1_782662700_132.log
/u01/disk1/timran/arch_1_782662700_133.log //drop table t1 purge

/u01/disk1/timran/arch_1_782662700_134.log
/u01/disk1/timran/arch_1_782662700_135.log

116 rows selected

3 logmr ddl timestamp san

SQL> show parameter utl

NAME TYPE VALUE
---------- ---------- ----------
create_stored_outlines string
utl_file_dir string /home/oracle/logmnr

SQL> execute dbms_logmnr_d.build('dict.ora','/home/oracle/logmnr',dbms_logmnr_d.store_in_flat_file);

SQL> execute dbms_logmnr.add_logfile(logfilename=>'/u01/disk1/timran/arch_1_782662700_133.log',options=>dbms_logmnr.new);

SQL> execute dbms_logmnr.add_logfile(logfilename=>'/u01/disk1/timran/arch_1_782662700_134.log',options=>dbms_logmnr.addfile);

SQL> execute dbms_logmnr.start_logmnr(dictfilename=>'/home/oracle/logmnr/dict.ora',options=>dbms_logmnr.ddl_dict_tracking);

SQL> select username,scn,to_char(timestamp,'yyyy-mm-dd hh24:mi:ss'),sql_redo from v$logmnr_contents WHERE lower(sql_redo) like 'drop table%';

USERNAME SCN TO_CHAR(TIMESTAMP,'YYYY-MM-DDH
SQL_REDO
---------- ---------- ---------- -------

SCOTT 1917250 2012-07-18 16:44:55 drop

```
table test purge;
SCOTT                          1917267 2012-07-18 16:45:01          drop
table student purge;
SCOTT                          1918000 2012-08-01 17:28:29          drop
table t1 purge;

SQL> execute dbms_logmnr.end_logmnr;
```

4) dbf

```
SQL> shutdown abort

[oracle@timran ~]$ cd /u01/oradata/timran11g
[oracle@timran ~]$ rm *.dbf
```

5

```
[oracle@timran ~]$ cp /u01/back1/*.dbf ./
```

6 log miner

```
17:31:43 SQL> startup
ORACLE instance started.

Total System Global Area  285212672 bytes
Fixed Size                  1218968 bytes
Variable Size              75499112 bytes
Database Buffers          201326592 bytes
Redo Buffers                7168000 bytes
Database mounted.
ORA-01113: file 1 needs media recovery
ORA-01110: data file 1: '/u01/oradata/timran11g/system01.dbf'

17:33:07 SQL> recover database until time '2012-08-01 17:28:29';

ORA-00279: change 1917581 generated at 07/18/2012 16:46:34 needed for thread 1
ORA-00289: suggestion : /u01/disk1/timran/arch_1_782662700_133.log
ORA-00280: change 1917581 for thread 1 is in sequence #133

17:33:17 Specify log: {<RET>=suggested | filename | AUTO | CANCEL}
auto

Log applied.
Media recovery complete.
```

7 resetlogs

```
SQL> alter database open resetlogs;
```

8

```
SQL> select * from scott.t1;

        ID
----------
         1
         2
         3
```

9 resetlogs sequence

```
SQL> select * from v$log;

    GROUP#    THREAD#  SEQUENCE#      BYTES  MEMBERS ARCHIVED  STATUS
FIRST_CHANGE# FIRST_TIME
---------- ---------- ---------- ---------- ---------- -------- ----------------
------------ -----------
         1          1          0   52428800          1 YES      UNUSED
0
         2          1          0   52428800          1 YES      UNUSED
0
         3          1          1   52428800          1 NO       CURRENT
1918000 2012-8-1 17
```

4.6.2 SCN

scn change

recover

```
SQL> recover database until change 1918000;
```

4.6.3 cancel (

4.6.4 backup controlfile

1 ?

SCN

2

recover database until [time|change] using backup controlfile;

[time|change]

Specify log: {<RET>=suggested | filename | AUTO | CANCEL}

scn

shutdwon abort)

AUTO archivelog current log;
filename current log CANCEL

1
2 backup controlfile alter database open resetlogs

1 (

------(abcd)----- -----
-

,

1
SQL> select * from v$tablespace;

```
        TS# NAME                           INC BIG FLA ENC
---------- ------------------------------ --- --- --- ---
         0 SYSTEM                         YES NO  YES
         1 SYSAUX                         YES NO  YES
         4 USERS                          YES NO  YES
```

```
         6 EXAMPLE                      YES NO  YES
         8 TEST                         YES NO  YES
         2 UNDOTBS1                     YES NO  YES
         3 TEMP                         NO  NO  YES

SQL> select * from v$log;

    GROUP#    THREAD#    SEQUENCE#      BYTES      MEMBERS ARC STATUS
FIRST_CHANGE# FIRST_TIME
---------- ---------- ---------- ---------- ---------- --- ---------------- ----
--------- ------------------
         1          1          7   52428800          1 NO  CURRENT
6676574 2013-01-17 13:55:19
         2          1          5   52428800          1 YES INACTIVE
6676549 2013-01-17 13:54:14
         3          1          6   52428800          1 YES INACTIVE
6676562 2013-01-17 13:54:48

SQL> create tablespace abcd datafile '/u01/oradata/timran11g/abcd01.dbf' size 5m;
SQL> create table scott.a1 (name char(10)) tablespace abcd;
SQL> insert into scott.a1 values('a');
SQL> commit;
SQL> select * from scott.a1;

NAME
----------
a

SQL> alter system switch logfile;

2

19:17:55 SQL> alter database backup controlfile to
'/u01/oradata/timran11g/con.bak1';

3)      abcd01.dbf

[oracle@timran ~]$rm /u01/oradata/timran11g/abcd01.dbf          //      open
        abcd01.dbf

SQL> alter system flush buffer_cache;                   //db buffer

SQL> conn / as sysdba                                   //      session      a1
```

```
SQL> select * from scott.a1;
select * from scott.a1
                    *
   1            :
ORA-00376:                  3
ORA-01110:            3: '/u01/oradata/timran11g/abcd01.dbf'

4

SQL> shutdown abort;

5
[oracle@timran timran11g]$ cd /u01/oradata/timran11g
[oracle@timran timran11g]$ rm *.ctl
[oracle@timran timran11g]$ rm *.dbf
[oracle@timran timran11g]$ cp /u01/back1/*.dbf ./
[oracle@timran timran11g]$ cp con.bak1 control01.ctl
[oracle@timran timran11g]$ cp con.bak1 control02.ctl
[oracle@timran timran11g]$ cp con.bak1 control03.ctl

SQL> startup
ORACLE

Total System Global Area  422670336 bytes
Fixed Size                  1300352 bytes
Variable Size             331352192 bytes
Database Buffers           83886080 bytes
Redo Buffers                6131712 bytes

ORA-01589:                          RESETLOGS     NORESETLOGS

SQL> col name for a50;
SQL> select file#,checkpoint_change#,name from v$datafile;

     FILE# CHECKPOINT_CHANGE# NAME
---------- ------------------ --------------------------------------------------
         1            6676574 /u01/oradata/timran11g/system01.dbf
         2            6676574 /u01/oradata/timran11g/sysaux01.dbf
         3            6676601 /u01/oradata/timran11g/abcd01.dbf
         4            6676574 /u01/oradata/timran11g/user01.dbf
         5            6676574 /u01/oradata/timran11g/example01.dbf
         6            6676574 /u01/oradata/timran11g/test01.dbf
         7            6676574 /u01/oradata/timran11g/undotbs01.dbf
```

```
SQL> select file#,checkpoint_change#  from v$datafile_header;

     FILE# CHECKPOINT_CHANGE#
---------- ------------------
         1            6676343
         2            6676343
         3                  0
         4            6676343
         5            6676343
         6            6676343
         7            6676343

SQL>
```

1 file3 abcd01.dbf, 3
2 scn scn

6)

```
SQL> recover database using  backup controlfile;

ORA-00283:
ORA-01110:          3: '/u01/oradata/timran11g/abcd01.dbf'
ORA-01157:         / 3 -  DBWR
ORA-01110:          3: '/u01/oradata/timran11g/abcd01.dbf'
```

// abcd abcd
datafile recover( )

```
SQL> alter database create  datafile '/u01/oradata/timran11g/abcd01.dbf';

---

SQL> recover database using  backup controlfile;
------

ORA-00308:              '/u01/disk1/timran/arch_1_804846837_9.log'
ORA-27037:
Linux Error: 2: No such file or directory
Additional information: 3
```

//archive
// :

filename auto open

SQL> recover database using backup controlfile; //

: {<RET>=suggested | filename | AUTO | CANCEL}
/u01/oradata/timran11g/redo03.log //

7 resetlogs

SQL> alter database open resetlogs;

8
SQL> select * from scott.a1;

NAME
---
a
b

2 (( )

----- ----- timran------

datafile
timran,

1
SQL> drop tablespace abcd including contents and datafiles;
SQL> alter database backup controlfile to '/u01/oradata/timran11g/con.bak2';
SQL> create tablespace timran datafile '/u01/oradata/timran11g/timran01.dbf' size 5m;
SQL> create table scott.r1 (id int) tablespace timran ;
SQL> insert into scott.r1 values(1);
SQL> commit;

SQL> select * from v$tablespace;

TS# NAME INC BIG FLA ENC
---------- ------------------------------ --- --- --- ---

```
         0 SYSTEM                                                  YES NO  YES
         1 SYSAUX                                                  YES NO  YES
        14 TIMRAN                                                  YES NO  YES
         4 USERS                                                   YES NO  YES
         6 EXAMPLE                                                 YES NO  YES
         8 TEST                                                    YES NO  YES
         3 TEMP                                                    NO  NO  YES
         2 UNDOTBS1                                                YES NO  YES

SQL> select * from scott.r1;

        ID
----------
         1
SQL>  select * from v$log;

    GROUP#         THREAD#     SEQUENCE#            BYTES         MEMBERS  ARC  STATUS
FIRST_CHANGE# FIRST_TIME
---------- ---------- ---------- ---------- ---------- --- ---------------- ----
--------- -------------------
         1              1              1     52428800              1 NO   CURRENT
6677119 2013-01-17 14:08:18
         2              1              0     52428800              1 YES  UNUSED
0
         3              1              0     52428800              1 YES  UNUSED
0

2

[oracle@timran  timran11g]rm  timran01.dbf

SQL>alter system flush buffer_cache;
SQL>conn / as sysdba
SQL>select * from scott.r1;
   1            :
ORA-01116:                  3
ORA-01110:            3:  '/u01/oradata/timran11g/timran01.dbf'
ORA-27041:
Linux Error: 2: No such file or directory
Additional information: 3

3)

SQL>shutdown abort
```

4

```
[oracle@timran  timran11g]$  cd /u01/oradata/timran11g
[oracle@timran  timran11g]$  rm *.ctl
[oracle@timran  timran11g]$  rm *.dbf
[oracle@timran  timran11g]$  cp /u01/back1/*.dbf ./
[oracle@timran  timran11g]$  cp con.bak2 control01.ctl
[oracle@timran  timran11g]$  cp con.bak2 control02.ctl
[oracle@timran  timran11g]$  cp con.bak2 control03.ctl
```

5

```
SQL> startup
ORACLE
------

ORA-01589:                              RESETLOGS      NORESETLOGS

SQL> select file#,checkpoint_change#,name from v$datafile;

     FILE# CHECKPOINT_CHANGE# NAME
---------- ------------------ ------------------------------------------------
         1            6677122 /u01/oradata/timran11g/system01.dbf
         2            6677122 /u01/oradata/timran11g/sysaux01.dbf
         4            6677122 /u01/oradata/timran11g/user01.dbf
         5            6677122 /u01/oradata/timran11g/example01.dbf
         6            6677122 /u01/oradata/timran11g/test01.dbf
         7            6677122 /u01/oradata/timran11g/undotbs01.dbf

SQL> select file#,checkpoint_change# from v$datafile_header;

     FILE# CHECKPOINT_CHANGE#
---------- ------------------
         1            6676343
         2            6676343
         4            6676343
         5            6676343
         6            6676343
         7            6676343
```

6

```
SQL> recover  database using  backup controlfile;
```

```
ORA-00279:       6676343 (     01/16/2013 14:11:39       )            1
ORA-00289:       : /u01/disk1/timran/arch_1_804846837_4.log
ORA-00280:       6676343 (            1)          #4


        : {<RET>=suggested | filename | AUTO | CANCEL}
auto
------

        : {<RET>=suggested | filename | AUTO | CANCEL}
/u01/oradata/timran11g/redo01.log
------
ORA-00283:
ORA-01244:
ORA-01110:            3:  '/u01/oradata/timran11g/timran01.dbf'

ORA-01112:

SQL> select file#,checkpoint_change#,name from v$datafile;

     FILE# CHECKPOINT_CHANGE# NAME
---------- ------------------ ------------------------------------------------
         1            6678002 /u01/oradata/timran11g/system01.dbf
         2            6678002 /u01/oradata/timran11g/sysaux01.dbf
         3            6677999 /u01/oracle/dbs/UNNAMED00003        //
                              timran01.dbf
         4            6678002 /u01/oradata/timran11g/user01.dbf
         5            6678002 /u01/oradata/timran11g/example01.dbf
         6            6678002 /u01/oradata/timran11g/test01.dbf
         7            6678002 /u01/oradata/timran11g/undotbs01.dbf

SQL> select file#,checkpoint_change# from v$datafile_header;

     FILE# CHECKPOINT_CHANGE#
---------- ------------------
         1            6678002
         2            6678002
         3                  0
         4            6678002
         5            6678002
         6            6678002
         7            6678002
```

7

SQL> alter database create datafile '/u01/oracle/dbs/UNNAMED00003' as '/u01/oradata/timran11g/timran01.dbf';

// 1 timran01.dbf 2 UNNAMED00003 timran01.dbf

SQL> select file#,checkpoint_change#,name from v$datafile;

```
     FILE# CHECKPOINT_CHANGE# NAME
---------- ------------------ ----------------------------------------------
         1            6678002 /u01/oradata/timran11g/system01.dbf
         2            6678002 /u01/oradata/timran11g/sysaux01.dbf
         3            6677999 /u01/oradata/timran11g/timran01.dbf
         4            6678002 /u01/oradata/timran11g/user01.dbf
         5            6678002 /u01/oradata/timran11g/example01.dbf
         6            6678002 /u01/oradata/timran11g/test01.dbf
         7            6678002 /u01/oradata/timran11g/undotbs01.dbf
```

SQL> recover database using backup controlfile;
ORA-00279: 6677999 (01/17/2013 14:20:50) 1
ORA-00289: : /u01/disk1/timran/arch_1_804953298_1.log
ORA-00280: 6677999 (1) #1

: {<RET>=suggested | filename | AUTO | CANCEL}
/u01/oradata/timran11g/redo01.log

8 resetlogs

SQL> alter database open resetlogs;

9

SQL> select * from scott.r1;

```
        ID
----------
         1
         2
         3
```

3

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

drop tablesapce xxx including contents and datafiles DDL

a
b
c

a b scn c

1

```
SQL> select * from v$tablespace;

        TS# NAME                           INC BIG FLA ENC
---------- ------------------------------ --- --- --- ---
         0 SYSTEM                         YES NO  YES
         1 SYSAUX                         YES NO  YES
         5 UNDOTBS2                       YES NO  YES
         4 USERS                          YES NO  YES
         6 EXAMPLE                        YES NO  YES
         8 TEST                           YES NO  YES
         3 TEMP                           NO  NO  YES

SQL> create table scott.t1(id int) tablespace test;

SQL> insert into scott.t1 values(1);

SQL> commit;

SQL> alter system switch logfile;

SQL> /
```

```
SQL> /

2                scn
SQL> select current_scn from v$database;

CURRENT_SCN
-----------
    7222848
```

3)

```
SQL> alter database backup controlfile to '/u01/oradata/timran11g/con.bak'
```

4

```
SQL> drop tablespace test including contents and datafiles;

SQL> shutdown abort
```

5

```
[oracle@timran timran11g]$ rm *.dbf
[oracle@timran timran11g]$ rm *.ctl
[oracle@timran timran11g]$ cp /u01/back1/*.dbf ./
[oracle@timran timran11g]$ cp con.bak control01.ctl
[oracle@timran timran11g]$ cp con.bak control02.ctl
[oracle@timran timran11g]$ cp con.bak control03.ctl
```

6) SCN

```
SQL> startup
---

ORA-01589:  RESETLOGS  NORESETLOGS

SQL> recover database until change 7222848 using backup controlfile;
```

7

```
SQL> alter database open resetlogs;
```

8

```
SQL> select * from scott.t1;

        ID
----------
         1
```

flashback

5.1 flashback flashback log undo data database

5.2 flashback DBA-II PPT 253

1 flashback drop
2 flashback query flashback database archive)
3) flashback table
4 flashback version query
5 flashback transaction
6 flashback database

5.2.1 drop (PPT-II-299)

1 recyclebin)

“ ” (

drop table purge
table

SQL> show parameter recyclebin // recyclebin on

```
NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
recyclebin                           string      ON
```

// off drop table purge

```
SQL> create tablespace test datafile '/u01/oradata/timran11g/test01.dbf' size 1m;
SQL> create table scott.t1(id int) tablespace test;
SQL> select segment_name from dba_segments where tablespace_name='TEST';
```

// test

```
SEGMENT_NAME
--------------------------------------------------------------------------------
-
```

T1

```
SQL> select sum(bytes) from dba_free_space where tablespace_name='TEST';
    //

SUM(BYTES)
----------
    917504

SQL> insert into scott.t1 values(1);
SQL> insert into scott.t1 select * from scott.t1;        //
/
/
   1            :
ORA-01653:     SCOTT.T1           string (          TEST    )

SQL> select count(*) from scott.t1;

  COUNT(*)
----------
     65536

SQL> select sum(bytes) from dba_free_space where tablespace_name='TEST';

SUM(BYTES)
----------                              //

SQL> drop table  scott.t1;

SQL> select segment_name from dba_segments where tablespace_name='TEST';

SEGMENT_NAME
--------------------------------------------------------------------------------
-
BIN$4KZBTYTKocDgQAB/AQAKRA==$0

SQL> select sum(bytes) from dba_free_space where tablespace_name='TEST';

SUM(BYTES)
----------
    983040
```

TEST test

autoextend Oracle

recyclebin autoextend.

SQL> create table scott.emp1 tablespace test as select * from scott.emp; //
test

SQL> select sum(bytes) from dba_free_space where tablespace_name='TEST';

SUM(BYTES)

917504

SQL> select segment_name from dba_segments where tablespace_name='TEST'; //t1

SEGMENT_NAME

-
EMP1

//t1

2

LIFO
FIFO

t1

SQL> flashback table t1 to before drop; // t1
SQL> purge table t1; // t1

SQL> flashback table " BIN$qrJLbL74ZgvgQKjA8Agb/A==$0" to befroe drop;
SQL> purge table "BIN$qrJLbL74ZgvgQKjA8Agb/A==$0";

SQL> purge recyclebin; //
3 schema drop .
SQL> drop table t1;
SQL> create table t1 as select * from emp;

```
SQL> select * from tab;
TNAME                          TABTYPE  CLUSTERID
------------------------------ ------- ----------
DEPT                           TABLE
EMP                             TABLE
BONUS                           TABLE
SALGRADE                        TABLE
BIN$qrJLbL76ZgvgQKjA8Agb/A==$0  TABLE
TEST                           TABLE

06:56:50 SQL> show recycle;
ORIGINAL NAME    RECYCLEBIN NAME                OBJECT TYPE  DROP TIME
---------------- ------------------------------ ------------ -------------------
T1               BIN$qrJLbL76ZgvgQKjA8Agb/A==$0 TABLE        2011-08-17:06:56:36
SQL> flashback table test to before drop;
flashback table test to before drop
*
ERROR at line 1:
ORA-38312: original name is used by an existing object

SQL> flashback table t1 to before drop rename to test_old;          //      drop
```

4)system　　sys　　system　　drop table

5　　drop

```
SQL> select * from tab;

TNAME                          TABTYPE  CLUSTERID
------------------------------ ------- ----------
BONUS                          TABLE
DEPT                            TABLE
EMP                             TABLE
SALGRADE                       TABLE

create table t (id int,name char(10));
alter table t add constraint pk_t primary key(id);
insert into t values (1,'sohu');
insert into t values (2,'sina');
commit;
SQL> select * from t;

        ID NAME
```

```
---------- ----------
         1 sohu
         2 sina

-----

SQL> select * from user_indexes;
SQL> select * from user_constraints;

SQL> drop table t;

SQL> select * from tab;

TNAME                          TABTYPE  CLUSTERID
------------------------------ ------- ----------
BIN$yF3hbvIcioTgQAB/AQAJIg==$0 TABLE
BONUS                           TABLE
DEPT                            TABLE
EMP                             TABLE
SALGRADE                       TABLE

-----     drop

SQL> select * from user_indexes;        //
SQL> select * from user_constraints;       //            (

SQL> flashback table t to before drop;



SQL> select * from t;

        ID NAME
---------- ----------
         1 sohu
         2 sina

SQL>
-----

SQL> select * from user_indexes;        //
SQL> select * from user_constraints;       //

-----
```

```
SQL> alter index "BIN$yF3hbvIbioTgQAB/AQAJIg==$0" rename to pk_t;

SQL> alter table t rename constraint "BIN$yF3hbvIaioTgQAB/AQAJIg==$0" to pk_t;

-----
ok!
```

5.2.2 flashback query DML (PPT-II-285)

1)

undo tablespace undo block

undo_retention

select ... as of scn | timestamp

2

sys:

```
create table scott.student (sno int,sname char(10),sage int);
insert into scott.student values(1,'Tom',21);
insert into scott.student values(2,'Kite',22);
insert into scott.student values(3,'Bob',23);
insert into scott.student values(4,'Mike',24);
commit;
/
```

```
SQL> select * from scott.student;

       SNO SNAME              SAGE
---------- ---------- ----------
         1 Tom                21
         2 Kite               22
         3 Bob                23
         4 Mike               24
```

```
select to_char(sysdate, 'yyyy-mm-dd hh24:mi:ss') from dual;    //      1
select current_scn from v$database;  //  scn 1

delete scott.student where sno=1;
commit;
```

```
select * from scott.student;

       SNO SNAME                SAGE
---------- ---------- ----------
         2 Kite                 22
         3 Bob                  23
         4 Mike                 24

select to_char(sysdate, 'yyyy-mm-dd hh24:mi:ss') from dual;     //       2
select current_scn  from v$database;    //   scn 2

update scott.student set sage=50;
commit;
select * from scott.student;

       SNO SNAME                SAGE
---------- ---------- ----------
         2 Kite                 50
         3 Bob                  50
         4 Mike                 50

select to_char(sysdate, 'yyyy-mm-dd hh24:mi:ss') from dual;     //       3
select current_scn  from v$database;    scn 3

scott:
select * from student  as of  timestamp to_date('       2','yyyy-mm-dd hh24:mi:ss');
select * from student  as of  scn     scn1;

create  table student2  as select * from scott.student as of  scn     scn1;
drop  table student;
rename student2  to  student;
select * from student;

*                                                                                DML


5.2.3            (PPT-11-264)

1)                                                    SCN


flashback  table  <table_name>  to  timestamp | scn
```

2
delete student;
commit;
alter table student enable row movement;
flashback table student to scn XXXXX

1 sys
2
3 trigger

5.2.4 11g (FLASHBACK ARCHIVE)(PPT-286-295) TOTAL RECALL

1. FBDA
(as of)

2.

1)
Oracle
2) default

3)
FDBA

4)
flashback archive administer //
flashback archive //
5) alter table flashback archive
6) drop truncate DDL
7) enable undo_management on,
ORA_55614
8)
DBA_FLASHBACK_ARCHIVE //
DBA_FLASHBACK_ARCHIVE_TABLES //
DBA_FLASHBACK_ARCHIVE_TS //

3.

1 DBA
sys:
create tablespace fda datafile '/u01/oradata/timran11g/fda01.dbf' size 5m;
create flashback archive fla1 tablespace fda quota 2m retention 1 year;

grant flashback archive on fla1 to scott;

scott:
alter table emp1 flashback archive fla1;

DML as of)

DDL

scott
alter table emp1 drop column comm;
truncate table emp1;
drop table emp1;
ORA-55610: DDL .

sys:
SQL> select * from dba_flashback_archive //
SQL> select * from dba_flashback_archive_ts; //
SQL> select * from dba_flashback_archive_tables; // emp1
sys:
SQL> alter table scott.emp1 no flashback archive; // scott.emp1

2 default

Note the output of the following query;
SQL> SELECT flashback_archieve_name, status FROM dba_flashback_archieve;

FLASHBACK_ARCHIEVE_NAME STATUS
FLA1

You executed the following command to enable Flashback Data Archive on the EXCHANGB_PATE table:
ALTER TABLE exchange_rate FLASHBACK ARCHIEVE;
What is the outcome of this command?
A.The table uses the default Flashback Data Archive.
B.The Flashback Data Archive Is created In the SYSAUX tablespace.
C.The Flashback Data Archive is created in the same tablespace where the tables are stored.
D.The command generates an error because no flashback Data Archive name is

specified and there is no default Flashback Data Achieve.

d

```
SQL> conn / as sysdba
SQL> alter flashback archive fla1 set default;
SQL> select FLASHBACK_ARCHIVE_NAME,STATUS from dba_flashback_archive;

FLASHBACK_ARCHIVE_NAME
STATUS
--------------------------------------------------------------------------------
-------
FLA1
DEFAULT
```

SQL> alter table scott.emp1 flashback archive; // emp1

FLA1 DEFAULT

```
SQL> select * from dba_flashback_archive_tables;
```

```
SQL> drop flashback archive fla1;
```

1 automatic undo managent 2 tablespace ASSM

5.2.5 (PPT-II-260)

1

10g

2 select … from … versions between
select SCN ID

3

scott:

```
create table t3 (id int, name char(10));
insert into t3 values(1,'tim');
insert into t3 values(2,'mike');
insert into t3 values(3,'brain');
insert into t3 values(4,'cade');
commit;
```

```
update t3 set name='nelson' where id=4;
commit;
delete t3 where id=2;
commit;
update t3 set id=id+100;
commit;
```

t3

```
SQL> select versions_startscn, versions_endscn, versions_xid,
versions_operation,id,name from scott.t3 versions between scn minvalue and
maxvalue;

SQL>select versions_xid, versions_operation,id, name from t3 versions between scn
minvalue and maxvalue;

VERSIONS_XID     VERSIONS_OPERATION                                    ID NAME
---------------- ----------------- ------------------------------------ ----
------
03000800F3010000 U                                                    104
nelson
03000800F3010000 U                                                    103
brain
03000800F3010000 U                                                  101 tim
04000A0076010000 D                                                    2 mike
08002000F9010000 U                                                    4
nelson
                                                                      1 tim
                                                                      2 mike
                                                                      3
brain
                                                                      4 cade
```

1) V$
session
2) DML

5.2.6 (PPT-11-270)

1
flashback_transaction_query
SQL
operation undo_sql

sys:
SQL>desc flashback_transaction_query;
SQL>select undo_sql from flashback_transaction_query where xid=hextoraw('
');

SQL> select undo_sql from flashback_transaction_query where xid=hextoraw('03000800F301000O');

UNDO_SQL
----
update "SYS"."T3" set "ID" = '4' where ROWID = 'AAANByAABAAAO/yAAD';
update "SYS"."T3" set "ID" = '3' where ROWID = 'AAANByAABAAAO/yAAC';
update "SYS"."T3" set "ID" = '1' where ROWID = 'AAANByAABAAAO/yAAA';

// update t3 set id=id+100;

SQL> update "SYS"."T3" set "ID" = '4' where ROWID = 'AAANByAABAAAO/yAAD';
SQL> update "SYS"."T3" set "ID" = '3' where ROWID = 'AAANByAABAAAO/yAAC';
SQL> update "SYS"."T3" set "ID" = '1' where ROWID = 'AAANByAABAAAO/yAAA';
SQL> commit;

1 Enable Supplemental Logging 10.0 compatibility
2 flashback_transaction_query SELECT ANY TRANSACTION

5.2.7

1

db buffer SGA
(Recover Write RVWR)
LGWR RVWR
PPT-311

*

2

(flash recovery area) ,
RMAN 1. 2.
3.RMAN flash recovery area Oracle
obsolete) (PPT-11-49-55)

```
SQL> show parameter recovery_file

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
db_recovery_file_dest                string      /u01/flash_recovery_area
db_recovery_file_dest_size           big integer 2G

SQL> show parameter flash

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
db_flashback_retention_target        integer     1440
```

* 1. db_recovery_file_dest db_recovery_file_dest_size 2.
1440

3

3.1) mount

```
SQL> STARTUP MOUNT EXCLUSIVE;
```

3.2)

```
SQL> ALTER DATABASE ARCHIVELOG;
```

SCN SCN SCN
san SCN resetlogs

3.3)

db_recovery_file_dest='u01/flash_recovery_area'

3.4)

db_flashback_retention_target=1440

1440 24

3.5)

SQL> alter database flashback on; //
/u01/flash_recovery_area/TIMRAN11G/flashback .flb

SQL> select flashback_on from v$database; //

FLASHBACK_ON

YES

RVWR alter database flashback off;

3.6

alter database open;

4) :

mount

4.1) SCN

SQL> select current_scn from v$database;

CURRENT_SCN

7248690

4.2 scott

SQL> drop user scott cascade;

4.3 mount

SQL> shutdown immediate;
SQL> startup mount exclusive //mount exclusive sys

SQL> flashback database to scn 7248690;

4.4 scott

SQL> alter database open read only;
SQL> select * from scott.emp;

4.5 resetlogs

startup force;
alter database open resetlogs; // resetlogs
scn PPT-315page

mount

flashback database to timestamp to_char('2012-03-02 19:11:11','yyyy-mm-dd hh24:mi:ss');
flashback database to scn 1264788;

,
/ scn

5

drop table xxx purge
drop user xxx cascade

truncate

trace
drop

6

SQL> alter tablespace <tablespace_name> flashback off; // open
SQL> alter tablespace <tablespace_name> flashback on; // mount
SQL> select * from v$tablesapce // FLA

flashback off offline scn

7

v$flashback_database_log Flashback Database

Log
v$flashback_database_stat 1),

SQL> select * from v$flashback_database_log;

OLDEST_FLASHBACK_SCN OLDEST_FLASHBACK_TI RETENTION_TARGET FLASHBACK_SIZE
ESTIMATED_FLASHBACK_SIZE
---------- ---------- ---------- ---------- ---------- ----------
12233583 2014-02-08 18:41:58 1440 8192000
0

OLDEST_FLASHBACK_SCN scn

SQL>select * from v$flashback_database_stat;

BEGIN_TIME END_TIME FLASHBACK_DATA DB_DATA REDO_DATA
ESTIMATED_FLASHBACK_SIZE
---------- ---------- ---------- ---------- ---------- ---

2014-02-08 19:49:15 2014-02-08 20:38:32 4587520 7921664 2973696
0
2014-02-08 18:41:58 2014-02-08 19:49:15 19709952 22528000 18658304
421822464

v$flashback_database_log flash database

* alter database open resetlogs

RMAN

6.1 rman :

1) Recovery Manager

2) oracle server process oracle server

3 rman datafile database tablespace datafile)
controlfile spfile archivelog

4

5

*

1 RMAN mount mount cp

RMAN

2 RMAN

6.2 rman

1 segment block

2 , RMAN
ORACLE BLOCK

3)

4 ASM

6.3 rman

1 target database( ) ,auxiliary database( ), catalog database( )

2 disk tape sbt

3 channel
channel channel

4 server process

5 rman controlfile

6 catalog database :

7 MML:media manage layer

6.4 rman

1

RMAN target database

[oracle@timran ~]$ rman target /

2

RMAN ORACLE_NET target database target database client tnsnames.ora

C:\Documents and Settings\timran>rman target sys/system@timran11g

6.5 rman rman

1 rman

RMAN> show all;

db_unique_name TIMRAN11G RMAN :

```
CONFIGURE RETENTION POLICY TO REDUNDANCY 1; # default
CONFIGURE BACKUP OPTIMIZATION OFF; # default
CONFIGURE DEFAULT DEVICE TYPE TO DISK; # default
CONFIGURE CONTROLFILE AUTOBACKUP ON; # default
CONFIGURE CONTROLFILE AUTOBACKUP FORMAT FOR DEVICE TYPE DISK TO '/U01/MYRMAN/%F'; # default
CONFIGURE DEVICE TYPE DISK PARALLELISM 1 BACKUP TYPE TO BACKUPSET; # default
CONFIGURE DATAFILE BACKUP COPIES FOR DEVICE TYPE DISK TO 1; # default
CONFIGURE ARCHIVELOG BACKUP COPIES FOR DEVICE TYPE DISK TO 1; # default
CONFIGURE MAXSETSIZE TO UNLIMITED; # default
CONFIGURE ENCRYPTION FOR DATABASE OFF; # default
CONFIGURE ENCRYPTION ALGORITHM 'AES128'; # default
CONFIGURE COMPRESSION ALGORITHM 'BZIP2'; # default
CONFIGURE ARCHIVELOG DELETION POLICY TO NONE; # default
CONFIGURE SNAPSHOT CONTROLFILE NAME TO '/u01/oracle/dbs/snapcf_timran11g.f'; # default
```

2 RMAN

CONFIGURE RETENTION POLICY TO REDUNDANCY 1; # default

PPT47)

:

7 3

5 15

15

obsolete) PPT-48

7

```
RMAN> configure retention policy to recovery window of 7 days;
```

:

RMAN N (obsolete)

2

2

```
RMAN> configure retention policy to redundancy 2;
```

NONE Clear

```
RMAN> configure retention policy to none; //RMAN
```

obsolete

RMAN> configure retention policy clear;

Sysdate-5 Obsolete

RMAN> configure retention policy to recovery window of 5 days;

RMAN> configure retention policy to redundancy 3;

CONFIGURE BACKUP OPTIMIZATION OFF; # default

(optimization)

RMAN> configure backup optimization on;

,

on (PPT103)

RETENTION POLICY

(r+1) RMAN

CONFIGURE DEFAULT DEVICE TYPE TO DISK; # default

DISK STB

CONFIGURE CONTROLFILE AUTOBACKUP OFF; # default

(autobackup on)

RMAN> CONFIGURE CONTROLFILE AUTOBACKUP ON;

off: system spfile

on: spfile

controlfile

CONFIGURE CONTROLFILE AUTOBACKUP FORMAT FOR DEVICE TYPE DISK TO '%F'; # default

format

RMAN

%c

%D (DD)

%M (MM)
%F DBID , c-IIIIIIIIIII-YYYYMMDD-QQ,
%d IIIIIIIIII DBID YYYYMMDD QQ 1-256

%n
%u
%p 1
%U %u_%p_%c
%s
%t
%T (YYYYMMDD)

CONFIGURE DEVICE TYPE DISK PARALLELISM 2 BACKUP TYPE TO BACKUPSET;

2 2

RUN{}

RUN{} (

RMAN

PARALLELISM RMAN
CONFIGURE CHANNEL RMAN
ALLOCATE CHANNEL
BACKUP:

FILESPERSET: BACKUP
MAXOPENFILES: ALLOCATE
CHANNEL CONFIGURE CHANNEL
MAXPIECESIZE: ALLOCATE
CHANNEL CONFIGURE CHANNEL
BACKUP DURATION: BACKUP
MAXSETSIZE: BACKUP

1 RUN{}

1

RMAN> RUN {

```
2> ALLOCATE CHANNEL c1 DEVICE TYPE sbt;
3> ALLOCATE CHANNEL c2 DEVICE TYPE sbt;
4> ALLOCATE CHANNEL c3 DEVICE TYPE sbt;
5> BACKUP
6> INCREMENTAL LEVEL = 0
7> FORMAT '/disk1/backup/df_%d_%s_%p.bak'
8> (DATAFILE 1,4,5 CHANNEL c1)
9> (DATAFILE 2,3,9 CHANNEL c2)
10> (DATAFILE 6,7,8 CHANNEL c3);
11> ALTER SYSTEM ARCHIVE LOG CURRENT;
12>}
```

2 FILESPERSET

64 2 8

20 3 3 4 3

1

2

```
RMAN> RUN{
2> ALLOCATE CHANNEL t1 DEVICE TYPE sbt;
3> ALLOCATE CHANNEL t2 DEVICE TYPE sbt;
4> ALLOCATE CHANNEL t3 DEVICE TYPE sbt;
5> ALLOCATE CHANNEL t4 DEVICE TYPE sbt;
6> BACKUP DATAFILE FILESPERSET 8;
}
```

2 ALLOCATE CHANNEL PARALLELISM

1 20 FILESPERSET=8 8

3 MAXPIECESIZE

3

```
RUN{
CONFIGURE CHANNEL DEVICE TYPE DISK MAXPIECESIZE 300M;
BACKUP datafile 2 format '/u01/myrman/%U.bak';
}
```

300M 500M

```
CONFIGURE CHANNEL DEVICE TYPE DISK MAXPIECESIZE 300M;

ALLOCATE CHANNEL c1 DEVICE TYPE DISK MAXPIECESIZE 300M;
```

4 maxsetsize :

4

```
RMAN> backup database maxsetsize 1G format '/u01/myrman/%U.bak';
```

<1G.

5 SECTION SIZE multisection backup

datafile

SECTION SIZE 5 800M

file section , 300M file section

5:

```
RMAN> RUN{
ALLOCATE CHANNEL d1 DEVICE TYPE disk;
ALLOCATE CHANNEL d2 DEVICE TYPE disk;
ALLOCATE CHANNEL d3 DEVICE TYPE disk;
BACKUP AS COMPRESSED BACKUPSET DATAFILE 2 SECTION SIZE 300M format
'/u01/myrman/%U.bak';
}
```

: SECTION SIZE maxpiecesize maxpiecesize SECTION SIZE

SECTION SIZE maxpiecesize allocate channel

```
RMAN> CONFIGURE CHANNEL DEVICE TYPE DISK clear;
```

CONFIGURE DATAFILE BACKUP COPIES FOR DEVICE TYPE DISK TO 1; # default

(4 2 2 PPT101)

TO STB TO DISK PPT-102) DISK TAPE

, duplex , backup backupset.

RMAN

```
RMAN> backup copies 2 datafile 4 format
'/u01/myrman/%s_dbf','/u01/myrman1/%s_dbf';
```

CONFIGURE ARCHIVELOG BACKUP COPIES FOR DEVICE TYPE DISK TO 1; # default

CONFIGURE MAXSETSIZE TO UNLIMITED; # default

Bytes KB MB GB unlimited

CONFIGURE ENCRYPTION FOR DATABASE OFF; # default
CONFIGURE ENCRYPTION ALGORITHM ' '; # default

Transparent encryption Password encryption:
PPT-107

CONFIGURE COMPRESSION ALGORITHM 'BZIP2'; # default

RMAN binary compression 11g PPT-II-104-106), rman
Unallocated block(HWM binary compression Unused block,
backup set :'BZIP2' 'ZLIB'. RMAN

CONFIGURE ARCHIVELOG DELETION POLICY TO NONE; # default

, Data Guard archive file

Oracle

CONFIGURE SNAPSHOT CONTROLFILE NAME TO
'/u01/oracle/dbs/snapcf_timran11g.f'; # default

rman RMAN catalog controlfile
(PPT-II-74)

6.6 rman

1 backupset datafile unallocate HWM
disk tape channel datafile
backupset backup piece OS

2 copy) cp datafile ,
0 disk tape

6.7 rman

1 stand alone

```
RMAN> shutdown immediate;
RMAN> startup force mount;
RMAN> alter database open;
RMAN> sql 'alter system switch logfile';

RMAN> sql 'select * from scott.emp';      //  select
```

2 job

```
RMAN>run {
shutdown immediate;
startup mount;
allocate channel c1 type disk;
allocate channel c2 type disk;
backup database format '/u01/myrman/%d_%s.bak';
alter database open;
}
```

3) EM WEB

rman

7.1 rman

7.1.1 backupset

1

1.1 RMAN> backup database format='/u01/myrman/timran_%s.bak' filesperset 3;

1.2 RMAN> backup database plus archivelog delete input; //

1.3 RMAN> backup database format '/u01/myrman/%s_bak' plus archivelog delete input skip inaccessible;

1.3

backup database format datafile format archivelog v$archived_log skip inaccessible

delete input v$archived_log

restore archivelog all;

RMAN RMAN

2

RMAN> backup tablespace users format '/u01/myrman/users_%s.bak' tag=userbak;
RMAN> backup tablespace system plus archivelog delete input; //

3

RMAN> backup datafile 3,5 format '/u01/myrman/%d_%s.bak'; //
" "

4

RMAN> backup archivelog all delete input;

5

RMAN> backup current controlfile;

6

RMAN> backup spfile;

7

RMAN> backup recovry area;

8)

RMAN> backup backupset 18; // disk backupset tape
duplex.

RMAN> list backup; // backup set

* RMAN spfile

7.1.2 image

1 RMAN> copy datafile 4 to '/u01/myrman/users_%s.bak';
2 RMAN> backup as copy tablespace 'TEST' format='/u01/myrman/%d_test_%s.bak';
// backup

RMAN> list datafilecopy all; //

* RMAN restore backupset recover
restore RMAN spfile

7.2 : PPT-117) 10g PPT-108)

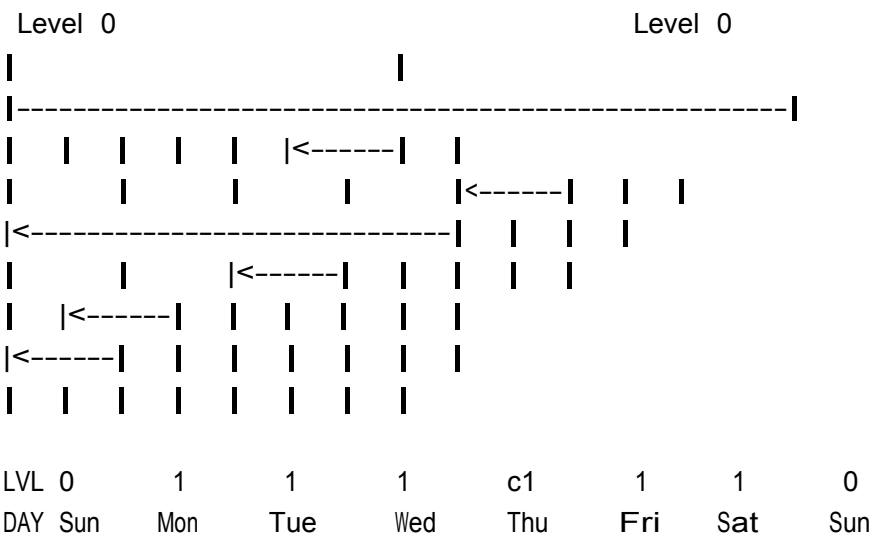
block rman datablock scn
scn

1 Differential incremental backup

2 Cumulative incremental backup)

10g 0 1 2

7.2.1



*
1 0 (full backup),
1
1 0 1 0
2 RMAN
startup force mount;
restore database;
alter database open resetlogs;

restore recover database noredo;
1 1 2
(PPT-II-179)

7.3 block change tracking) 10G

oracle

CTWR

DATA GUARD

RMAN 8
0 7

1

SQL> alter database enable block change tracking using file '/u01/oradata/timran11g/change_tracking.dbf';

2 , CTWR ,

SQL> col filename for a50;
SQL> select * from v$block_change_tracking;

```
STATUS     FILENAME                                            BYTES
---------- -------------------------------------------------- ----------
ENABLED    /u01/oradata/timran11g/change_tracking.dbf          11599872
```

3 0 36
RMAN> backup incremental level 0 format '/u01/myrman/%s.bak' datafile 2;
ORA_DISK_1: , :00:00:36

4 1 2 , .
RMAN> backup incremental level 1 format '/u01/myrman/%s.bak' datafile 2;
ORA_DISK_1: , :00:00:02

5
SQL> alter database disable block change tracking;

6) 0 1 0 ,
25

RMAN> backup incremental level 1 format '/u01/myrman/%s.bak' datafile 2;
ORA_DISK_1: , :00:00:25

7

SQL> alter database enable block change tracking using file '/u01/oradata/timran11g/change_tracking.dbf';

8 25

RMAN> backup incremental level 1 format '/u01/myrman/%s.bak' datafile 2;
ORA_DISK_1: , :00:00:25

9 1 , .

RMAN> backup incremental level 1 format '/u01/myrman/%s.bak' datafile 2;
ORA_DISK_1: , :00:00:01

incremental level 0 backup

7.4 (PPT-11-168-169)

image copy 0 0 image copy imcremental level 1 image copy
image copy imcremental level 1

RMAN>
run {
recover copy of database with tag 'incr_update';
backup incremental level 1 for recover of copy with tag 'incr_update' datafile 4;
}

?

backup level 0 image copy,
backup level 1 backup set
recover copy level 1 image copy

// database datafile a whole backup
// retention=1, level 1 obsolete

7.5 DRA(PPT-11-218-225)

DRA RMAN EM
ADR Health Monitor

1 RMAN

RMAN>backup tablespace sysaux format '/u01/myrman/%d_%s.bak';

2) sysaux01.dbf
SQL> shutdown abort

[oracle@timran timran11g]$ mv sysaux01.dbf sysaux01.bak

SQL> startup

ORA-01157: / 2 - DBWR
ORA-01110: 2: '/u01/oradata/timran11g/sysaux01.dbf'

3) mount rman, DRA
[oracle@timran timran11g]$ rman target /

RMAN> list failure;

==========

ID
------- -------- --------- ------------------- -------
202 HIGH OPEN 2013-10-25 19:09:09

CRITICAL | HIGH | LOW

CRITICAL CRITICAL
HIGH LOW LOW HIGH HIGH LOW
LIST FAILURE

OPEN

Change failure failure

4)RMAN> change failure 202 priority low;

==========

ID

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

202 HIGH OPEN 2013-10-25 19:09:09

(YES NO)? y

1 LOW

RMAN> list failure;

RMAN> change failure 202 priority high;

==========

ID

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

202 LOW OPEN 2013-10-25 19:09:09

(YES NO)? y

1 HIGH

RMAN> list failure;

==========

ID

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

202 HIGH OPEN 2013-10-25 19:09:09

5)RMAN> advise failure;

:

: /u01/diag/rdbms/timran11g/timran11g/hm/reco_3505864154.hm

6)RMAN> repair failure;

:

: /u01/diag/rdbms/timran11g/timran11g/hm/reco_1197260073.hm

:

```
# restore and recover datafile
restore datafile 2;
recover datafile 2;
```

(YES NO)? y

```
restore    2013-03-12 14:19:36
    ORA_DISK_1

ORA_DISK_1:
ORA_DISK_1:
ORA_DISK_1:          00002          /u01/oradata/timran11g/sysaux01.dbf
ORA_DISK_1:                  /u01/myrman/TIMRAN11_1.bak
ORA_DISK_1:        = /u01/myrman/TIMRAN11_1.bak        = TAG20130311T212425
ORA_DISK_1:                1
ORA_DISK_1:          ,      : 00:00:45
restore    2013-03-12 14:20:22

recover    2013-03-12 14:20:22
    ORA_DISK_1


,     : 00:00:07

recover    2013-03-12 14:20:29
```

(YES NO)? y

*

1) list failure, advise failure.
list,advise,repair

2) DRA, nomount mount open

3)DRA RAC

rman

8.1 recover

1
2

8.2

---- archived

run{} linux

```
/u01/oradata/timran11g/myrman.rcv
run {
allocate channel c1 type disk;
allocate channel c2 type disk;
backup database format '/u01/myrman/%d_%s.bak";
}
```

rman

```
rman target / @/u01/oradata/timran11g/myrman.rcv
```

RMAN RMAN rman v$session client_info
RMAN , -
set command id to 'XXX" v$session

```
SQL>
select sid,spid,client_info
from v$process p join v$session s on (p.addr=s.paddr)
where client_info like 'rman%";
```

```
SID SPID CLIENT_INFO
---------- ------------------------ ------------------------------------------
--------------------
113 12992 rman channel=ORA_DISK_1
111 12995 rman channel=ORA_DISK_2
```

```
RMAN> list backup;
```

```
==================

BS                  LV
------- ---- -- ---------- ---------- ---------- ------------------
22      Full    635.16M     DISK        00:01:29    2013-01-15 15:49:14
        BP      : 22        : AVAILABLE         : NO       : TAG20130115T154745
    :/u01/myrman/TIMRAN11_24.bak
          22
       LV       Ckp SCN     Ckp
  ---- -- ---- ---------- ------------------ ----
  1                          Full    6634197             2013-01-15    15:47:29
/u01/oradata/timran11g/system01.dbf
  4        Full 6634197    2013-01-15 15:47:29 /u01/oradata/timran11g/user01.dbf
  6        Full 6634197    2013-01-15 15:47:29 /u01/oradata/timran11g/test01.dbf

BS                  LV
------- ---- -- ---------- ---------- ---------- ------------------
23      Full    621.61M     DISK        00:01:39    2013-01-15 15:49:27
        BP      : 23        : AVAILABLE         : NO       : TAG20130115T154745
    :/u01/myrman/TIMRAN11_25.bak
          23
       LV       Ckp SCN     Ckp
  ---- -- ---- ---------- ------------------ ----
  2                          Full    6634197             2013-01-15    15:47:29
/u01/oradata/timran11g/sysaux01.dbf
  5                          Full    6634197             2013-01-15    15:47:29
/u01/oradata/timran11g/example01.dbf
  7                          Full    6634197             2013-01-15    15:47:29
/u01/oradata/timran11g/undotbs01.dbf

BS                  LV
------- ---- -- ---------- ---------- ---------- ------------------
24      Full    9.67M       DISK        00:00:11    2013-01-15 15:49:44
        BP      : 24        : AVAILABLE         : NO       : TAG20130115T154933
    :/u01/myrman/c-3416564781-20130115-08
         SPFILE:            : 2013-01-15 15:47:44
  SPFILE db_unique_name: TIMRAN11G
                : Ckp SCN: 6634197      Ckp      : 2013-01-15 15:47:29

RMAN>
```

: C1 C2 22 23

```
      1  system                         EM     DRA

1

[oracle@timran  ~]$ sqlplus scott/scott

SQL> create  table t1  (id int);
SQL>  insert  into  t1 values(1);
SQL> commit;
SQL> select * from t1;

         ID
----------
          1

SQL> alter system switch  logfile;
SQL> /
SQL> /

SQL> insert into t1 values(2);
SQL> commit;
SQL> select * from scott.t1;

         ID
----------
          1
          2


3              system01.dbf

[oracle@timran  ~]$ rm /u01/oradata/timran11g/system01.dbf

SQL> startup froce
ORACLE instance  started.

Total  System Global Area  285212672 bytes
Fixed  Size                  1218968 bytes
Variable  Size              83887720 bytes
Database Buffers           192937984 bytes
Redo  Buffers                7168000 bytes
Database mounted.
ORA-01157: cannot identify/lock data file 1 - see DBWR trace file
```

ORA-01110: data file 1: '/u01/oradata/timran11g/system01.dbf'

EM ...

2 open

1

```
SQL> create table scott.emp1 as select * from scott.emp where rownum < 3;
SQL> select * from scott.emp1;

     EMPNO ENAME      JOB              MGR HIREDATE         SAL       COMM
DEPTNO
---------- ---------- --------- ---------- --------- ---------- ---------- -----
-----
      7369 SMITH      CLERK             7902 17-DEC-80        800
20
      7499 ALLEN      SALESMAN          7698 20-FEB-81       1600        300
30
```

2 users

```
[oracle@timran ~]$ rm /u01/oradata/timran11g/users01.dbf
```

3) db buffer

```
SQL> alter system flush buffer_cache;
SQL> conn /as sysdba
SQL> select * from scott.emp1;
select * from scott.emp1
                    *
ERROR at line 1:
```

SQL> alter system checkpoint // rman

4

```
[oracle@timran timran11g]$ mkdir /u01/oradata/timran11g/dir1
```

5 RMAN

```
RMAN>run{
```

```
sql 'alter database datafile 4 offline';
set newname for datafile 4 to '/u01/oradata/timran11g/dir1/users01.dbf';
restore tablespace users;
switch datafile 4;
recover tablespace users;
sql 'alter database datafile 4 online';
}
```

set newname for RMAN restore
switch datafile controlfile recover

5

```
SQL> select * from scott.emp1;

     EMPNO ENAME      JOB              MGR HIREDATE                 SAL
COMM       DEPTNO
---------- ---------- --------- ---------- ------------------- ---------- ------
---- ----------
      7369 SMITH      CLERK             7902 1980-12-17 00:00:00        800
20
      7499 ALLEN      SALESMAN          7698 1981-02-20 00:00:00       1600
300         30
```

6

```
SQL> alter tablespace users offline;

[oracle@timran ~]$ mv /u01/oradata/timran11g/dir1/users01.dbf
/u01/oradata/timran11g
```

```
SQL>alter tablespace users rename datafile
'/u01/oradata/timran11g/dir1/users01.dbf' to
'/u01/oradata/timran11g/users01.dbf';
SQL> alter tablespace users online;
```

7

```
SQL> select * from scott.emp1;
```

3 (rman),datafile

1
SQL> create tablespace lx datafile '/u01/oradata/timran11g/lx01.dbf' size 5m;
SQL> create table scott.t2(id int) tablespace lx;
SQL> insert into scott.t2 values (1);
SQL> commit;
SQL> select * from scott.t2;

ID

1

2) t2
[oracle@timran ~]$rm /u01/oradata/timran11g/lx01.dbf

3 db buffer t2

SQL> alter system flush buffer_cache;
SQL> conn / as sysdba
SQL> select * from scott.t2;
select * from scott.t2
*
1 :
ORA-01116: 3
ORA-01110: 3: '/u01/oradata/timran11g/lx01.dbf'
ORA-27041:

4 rman rman lx01.dbf)

RMAN>run {
sql 'alter database datafile 3 offline';
restore datafile 3;
recover datafile 3;
sql 'alter database datafile 3 online';
}

sql : alter database datafile 3 offline

restore 2013-01-18 11:23:32
: ORA_DISK_1
ORA_DISK_1: SID=130 =DISK

, = 3 = /u01/oradata/timran11g/lx01.dbf //

RMAN lx01.dbf
;
restore 2013-01-18 11:23:35

recover 2013-01-18 11:23:35
ORA_DISK_1

, : 00:00:01

recover 2013-01-18 11:23:36

sql : alter database datafile 3 online

5)
SQL> select * from scott.t2;

ID

1

rman

9.1 rman time scn sequence

1 time scn

1

RMAN> show all;

CONFIGURE CONTROLFILE AUTOBACKUP ON; //
flash_recovery_area

RMAN>delete backupset;
RMAN>backup database format '/u01/myrman/%s.bak'

SQL> create table scott.t1 (id int);
SQL> insert into scott.t1 values(1);
SQL> commit;
select * from scott.t1;
SQL> select * from scott.t1;

ID

```
----------
         1

SQL> select * from v$log;

    GROUP#    THREAD#    SEQUENCE#      BYTES    MEMBERS ARC STATUS
FIRST_CHANGE# FIRST_TIME
---------- ---------- ---------- ---------- ---------- --- ---------------- ----
--------- ------------------
         1          1          7   52428800          1 NO  CURRENT
6689019 2013-01-18 13:45:25
         2          1          5   52428800          1 YES INACTIVE
6689014 2013-01-18 13:45:22
         3          1          6   52428800          1 YES INACTIVE
6689016 2013-01-18 13:45:23


2

SQL> select sysdate from dual;

SYSDATE
-------------------
2013-01-18 13:47:04

3

SQL> truncate table  scott.t1;              //                    sequence 7


SQL> alter system switch logfile;
SQL> /
SQL> select * from v$log;

    GROUP#    THREAD#    SEQUENCE#      BYTES    MEMBERS ARC STATUS
FIRST_CHANGE# FIRST_TIME
---------- ---------- ---------- ---------- ---------- --- ---------------- ----
--------- ------------------
         1          1          7   52428800          1 YES ACTIVE
6689019 2013-01-18 13:45:25
         2          1          8   52428800          1 YES ACTIVE
6689269 2013-01-18 13:49:17
         3          1          9   52428800          1 NO  CURRENT
6689271 2013-01-18 13:49:19
```

```
SQL> insert into scott.t1 values(2);                    //
sequence 9
SQL> commit;
SQL> select * from scott.t1;

        ID
----------
         2
4    RMAN

run {
startup force mount;
allocate channel c1 type disk;
allocate channel c2 type disk;
set until time '2013-01-18 13:47:04 ';
restore database;
recover database;
alter database open resetlogs;
}
```

Oracle

```
                    422670336

Fixed Size                  1300352
Variable Size             331352192
Database Buffers           83886080
Redo Buffers                6131712


          : c1
      c1: SID=154          =DISK

          : c2
      c2: SID=151          =DISK

            : SET until clause

      restore      2013-01-18 14:19:34

      c1:
      c1:
```

```
c1:              00001          /u01/oradata/timran11g/system01.dbf
c1:              00002          /u01/oradata/timran11g/sysaux01.dbf
c1:              00003          /u01/oradata/timran11g/lx01.dbf
c1:              00004          /u01/oradata/timran11g/user01.dbf
c1:              00005          /u01/oradata/timran11g/example01.dbf
c1:              00006          /u01/oradata/timran11g/test01.dbf
c1:              00007          /u01/oradata/timran11g/undotbs01.dbf
c1:                        /u01/myrman/51.bak
c1:          = /u01/myrman/51.bak        = TAG20130118T123557
c1:                    1
c1:           ,       : 00:01:55
restore      2013-01-18 14:21:30

recover      2013-01-18 14:21:31



1        4                        /u01/disk1/timran/arch_1_804846837_4.log

1        5                        /u01/disk1/timran/arch_1_804846837_5.log

1        6                        /u01/disk1/timran/arch_1_804846837_6.log

1        7                        /u01/disk1/timran/arch_1_804846837_7.log

                =/u01/disk1/timran/arch_1_804846837_4.log       =1       =4
                =/u01/disk1/timran/arch_1_804846837_5.log       =1       =5
                =/u01/disk1/timran/arch_1_804846837_6.log       =1       =6
                =/u01/disk1/timran/arch_1_804846837_7.log       =1       =7
          ,       : 00:00:08
recover      2013-01-18 14:21:41


        : c1
        : c2

4

SQL> select * from scott.t1;

         ID
----------
          1
```

// scn time set until scn 6689163;

// set until sequence 3;

* RMAN

RMAN

---

time until time XXX set until time XXX
scn until change XXX set until scn XXX
until cancel set until sequence XXX

2

SPFILE CONTROLFILE:

1

SQL> select * from v$tablespace;

TS#	NAME	INC	BIG	FLA	ENC
0	SYSTEM	YES	NO	YES	
1	SYSAUX	YES	NO	YES	
4	USERS	YES	NO	YES	
6	EXAMPLE	YES	NO	YES	
8	TEST	YES	NO	YES	
3	TEMP	NO	NO	YES	
2	UNDOTBS1	YES	NO	YES	

//TEST T1

SQL> select owner,table_name,tablespace_name from dba_tables where tablespace_name='TEST';

OWNER	TABLE_NAME	TABLESPACE_NAME
SCOTT	T1	TEST

//T1

SQL> select * from scott.t1;

```
         ID
----------
          1
```

rman

```
RMAN> list backup;


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

BS                LV
------- ---- -- ---------- ----------- ------------ -------------------
1       Full     1.27G       DISK          00:01:42      2013-01-16 19:36:18
        BP       : 1         : AVAILABLE         : NO       : TAG20130116T193436
    :/u01/myrman/2.bak
          1
       LV        Ckp SCN     Ckp
  ---- -- ---- ---------- ------------------ ----
  1                          Full     6698790              2013-01-16     19:34:45
/u01/oradata/timran11g/system01.dbf
  2                          Full     6698790              2013-01-16     19:34:45
/u01/oradata/timran11g/sysaux01.dbf
  4       Full 6698790    2013-01-16 19:34:45 /u01/oradata/timran11g/user01.dbf
  5                          Full     6698790              2013-01-16     19:34:45
/u01/oradata/timran11g/example01.dbf
  6       Full 6698790    2013-01-16 19:34:45 /u01/oradata/timran11g/test01.dbf
  7                          Full     6698790              2013-01-16     19:34:45
/u01/oradata/timran11g/undotbs01.dbf

BS                LV
------- ---- -- ---------- ----------- ------------ -------------------
2       Full     9.67M       DISK          00:00:10      2013-01-16 19:36:31
        BP       : 2         : AVAILABLE         : NO       : TAG20130116T193621

  :/u01/flash_recovery_area/TIMRAN11G/autobackup/2013_01_16/o1_mf_s_819894065_8x
9y1l8z_.bkp
          SPFILE:           : 2013-01-16 19:29:09
  SPFILE db_unique_name: TIMRAN11G
                 : Ckp SCN: 6698846       Ckp       : 2013-01-16 19:36:21
```

// spfile file controle file 2

3 DBID

```
SQL> select dbid from v$database;

      DBID
----------
3416564781
```

//dbid database ID spfile controlfile
rman

4

```
SQL> shutdown abort
```

```
[oracle@timran dbs]$ mv spfiletimran.ora spfiletimran.old
[oracle@timran dbs]$ mv inittimran.ora inittimran.old
```

// spfile pfile

5) RMAN

```
[oracle@timran ~]$ [oracle@timran ~]$ rman target /

connected to target database (not started)
```

RMAN> startup nomount; // SQL*PLUS RMAN
startup nomount RMAN

```
startup failed: ORA-01078: failure in processing system parameters
LRM-00109: could not open parameter file '/u01/oracle/dbs/inittimran.ora'

starting Oracle instance without parameter file for retrival of spfile
Oracle instance started

Total System Global Area     159383552 bytes

Fixed Size                     1218244 bytes
Variable Size                 58722620 bytes
Database Buffers              92274688 bytes
Redo Buffers                   7168000 bytes

RMAN> set dbid=3416564781;
```

executing command: SET DBID

RMAN> restore spfile from autobackup;

// .

RMAN> restore spfile from '/u01/flash_recovery_area/TIMRAN11G/autobackup/2013_01_16/o1_mf_s_819894065_8x9y1l8z_.bkp';

restore 2013-01-16 14:43:42

: ORA_DISK_1

ORA_DISK_1: SID=100 =DISK

ORA_DISK_1: AUTOBACKUP /u01/flash_recovery_area/TIMRAN11G/autobackup/2013_01_16/o1_mf_s_819894065_8x9y1l8z_.bkp spfile

ORA_DISK_1: AUTOBACKUP SPFILE

restore 2013-01-16 14:43:46

// dbs/ spfiletimran.ora spfile /

dbid ( ) / set dbid

RMAN RMAN Oracle

CONFIGURE CONTROLFILE AUTOBACKUP ON flash_recovery_area

RMAN> restore controlfile from autobackup

3 RMAN

drop tablespace test drop test t1

1 $ tail -f /u01/diag//rdbms/timran11g/timran11g/trace/alert_timran11g.log

// drop tablespace

2 SQL> drop tablespace test including contents and datafiles;

// test

3

Wed Jan 16 19:39:56 2013 // until time
drop tablespace test including contents and datafiles
Deleted file /u01/oradata/timran11g/test01.dbf
Wed Jan 16 19:40:12 2013
Completed: drop tablespace test including contents and datafiles

4 rman

RMAN> list backup;

==========

BS LV
------- ---- -- ---------- ----------- ------------ -------------------
1 Full 1.27G DISK 00:01:42 2013-01-16 19:36:18
BP : 1 : AVAILABLE : NO : TAG20130116T193436
:/u01/myrman/2.bak
1
LV Ckp SCN Ckp
---- -- ---- ---------- ------------------- ----
1 Full 6698790 2013-01-16 19:34:45
/u01/oradata/timran11g/system01.dbf
2 Full 6698790 2013-01-16 19:34:45
/u01/oradata/timran11g/sysaux01.dbf
4 Full 6698790 2013-01-16 19:34:45 /u01/oradata/timran11g/user01.dbf
5 Full 6698790 2013-01-16 19:34:45
/u01/oradata/timran11g/example01.dbf
6 Full 6698790 2013-01-16 19:34:45
7 Full 6698790 2013-01-16 19:34:45
/u01/oradata/timran11g/undotbs01.dbf

BS LV
------- ---- -- ---------- ----------- ------------ -------------------
2 Full 9.67M DISK 00:00:10 2013-01-16 19:36:31
BP : 2 : AVAILABLE : NO : TAG20130116T193621

:/u01/flash_recovery_area/TIMRAN11G/autobackup/2013_01_16/o1_mf_s_819894065_8x9y1l8z_.bkp
SPFILE: : 2013-01-16 19:29:09
SPFILE db_unique_name: TIMRAN11G
: Ckp SCN: 6698846 Ckp : 2013-01-16 19:36:21

BS LV
------- ---- -- ---------- ----------- ------------ ------------------
3 Full 9.67M DISK 00:00:10 2013-01-16 19:40:12
BP : 3 : AVAILABLE : NO : TAG20130116T194002

:/u01/flash_recovery_area/TIMRAN11G/autobackup/2013_01_16/o1_mf_s_819894065_8x9y1l9z_.bkp
SPFILE: : 2013-01-16 19:29:09
SPFILE db_unique_name: TIMRAN11G
: Ckp SCN: 6698986 Ckp : 2013-01-16 19:40:02

// 1 6 test 3
on

5

SQL> shutdown abort
[oracle@timran timran11g]$ rm *.ctl
[oracle@timran timran11g]$ rm *.dbf

6 drop tablespace test

1. 3 drop tablespace
test

2. restore controlfile from autobackup until time XXX.
RMAN 2 3. RMAN “ ”

3. restore mount
RMAN using backup controlfile

```
RMAN>run{
startup nomount;
set dbid=3416564781;
restore controlfile from autobackup until time '2013-01-16 19:39:56';
alter database mount;
set until time '2013-01-16 19:39:56';
restore database;
recover database;
alter database open resetlogs;
}
```

Oracle

422670336

Fixed Size	1300352
Variable Size	352323712
Database Buffers	62914560
Redo Buffers	6131712

: SET DBID

restore 2013-01-16 19:44:47

: ORA_DISK_1
ORA_DISK_1: SID=154 =DISK

: /u01/flash_recovery_area
( ): TIMRAN11G
ORA_DISK_1: AUTOBACKUP
/u01/flash_recovery_area/TIMRAN11G/autobackup/2013_01_16/o1_mf_s_819894065_8x9y1l8z_.bkp
ORA_DISK_1: AUTOBACKUP: 20130116
ORA_DISK_1: AUTOBACKUP
/u01/flash_recovery_area/TIMRAN11G/autobackup/2013_01_16/o1_mf_s_819894065_8x9y1l8z_.bkp
ORA_DISK_1: AUTOBACKUP
=/u01/oradata/timran11g/control01.ctl
=/u01/oradata/timran11g/control02.ctl
=/u01/oradata/timran11g/control03.ctl
restore 2013-01-16 19:45:28

: ORA_DISK_1

: SET until clause

restore 2013-01-16 19:45:33
implicit crosscheck backup 2013-01-16 19:45:33
: ORA_DISK_1
ORA_DISK_1: SID=154 =DISK
1
implicit crosscheck backup 2013-01-16 19:45:34

implicit crosscheck copy 2013-01-16 19:45:34
ORA_DISK_1
implicit crosscheck copy 2013-01-16 19:45:34

ORA_DISK_1

ORA_DISK_1:
ORA_DISK_1:
ORA_DISK_1: 00001 /u01/oradata/timran11g/system01.dbf
ORA_DISK_1: 00002 /u01/oradata/timran11g/sysaux01.dbf
ORA_DISK_1: 00004 /u01/oradata/timran11g/user01.dbf
ORA_DISK_1: 00005 /u01/oradata/timran11g/example01.dbf
ORA_DISK_1: 00006 /u01/oradata/timran11g/test01.dbf
//test
ORA_DISK_1: 00007 /u01/oradata/timran11g/undotbs01.dbf
ORA_DISK_1: /u01/myrman/2.bak
ORA_DISK_1: = /u01/myrman/2.bak = TAG20130116T193436
ORA_DISK_1: 1
ORA_DISK_1: , : 00:01:46
restore 2013-01-16 19:47:21

recover 2013-01-16 19:47:22
ORA_DISK_1

1 2 /u01/oradata/timran11g/redo02.log

=/u01/oradata/timran11g/redo02.log =1 =2
, : 00:00:02
recover 2013-01-16 19:47:25

7
SQL> select * from scott.t1;

ID

1

4 TableSpace Point In Time Recovery

TSPITR
TSPITR RMAN

RMAN
,

$rman target sys/oracle@timran11g auxiliary sys/oracle@newdb

auxiliary instance target database

1 TSPITR system undo

2 RMAN> CONFIGURE CONTROLFILE AUTOBACKUP ON;

1)
SQL> create tablespace abcd datafile '/u01/oradata/timran11g/abcd01.dbf' size 5m;

2)
create table scott.t2(c1 date) tablespace abcd;
insert into scott.t2 values(sysdate);
commit;

3)RMAN

RMAN>backup tablespace abcd format '/u01/myrman/abcd_%s.bak';

4

SQL>select sysdate from dual;

SYSDATE

2013-01-16 22:02:14

5) purge

SQL>drop table scott.t2 purge;

6)

$mkdir -p /u01/oradata/timran11g/auxdata

7) RMAN TSPITR

[oracle@timran ~]$ rman target /

RMAN> recover tablespace abcd until time '2013-01-16 22:02:14' auxiliary destination '/u01/oradata/timran11g/auxdata';

abcd

abcd TSPITR

8)

SQL> alter tablespace abcd online;
SQL> select * from scott.t2;

C1

2013-01-16 21:58:11

1 TSPITR
TS_PITR_CHECK
2) TSPITR 11gR2

Oracle PPT-II-563

3) TS_PITR_OBJECTS_TO_BE_DROPPED creation time

4 TSPITR TSPITR TSPITR

5 BMR PPT-II-229-236

RMAN

Block format incorrect checksum
Oracle internal error checksum

(

A. ANALYZE operations
B. dbv
C. SQL queries that access the potentially corrupt block
D. DBMS_REPAIR
F. RMAN

DB_BLOCK_CHECKSUM disk I/O TYPICAL
DB_BLOCK_CHECKING memory data FALSE
DB_LOST_WRITE_PROTECT lost write standy database TYPICAL

11g DB_ULTRA_SAFE(
OFF |DATA_ONLY|DATA_AND_INDEX

RMAN BACKUP
V$database_block_currption

ORA-01578: ORACLE DATA BLOCK CURRPTED(FILE #5,BLOCK #21)

rman

RMAN>blockrecover device type disk datafile 5 block 21;

11g RMAN>recover corruption list backup validate database

RMAN>BACKUP VALIDATE DATABAE;
RMAN>RECOVER CORRUPTION LIST;

BACKUP VALIDATE DATABAE
, v$backup_corruption v$database_block_corruption

RMAN> BACKUP CORRUPTION LIST UNITL TIME SYSDATE - 7;

RMAN UNTIL

1 BMR RMAN block
ARCHIVELOG
2 RMAN set
maxcorrupt
3 BMR mount open ,
incremental level 0
4

SQL> desc V$DATABASE_BLOCK_CORRUPTION;
?

FILE#
NUMBER
BLOCK#
NUMBER
BLOCKS
NUMBER
CORRUPTION_CHANGE#
NUMBER
CORRUPTION_TYPE VARCHAR2(9)

CORRUPTION_TYPE MEDIA_CORRUPT,

RMAN> recover corruption list;

6 (PPT-11-127)

Oracle 11g backup … keep RMAN
(obsolete)
keep RMAN

BACKUP … KEEP {FOREVER|UNTIL TIME 'date_expt'} [RESOTRE POINT rename];

KEEP FOREVER catalog Oracle 11g
KEEP UNTIL TIME 'sysdate+365'

RESOTRE POINT SCN

RMAN>
backup datafile 4 format '/u01/myrman/%s_%t.bak'
keep until time 'sysdate+30'
restore point timranbak;

RESOTRE POINT rename scn

RMAN> list restore point all;

SCN RSP
---------- -------------------- ---------- -------------------- ----
13400758 2014-03-13 10:10:18 TIMRANBAK

1 retention delete obsolete
2 spfile control

RMAN>

10.1 Catalog database

catalog RMAN

1 RMAN
autobackup RMAN
2 RMAN control_file_record_keep_time 7

Catalog Database

1 RMAN
2 rman
3 catalog

4 catalog script catalog RMAN

10.2 Catalog database

catalog Oracle server ,

Catalog catalog :xp-oracle-orcl target:linux-oracle-timran11g

1 Catalog

```
SQL> create tablespace rman_ts datafile 'E:\rman.dbf' size 50m;
```

2 RMAN

```
SQL> create user rman identified by rman default tablespace rman_ts;
SQL> grant resource,recovery_catalog_owner to rman;
SQL> exit
```

3 RMAN target catalog

```
C:>rman target sys/system@timran11g catalog rman/rman@orcl
```

TIMRAN(DBID=4035750304

4 catalog

```
RMAN>create catalog tablespace rman_ts;
```

// Oracle rman catalog user_objects

xp sqlplus rman/rman

SQL> select object_name,object_type from user_objects;

5 target target rman catalog)

RMAN>register database;

resync

resync

Catalog

target catalog target Catalog target online Catalog full resync.

RMAN> RESYNC CATALOG;

10.3 catalog targe t

, catalog target

RMAN connect target|catalog

catalog connect target target

:

target, timran11g(linux), orcl(xp), catalog

1 rman catalog

C:\Documents and Settings\timran>rman catalog rman/rman@orcl

2 timran11g

```
RMAN> connect target sys/system@timran11g

                    : TIMRAN11 (DBID=3439065160)

RMAN> connect target sys/system@orcl;

RMAN-00571:  ===========================================================
RMAN-00569: =============== ERROR MESSAGE STACK  FOLLOWS ===============
RMAN-00571:  ===========================================================
RMAN-06167:

//      catalog                    target
RMAN> exit
```

3) orcl

```
RMAN> connect target sys/system@orcl;

                    : ORCL (DBID=1335748581)

RMAN> register database;
```

resync

resync

10.4 RMAN catalog

catalog rman
timran.rcv

```
run{
backup database plus archivelog delete all input;
delete obsolet;
}
```

```
$rman target / catalog rman/rman@orcl @timran.rcv
```

catalog rman catalog

create [global] script

replace [global] script
print [global] script
list [global] script name
exectue [global] script
delete [global] script

10.5 catalog database((PPT-II-83)

catalog , catalog Oracle target,
IMPORT CATALOG catalog target
catalog, catalog target
RMAN catalog target NO UNREGISTER IMPORT
CATALOG target

IMPORT CATALOG catalog 10g catalog 11g
catalog

$rman

11g

RMAN> connect catalog rman/rman@rman11

import catalog catalog 10g) catalog 11g)
catalog target database catalog

RMAN> import catalog rman1/rman1@rman10

target database
RMAN> import catalog rman1/rman1@rman10 dbid=123456,1234557;

10.6 Catalog command

RMAN
RMAN
target controlfile catalog

CATALOG DATAFILECOPY '/disk1/old_datafiles/01_01_2003/users01.dbf';
CATALOG ARCHIVELOG '/disk1/arch_logs/archive1_731.dbf',
'/disk1/arch_logs/archive1_732.dbf';
CATALOG BACKUPPIECE '/disk1/backups/backup_820.bkp';

: OS RMAN

CATALOG START WITH '/disk1/backups/';

catalog image copy restore (PPT-II-170)

RMAN> backup as copy datafile 4 format '/u01/myrman/%s.dbf';

SQL> select file#,name from v$datafile; // datafile 4

[oracle@timran timran11g]$ rm /u01/oradata/timran11g/users01.dbf

RMAN> sql 'alter database datafile 4 offline';

RMAN> switch datafile 4 to copy;

//switch resync catalog

RMAN> recover datafile 4;

RMAN> sql 'alter database datafile 4 online';

SQL*PLUS

SQL>alter tablespace users offline;
[oracle@timran timran11g]$ cp /u01/myrman/3.dbf /u01/oradata/timran11g/users01.dbf
SQL>alter tablespace users rename datafile '/u01/myrman/3.dbf' to '/u01/oradata/timran11g/users01.dbf';
SQL>alter tablespace users online;

1 RMAN SYS RMAN
AS SYSDBA
2 catalog
11.1.0.6 6
3 create script create global script

RMAN catalog
4 global script RMAN
5 exectue RUN{} Oracle

10.7 PPT85-86)

catalog target
DBA CATALOG Oracle11
(virtual private catalog) CATALOG
CATALOG

(virtual private catalog) (base recovery catalog)

(base catalog) PROD1, PROD2, PROD3
CATOWNER VPC1 PROD1
(virtual catalog)

1.SQL> GRANT recovery_catalog_owner TO vpc1; // VPC1
2.RMAN> CONNECT CATALOG catowner/password@catdb; //CATOWNER catalog server
3.RMAN> GRANT CATALOG FOR DATABASE prod1 TO vpc1; // VPC1 PROD1

4.RMAN> CONNECT CATALOG vpc1/password@catdb; //VPC1 catalog server
5.RMAN> CREATE VIRTUAL CATALOG; //VPC1 virtual catalog

10.8 Duplicate Database

10.8.1
Source Database (source host
Duplicate Database new host
Catalog Database (catalog host)

10.8.2 Duplicate Database RMAN RMAN Duplicate

1 TEST Database

source host copy, RMAN new host source new host

new host DBID

2 Standby Database

Data Guard, Standby Database Failover, Primary database log Standy Database.

10.8.3 RMAN Duplicate

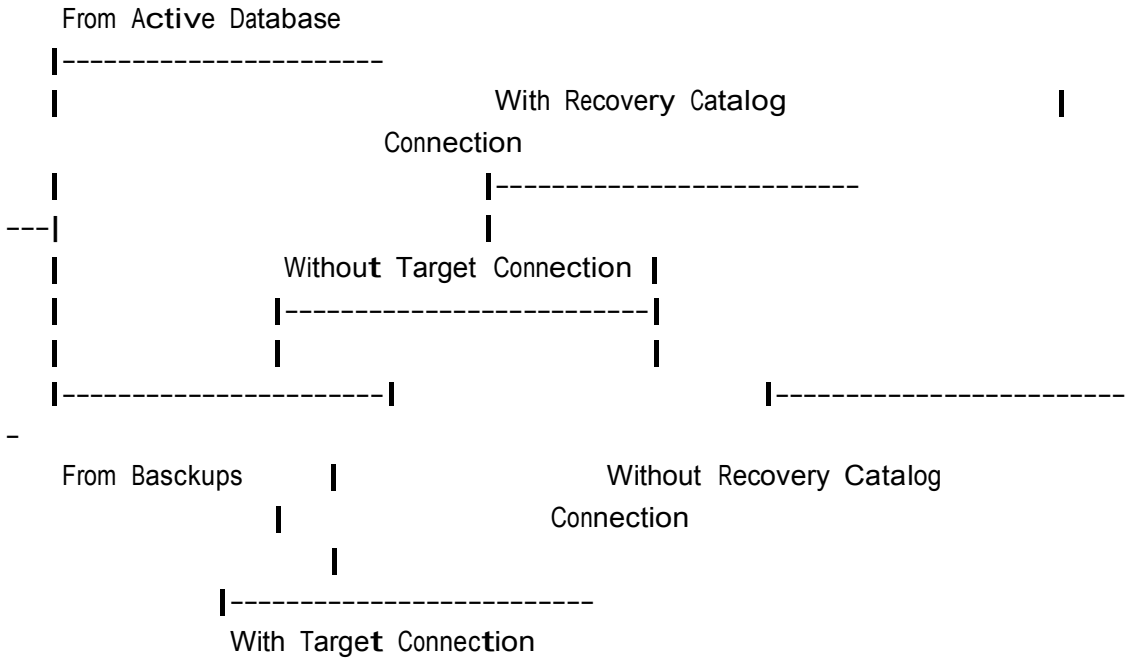
1 Backup-Based Duplication

RMAN , RMAN

2 Active Database Duplication

RMAN , RMAN

10.8.4 RMAN Duplicate(for Database or Standby Database) (PPT-II-535)



1 Oracle Home

2 , Active

3

4

5 nomount

6 mount open

7
active)
8
9 rman duplicate
10) resetlogs duplicate

1 Duplicating to a Host with the Same Directory Structure (Active)

```
DUPLICATE TARGET DATABASE TO dupdb
  FROM ACTIVE DATABASE
  PASSWORD FILE
  SPFILE
  NOFILENAMECHECK;
```

Active source host new host
PASSWORD FILE, SPFILE new host source host
NOFILENAMECHECK new host
source host

2 Duplicating a Database Without a Target and Recovery Catalog Connection (Backup-Based)

```
DUPLICATE DATABASE TO dupdb
  UNTIL TIME "TO_DATE('11/01/2007 14:00:00', 'MM/DD/YYYY HH24:MI:SS')"
  SPFILE
  BACKUP LOCATION '/prod_backups'
  NOFILENAMECHECK;
```

RMAN new host(dupdb), source host
new host /prod_backups

3 Duplicating a Standby Database to a Host with the Different Directory Structure (Active)

```
DUPLICATE TARGET DATABASE
  FOR STANDBY
  FROM ACTIVE DATABASE
  PASSWORD FILE
  SPFILE
    PARAMETER_VALUE_CONVERT '/disk1', '/disk2'
    SET DB_UNIQUE_NAME 'dup1'
    SET DB_FILE_NAME_CONVERT '/disk1','/disk2'
```

```
SET LOG_FILE_NAME_CONVERT '/disk1','/disk2'
SET SGA_MAX_SIZE 200M
SET SGA_TARGET 125M;
```

Standby RMAN source host spfile new host spfile new host DB_UNIQUE_NAME source host db_name new host spfile active source host datafile,archivelog new host

1 duplicate windows--linux windows32 64
2 RMAN new host active
3 Active source hos new host sys .
4 database Oracle DBID source host new host standby database Oracle db_unqiue_name primary host standby host
5 active source host target channel source database
6 backup new host auxiliary channel
7 DB_FILE_NAME_CONVERT
LOG_FILE_NAME_CONVERT
8) duplicate database spfile

rman

11.1 rman

11.2 list

1 RMAN> list backup;
2 RMAN> list backup of tablespace users;
3 RMAN> list backup of datafile 2;
4 RMAN> list backup of controlfile;
5) RMAN> list backup of archivelog all;
6 RMAN> list backup of archivelog until time ='sysdate -1';
7 RMAN> list backupset 56;
8 RMAN> list datafilecopy all;
9 RMAN> list copy of tablespace users;
10 RMAN> list copy of datafile 1;
11 RMAN> list datafilecopy 67;

12 RMAN> list copy of controlfile;
13) RMAN> list expired backup;

11.3 crosscheck AVAILABLE UNAVAILABLE EXPIRED
(RMAN OS)

AVAILABLE/UNAVAILABLE change

RMAN> CHANGE BACKUPSET 1 UNAVAILABLE;

EXPIRED crosscheck

RMAN> crosscheck backup;
RMAN> crosscheck copy

EXPIRED crosscheck RMAN crosscheck
AVAILABLE EXPIRED duplex

os crosscheck
AVAILABLE--EXPIRED--AVAILABLE

RMAN>delete expired backup; //

expired

RMAN> change backuppiece 11 uncatalog; //11 RMAN
xxx.bak
RMAN> catalog backuppiece '/u01/myrman/xxx.bak'; // 11 RMAN

* DELETE EXPIRED RMAN , DELETE
OBSOLETE

11.4 report

RMAN> REPORT schema; //
RMAN> REPORT schema at time|scn|sequence; //at catalog

RMAN> REPORT need backup; //

RMAN> REPORT NEED BACKUP DAYS n // N

RMAN> REPORT obsolete; //
obsolete
RMAN> REPORT NEED BACKUP incremental 3; //
RMAN> REPORT NEED BACKUP redundancy 2; //

RMAN> REPORT NEED BACKUP recovery window of 3 days; //

RMAN> REPORT OBSOLETE REDUNDANCY 2; //

RMAN> REPORT UNRECOVERABLE DATABASE; //
nologging

1 REPORT NEED BACKUP REPORT NEED BACKUP DAYS n

REPORT NEED BACKUP //
REPORT NEED BACKUP DAYS n // N

REPORT NEED BACKUP DAYS n,

" Displays files that require more than n days' worth of archived redo log files for recovery "

RMAN n n

2 REPORT OBSOLETE REPORT UNRECOVERABLE DATABASE

REPORT OBSOLETE

REPORT UNRECOVERABLE DATABASE

nologging
report unrecoverable database

11.5 delete

RMAN> delete backup of datafile 2;
RMAN> delete backup of tablespace system;
RMAN> delete backupset ;
RMAN> delete backupset 30,32;

```
RMAN> delete backup of controlfile
RMAN> delete noprompt backup of controlfile;      //      noprompt
RMAN> delete datafilecopy all;
RMAN> delete copy of datafile 10;
RMAN> delete copy of tablespace users;
RMAN> delete expired backup;      //
RMAN> delete expired copy;
RMAN> delete obsolete;      //
RMAN> delete noprompt obsolete; //
```

Oracle

Oracle

12.1 Oracle

OS OS

Linux Linux CPU
. Linux Oracle
Oracle session

Oracle Resource Manager OS Oracle

12.2 Oracle PPT:406

1) Resource consumer group

session
session session

session oracle
session
session

SYS_GROUP //sys system
DEFAULT_CONSUMER_GROUP //
OTHER_GROUP //

OTHER_GROUPS

OTHER_GROUPS

SESSION OTHER_GROUPS OTHER_GROUPS

2) Resource plan

Oracle

active (active)

show resoure_manager_plan

select name,is_top_plan from v$rsrc_plan;

OEM

3) Resource plan directives

session

CPU

12.3

1 connect grant

connect to tim identified by tim; grant

connect to mike identified by mike; grant

connect to mgr identified by mgr;

2

sys EM-->Server-->Resource Manager-->Consumer Groups //

OLTP DSS OEM

OLTP tim,mgr DSS mike,mgr

Show SQL Enter

3

DEFAULT_CONSUMER_GROUP

```
SQL> select username,INITIAL_RSRC_CONSUMER_GROUP from dba_users;

USERNAME                       INITIAL_RSRC_CONSUMER_GROUP
------------------------------ ------------------------------
MGR                             DEFAULT_CONSUMER_GROUP
HR                              DEFAULT_CONSUMER_GROUP
TIM                             DEFAULT_CONSUMER_GROUP
MIKE                            DEFAULT_CONSUMER_GROUP
SCOTT                          DEFAULT_CONSUMER_GROUP
------
SYSTEM                         SYS_GROUP
SYS                            SYS_GROUP
------
```

TIM,MIKE,MGR session

```
SQL>
exec  dbms_resource_manager.set_initial_consumer_group('TIM','OLTP');
exec  dbms_resource_manager.set_initial_consumer_group('MIKE','DSS');
exec dbms_resource_manager.set_initial_consumer_group('MGR','OLTP');

SQL> select username,INITIAL_RSRC_CONSUMER_GROUP  from dba_users;

USERNAME                       INITIAL_RSRC_CONSUMER_GROUP
------------------------------ ------------------------------
TIM                            OLTP
MIKE                           DSS
MGR                            OLTP
HR                             DEFAULT_CONSUMER_GROUP
SCOTT                          DEFAULT_CONSUMER_GROUP
------
```

4)

DAYTIME--

4.1) SYS_GROUP OLTP DSS DATTIME OEM OTHER_GROUPS

4.2) CPU advance, MGMT 8 cpu level).

```
Group/Subplan        level 1      level 2      level 3      level4  ......
-------------------------------------------------------------------------------
-------
DSS                  20
OLTP                      80
OTHER_GROUPS                          100
SYS_GROUP       100

            NIGHTTIME--
     4.1-4.2

Group/Subplan        level 1      level 2      level 3      level4  ......
-------------------------------------------------------------------------------
-------
DSS                  90
OLTP                      10
OTHER_GROUPS                          100
SYS_GROUP       100
```

5) ,MGR OLTP DSS

DAYTIME

linux session1 sys;

```
SQL> alter system set resource_manager_plan='DAYTIME';
```

windows/cmd session2 MGR

```
C:\Documents and Settings\timran>sqlplus mgr/mgr@timran11g
```

linux session1 sys;

```
SQL>select resource_consumer_group from v$session where username='MGR';

resource_consumer_group
----------------------
OLTP
```

session2,mgr:

```
declare old_grp varchar2(30);
```

```
begin
dbms_session.switch_current_consumer_group('DSS',old_grp,TRUE);
end;
/
```

session1 sys;

```
SQL>select resource_consumer_group from v$session where username='MGR';

resource_consumer_group
----------------------
DSS
```

6 sys (plan

```
execute dbms_resource_manager.switch_consumer_group_for_user('MGR','OLTP');
```

12.4

1 cpu EMPHASI (% RATIO
8 level, level
100 level 100 PPT-II-413)

2 daytime

2.1 (PPT-414)
SESSION DSS 8 3
active session) 3 5

2.2
Oracle parallel_max_servers,
Resource Management

2.3
Threshold
action

2.4 session
session PGA idle time
max idle time(=1800 3 block another
session(=30, 30 session.

2,5 undo

undo
undo undo pool 6G
session

12.5

12.3 MGR MGR MGR
DBA Threshold DAYTIME
OLTP Threshold 10, ACTION switch to DSS MGR 10

1 OEM DAYTIME

2 Threshold 10

3 session2 mgr

4 session1 sys: MGR OLTP
SQL>select resource_consumer_group from v$session where username='MGR';

5) session2 mgr
SQL>select count(*) from all_objects;

6) session1 sys: 10 DSS
SQL>select resource_consumer_group from v$session where username='MGR';

7) revert after call=yes, MGR OLTP

12.6

1 SQL> show parameter resource

NAME	TYPE	VALUE
resource_limit	boolean	FALSE
resource_manager_cpu_allocation	integer	1
resource_manager_plan	string	NIGHTIME

resource_manager_plan resource_limit

2 ADMINISTER RESOURCE MANAGER,
grant oracle

DBMS_RESOURCE_MANAGER DBMS_RESOURCE_MANAGER_PRIVS PL/SQL API

3 :

DBMS_RESOURCE_MANAGER_PRIVS Resource Manager

DBMS_SESSION DBMS_RESOURCE_MANAGER

4 CPU 100%
<100%,

5 OTHER_GROUPS

6

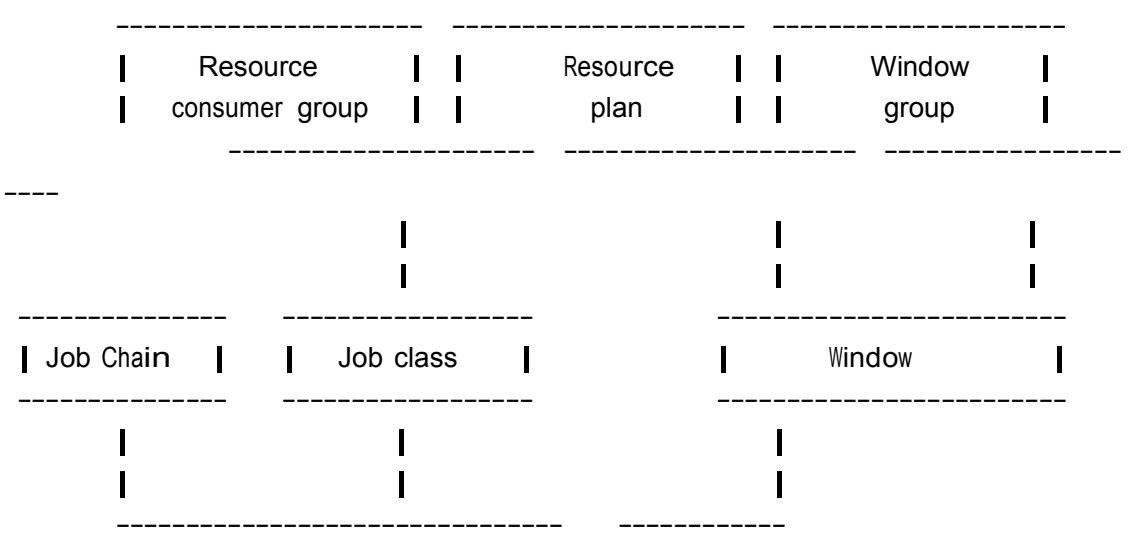
7 undo pool undo undo

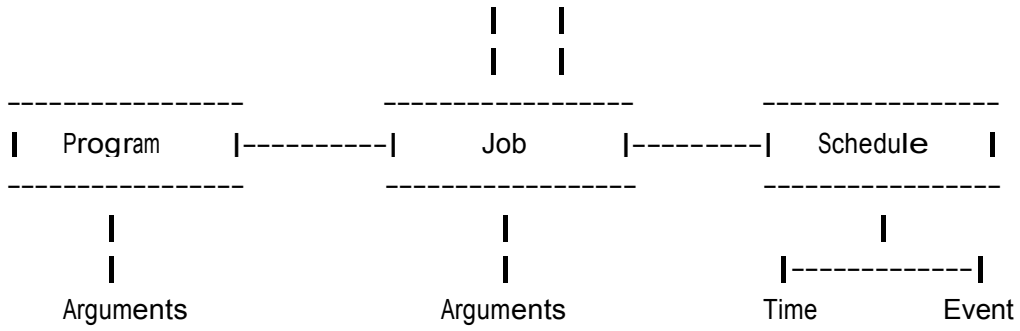
Oracle

13.1 Oracle

Oracle Oracle
job

Advanced Scheduler Concepts:(PPT:450)





13.2

1) Advanced SCHEDULER jobs

JOB JOB program schedule JOB
JOB JOB Oracle 10g dbms_job
Oracle 10g Oracle
dbms_scheduler

* JOB_QUEUE_PROCESSES >0
1000 (
cjq0)

```
SQL> show parameter job_queue_processes

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
job_queue_processes                  integer     1000
```

```
SQL> select program from v$process where program like '%J%';

PROGRAM
------------------------------------------------
oracle@timran.localdomain (J000)                  //        job slave    job
                  1000
oracle@timran.localdomain (CJQ0)                  //        Job Coordinator    job
```

2) Advanced SCHEDULER program

Program

PL/SQL BLOCK pl/sql
STORED PROCEDURE PL/SQL Java c

EXECUTEABLE ORACLE

3) Advanced SCHEDULER schedule

Scheduler

Schedules Programs Jobs
program
schedule job 11g SCHEDULER
Job program schedule job

dbms_scheduler

```
SQL> spool /tmp/sch.txt
SQL> desc dbms_scheduler
SQL> spool off
$more /tem/sch.txt
```

4 JOB CLASSES

job job Job Classes
Job Classes Jobs 1-5 , 3 1
Job Classes

5 WINDOW

(START DATE) (END DATE) (DURATION)
(REPEAT INTERVAL) SCHEDULER(
resource plan
resource plan ACTIVE),
resource plan,

job class job class resource plan
resource plan job class job , job

6 JOB CHAIN

CHAIN Programs PROGRAM:A PROGRAM:B
PROGRAM:C PROGRAM:D Programs:A B C D
CHAIN

7)

DBA_SCHEDULER_JOBS

1

2

DBMS_SCHEDULER

PL/SQL DBMS_SCHEDULER PL/SQL

JOB_STYLE EM

1

```
dbms_scheduler.create_job( job_
name          =>'test_ltwtjob1',
program_name     =>'test_prog',
repeat_interval  =>'freq=hourly',
end_date      =>to_timestamp(sysdate+1),
job_style     =>'lightweight',
```

2

```
dbms_scheduler.create_job( job_
name          =>'test_ltwtjob1',
program_name     =>'test_prog',
shedule_name     =>'test_sched'
job_style     =>'lightweight',
```

TEST_LTWTJOB1 test_prog ,

job_style

PL/SQL

PLSQL_BLOCK STORED_PROCEDURE

8 (Event)

SCHEDULER EVENT

Scheduler Events

Scheduler Events schduler job job

EVENT

EVENT application

Application Events

Events Scheduler Events
Scheduler EVENT Scheduler job job
event EVENT job

(Event) OCP

13.3

program schedule job,

```
SQL> create table scott.job_test1(my_date date);
```

my_pro1 program (PL/SQL BLOCK)

```
BEGIN
DBMS_SCHEDULER.CREATE_PROGRAM(
 program_name    =>'my_pro1',
program_action  =>'begin
                  insert into scott.job_test1 values(sysdate);
                  commit;
              end;',
program_type     =>'PLSQL_BLOCK',
number_of_arguments =>0,
comments      =>'insert sysdate into table',
enabled       =>TRUE);
END;
/
```

PL/SQL procedure successfully completed.

program oracle sysdate
scott.job_test

number_of_arguments
0 255 0 0 program_type
PLSQL_BLOCK progremm DEFINE_PROGRAM_ARGUMENT

schedule program

```
BEGIN
dbms_scheduler.create_schedule(
repeat_interval  => 'FREQ=SECONDLY;INTERVAL=30',
start_date    => sysdate,
comments      => 'Start Every 30 seconds',
schedule_name     => 'my_sch1');
END;
/
```

REPEAT_INTERVAL FREQ INTERVAL

FREQ YEARLY, MONTHLY, WEEKLY, DAILY, HOURLY, MINUTELY, and SECONDLY

INTERVAL 1-99

'FREQ=SECONDLY;INTERVAL=30 30 'FREQ=DAILY;INTERVAL=1';

job schedule program job start_date,repeat_interval,job_action program schedule

```
BEGIN
dbms_scheduler.create_job( job_
name          => 'my_job1',
program_name      => 'my_pro1',
schedule_name     => 'my_sch1',
comments      => 'insert sysdate into table',
enabled       => TRUE);
END;
/
```

ORACLE (30)program

```
SQL> select * from scott.job_test1;
```

```
MY_DATE
-------------------
2012-11-22 15:56:13
2012-11-22 15:56:43
2012-11-22 15:57:13
------
```

JOB

DBA_SCHEDULER_JOBS
DBA_SCHEDULER_RUNNING_JOBS; // job (
DBA_SCHEDULER_JOB_LOG
DBA_SCHEDULER_JOB_RUN_DETAILS

"MY_JOB1"

```
SQL>select log_id, log_date, status, additional_info from
user_scheduler_job_run_details where job_name = 'MY_JOB1';
```

Oracle Scheduler PL/SQL API, DBMS_SCHEDULER

```
SQL> exec dbms_scheduler.enable('my_job1');

SQL> exec dbms_scheduler.disable('my_job1');

SQL> exec dbms_scheduler.drop_job('my_job1');

SQL> exec dbms_scheduler.run_job('my_job1');

SQL> exec dbms_scheduler.stop_job('my_job1');
```

Scheduler
JOB

JOB JOB JOB JOB

Oracle DBMS_SCHEDULER.set_attribute,
JOB

1 JOB_TYPE job

'PLSQL_BLOCK', 'STORED_PROCEDURE', 'EXECUTABLE', and 'CHAIN'

2 JOB_ACTION job . JOB_TYPE
JOB_TYPE 'STORED_PROCEDURE' ORACLE

3 LOGGING_LEVEL jobs

SCHEDULER JOB

DBMS_SCHEDULER.LOGGING_OFF DBMS_SCHEDULER.LOGGING_RUNS
DBMS_SCHEDULER.LOGGING_FULL

4 AUTO_DROP TRUE job job
job COMPLETED

5 RESTARTABLE jobs FALSE
TRUE

6 job

13.5 Job Class(Window

job class job, window

job

(PPT-II-452)

1.Job class Job

2.window Resource plan, window Job

JOB

job class Job class Job_Class

job set_attribute 1-5), job Job Class
1-5 1 3

window resource plan window
resource plan Window high low)

window _
high window window
window window
window

window schedule Oracle window resource plan
resource plan

DBA_SCHEDULER_WINDOWS

SQL>SELECT window_name,resource_plan,enabled,active FROM DBA_SCHEDULER_WINDOWS;

Job Class Window Scheduler

1

select WINDOW_NAME,ACTIVE from dba_scheduler_windows; //ACTIVE TRUE

2

select * from v$rsrc_plan;

3 ~

SQL> alter system set resource_manager_plan='';

4 Job Class My_Class MY_JOB1 My_Class MY_JOB1
DEFAULT_JOB_CLASS) My_Class OLTP

5) DAY_WIN DAYTIME

```
BEGIN
DBMS_SCHEDULER.CREATE_WINDOW(
window_name=>'"DAY_WIN"',
resource_plan=>'DAYTIME',
start_date=>systimestamp at time zone 'Asia/Shanghai',
duration=>numtodsinterval(1, 'minute'),
repeat_interval=>'FREQ=MINUTELY;INTERVAL=2',
end_date=>null,
window_priority=>'HIGH',
comments=>'');
END;
/
```

DAY_WIN 2 DAYTIME duration

1 Active true 1

| 2 | 2 |...

2 |---|---|...

1 |Active | |Active| |...

repeat_interval >duration Oracle

job resource_plan a 4 5

6

MY_JOB1 MY_SCH1 Schedule, DAY_WIN window

EDIT(MY_JOB1)-->Schedul Type-->Use_Pre_Define_Window-->DAY_WIN

MY_JOB1 JOB CLASS, DEFAULT_JOB_CLASS MY_CLASS OK e

```
SQL> select * from scott.job_test1;
```

2

SQL> exec dbms_scheduler.close_window('DAY_WIN');

*

1 create job API set attribute

2 A 1 B 5 B resource plan B A

AWR (PPT-I-349-360)

14.1 Oracle ASH AWR

1) ASH(Active Session History)

ASH Oracle 3 1 on cpu,2)waiting, 3)idle. Active Session v$session
ASH v$session
SGA ASH AWR ASH
AWR MMNL

ASH

SQL> @/u01/oracle/rdbms/admin/ashrpt.sql

2) AWR Automatic Workload Repository)

AWR oracle 10g
Statspack AWR

*

AWR MMON 1 ,
sysaux ADDM
Oracle 8

AWR

SQL> @/u01/oracle/rdbms/admin/awrrpt.sql

14.2 :

1) AWR i o
SYSAUX

. v$sysstat v$sesstat
.SQL cpu
.
. u (v$sys_time_model
v$sess_time_model)
. V$session
.ASH c
.
. ADDM Segment Advisor Sql Access Adivisor
. I/O

2) AWR metric) d
1 metrics
2 metrics

3) AWR baseline) h
m
r retention

Oracle (Fixed Baselines)

t t
v

(Moving Window Baseline)

Oracle
Oracle system moving baseline, AWR AWR
x (Adaptive Thresholds) ´ system moving
baseline AWR 8
x 30 x
AWR

(Baseline Templates)

single Repeating

AWR

AWR

(

)

singe

```
begin
DBMS_WORKLOAD_REPOSITORY.CREATE_BASELINE_TEMPLATE(
START_TIME => TO_TIMESTAMP(SYSDATE+2),
END_TIME => TO_TIMESTAMP(SYSDATE+10),
BASELINE_NAME => 'Mybase4',
TEMPLATE_NAME => 'Mytemp4',
EXPIRATION => NULL);
end;
/
```

repeat

```
BEGIN
DBMS_WORKLOAD_REPOSITORY.CREATE_BASELINE_TEMPLATE
( day_of_week => 'monday', hour_in_day => 17,
duration => 3, expiration => 30,
start_time => '2014-01-01 17:00:00',
end_time => '2014-12-31 20:00:00',
baseline_name_prefix => 'baseline_2014_mondays_',
template_name => 'template_2014_mondays');
END;
/
```

4) (Adaptive Thresholds)

metric (warning and critical alert)

OLTP ( )

OLTP

x

1 x c

2 x ɔ x
(0.95) 100 5
(0.99) 100 1 (0.999) 1000 1
; (0.9999) 10000 1

′ c
x redo

x ″
′A OLTP
″ . ′A x

5) AWR

SQL> show parameter statistics_level

NAME TYPE VALUE
---------- ---------- ----------
statistics_level string TYPICAL
SQL>

STATISTICS_LEVEL TYPICAL ALL AWR
ALL TYPICAL

*

STATISTICS_LEVEL BASIC
DBMS_WORKLOAD_REPOSITORY AWR

14.3 ADDM (Automatic Database Dianostic Monitor)

14.3.1

ADDM Oracle
AWR
Advisor) SQL Tuning Advisor, SQL Access Advisor
ADDM ′E ′H ′H

ADDM ADDM
ADDM ′I ADDM

ADDM
control_management_pack_access DIAGNOSTIC+TUNING NONE ADDM

* AWR ADDM
ADDM AWR ADDM 30

ADDM

SQL> @/u01/oracle/rdbms/admin/addmrpt.sql

1 OEM AWR ADDM

2 AWR
exec dbms_workload_repository.create_snapshot;

3 ′
create table scott.test1 as select * from all_objects;

```
begin
for i in 1..20 loop
insert into scott.test1 select * from all_objects;
update scott.test1 set object_id=1 where object_name='TEST1';
delete scott.test1;
end loop;
commit;
end;
/
```

4 AWR
exec dbms_workload_repository.create_snapshot;

OEM AWR

ADDM

OEM Server-->Advisor Central-->Advisor Task Results ′O ADDM

ADDM

Server-->Advisor Central--> ADDM-->Run ADDM to analyze past performance

′ Period Start Time Period End Time-->ok

task_nn, Impact(%) Finding Occurrences
Finding Top SQL by DB Time, Recommendations SQL Tuning Set(STS)...

14.3.2 Advisor

AWR ADDM
Ή΄Υ Ω

Oracle 11g Advisor (PPT-II-382)

1)SQL Advisors

SQL Tuning Advisor: SQL , sql profile sql
sql
SQL Access Advisor: ΐ A SQL B index,partition, materilizer view
SQL Repair Advisor: oracle ORA-600 patch(

2)Memory Advisors Oraclen SGA+PGA

3)Segment Advisor: shrink)

4)Undo Advisor: undo

5)MTTR Advisor

14.3.3 Advisor API's

DBMS_ADVISOR: Advisor

Automatic Database Diagnostic Monitor (DBMS_ADDM)

SQL Performance Analyzer (DBMS_SQLPA)

SQL Repair Advisor (DBMS_SQLDIAG)

SQL Tuning Advisor (DBMS_SQLTUNE)

14.3.5 OEM Segment Advisor

14.3.1 scott.vvvvvv HWM delete
HWM

OEM Server-->Advisor Central-->Segment Advisor-->Tablespace--> ï A
add users users used% -->Submit

Segment Advisor AWR Refresh Status COMPLETED,
name Recommendations Recommendation
Detail Γ Implement users

Recommendation Shrink

Compact Segments and Release Space

Compact Segments

Implement users used% Δ HWM unused
block

14.4

14.4.1

(Optimizer), DML
RBO Rule_Based Optimizer) E Z , Oracle CBO Cost_Based
Optimizer ,

CBO (optimizer statistics),
DBMS_STATS

H Θ

SQL> show parameter optimizer_dynamic_sampling

NAME	TYPE	VALUE
optimizer_dynamic_sampling	integer	2

14.4.2 tuning mode normal mode.

tuning SQL Tuning Advisor.

1 2 SQL profile 3 4 SQL

normal sql

14.4.3 optimizer statistics

Oracle Automated Maintenance Tasks optimizer statistics “ ” I Automatic Statistics Gathering Window 25% objects IO optimizer statistics

Oracle optimizer statistics “ ” “ ” Manual Statistics DBMS_STATS optimizer statistics

scott

OEM->Server->Query Optimizer->Manage Optimizer Statistics->Gather Optimizer Statistics

SQL> select OWNER,TABLE_NAME,LAST_ANALYZED from dba_tables where owner='SCOTT';

SQL> select job_name,LAST_START_DATE from dba_scheduler_jobs;

SQL> select column_name,num_distinct from dba_tab_col_statistics where table_name='EMP';

COLUMN_NAME	NUM_DISTINCT
DEPTNO	3
COMM	4
SAL	12
HIREDATE	13
MGR	6

JOB	5
ENAME	14
EMPNO	14

object

oracle

1)Restoring Previous Versions of Statistics
2)Locking Statistics schema table) ,

3)Pending Statistics ~ .

```
EXEC DBMS_STATS.SET_TABLE_PREFS('SCOTT', 'EMP', 'PUBLISH', 'false'); //
EMP
```

4)Automatic Optimizer Statistics Collection objects
Window

job objects objects
Window Window
job job

14.4.4 Autotask job

OEM->Server->Oracle Scheduler->Automated Maintenance Tasks

Automatic Optimizer Statistics Collection
Automatic Segment Advisor
Automatic SQL Tuning Advisor

14.4.5
7 OEM->Server->Oracle Scheduler->Window Groups
DEFAULT_MAINTENANCE_PLAN 3
ORA$AUTOTASK_SUB_PLAN

14.4.6 Autotask(PPT-1-362-364)

Oracle 3 Scheduler DBMS_SCHEDULER
Autotask DBMS_AUTO_TASK_ADMIN

RECOMMEND

RECOMMEND(IMPLEMENT(Γ Automatic SQL Tuning Advisor SQL PROFILE IMPLEMENT ENABLE Oracle Γ SQL PROFILE PLAN 3 c IMPLEMENT SQL PROFILE RECOMMEND DBA IMPLEMENT

14.4.7 Autotask

dba_autotask_clien dba_autotask_operation

SQL> select client_name,status,attributes,window_group,service_name from dba_autotask_client;

SQL> select client_name,operation_name from dba_autotask_operation;

(PPT-I-365-371)

15.1

10g Oracle K Λ M N

---- metric

11g 200 AWR MMON Γ
85% 97

85% 97%

dba_outstanding_alerts
dba_alert_history

1 unifom 85%

SQL> create tablespace small datafile '/u01/oradata/timran11g/small01.dbf' size 10m extent management local uniform size 3m;

2 3 extent 3*3 uniform size 9M 85%

SQL> create table scott.test_table(id int) tablespace small storage(minextents 3);

dba_outstanding_alerts 三 MMON

SQL> select reason from dba_outstanding_alerts;

REASON

[SMALL] [90 percent]

OEM->HOME

3

SQL> alter database datafile '/u01/oradata/timran11g/small01.dbf' resize 20m;

4 dba_outstanding_alerts MMON dba_alert_history OEM dba_outstanding_alerts HOME clear

SQL> select reason from dba_outstanding_alerts;

SQL> select reason,resolution from dba_alert_history where reason like '% %'; //cleared

REASON
RESOLUTION

[SMALL] [45 percent] cleared

SQL> drop tablespace small including contents and datafiles;

15.1.1

API OEM OEM HOME -->Relete Link-->Metric and Policy settings

15.1.2

1 OEM-> setup
2 OEM-> Preferences
3 O Preferences -> Administrators

*
1 MMON EM EM

2 OEM dba_outstanding_alerts
dba_alert_history
dba_alert_history

15.2 Support Workbench

15.2.1 ADR (PPT-II-237)

052 П o
P Σ

ADR OEM Support Workbench ADRCI

15.2.2 Problem Incident Packaging(PPT-I-506)

Problem(:

ORA-4031
Oracle ORA-600

Incident( ):

，

ADR

Incident Incident ID

Packaging

T Oracle Problem zip
Oracle Support :

Support Workbench

1
2
3 // P Σ
4 // MetaLink Y
5 // Quick Packaging Cusotm Packaging
Φ
6 // X
7 //
8 // Oracle
30

ADRCI

```
ADRCI> help
ADRCI> show incident //
ADRCI> ips create package incident 17000 // 17000
```

15.3 Health Monitor P Σ

Health Monitor 11g
Ψ Reactive
Manually HM redo undo
HM

15.3.1

1). Reactive
Fault diagnosability infrastructure critical
error

2). Manually

DBMS_HM Enterprise Manager HM

15.3.2

1). DB-ONLINE
2). DB-OFFLINE

```
SQL> select name,internal_check,offline_capable from v$hm_check where
internal_check='N';

NAME                                                             INTERNAL_CHECK
OFFLINE_CAPABLE
---------------------------------------------------------------- --------------
---------------
DB Structure Integrity Check                                     N
Y
Data Block Integrity Check                                       N
Y
Redo Integrity Check                                             N
Y
Transaction Integrity Check                                      N
N
Undo Segment Integrity Check                                     N
N
Dictionary Integrity Check                                       N
N
```

15.4 EM HM Alerts Active Incident Problem Support Workbench service request(SR) Package

dictcheck object id

```
create table scott.dictcheck(id int);
select object_id from dba_objects where object_name='DICTCHECK';

 OBJECT_ID
----------
     71117

select obj#,cols from tab$ where obj#=71117;

      OBJ#       COLS
---------- ----------
     71117          1
```

1000

```
SQL> update tab$ set cols=1001 where obj#=71117;
SQL> commit;
SQL> select obj#,cols from tab$ where obj#=71117;

      OBJ#       COLS
---------- ----------
     71117       1001
```

EM,

Home , Diagnostic Summary Alerts
HM,

EM-->Advisor Central-->Checkers-->Dictionary Integrity Check-->Run Name(MyCheck)

Findings "SQL dictionary health check: invalid column number 8 on object TAB$ failed"
Damage Translation "Damaged rowid is AAAAACAABAAAS7QAAA - description: Object SCOTT.DICTCHECK is referenced"

dictcheck Active Incident

```
SQL> alter system flush shared_pool;
SQL> alter system flush buffer_cache;
SQL> exit
[oracle@timran11g ~]$ sqlplus / as sysdba

SQL> select * from scott.dictcheck;
select * from scott.dictcheck
*
   1 :
ORA-03113:
    ID: 19231
    ID: 100 : 16001
```

Home --Damage Translation 1 Active Incident

```
SQL> conn scott/scott
        dictcheck
SQL> select * from scott.dictcheck;
select * from scott.dictcheck
```

*

1 :

ORA-03113:

ID: 19615

ID: 113 : 3254

Home --Damage Translation 2 Active Incident

Support Workbench Problem Incident

Incident Support Workbench, Problem(

--ORA 7445 [qcstda()+490]

Incident ID, incident dump

Ω SR

Problem ID ORA 7445 Ω SR Packge...

SQL> drop table scott.dictcheck purge;

Oracle

16.1 SQL

1 parse

i) Ï sql oracle

HASH Ÿ

ii) oracle oracle

ά system

iii)

2 BIND

3

4 sql 1) 4)

16.2 é é é

shared cursor

é é é V$sqlare V$sql é
é é é v$sql
child_number 0 é é
sql library cache é é sql
é

```
SQL> alter system flush shared_pool;

select count(*) from scott.emp where deptno=10;
select count(*) from scott.emp where deptno=10;
SELECT count(*) from scott.emp where deptno=10;


SQL> select sql_id,sql_text,child_number,executions from v$sql where sql_text
like '%deptno=10%' and sql_text not like '%v$sql%';

SQL_ID                                                                  SQL_TEXT
CHILD_NUMBER EXECUTIONS
------------- ------------------------------------------------------------------
-------------- ------------ ----------
dp4tk30fhwyp1         SELECT    count(*)    from    scott.emp    where    deptno=10
0             1
1kjj3s9qg6xg4   select count(*) from scott.emp  where deptno=10
       0            2

//       é          é     1kjj3s9qg6xg4
//       é     CHILD_NUMBER   0        ή é          é


SQL> alter system flush shared_pool;
SQL> alter session set optimizer_index_caching=40;      //          í


SQL> select count(*) from scott.emp where deptno=10;

SQL> alter session set optimizer_index_caching=100;      //          í
```

SQL> select count(*) from scott.emp where deptno=10;

SQL> select sql_id,sql_text,child_number,executions from v$sql where sql_text like '%deptno=10%' and sql_text not like '%v$sql%';

SQL_ID SQL_TEXT
CHILD_NUMBER EXECUTIONS
------------- --
-------------- ------------ ----------
1kjj3s9qg6xg4 select count(*) from scott.emp where deptno=10
0 1
1kjj3s9qg6xg4 select count(*) from scott.emp where deptno=10
1 1

// ἑ (1kjj3s9qg6xg4) , ἑ

1. ἑ SQL SQL ἑ
2. SQL ἑ
ἑ ἑ

16.3 BIND

```
create table scott.m1(x int);
create or replace procedure proc1
as
  begin
    for i in 1..10000
    loop
        execute immediate
        'insert into scott.m1 values(:x)' using i;
    end loop;
  end;
/
```

--------- create

table scott.m2(x int); create or
replace procedure proc2

```
as
  begin
    for i in 1..10000
    loop
        execute immediate
        'insert into scott.m2 values('||i||')';
    end loop;
  end;
/
---------

SQL> set timing on;
SQL> exec proc1

SQL> select sql_id,sql_text,child_number,executions from v$sql where sql_text
like '%insert into scott%' and sql_text not like '%v$sql%';


SQL_ID                                                                  SQL_TEXT
CHILD_NUMBER EXECUTIONS
------------- ------------------------------------------------------------------
------------- ----------- ----------
2uqs6daxb54ar           insert          into            scott.m1            values(:x)
1       10000

PL/SQL
        :  00: 00: 01.21

SQL> exec proc2

PL/SQL
        :  00: 00: 09.98
```

1 é SQL SQL

2

16.4 11g

cache memory

RESULT CACHE

Result Cache Server Result Cache Client Result Cache

SGA shared pool

OCI ( ),

Oracle Call Interface OCI Oracle
Oracle ODBC, Oracle

Client Result Cache V$CLIENT_RESULT_CACHE_STATS

```
SQL> show parameter result

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
client_result_cache_lag              big integer 3000
client_result_cache_size             big integer 0
result_cache_max_result              integer     5
result_cache_max_size                big integer 1056K
result_cache_mode                    string      MANUAL
result_cache_remote_expiration       integer     0
```

client_result_cache
server result cache

server result cache

result_cache_max_size=0
result_cache_max_result Server Result Cache

result_cache_mode Server Result Cache 3

result_cache_mode=AUTO
result_cache_mode=MANUAL
result_cache_mode=FORCE no_result_cache
ŭ α

Result Cache

result_cache_mode=MANUAL

```
SQL> set autotrace on;

SQL> select /*+ result_cache */ count(*) from scott.emp;

  COUNT(*)
----------
        14



------------------------------------------------------
Plan hash value: 2937609675

-------------------------------------------------------------------------------
--------
| Id  | Operation                 | Name                         | Rows  | Cost (%CPU)|
Time     |
-------------------------------------------------------------------------------
--------
|   0 | SELECT STATEMENT          |                              |     1 |     1   (0)|
00:00:01 |
|   1 |  RESULT CACHE             | 5cjd9qv8vs58n2baj8u7sfwmq7 |       |            |
|
|   2 |   SORT AGGREGATE          |                              |     1 |            |
|
|   3 |    INDEX FULL SCAN| PK_EMP                          |    14 |     1   (0)|
00:00:01 |
-------------------------------------------------------------------------------
--------

Result Cache Information (identified by operation id):
------------------------------------------------------

   1 - column-count=1; dependencies=(SCOTT.EMP); attributes=(single-row);
name="select /*+ result_cache */ count(*) from
 scott.emp"



------------------------------------------------------
          1  recursive calls
          0  db block gets
          1  consistent gets
```

```
          0  physical reads
          0  redo size
        419  bytes sent via SQL*Net to client
        416  bytes received via SQL*Net from client
          2  SQL*Net roundtrips to/from client
          0  sorts (memory)
          0  sorts (disk)
          1  rows processed

                  consistent gets=1                  SQL


SQL> select /*+ result_cache */ count(*) from scott.emp;

  COUNT(*)
----------
        14


------------------------------------------------------------
Plan hash value: 2937609675

-------------------------------------------------------------------------------
--------
| Id  | Operation             | Name                         | Rows  | Cost (%CPU)|
Time     |
-------------------------------------------------------------------------------
--------
|   0 | SELECT STATEMENT      |                              |     1 |     1   (0)|
00:00:01 |
|   1 |  RESULT CACHE         | 5cjd9qv8vs58n2baj8u7sfwmq7 |       |            |
|
|   2 |   SORT AGGREGATE      |                              |     1 |            |
|
|   3 |    INDEX FULL SCAN| PK_EMP                       |    14 |     1   (0)|
00:00:01 |
-------------------------------------------------------------------------------
--------

Result Cache Information (identified by operation id):
------------------------------------------------------
```

1 - column-count=1; dependencies=(SCOTT.EMP); attributes=(single-row); name="select /*+ result_cache */ count(*) from scott.emp"

---

0 recursive calls
0 db block gets
0 consistent gets
0 physical reads
0 redo size
419 bytes sent via SQL*Net to client
416 bytes received via SQL*Net from client
2 SQL*Net roundtrips to/from client
0 sorts (memory)
0 sorts (disk)
1 rows processed

consistent gets=0 SQL RESULT CACHE r

/*+ result_cache */ hints

16.4 11g (PPT-II-335-345)

Oracle11g Oracle Oracle11g -- (automatic memory management AMM) SGA PGA SGA PGA

16.4.1

PGA SGA 8i
PGA (9i)
SGA (10g)
memory 11g)

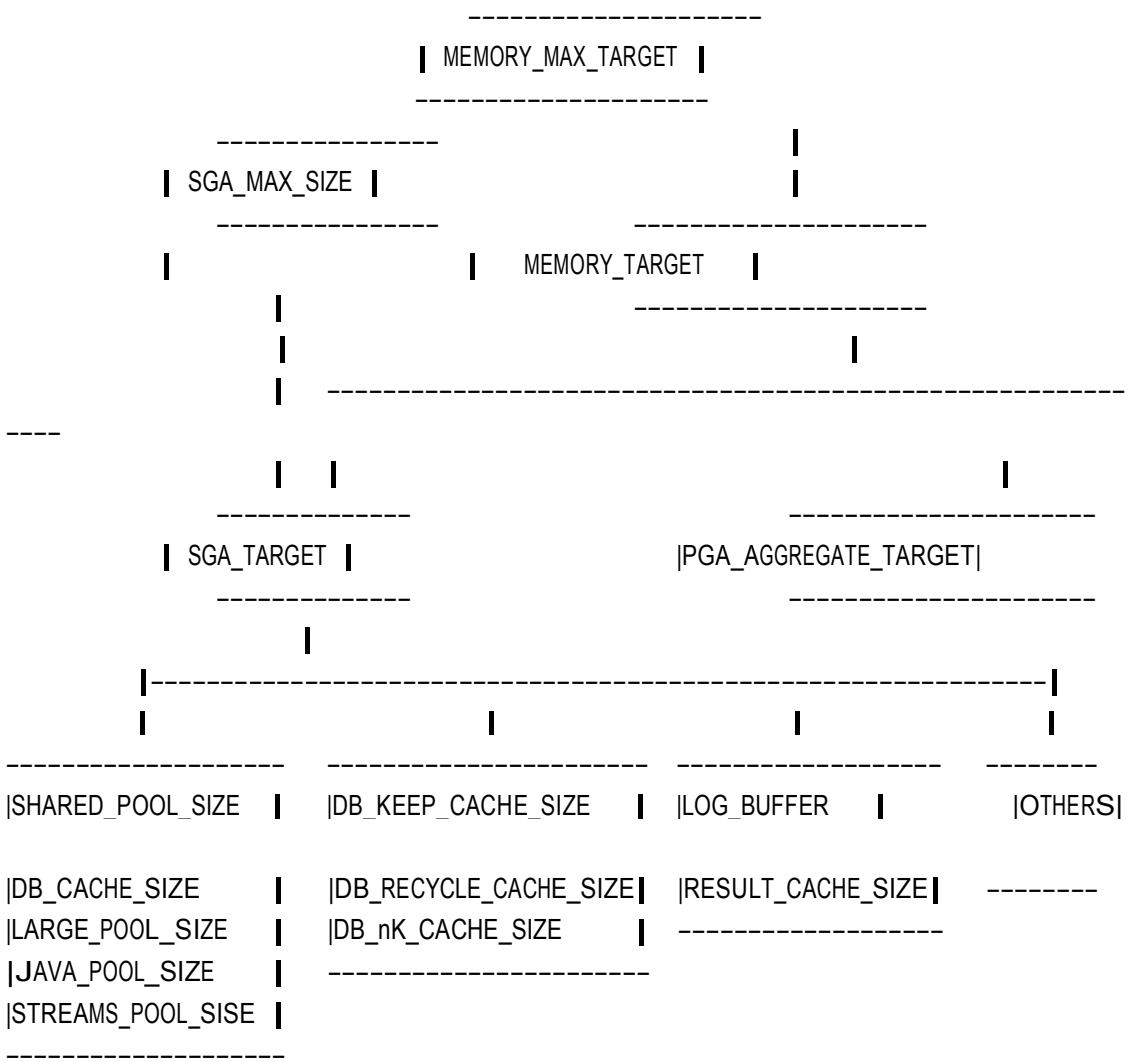
16.4.2 AMM

memory_max_target:

Oracle memory_target<=memory_max_target.

memory_target:
oracle SGA PGA

1 memory_max_target
memory_max_target=memory_target
2 SGA PGA sga_target pag_aggregate_target
0



16.4.3 10g sga pga β 11g

1 SGA

show parameter sga_target; // 600M

2 PGA

SQL> select value/1024/1024 from v$pgastat where name='maximum PGA allocated'; // 300M

PGA A

SQL> show parameter pga_aggregate_target; // 2G, 300M 300M PGA

3 11g memory_target memory_target=600M(SGA)+300M(PGA)

4 11g memory_max_target memory_max_target=memory_target.

5) sga_target=0，pga_aggregate_target=0

16.4.4

SGA 5

DB_CACHE_SIZE
SHARED_POOL_SIZE
LARGE_POOL_SIZE
JAVA_POOL_SIZE
STREAMS_POOL_SIZE

3

LOG_BUFFER

DB_KEEP_CACHE_SIZE
DB_RECYCLE_CACHE_SIZE
DB_nK_CACHE_SIZE

15.4.5

SQL> select * from v$memory_target_advice order by memory_size;

MEMORY_SIZE	MEMORY_SIZE_FACTOR	ESTD_DB_TIME	ESTD_DB_TIME_FACTOR	VERSION
202	.5	1508	1.1186	0
303	.75	1409	1.0452	0
404	1	1348	1	0
505	1.25	1344	.9972	0
606	1.5	1344	.9972	0
707	1.75	1344	.9972	0
808	2	1344	.9972	0

7

memory_size_factor 1 memory_target

V$PGA_TARGET_ADVICE PGA cache hit

```
SELECT round(PGA_TARGET_FOR_ESTIMATE/1024/1024)
target_mb,ESTD_PGA_CACHE_HIT_PERCENTAGE cache_hit_perc,
       ESTD_OVERALLOC_COUNT  FROM V$PGA_TARGET_ADVICE;
```

V$MEMORY_DYNAMIC_COMPONENTS
V$MEMORY_RESIZE_OPS
V$PGA_TARGET_ADVICE
v$sga_dynamic_components
v$sga_dynamic_free_memory

v$sga
v$sgainfo
v$sgastat
v$pgastat
v$buffer_pool

11g DBA γ δ
Oracle ε ζ η
θ

16.5 Oracle

16.5.1 AUTOTRACE

sys autotrace SQL*PLUS SQL

sys autotrace

autotrace

autotrace plan_table

```
SQL> desc plan_table;
SQL> drop table plan_table;
```

sys

```
SQL> @$ORACLE_HOME/rdbms/admin/utlxplan
```

plustrace

```
SQL> @$ORACLE_HOME/sqlplus/admin/plustrce
```

plustrace

```
SQL> grant plustrace to scott;
```

autotrace

```
SQL> conn scott/scott
SQL> set autotrace on;
```

```
SQL>set autotrace on;

SQL>set autotrace traceonly explain;      //
SQL>set autotrace traceonly statistics; //
```

```
SQL> create table emp1 as select * from emp;
SQL> create table dept1 as select * from dept;
```

NEW YORK

```
SQL> set autotrace traceonly explain;

SQL> select e.ename,e.job,d.loc,d.deptno from emp1 e ,dept1 d where
e.deptno=d.deptno and e.job='MANAGER' and d.loc='NEW YORK';
```

```
-----------------------------------------------------
Plan hash value: 619452140

-------------------------------------------------------------------------------
| Id  | Operation           | Name  | Rows  | Bytes | Cost (%CPU)| Time     |
-------------------------------------------------------------------------------
|   0 | SELECT STATEMENT    |       |     1 |    47 |     7  (15)| 00:00:01 |
|*  1 |  HASH JOIN          |       |     1 |    47 |     7  (15)| 00:00:01 |
|*  2 |   TABLE ACCESS FULL| DEPT1 |     1 |    21 |     3   (0)| 00:00:01 |
|*  3 |   TABLE ACCESS FULL| EMP1  |     3 |    78 |     3   (0)| 00:00:01 |
-------------------------------------------------------------------------------

Predicate Information (identified by operation id):
---------------------------------------------------

   1 - access("E"."DEPTNO"="D"."DEPTNO")
   2 - filter("D"."LOC"='NEW YORK')
   3 - filter("E"."JOB"='MANAGER')

Note
-----
   - dynamic sampling used for this statement

SQL>
```

Operation ι Id κ
IO

1 dept1 where λ μ
2 emp1 where λ μ
3 λ HASH JOIN

emp1 dept1 ν ξ ο π
λ RBO
ρ
CBO ς

CBO

1 nested_loop join (σ

driving table), outer table),
inner table),Oracle

driving table inner table

2 hash join (τ

Oracle hash ,Oracle
hash

υ hash σ
φ

3 sort_merge join

υ

hints

/*+ use_nl emp1,dept1 */ σ
/*+ use_merge emp1,dept1) */
/*+ use_hash emp1,dept1 */ χ
/*+ leading(emp1) */ emp
/*+ ordred */ from

SELECT /*+ use_nl e,d */ e.ename,e.job,d.loc,d.deptno from emp1 e ,dept1 d where e.deptno=d.deptno and e.job='MANAGER' and d.loc='NEW YORK';

SQL , hints ,
hints

16.6 SQL SPM

SQL SQL DBA SPM

SQL Plan Management)
Oracle SQL SQL

16.6.1

Oracle

ψ
accepted (
accepted unaccepted
ω accepted,

16.6.2

1 OPTIMIZER_CAPTURE_SQL_PLAN_BASELINE TRUE
~ accepted ,

2 ï
accepted

16.6.3 SPM

SMB SQL Management Base SQL sql sql profile
SYSAUX SBM SYSAUX 10% 1%–50%
SQL .

Oracle DBMS_SPM OEM SQL

dba_sql_plan_baselines

16.7 Total Recall (PPT-11-371)

ï Oracle Oracle11g
⌒

Total Recall Database Replay SQL SQL
Performence Analyzer

Database Replay

(

ï RAC ï

Database Replay B

B ï A

16.7.1 Database Replay

1 B

SQL DML/DDL

job

2 B B

ü ó

Replay

3 ï

4 B Replay,

replay client

5

Oracle dbms_workload Database Replay

1 ú ï

ASM ASM

2

16.7.2 SQL Performence Analyzer SPA)

ï SQL B SQL

ώ

Database Replay SQL Oracle dbms_splpa

SQL Performence Analyzer

1 6 SQL B

2 SQL STS

3 SQL

4 SQL B

5 ï SQL B

6 SQL
7

Oracle Linux RMAN CATALOG _ 9i

Oracle
RMAN RMAN Y

catalog

1. Y connect.rcv target catalog
2.
   global_del_obso --
   global_bkctl --
   global_arch --
3. 0,1,2
   2 3 global_del
   global_arch global_bkctl
4. inc0.rcv,inc1.rcv,inc2.rcv
   @@/<dir>/connect.rcv run{execute global script scriptname;}exit;
5. 4 inc0.sh,inc1.sh,inc2.sh
   nohup $ORACLE_HOME/bin/rman cmdfile=/u03/bk/scripts/inc1.rcv

log=/u03/bk/scripts/inc0.log append&

6. crontab

1.

connect.rcv

```
connect catalog rman/rman@david;
connect target sys/oracle@austin;
```

catalog

```
rman cmdfile=/u03/bk/scripts/connect.rcv --(  rman  )
```

```
rman catalog  rman/rman@david target sys/oracle@austin
```

2.

--

```
RMAN> create global script global_del_obso  comment 'A script for obsolete backup
and delete it' {
crosscheck archivelog all;
delete noprompt expired archivelog all;
allocate channel ch1 device type disk;
delete noprompt obsolete recovery window of 7 days;
release channel ch1;
}
```

--

```
RMAN> create global script global_bkctl comment 'A script for backup control
file'{
allocate channel ch1 device type disk;
backup as compressed backupset
current controlfile reuse
format='/u03/bk/backupctl.ctl'
tag='bkctl';
release channel ch1;
}
```

--

```
RMAN> create global script global_arch comment "backup archivelog and then delete it" {
allocate channel ch1 device type disk;
allocate channel ch2 device type disk;
sql "alter system archive log current";      --
set limit channel ch1 readrate=10240;          --(          10M)
set limit channel ch1 kbytes=4096000;          --(              )
backup as compressed backupset
format='/u03/bk/arch_%d_%U'
tag='bkarch'
archivelog all delete input;
release channel ch1;
release channel ch2;
}
```

```
--      list

list global script names;                  --(              )

delete globals script script_name;        --(          )

RMAN> list global script names;
```

List of Stored Scripts in Recovery Catalog

Global Scripts

Script Name

Description

---

global_arch

backup archivelog and then delete it

global_bkctl

A script for backup control file

global_del_obso

A script for obsolete backup and delete it

3. 0 1 2 (´Y)

-- 0

```
RMAN> create global script global_inc0 comment "backup database as incrmental level 0"{
execute global script global_del_obso;
allocate channel ch1 device type disk;

allocate channel ch2 device type disk;
set limit channel ch1 readrate=10240;
set limit channel ch1 kbytes=4096000;
set limit channel ch2 readrate=10240;
set limit channel ch2 kbytes=4096000;
backup as compressed backupset
incremental level 0 database

format='/u03/bk/inc0_%d_%U'
tag='inc0';
release channel ch1;
release channel ch2;
execute global script global_arch;
execute global script global_bkctl;
 }
```

-- 1

```
RMAN> create global script global_inc1 comment "backup database as incrmental level 1"{
execute global script global_del_obso;
allocate channel ch1 device type disk;
allocate channel ch2 device type disk;
set limit channel ch1 readrate=10240;
set limit channel ch1 kbytes=4096000;
set limit channel ch2 readrate=10240;
set limit channel ch2 kbytes=4096000;
backup as compressed backupset
incremental level 1 database
format='/u03/bk/inc1_%d_%U'
```

```
tag='inc1';
release channel ch1;
release channel ch2;
execute global script global_arch;
execute global script global_bkctl;
}
```

-- 2

```
RMAN> create global script global_inc2 comment "backup database as incrmental
level 2"{
execute global script global_del_obso;
allocate channel ch1 device type disk;
allocate channel ch2 device type disk;
set limit channel ch1 readrate=10240;
set limit channel ch1 kbytes=4096000;
set limit channel ch2 readrate=10240;
set limit channel ch2 kbytes=4096000;
backup as compressed backupset
incremental level 2 database
format='/u03/bk/inc2_%d_%U'
tag='inc2';
release channel ch1;
release channel ch2;
execute global script global_arch;
execute global script global_bkctl;
}
```

-- rman rman global_inc0 global_inc1 global_inc2, RMAN
, ( )

```
RMAN> run{
execute global script global_inc0;
execute global script global_inc1;
execute global script global_inc2;
 }
```

--

list backupset summary;

4. shell linux

a. vi inc0.rcv inc1.rcv ,inc2.rcv --

@@/u03/bk/scripts/connect.rcv --(rman
@@)( )

```
run{
execute global script gloal_inc0;
}
exit;
```

b. shell

vi inc0.sh

nohup $ORACLE_HOME/bin/rman cmdfile=/u03/bk/scripts/inc0.rcv
log=/u03/bk/scripts/inc0.log append &

vi inc1.sh

nohup $ORACLE_HOME/bin/rman cmdfile=/u03/bk/scripts/inc1.rcv
log=/u03/bk/scripts/inc0.log append &

vi inc2.sh

nohup $ORACLE_HOME/bin/rman cmdfile=/u03/bk/scripts/inc2.rcv
log=/u03/bk/scripts/inc0.log append &

-- nohup &

c. crontab

crontab -e

```
#min    hour    date    mon    day(    )    command
30      1       *       *      0            /u03/bk/scripts/inc0.sh
30      1       *       *      1            /u03/bk/scripts/inc2.sh
```

30 1 * * 2 /u03/bk/scripts/inc2.sh

30 1 * * 3 /u03/bk/scripts/inc2.sh

30 1 * * 4 /u03/bk/scripts/inc1.sh

30 1 * * 5 /u03/bk/scripts/inc2.sh

30 1 * * 6 /u03/bk/scripts/inc2.sh

d. crontab ( )

/sbin/service crond status -- crontab

/sbin/service crond stop //

/sbin/service crond restart //

/sbin/service crond reload //

crontab

/etc/rc.d/rc.local

/sbin/service crond start

e.

0

2

1

2

f. shell

chmod 755 *.sh -- shell

./inc0.sh

1.backup controlfile in each scripts tail （ ´Y ）

2.Delete obsolete backupset in each scripts threshold （ ）

3.Switch logfile before backup database; （
）

4.Chmod u+x*.sh