

삭제한 테이블을 임시 데이터베이스를 통해 복구

PROD1 DB 초기화

```
[oracle@edydr1p1 ~]$ ! cp -av /home/oracle/backup/arch/coldBU_6/*.*/
/u01/app/oracle/oradata/PROD1/

`/home/oracle/backup/arch/coldBU_6/control01.ctl' -> `/u01/app/oracle/oradata/PROD1/control01.ctl'
`/home/oracle/backup/arch/coldBU_6/example01.dbf' -> `/u01/app/oracle/oradata/PROD1/example01.dbf'
`/home/oracle/backup/arch/coldBU_6/redo01.log' -> `/u01/app/oracle/oradata/PROD1/redo01.log'
`/home/oracle/backup/arch/coldBU_6/redo02.log' -> `/u01/app/oracle/oradata/PROD1/redo02.log'
`/home/oracle/backup/arch/coldBU_6/redo03.log' -> `/u01/app/oracle/oradata/PROD1/redo03.log'
`/home/oracle/backup/arch/coldBU_6/redo04.log' -> `/u01/app/oracle/oradata/PROD1/redo04.log'
`/home/oracle/backup/arch/coldBU_6/sysaux01.dbf' -> `/u01/app/oracle/oradata/PROD1/sysaux01.dbf'
`/home/oracle/backup/arch/coldBU_6/system01.dbf' -> `/u01/app/oracle/oradata/PROD1/system01.dbf'
`/home/oracle/backup/arch/coldBU_6/temp01.dbf' -> `/u01/app/oracle/oradata/PROD1/temp01.dbf'
`/home/oracle/backup/arch/coldBU_6/undotbs01.dbf' -> `/u01/app/oracle/oradata/PROD1/undotbs01.dbf'
`/home/oracle/backup/arch/coldBU_6/users01.dbf' -> `/u01/app/oracle/oradata/PROD1/users01.dbf'

[oracle@edydr1p1 arch1]$ ls
arch_1_6_1043935856.arc  arch_1_7_1043935856.arc  arch_1_8_1043935856.arc
arch_1_9_1043935856.arc
[oracle@edydr1p1 arch1]$ rm *
[oracle@edydr1p1 arch1]$ ls
[oracle@edydr1p1 arch1]$

SYS@PROD1>startup
ORACLE instance started.
...
Database mounted.
Database opened.
```

시퀀스 9에서 테이블 생성하기

```
SYS@PROD1>select group#, sequence#, members, archived, status
2 , first_change#, first_time, next_change#, next_time
3 from v$log;
```

GROUP#	SEQUENCE#	MEMBERS	ARC	STATUS	FIRST_CHANGE#	FIRST_TIM	NEXT_CHANGE#	NEXT_TIME
1	4	1	YES	INACTIVE	2436138	24-JUN-20	2436142	24-JUN-20
2	5	1	YES	INACTIVE	2436142	24-JUN-20	2436155	24-JUN-20
3	6	1	NO	CURRENT	2436155	24-JUN-20	2.8147E+14	

```
3 rows selected.

SYS@PROD1>alter system switch logfile;
System altered.

SYS@PROD1>/
System altered.

SYS@PROD1>/
System altered.
```

```

SYS@PROD1>select group#, sequence#, members, archived, status
2  , first_change#, first_time, next_change#, next_time
3  from v$log;

```

GROUP#	SEQUENCE#	MEMBERS	ARC	STATUS	FIRST_CHANGE#	FIRST_TIM	NEXT_CHANGE#	NEXT_TIME
1	7	1	YES	INACTIVE	2438997	25-JUN-20	2439000	25-JUN-20
2	8	1	YES	INACTIVE	2439000	25-JUN-20	2439004	25-JUN-20
3	9	1	NO	CURRENT	2439004	25-JUN-20	2.8147E+14	

3 rows selected.

```

[oracle@edydr1p1 ~]$ cd arch1

```

```

[oracle@edydr1p1 arch1]$ ls

```

```

arch_1_6_1043935856.arc  arch_1_7_1043935856.arc  arch_1_8_1043935856.arc

```

* 테이블 생성 및 조회

```

SYS@PROD1>create table scott.emp_n
2  tablespace users
3  as
4  select *
5  from hr.employees;

```

Table created.

```

SYS@PROD1>select count(*)
2  from scott.emp_n;

```

```

COUNT(*)
-----
107

```

1 row selected.

* 타임스탬프를 찍어본다. (사실은 모르는 시간)

```

SYS@PROD1>select systimestamp
2  from dual;

```

```

SYSTIMESTAMP
-----
25-JUN-20 02.23.49.159975 PM +09:00

```

1 row selected.

* 상황발생!! 사용자가 실수로 테이블을 삭제해버렸다.

```

SYS@PROD1>drop table
2  scott.emp_n purge;

```

Table dropped.

로그마이너를 통한 변경시간 확인 작업

```
SYS@PROD1>select a.group#, b.sequence#, a.member, b.bytes/1024/1024 MB,
2 b.archived, b.status, b.first_change#
3 from v$logfile a, v$log b
4 where a.group# = b.group#
5 order by 1;
```

GROUP#	SEQUENCE#	MEMBER	MB	ARC	STATUS	FIRST_CHANGE#
1	7	/u01/app/oracle/oradata/PROD1/redo01.log	50	YES	INACTIVE	2438997
2	8	/u01/app/oracle/oradata/PROD1/redo02.log	50	YES	INACTIVE	2439000
3	9	/u01/app/oracle/oradata/PROD1/redo03.log	50	NO	CURRENT	2439004

3 rows selected.

* 로그마이너 분석 대상 리두 로그 파일을 등록한다.

```
SYS@PROD1>begin
2 dbms_logmnr.add_logfile (logfile_name =>
'/u01/app/oracle/oradata/PROD1/redo01.log', options => dbms_logmnr.new);
3 dbms_logmnr.add_logfile (logfile_name =>
'/u01/app/oracle/oradata/PROD1/redo02.log', options => dbms_logmnr.addfile);
4 dbms_logmnr.add_logfile (logfile_name =>
'/u01/app/oracle/oradata/PROD1/redo03.log', options => dbms_logmnr.addfile);
5 end;
6 /
```

PL/SQL procedure successfully completed.

* 등록 로그 파일을 확인한다.

```
SYS@PROD1>select db_name, filename
2 from v$logmnr_logs;
```

DB_NAME	FILENAME
PROD1	/u01/app/oracle/oradata/PROD1/redo01.log
PROD1	/u01/app/oracle/oradata/PROD1/redo02.log
PROD1	/u01/app/oracle/oradata/PROD1/redo03.log

3 rows selected.

* 로그 마이너 분석 시작

```
SYS@PROD1>begin
2 dbms_logmnr.start_logmnr(options => dbms_logmnr.dict_from_online_catalog);
3 end;
4 /
```

PL/SQL procedure successfully completed.

* 분석된 로그를 조회한다.

```
SYS@PROD1>select to_char(timestamp, 'yyyy-mm-dd hh24:mi:ss') ti_stamp
2 , operation, sql_redo
3 from v$logmnr_contents
4 where seg_name = 'EMP_N';
```

TI_STAMP	OPERATION	SQL_REDO
2020-06-25 14:23:33 DDL		create table scott.emp_n tablespace users as select * from hr.employees;
2020-06-25 14:24:00 DDL		drop table scott.emp_n purge;

2 rows selected.

* 로그 마이너 분석 종료

```
SYS@PROD1>exec dbms_logmnr.end_logmnr;
PL/SQL procedure successfully completed.
```

temp DB로 열기 위해서 PFILE을 미리 생성한다. (경로 설정을 직접할 수 있도록 SPFILE로 PFILE을 생성)

```
SYS@PROD1>! ls $ORACLE_HOME/dbs
hc_em12rep.dat  hc_PROD1.dat  lkEM12REP  lkPROD1      orapworcl  spfileem12rep.ora
spfilePROD1.ora hc_orcl.dat   init.ora   lkORCL      orapwem12rep orapwPROD1
spfileorcl.ora
```

```
SYS@PROD1>create pfile from spfile;
File created.
```

```
SYS@PROD1>! ls $ORACLE_HOME/dbs
hc_em12rep.dat  hc_PROD1.dat  initPROD1.ora  lkORCL  orapwem12rep  orapwPROD1
spfileorcl.ora  hc_orcl.dat   init.ora       lkEM12REP  lkPROD1  orapworcl
spfileem12rep.ora  spfilePROD1.ora
```

* PFILE을 생성한 후에 정상 종료한다.

```
SYS@PROD1>shutdown immediate
Database closed.
Database dismounted.
ORACLE instance shut down.
```

temp 디렉토리를 생성한다.

```
[oracle@edydr1p1 ~]$ mkdir temp
```

```
[oracle@edydr1p1 ~]$ ls
afiedt.buf  arch2  bea  Desktop  Downloads  Music  Pictures  solns  Templates
Videos  arch1  backup  control_re.sql  Documents  labs  oradiag_oracle
Public  temp  utl_dir
```

데이터 파일은 backup으로부터, 컨트롤 파일과 리두 로그 파일은 현재 PROD1로부터 가져온다.

```

SYS@PROD1>! cp -av /home/oracle/backup/arch/coldBU_6/*.dbf /home/oracle/temp/
`/home/oracle/backup/arch/coldBU_6/example01.dbf' -> `/home/oracle/temp/example01.dbf'
`/home/oracle/backup/arch/coldBU_6/sysaux01.dbf' -> `/home/oracle/temp/sysaux01.dbf'
`/home/oracle/backup/arch/coldBU_6/system01.dbf' -> `/home/oracle/temp/system01.dbf'
`/home/oracle/backup/arch/coldBU_6/temp01.dbf' -> `/home/oracle/temp/temp01.dbf'
`/home/oracle/backup/arch/coldBU_6/undotbs01.dbf' -> `/home/oracle/temp/undotbs01.dbf'
`/home/oracle/backup/arch/coldBU_6/users01.dbf' -> `/home/oracle/temp/users01.dbf'

SYS@PROD1>! cp -av /u01/app/oracle/oradata/PROD1/*.ctl /home/oracle/temp/
`/u01/app/oracle/oradata/PROD1/control01.ctl' -> `/home/oracle/temp/control01.ctl'

SYS@PROD1>! cp -av /u01/app/oracle/oradata/PROD1/*.log /home/oracle/temp/
`/u01/app/oracle/oradata/PROD1/redo01.log' -> `/home/oracle/temp/redo01.log'
`/u01/app/oracle/oradata/PROD1/redo02.log' -> `/home/oracle/temp/redo02.log'
`/u01/app/oracle/oradata/PROD1/redo03.log' -> `/home/oracle/temp/redo03.log'
`/u01/app/oracle/oradata/PROD1/redo04.log' -> `/home/oracle/temp/redo04.log'

SYS@PROD1>! ls /home/oracle/temp
control01.ctl redo01.log redo03.log sysaux01.dbf temp01.dbf users01.dbf
example01.dbf redo02.log redo04.log system01.dbf undotbs01.dbf

```

PFILE에서 컨트롤 파일 경로를 수정한 후 temp DB 상태를 MOUNT 단계까지 올린다.

```

[oracle@edydr1p1 ~]$ cd $ORACLE_HOME/dbs

[oracle@edydr1p1 dbs]$ ls
hc_em12rep.dat hc_PROD1.dat initPROD1.ora lkORCL orapwem12rep orapwPROD1
spfileorcl.ora hc_orcl.dat init.ora lkEM12REP lkPROD1 orapworcl
spfileem12rep.ora spfilePROD1.ora

[oracle@edydr1p1 dbs]$ vi initPROD1.ora

PROD1.__data_transfer_cache_size=0
PROD1.__db_cache_size=838860800
PROD1.__java_pool_size=16777216
PROD1.__large_pool_size=33554432
PROD1.__oracle_base='/u01/app/oracle'#ORACLE_BASE set from environment
PROD1.__pga_aggregate_target=419430400
PROD1.__sga_target=1241513984
PROD1.__shared_io_pool_size=50331648
PROD1.__shared_pool_size=285212672
PROD1.__streams_pool_size=0
*.audit_file_dest='/u01/app/oracle/admin/PROD1/adump'
*.audit_trail='db'
*.compatible='12.1.0.2.0'
*.control_files='/home/oracle/temp/control01.ctl'
*.db_block_size=8192
*.db_domain=''
*.db_name='PROD1'
*.diagnostic_dest='/u01/app/oracle'
*.dispatchers='(PROTOCOL=TCP) (SERVICE=PROD1XDB)'
*.local_listener='LISTENER_PROD1'
*.log_archive_dest_1='location=/home/oracle/arch1 mandatory'
*.log_archive_format='arch_%t_%s_%r.arc'
*.open_cursors=300
*.pga_aggregate_target=390m
*.processes=300
*.remote_login_passwordfile='EXCLUSIVE'
*.sga_target=1170m
*.undo_tablespace='UNDOTBS1'
*.utl_file_dir='/home/oracle/utl_dir'

```

```

[oracle@edydr1p1 ~]$ sqlplus / as sysdba
Connected to an idle instance.

SYS@PROD1>select status
  2  from v$instance;
select status
*
ERROR at line 1:
ORA-01034: ORACLE not available
Process ID: 0
Session ID: 0 Serial number: 0

SYS@PROD1>startup pfile=$ORACLE_HOME/dbs/initPROD1.ora mount
ORACLE instance started.

Total System Global Area 1241513984 bytes
Fixed Size                  2923872 bytes
Variable Size              452985504 bytes
Database Buffers           771751936 bytes
Redo Buffers                13852672 bytes
Database mounted.

SYS@PROD1>select name
  2  from v$controlfile;

NAME
-----
/home/oracle/temp/control01.ctl

1 row selected.

```

데이터 파일 이름을 바꾸고 복구작업과 관련없는 파일은 OFFLINE으로 변경한다.

```

SYS@PROD1>select name, status
  2  from v$datafile;

NAME                                                    STATUS
-----
/u01/app/oracle/oradata/PROD1/system01.dbf            SYSTEM
/u01/app/oracle/oradata/PROD1/sysaux01.dbf            ONLINE
/u01/app/oracle/oradata/PROD1/undotbs01.dbf           ONLINE
/u01/app/oracle/oradata/PROD1/example01.dbf           ONLINE
/u01/app/oracle/oradata/PROD1/users01.dbf             ONLINE

5 rows selected.

SYS@PROD1>alter database rename file '/u01/app/oracle/oradata/PROD1/system01.dbf' to
'/home/oracle/temp/system01.dbf';

Database altered.

SYS@PROD1>alter database rename file '/u01/app/oracle/oradata/PROD1/sysaux01.dbf' to
'/home/oracle/temp/sysaux01.dbf';

Database altered.

```

```
SYS@PROD1>alter database rename file '/u01/app/oracle/oradata/PROD1/undotbs01.dbf'
to '/home/oracle/temp/undotbs01.dbf';
```

Database altered.

```
SYS@PROD1>alter database rename file '/u01/app/oracle/oradata/PROD1/users01.dbf' to
'/home/oracle/temp/users01.dbf';
```

Database altered.

```
SYS@PROD1>alter database datafile '/u01/app/oracle/oradata/PROD1/example01.dbf'
offline;
```

Database altered.

```
SYS@PROD1>select name, status
2 from v$datafile;
```

NAME	STATUS
/home/oracle/temp/system01.dbf	SYSTEM
/home/oracle/temp/sysaux01.dbf	ONLINE
/home/oracle/temp/undotbs01.dbf	ONLINE
/u01/app/oracle/oradata/PROD1/example01.dbf	OFFLINE
/home/oracle/temp/users01.dbf	ONLINE

5 rows selected.

리두 로그 파일도 이름을 바꿔준다.

```
SYS@PROD1>select member
2 from v$logfile;
```

MEMBER
/u01/app/oracle/oradata/PROD1/redo03.log
/u01/app/oracle/oradata/PROD1/redo02.log
/u01/app/oracle/oradata/PROD1/redo01.log

3 rows selected.

```
SYS@PROD1>alter database rename file '/u01/app/oracle/oradata/PROD1/redo01.log' to
'/home/oracle/temp/redo01.log';
```

Database altered.

```
SYS@PROD1>alter database rename file '/u01/app/oracle/oradata/PROD1/redo02.log' to
'/home/oracle/temp/redo02.log';
```

Database altered.

```
SYS@PROD1>alter database rename file '/u01/app/oracle/oradata/PROD1/redo03.log' to
'/home/oracle/temp/redo03.log';
```

Database altered.

```
SYS@PROD1>select member
  2  from v$logfile;
```

MEMBER

```
-----
/home/oracle/temp/redo03.log
/home/oracle/temp/redo02.log
/home/oracle/temp/redo01.log
```

3 rows selected.

복원작업을 마치면 복구한다.

★ 리커버리 편의를 위해 시간 형식을 맞춰준다.

```
SYS@PROD1>alter session set nls_date_format = 'yyyy/mm/dd hh24:mi:ss';
Session altered.
```

★ MOUNT 단계임을 확인한 후 Recovery 한다. 테이블을 삭제하기 전 이전 시점으로 돌아간다.

```
SYS@PROD1>select status
  2  from v$instance;
```

STATUS

```
-----
MOUNTED
```

1 row selected.

```
SYS@PROD1>recover database until time '2020/06/25 14:23:50';
ORA-00279: change 2436438 generated at 06/24/2020 14:20:17 needed for thread 1
ORA-00289: suggestion : /home/oracle/arch1/arch_1_6_1043935856.arc
ORA-00280: change 2436438 for thread 1 is in sequence #6
```

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

Log applied.
Media recovery complete.

```
SYS@PROD1>alter database open;
alter database open
*
```

ERROR at line 1:
ORA-01589: must use RESETLOGS or NORESETLOGS option for database open

```
SYS@PROD1>alter database open resetlogs;
Database altered.
```

```
SYS@PROD1>select count(*)
  2  from scott.emp_n;
```

```
COUNT(*)
-----
      107
```

1 row selected.

복구를 완료했으면 사용자 계정으로 들어가 해당 테이블의 덤프파일을 추출한다.

```
SYS@PROD1>conn scott/tiger
```

```
ERROR:
```

```
ORA-28000: the account is locked
```

```
SYS@PROD1>alter user scott identified by tiger account unlock;
```

```
User altered.
```

```
[oracle@edydr1p1 ~]$ exp scott/tiger tables=emp_n file=emp_n.dmp
```

```
Export: Release 12.1.0.2.0 - Production on Thu Jun 25 15:09:29 2020
```

```
Copyright (c) 1982, 2014, Oracle and/or its affiliates. All rights reserved.
```

```
Connected to: Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit Production
```

```
With the Partitioning, OLAP, Advanced Analytics and Real Application Testing options
```

```
Export done in US7ASCII character set and AL16UTF16 NCHAR character set
```

```
server uses WE8MSWIN1252 character set (possible charset conversion)
```

```
About to export specified tables via Conventional Path ...
```

```
. . exporting table EMP_N 107 rows exported
```

```
EXP-00091: Exporting questionable statistics.
```

```
Export terminated successfully with warnings.
```

* 디렉토리 내의 모든 내용을 리스트 형식으로 출력, 시간 순으로 정렬해서 본다.

```
[oracle@edydr1p1 ~]$ ls -alt emp_n.dmp
```

```
-rw-r--r-- 1 oracle oinstall 24576 Jun 25 15:09 emp_n.dmp
```

추출한 덤프를 import시킬 PROD1 상태를 확인한다.

```
SYS@PROD1>select instance_name, status  
2 from v$instance;
```

INSTANCE_NAME	STATUS
PROD1	OPEN

```
1 row selected.
```

```
SYS@PROD1>show parameter pfile;
```

NAME	TYPE	VALUE
spfile	string	

```
SYS@PROD1>shutdown immediate
```

```
Database closed.
```

```
Database dismounted.
```

```
ORACLE instance shut down.
```

```
SYS@PROD1>startup
```

```
ORACLE instance started.
```

```
...
```

```
Database mounted.
```

```
Database opened.
```

```
SYS@PROD1>show parameter spfile
```

NAME	TYPE	VALUE
spfile	string	/u01/app/oracle/product/12.1.0 /dbhome_1/dbs/spfilePROD1.ora

```
SYS@PROD1>select name  
2 from v$controlfile;
```

NAME
/u01/app/oracle/oradata/PROD1/control01.ctl

1 row selected.

```
SYS@PROD1>select name, status  
2 from v$datafile;
```

NAME	STATUS
/u01/app/oracle/oradata/PROD1/system01.dbf	SYSTEM
/u01/app/oracle/oradata/PROD1/sysaux01.dbf	ONLINE
/u01/app/oracle/oradata/PROD1/undotbs01.dbf	ONLINE
/u01/app/oracle/oradata/PROD1/example01.dbf	ONLINE
/u01/app/oracle/oradata/PROD1/users01.dbf	ONLINE

5 rows selected.

```
SYS@PROD1>select member  
2 from v$logfile;
```

MEMBER
/u01/app/oracle/oradata/PROD1/redo03.log
/u01/app/oracle/oradata/PROD1/redo02.log
/u01/app/oracle/oradata/PROD1/redo01.log

3 rows selected.

```
SYS@PROD1>select count(*)  
2 from scott.emp_n;  
from scott.emp_n  
*
```

ERROR at line 2:
ORA-00942: table or view does not exist

상태 확인이 끝나면 덤프를 import한다.

```
[oracle@edydr1p1 ~]$ imp scott/tiger tables=emp_n file=emp_n.dmp

Import: Release 12.1.0.2.0 - Production on Thu Jun 25 15:15:13 2020

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Connected to: Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit Production
With the Partitioning, OLAP, Advanced Analytics and Real Application Testing options

Export file created by EXPORT:V12.01.00 via conventional path
import done in US7ASCII character set and AL16UTF16 NCHAR character set
import server uses WE8MSWIN1252 character set (possible charset conversion)
. importing SCOTT's objects into SCOTT
. importing SCOTT's objects into SCOTT
. . importing table "EMP_N" 107 rows imported
Import terminated successfully without warnings.
```

잠깐!! import 시 다음 오류가 뜨면 사용자 계정의 LOCK을 풀고 다시 진행하자.

```
Import: Release 12.1.0.2.0 - Production on Thu Jun 25 15:13:41 2020

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IMP-00058: ORACLE error 28000 encountered
ORA-28000: the account is lockedUsername:
Password:

SYS@PROD1>alter user scott identified by tiger
2 account unlock;

User altered.
```

복구 후에 데이터 파일, 컨트롤 파일, 리두 로그 파일이 정상 작동하고 있는지 조회해본다.

```
[oracle@edydr1p1 ~]$ sqlplus / as sysdba

SYS@PROD1>select count(*)
2 from scott.emp_n;

COUNT(*)
-----
107

1 row selected.

SYS@PROD1>show parameter spfile;

NAME                                TYPE                                VALUE
-----                                -                                -
spfile                              string                              /u01/app/oracle/product/12.1.0
                                         /dbhome_1/dbs/spfilePROD1.ora

SYS@PROD1>alter system switch logfile;
System altered.

... 두번 더 실행
```

임시로 썼던 temp 디렉토리와 PFILE을 모두 지운다.

```
[oracle@edydr1p1 ~]$ ls
afiedt.buf  arch2    bea                Desktop    Downloads  labs    oradiag_oracle
Public      temp      utl_dir            arch1      backup     control_re.sql Documents
emp_n.dmp   Music    Pictures           solns      Templates  Videos

[oracle@edydr1p1 ~]$ rm -rf temp

[oracle@edydr1p1 ~]$ ls
afiedt.buf  arch2    bea                Desktop    Downloads  labs    oradiag_oracle
Public      Templates Videos  arch1      backup     control_re.sql Documents emp_n.dmp
Music       Pictures          solns      utl_dir

[oracle@edydr1p1 ~]$ cd $ORACLE_HOME/dbs
[oracle@edydr1p1 dbs]$ ls
hc_em12rep.dat  hc_PROD1.dat  initPROD1.ora  lkORCL  orapwem12rep  orapwPROD1
spfileorcl.ora  hc_orcl.dat   init.ora       lkEM12REP  lkPROD1  orapworcl
spfileem12rep.ora  spfilePROD1.ora

[oracle@edydr1p1 dbs]$ rm initPROD1.ora

[oracle@edydr1p1 dbs]$ ls
hc_em12rep.dat  hc_PROD1.dat  lkEM12REP  lkPROD1  orapworcl  spfileem12rep.ora
spfilePROD1.ora  hc_orcl.dat   init.ora    lkORCL    orapwem12rep  orapwPROD1
spfileorcl.ora
```