

CONSOLIDATION - MULTITENANT

TIPS AND TRICKS FOR DBAS

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WE SIMPLIFY COMPLEXITY.



Mobile



Process /
Integration



Analytics /
Big Data



Database /
Data
Management



Identity &
Access
Management



Oracle Cloud



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Slide 5

RP4

Rodrigo Pinto, 12/7/2019

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ORAWORLD

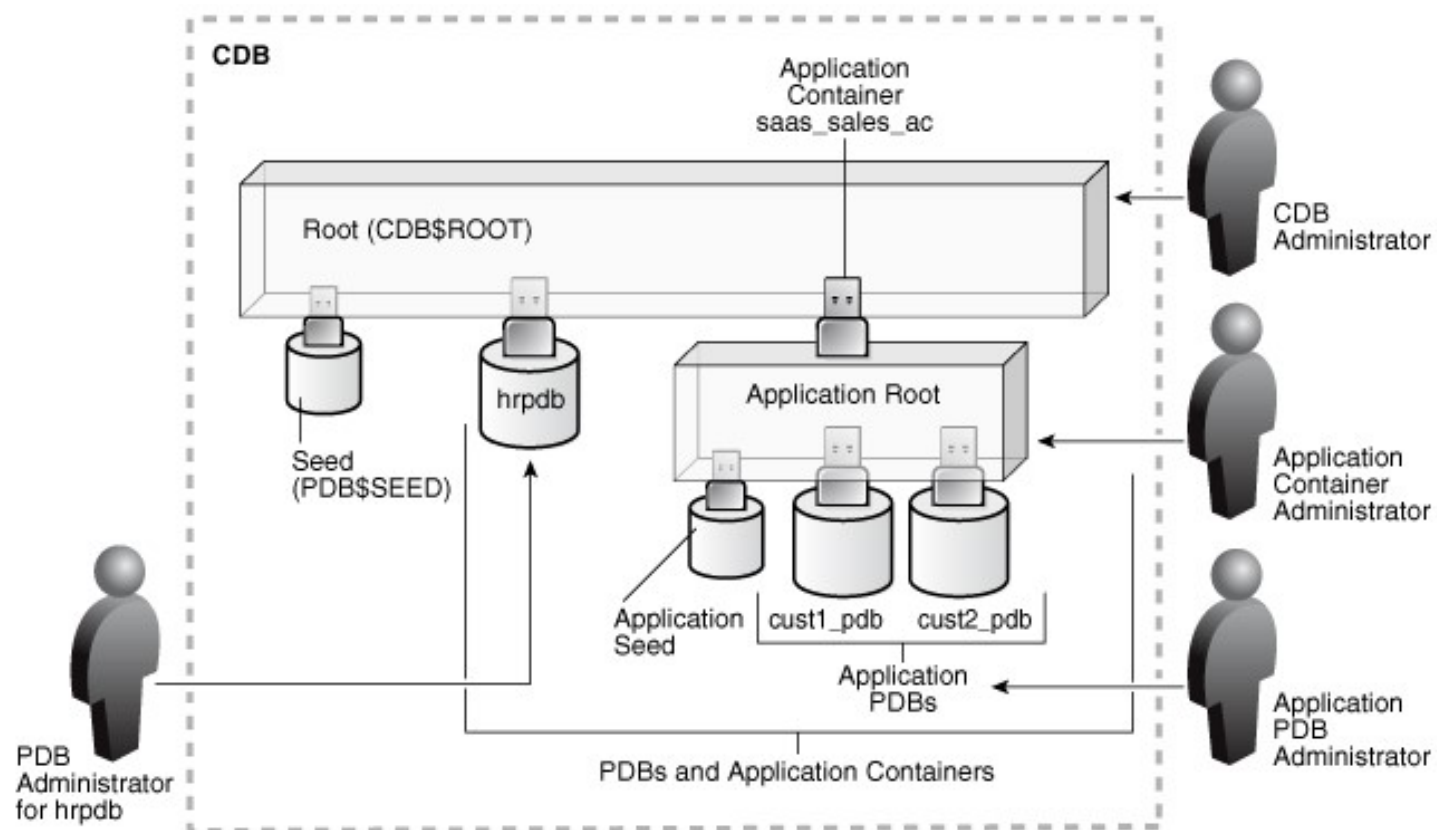
e-Magazine for Oracle Users published by the EOUC

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WE SIMPLIFY COMPLEXITY.

WHAT IS AND WHY MULTITENANT?

ARCHITECTURE



Database Configuration Assistant - Create a database - Step 4 of 14

Specify Database Identification Details **19c ORACLE Database**

Provide a unique database identifier information. An Oracle database is uniquely identified by a Global database name, typically of the form "name.domain".

Global database name:

SID:

Service name:

☒ **Create as Container database**

A Container database can be used for consolidating multiple databases into a single database, and it enables database virtualization. A Container database (CDB) can have zero or more pluggable databases (PDB).

☒ **Use Local Undo tablespace for PDBs**

☐ **Create an empty Container database**

☒ **Create a Container database with one or more PDBs**

Number of PDBs:

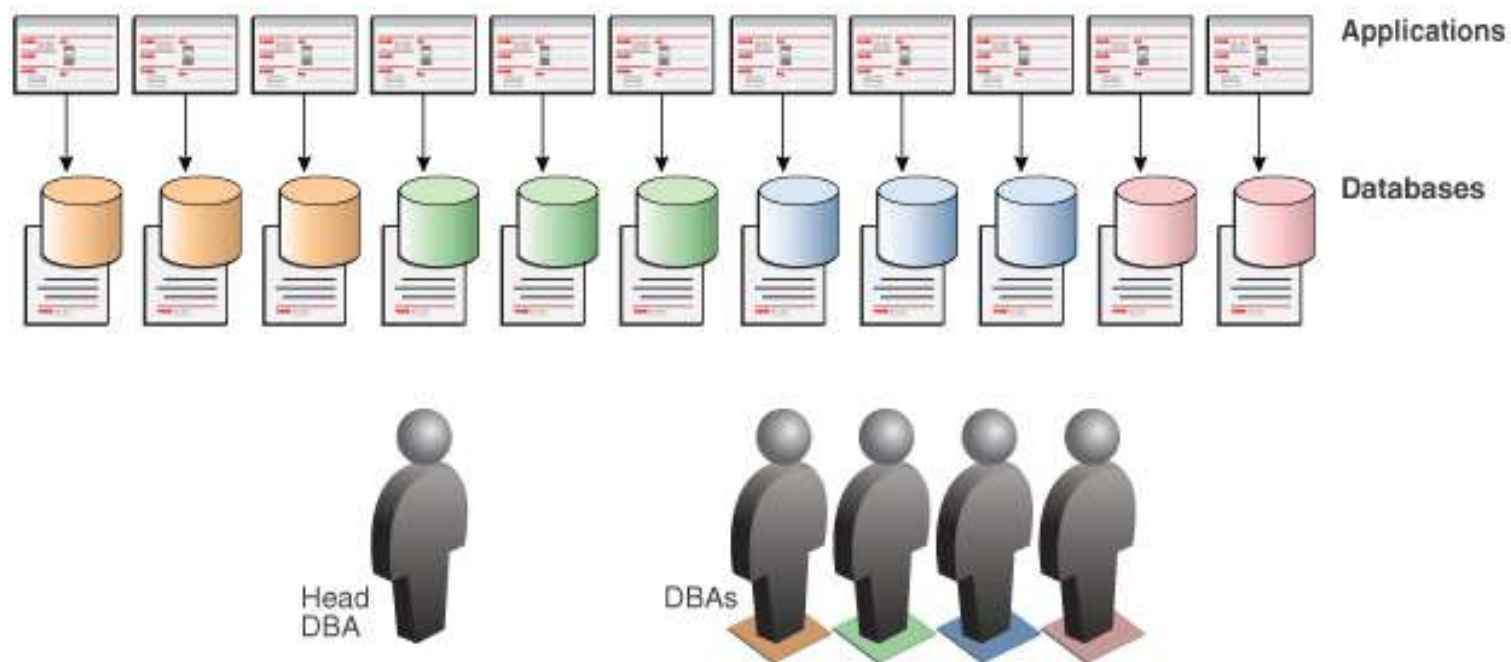
PDB name:

[Help](#) [< Back](#) [Next >](#) [Finish](#) [Cancel](#)

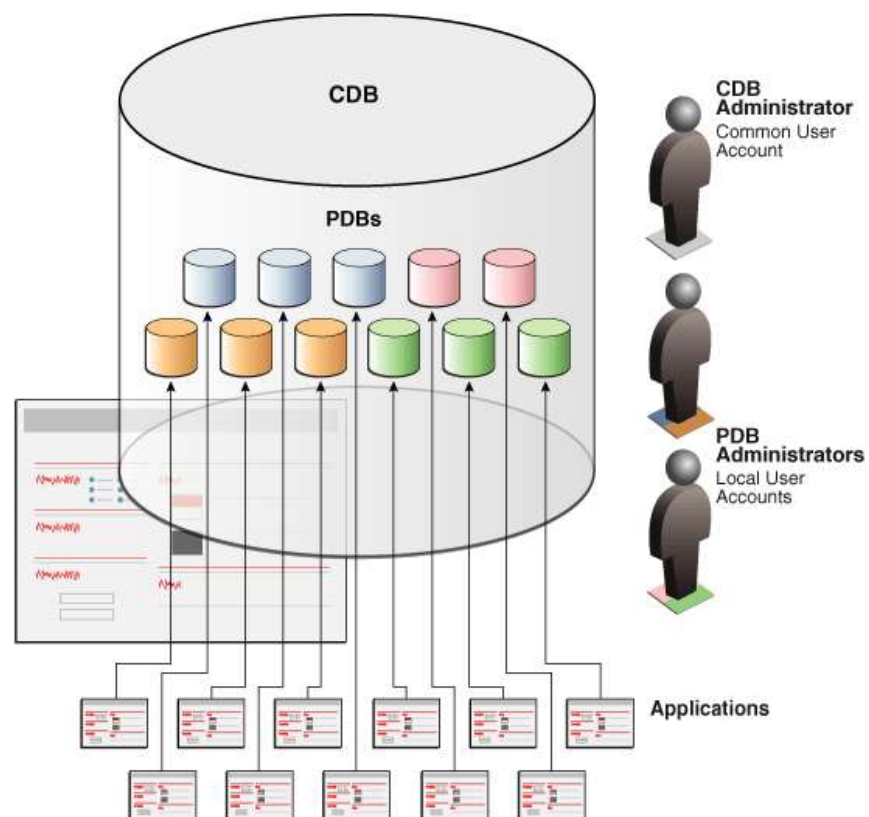
8.1.1 Deprecation of Non-CDB Architecture

The non-CDB architecture is deprecated in Oracle Database 12c, and may be desupported and unavailable in a release after Oracle Database 12c Release 2. Oracle recommends use of the CDB architecture.

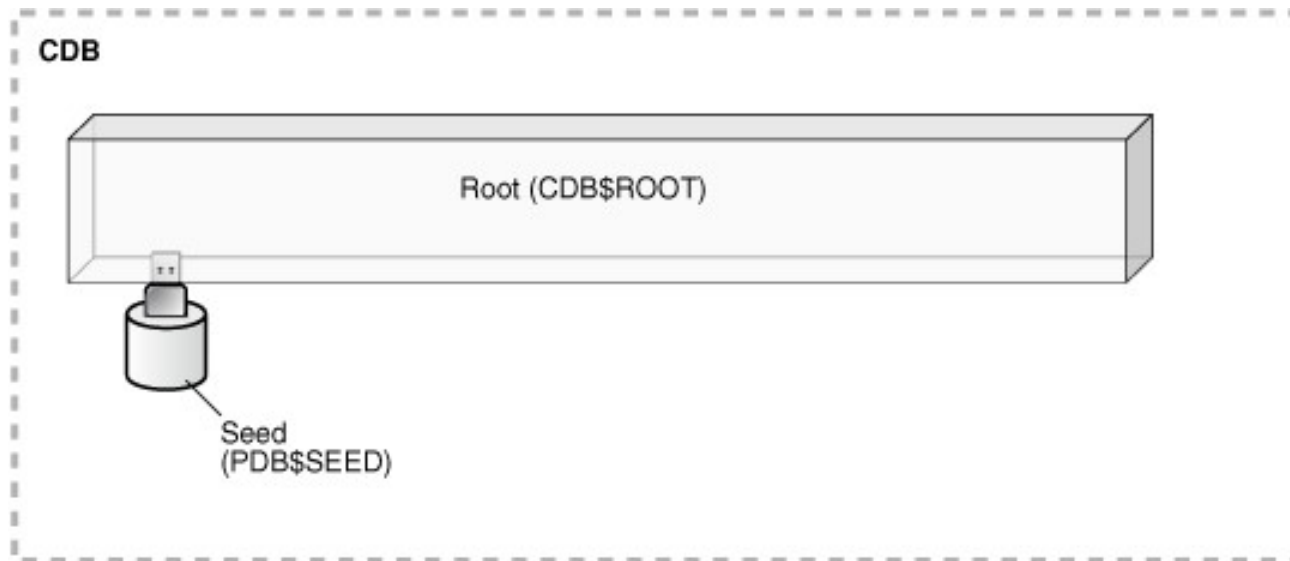
ARCHITECTURE (NONCDB)



ARCHITECTURE (CDB)



KEY TO CONSOLIDATION



CREATING PDBS

By Cloning

- From pdb\$seed
- From pdb local/remote or noncdb
- From snapshots
- Snapshot copy Pdb
- Refreshable clone

CREATING PDBS

By Plugging In

- From unplugged PDB or NONCDB
- Full transportable tablespace
- Using datapump
- Using Oracle Golden Gate
- Create PDB by relocating
- Create a PDB as Proxy PDB

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TOP FEATURES BY VERSION



TOP FEATURES – 12CR1

- Multitenant
- CDB resource plan
- PDB resource plan
- Full transportable tablespace

TOP FEATURES – 12CR2

- Local UNDO
- PDB Archive
- Flashback pluggable database
- PDB charset
- 31 Features added

TOP FEATURES – 18C (12.2.0.2)

- ASM database cloning
- Create keystore for each PDB
- Create user-defined masterkey
- DBCA PDB Clone
- 31 Features added

TOP FEATURES – 19C (12.2.0.3)

- Relocate PDB to another CDB using DBCA in silent mode
- ADDM per PDB
- Automated PDB relocation
- Workload Capture and Replay in a PDB

```
[oracle@ora19c ~]$ sqlplus sys/oracle@orclcdb as sysdba


SQL*Plus: Release 19.0.0.0.0 - Production on Sun Dec 8 15:06:14 2019
Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle. All rights reserved.

Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.3.0.0.0

SQL> select count(1) from v$system_parameter where ispdb_modifiable='TRUE';

COUNT(1)
-----
      237
```



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BEST ASPECTS



BEST OF MULTITENANT

- No changes on application code to use
- Works with RAC
- Works with Dataguard
- Best resource allocation
- Less efforts to Administration
- Simplifies daily DBA tasks

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HOW TO MIGRATE



HOW TO MIGRATE

- Datapump
- Full transportable tablespace
- Cloning
- Convert noncdb to PDB
- Golden gate
- dbupgrade (text) - <https://mikedietchde.com/hol-19c-upgrade/>

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REAL LIFE BAD EXPERIENCES

With workaround

ISSUE – TEMPORARY TABLESPACE (DATAGUARD)

```

2. oracle@ora19c:~
SQL> conn sys/oracle@orclcdb as sysdba
Connected.
SQL> select db_unique_name,database_role, open_mode from v$database;

DB_UNIQUE_NAME          DATABASE_ROLE    OPEN_MODE
-----
orclcdb                  PRIMARY         READ WRITE

SQL> select con_id,name from v$datafile
union all
select con_id,name from v$tempfile order by con_id;
 2      3
CON_ID NAME
-----
1 /u01/app/oracle/oradata/ORCLCDB/undotbs2.dbf
1 /u01/app/oracle/oradata/ORCLCDB/temp01.dbf
1 /u01/app/oracle/oradata/ORCLCDB/system01.dbf
1 /u01/app/oracle/oradata/ORCLCDB/sysaux01.dbf
1 /u01/app/oracle/oradata/ORCLCDB/users01.dbf
2 /u01/app/oracle/oradata/ORCLCDB/pdbseed/undotbs01.dbf
2 /u01/app/oracle/oradata/ORCLCDB/pdbseed/sysaux01.dbf
2 /u01/app/oracle/oradata/ORCLCDB/pdbseed/system01.dbf
2 /u01/app/oracle/oradata/ORCLCDB/pdbseed/temp012019-05-31_15-03-14-330-PM.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/APEX_1291597703607401.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/sysaux01.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/undotbs2.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/system01.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/temp01.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/users01.dbf

15 rows selected.

```

ISSUE – TEMPORARY TABLESPACE (DATAGUARD)

```

2. oracle@ora19c:~
SQL> conn sys/oracle@orclstb as sysdba
Connected.
SQL> select db_unique_name,database_role, open_mode from v$database;

DB_UNIQUE_NAME          DATABASE_ROLE    OPEN_MODE
-----
orclstb                  PHYSICAL STANDBY MOUNTED

SQL> select con_id,name from v$datafile
union all
select con_id,name from v$tempfile order by con_id;
 2      3
CON_ID NAME
-----
1 /u01/app/oracle/oradata/ORCLSTB/undotbs2.dbf
1 /u01/app/oracle/oradata/ORCLSTB/temp01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/system01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/sysaux01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/users01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/undotbs01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/sysaux01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/system01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/temp012019-05-31_15-03-14-330-PM.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/APEX_1291597703607401.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/sysaux01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/undotbs2.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/system01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/temp01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/users01.dbf

15 rows selected.

```


ISSUE – TEMPORARY TABLESPACE (DATAGUARD)

```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ dgmgrl /  
DGMGRL for Linux: Release 19.0.0.0.0 - Production on Sat Dec 7 07:03:53 2019  
Version 19.3.0.0.0  
  
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved.  
  
Welcome to DGMGRL, type "help" for information.  
Connected to "orclcdb"  
Connected as SYSDBA.  
DGMGRL> show configuration  
  
Configuration - dg_orcl  
  
Protection Mode: MaxPerformance  
Members:  
  orclcdb - Primary database  
  orclstb - Physical standby database  
  
Fast-Start Failover: Disabled  
  
Configuration Status:  
SUCCESS (status updated 45 seconds ago)  
DGMGRL> 
```

ISSUE – TEMPORARY TABLESPACE (DATAGUARD)

```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ mkdir -p /u01/app/oracle/oradata/ORCLCDB/  
orcl/   pdbseed/  
[oracle@ora19c ~]$ mkdir -p /u01/app/oracle/oradata/ORCLCDB/pdb1  
[oracle@ora19c ~]$ mkdir -p /u01/app/oracle/oradata/ORCLSTB/pdb1  
[oracle@ora19c ~]$
```

```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ sqlplus sys/oracle@orclcdb as sysdba  
  
SQL*Plus: Release 19.0.0.0.0 - Production on Sat Dec 7 07:12:56 2019  
Version 19.3.0.0.0  
  
Copyright (c) 1982, 2019, Oracle. All rights reserved.  
  
Connected to:  
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production  
Version 19.3.0.0.0  
  
SQL> create pluggable database pdb1 admin user mufalani identified by oracle  
file_name_convert=('/u01/app/oracle/oradata/ORCLCDB/pdbseed/',  
                  '/u01/app/oracle/oradata/ORCLCDB/pdb1/'); 2 3  
  
Pluggable database created.  
  
SQL> alter pluggable database pdb1 open;  
  
Pluggable database altered.  
  
SQL>
```

ISSUE – TEMPORARY TABLESPACE (DATAGUARD)

```

SQL> show pdbs

  CON_ID  CON_NAME              OPEN  MODE  RESTRICTED
-----
         2  PDB$SEED                  READ  ONLY  NO
         3  ORCL                      READ  WRITE NO
         4  PDB1                      READ  WRITE NO

SQL> set lin 230
set pages 30
col con_id form 999
col name form a100
select con_id,name from v$datafile
union all
select con_id,name from v$tempfile order by con_id;
SQL> SQL> SQL> SQL> 2    3
CON_ID NAME
-----
1 /u01/app/oracle/oradata/ORCLCDB/temp01.dbf
1 /u01/app/oracle/oradata/ORCLCDB/users01.dbf
1 /u01/app/oracle/oradata/ORCLCDB/sysaux01.dbf
1 /u01/app/oracle/oradata/ORCLCDB/system01.dbf
1 /u01/app/oracle/oradata/ORCLCDB/undotbs2.dbf
2 /u01/app/oracle/oradata/ORCLCDB/pdbseed/system01.dbf
2 /u01/app/oracle/oradata/ORCLCDB/pdbseed/temp012019-05-31_15-03-14-330-PM.dbf
2 /u01/app/oracle/oradata/ORCLCDB/pdbseed/undotbs01.dbf
2 /u01/app/oracle/oradata/ORCLCDB/pdbseed/sysaux01.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/undotbs2.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/users01.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/sysaux01.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/system01.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/APEX_1291597703607401.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/temp01.dbf
4 /u01/app/oracle/oradata/ORCLCDB/pdb1/system01.dbf
4 /u01/app/oracle/oradata/ORCLCDB/pdb1/temp012019-05-31_15-03-14-330-PM.dbf
4 /u01/app/oracle/oradata/ORCLCDB/pdb1/undotbs01.dbf
4 /u01/app/oracle/oradata/ORCLCDB/pdb1/sysaux01.dbf

19 rows selected.

```

ISSUE – TEMPORARY TABLESPACE (DATAGUARD)

```

oracle@ora19c ~]$ sqlplus sys/oracle@orclstb as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Sat Dec 7 07:15:32 2019
Version 19.3.0.0.0

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Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.3.0.0.0

SQL> set lin 230
set pages 30
col con_id form 999
col name form a100
select con_id,name from v$datafile
union all
select con_id,name from v$tempfile order by con_id;
SQL> SQL> SQL> SQL> 2 3
CON_ID NAME
-----
1 /u01/app/oracle/oradata/ORCLSTB/undotbs2.dbf
1 /u01/app/oracle/oradata/ORCLSTB/temp01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/system01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/sysaux01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/users01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/undotbs01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/sysaux01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/system01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/temp012019-05-31_15-03-14-330-PM.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/temp01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/system01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/undotbs2.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/APEX_1291597703607401.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/users01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/sysaux01.dbf
4 /u01/app/oracle/oradata/ORCLSTB/pdb1/undotbs01.dbf
4 /u01/app/oracle/oradata/ORCLSTB/pdb1/system01.dbf
4 /u01/app/oracle/oradata/ORCLSTB/pdb1/sysaux01.dbf

18 rows selected.

```

ISSUE – TEMPORARY TABLESPACE (DATAGUARD)

```
[oracle@oral9c ~]$ dgmgrl sys/oracle@orclcdb
DGMGRL for Linux: Release 19.0.0.0.0 - Production on Sat Dec 7 07:18:07 2019
Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved.

Welcome to DGMGRL, type "help" for information.
Connected to "orclcdb"
Connected as SYSDBA.
DGMGRL> switchover to orclstb
Performing switchover NOW, please wait...
Operation requires a connection to database "orclstb"
Connecting ...
Connected to "orclstb"
Connected as SYSDBA.
New primary database "orclstb" is opening...
Operation requires start up of instance "orclcdb" on database "orclcdb"
Starting instance "orclcdb"...
Connected to an idle instance.
ORACLE instance started.
Connected to "orclcdb"
Database mounted.
Connected to "orclcdb"
Switchover succeeded, new primary is "orclstb"
DGMGRL> █
```


ISSUE – TEMPORARY TABLESPACE (DATAGUARD)

```
DGMGRL> show configuration

Configuration - dg_orcl

  Protection Mode: MaxPerformance
  Members:
    orclstb - Primary database
    orclcdb - Physical standby database

Fast-Start Failover: Disabled

Configuration Status:
SUCCESS (status updated 48 seconds ago)

DGMGRL>
```

```
Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle. All rights reserved.

Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.3.0.0.0

SQL> select db_unique_name,database_role, open_mode from v$database;

DB_UNIQUE_NAME          DATABASE_ROLE    OPEN_MODE
-----
orclstb                  PRIMARY          READ WRITE

SQL> set lin 230
set pages 30
col con_id form 999
col name form a100
select con_id,name from v$datafile
union all
select con_id,name from v$tempfile order by con_id;
SQL> SQL> SQL> SQL> 2 3
CON_ID NAME
-----
1 /u01/app/oracle/oradata/ORCLSTB/undotbs2.dbf
1 /u01/app/oracle/oradata/ORCLSTB/temp01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/system01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/sysaux01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/users01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/undotbs01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/sysaux01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/system01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/temp012019-05-31_15-03-14-330-PM.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/temp01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/system01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/undotbs2.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/APEX_1291597703607401.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/users01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/sysaux01.dbf
4 /u01/app/oracle/oradata/ORCLSTB/pdb1/undotbs01.dbf
4 /u01/app/oracle/oradata/ORCLSTB/pdb1/system01.dbf
4 /u01/app/oracle/oradata/ORCLSTB/pdb1/sysaux01.dbf

18 rows selected.
```

ISSUE – TEMPORARY TABLESPACE (DATAGUARD)

```

2. oracle@ora19c:~
[oracle@ora19c ~]$ sqlplus sys/oracle@orclpdb as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Sat Dec 7 07:25:57 2019
Version 19.3.0.0.0

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Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.3.0.0.0

SQL> select db_unique_name,database_role, open_mode from v$database;

DB_UNIQUE_NAME          DATABASE_ROLE    OPEN_MODE
-----
orclpdb                 PHYSICAL STANDBY MOUNTED

SQL> set lin 230
set pages 30
col con_id form 999
col name form a100
select con_id,name from v$datafile
union all
select con_id,name from v$tempfile order by con_id;
SQL> SQL> SQL> 2 3
CON_ID NAME
-----
1 /u01/app/oracle/oradata/ORCLCDB/temp01.dbf
1 /u01/app/oracle/oradata/ORCLCDB/users01.dbf
1 /u01/app/oracle/oradata/ORCLCDB/sysaux01.dbf
1 /u01/app/oracle/oradata/ORCLCDB/system01.dbf
1 /u01/app/oracle/oradata/ORCLCDB/undotbs2.dbf
2 /u01/app/oracle/oradata/ORCLCDB/pdbseed/system01.dbf
2 /u01/app/oracle/oradata/ORCLCDB/pdbseed/temp012019-05-31_15-03-14-330-PM.dbf
2 /u01/app/oracle/oradata/ORCLCDB/pdbseed/undotbs01.dbf
2 /u01/app/oracle/oradata/ORCLCDB/pdbseed/sysaux01.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/undotbs2.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/users01.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/sysaux01.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/system01.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/APEX_1291597703607401.dbf
3 /u01/app/oracle/oradata/ORCLCDB/orcl/temp01.dbf
4 /u01/app/oracle/oradata/ORCLCDB/pdb1/system01.dbf
4 /u01/app/oracle/oradata/ORCLCDB/pdb1/temp012019-05-31_15-03-14-330-PM.dbf
4 /u01/app/oracle/oradata/ORCLCDB/pdb1/undotbs01.dbf
4 /u01/app/oracle/oradata/ORCLCDB/pdb1/sysaux01.dbf

19 rows selected.

```

ISSUE – TEMPORARY TABLESPACE (DATAGUARD)

```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ dgmgrl sys/oracle@orclstb  
DGMGRL for Linux: Release 19.0.0.0.0 - Production on Sat Dec 7 07:30:06 2019  
Version 19.3.0.0.0  
  
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved.  
  
Welcome to DGMGRL, type "help" for information.  
Connected to "orclstb"  
Connected as SYSDBA.  
DGMGRL> switchover to orclcdb;  
Performing switchover NOW, please wait...  
Operation requires a connection to database "orclcdb"  
Connecting ...  
Connected to "orclcdb"  
Connected as SYSDBA.  
New primary database "orclcdb" is opening...  
Operation requires start up of instance "orclstb" on database "orclstb"  
Starting instance "orclstb"...  
Connected to an idle instance.  
ORACLE instance started.  
Connected to "orclstb"  
Database mounted.  
Connected to "orclstb"  
Switchover succeeded, new primary is "orclcdb"  
DGMGRL>
```

```
DGMGRL> show configuration  
  
Configuration - dg_orcl  
  
Protection Mode: MaxPerformance  
Members:  
  orclcdb - Primary database  
  orclstb - Physical standby database  
  
Fast-Start Failover: Disabled  
  
Configuration Status:  
SUCCESS (status updated 19 seconds ago)  
  
DGMGRL>
```

ISSUE – TEMPORARY TABLESPACE (DATAGUARD)

```

2. oracle@ora19c:~
[oracle@ora19c ~]$ sqlplus sys/oracle@orclstb as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Sat Dec 7 07:32:48 2019
Version 19.3.0.0.0

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Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.3.0.0.0

SQL> alter session set container = pdb1;

Session altered.

SQL> show con_name

CON_NAME
-----
PDB1
SQL> alter tablespace temp
add tempfile '/u01/app/oracle/oradata/ORCLSTB/pdb1/temp012019-05-31_15-03-14-330-PM.dbf'
size 37m autoextend on next 10m maxsize unlimited;
2 3 alter tablespace temp
*
ERROR at line 1:
ORA-01109: database not open

SQL>

```

```

2. oracle@ora19c:~
[oracle@ora19c ~]$ dgmgrl /

DGMGRL for Linux: Release 19.0.0.0.0 - Production on Sat Dec 7 07:37:40 2019
Version 19.3.0.0.0

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Welcome to DGMGRL, type "help" for information.
Connected to "orclcdb"
Connected as SYSDB.
DGMGRL> edit database orclstb set state='APPLY-OFF';
Succeeded.
DGMGRL>

```

ISSUE – TEMPORARY TABLESPACE (DATAGUARD)

```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ sqlplus sys/oracle@orclstb as sysdba  
SQL*Plus: Release 19.0.0.0.0 - Production on Sat Dec 7 07:47:34 2019  
Version 19.3.0.0.0  
Copyright (c) 1982, 2019, Oracle. All rights reserved.  
  
Connected to:  
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production  
Version 19.3.0.0.0  
  
SQL> select db_unique_name, database_role, open_mode from v$database;  
  
DB_UNIQUE_NAME          DATABASE_ROLE    OPEN_MODE  
-----  
orclstb                  PHYSICAL STANDBY READ ONLY  
  
SQL> alter session set container = pdb1;  
Session altered.  
  
SQL> alter tablespace temp  
add tempfile '/u01/app/oracle/oradata/ORCLSTB/pdb1/temp012019-05-31_15-03-14-330-PM.dbf'  
size 37m autoextend on next 10m maxsize unlimited;  
  2      3 alter tablespace temp  
*  
ERROR at line 1:  
ORA-01109: database not open  
  
SQL> alter pluggable database pdb1 open read only;  
Pluggable database altered.  
  
SQL> alter tablespace temp  
add tempfile '/u01/app/oracle/oradata/ORCLSTB/pdb1/temp012019-05-31_15-03-14-330-PM.dbf'  
size 37m autoextend on next 10m maxsize unlimited;  
  2      3  
Tablespace altered.  
  
SQL> █
```


ISSUE – TEMPORARY TABLESPACE (DATAGUARD)

```

2. oracle@ora19c:~
[oracle@ora19c ~]$ sqlplus sys/oracle@orclstb as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Sat Dec 7 07:52:49 2019
Version 19.3.0.0.0

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Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.3.0.0.0

SQL> select db_unique_name,database_role, open_mode from v$database;

set lin 230
set pages 30
col con_id form 999
col name form a100
select con_id,name from v$datafile
union all
select con_id,name from v$tempfile order by con_id;

DB_UNIQUE_NAME          DATABASE_ROLE    OPEN_MODE
-----
orclstb                  PHYSICAL STANDBY READ ONLY

SQL> SQL> SQL> SQL> SQL> SQL> 2 3
CON_ID NAME
-----
1 /u01/app/oracle/oradata/ORCLSTB/temp01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/users01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/sysaux01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/system01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/undotbs2.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/system01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/temp012019-05-31_15-03-14-330-PM.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/undotbs01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/sysaux01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/undotbs2.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/users01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/sysaux01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/system01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/APEX_1291597703607401.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/temp01.dbf
4 /u01/app/oracle/oradata/ORCLSTB/pdb1/system01.dbf
4 /u01/app/oracle/oradata/ORCLSTB/pdb1/temp012019-05-31_15-03-14-330-PM.dbf
4 /u01/app/oracle/oradata/ORCLSTB/pdb1/undotbs01.dbf
4 /u01/app/oracle/oradata/ORCLSTB/pdb1/sysaux01.dbf

19 rows selected.

```

```

2. oracle@ora19c:~
[oracle@ora19c ~]$ dgmgrl /

DGMGRL for Linux: Release 19.0.0.0.0 - Production on Sat Dec 7 07:54:28 2019
Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved.

Welcome to DGMGRL, type "help" for information.
Connected to "orclcdb"
Connected as SYSDBG.
DGMGRL> edit database orclstb set state='APPLY-ON';
Succeeded.
DGMGRL>

```

ISSUE – STARTUP RAC CDB HANG

- Bug 27862368 - PDB RAC instances concurrent startup time out on SYS._NEXT_SVC lock (Doc ID 27862368.8)
- Workaround – start by sqlplus or instance per instance

```
srvctl start instance -db db_unique_name -node node_name  
    [-instance "instance_name"] [-startoption start_options]  
  
srvctl start instance -db db_unique_name -instance "inst_name_list"  
    [-startoption start_options]
```

ISSUE – RUN DATAPATCH SIMULTANEOUS

- **12.1:Parallel Execution Of Datapatch during Patching or Manual upgrade fails with error " ORA-12012:ORA-20001:ORA-06512:ORA-19202:ORA-31011:LPX-00231 " (Doc ID 2054286.1)**
- **Workaround – run one database per time**

ISSUE – PLUG IN PDB CRASHES DATAGUARD

```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ sqlplus sys/oracle@orclcdb as sysdba  
SQL*Plus: Release 19.0.0.0.0 - Production on Sat Dec 7 07:58:03 2019  
Version 19.3.0.0.0  
Copyright (c) 1982, 2019, Oracle. All rights reserved.  
  
Connected to:  
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production  
Version 19.3.0.0.0  
  
SQL> show pdbs  


| CON_ID | CON_NAME  | OPEN MODE  | RESTRICTED |
|--------|-----------|------------|------------|
| 2      | PDB\$SEED | READ ONLY  | NO         |
| 3      | ORCL      | READ WRITE | NO         |
| 4      | PDB1      | READ WRITE | NO         |

  
SQL> alter pluggable database pdb1 close immediate;  
Pluggable database altered.  
  
SQL> alter pluggable database pdb1 unplug into '/home/oracle/pdb1.pdb';  
Pluggable database altered.  
  
SQL> drop pluggable database pdb1 including datafiles;  
Pluggable database dropped.  
  
SQL> show pdbs;  


| CON_ID | CON_NAME  | OPEN MODE  | RESTRICTED |
|--------|-----------|------------|------------|
| 2      | PDB\$SEED | READ ONLY  | NO         |
| 3      | ORCL      | READ WRITE | NO         |

  
SQL> █
```


ISSUE – PLUG IN PDB CRASHES DATAGUARD

```

2. oracle@ora19c:~
[oracle@ora19c ~]$ dgmgrl /
DGMGRL for Linux: Release 19.0.0.0.0 - Production on Sat Dec 7 08:00:11 2019
Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved.

Welcome to DGMGRL, type "help" for information.
Connected to "orclcdb"
Connected as SYSDB.
DGMGRL> show configuration

Configuration - dg_orcl

Protection Mode: MaxPerformance
Members:
  orclcdb - Primary database
  orclstb - Physical standby database

Fast-Start Failover: Disabled

Configuration Status:
SUCCESS (status updated 45 seconds ago)

```

```

[oracle@ora19c ~]$
[oracle@ora19c ~]$ sqlplus sys/oracle@orclstb as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Sat Dec 7 08:00:55 2019
Version 19.3.0.0.0

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Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.3.0.0.0

SQL> show pdbs


```

CON_ID	CON_NAME	OPEN MODE	RESTRICTED
2	PDB\$SEED	MOUNTED	
3	ORCL	MOUNTED	

```

SQL>

```

ISSUE – PLUG IN PDB CRASHES DATAGUARD

```
Recovery of Online Redo Log: Thread 1 Group 4 Seq 35 Reading mem 0
  Mem# 0: /u01/app/oracle/oradata/ORCLSTB/srl04.log
2019-12-07T07:54:54.457661-05:00
Completed: ALTER DATABASE RECOVER MANAGED STANDBY DATABASE DISCONNECT NODELAY
2019-12-07T07:59:26.811843-05:00
PDB1(4):Deleted file /u01/app/oracle/oradata/ORCLSTB/pdb1/temp012019-05-31_15-03-14-330-PM.dbf
PDB1(4):Recovery deleting tempfile #5:'/u01/app/oracle/oradata/ORCLSTB/pdb1/temp012019-05-31_15-03-14-330-PM.dbf'
PDB1(4):Recovery dropped temporary tablespace 'TEMP'
PDB1(4):Recovery deleting file #18:'/u01/app/oracle/oradata/ORCLSTB/pdb1/undotbs01.dbf' from controlfile.
PDB1(4):Deleted file /u01/app/oracle/oradata/ORCLSTB/pdb1/undotbs01.dbf
PDB1(4):Recovery dropped tablespace 'UNDOTBS1'
PDB1(4):Recovery deleting file #17:'/u01/app/oracle/oradata/ORCLSTB/pdb1/sysaux01.dbf' from controlfile.
PDB1(4):Deleted file /u01/app/oracle/oradata/ORCLSTB/pdb1/sysaux01.dbf
PDB1(4):Recovery dropped tablespace 'SYSAUX'
PDB1(4):Recovery deleting file #16:'/u01/app/oracle/oradata/ORCLSTB/pdb1/system01.dbf' from controlfile.
PDB1(4):Deleted file /u01/app/oracle/oradata/ORCLSTB/pdb1/system01.dbf
PDB1(4):Recovery dropped tablespace 'SYSTEM'
PDB1(4):Recovery dropped pluggable database 'PDB1'
2019-12-07T08:04:59.416472-05:00
```

ISSUE – PLUG IN PDB CRASHES DATAGUARD

```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ sqlplus sys/oracle@orclcdb as sysdba  
SQL*Plus: Release 19.0.0.0.0 - Production on Sat Dec 7 08:04:46 2019  
Version 19.3.0.0.0  
  
Copyright (c) 1982, 2019, Oracle. All rights reserved.  
  
Connected to:  
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production  
Version 19.3.0.0.0  
  
SQL> create pluggable database pdb1 using '/home/oracle/pdb1.pdb'  
file_name_convert=('/home/oracle/', '/u01/app/oracle/oradata/ORCLCDB/pdb1/');  
2  
  
Pluggable database created.  
  
SQL> SQL> alter pluggable database pdb1 open;  
alter plu  
Pluggable database altered.  
  
SQL> alter pluggable database pdb1 save state;  
  
Pluggable database altered.  
  
SQL> █
```

ISSUE – PLUG IN PDB CRASHES DATAGUARD

```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ dgmgrl /  
DGMGRL for Linux: Release 19.0.0.0.0 - Production on Sat Dec 7 08:06:23 2019  
Version 19.3.0.0.0  
  
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved.  
  
Welcome to DGMGRL, type "help" for information.  
Connected to "orclcdb"  
Connected as SYSDBG.  
DGMGRL> show configuration  
  
Configuration - dg_orcl  
  
Protection Mode: MaxPerformance  
Members:  
  orclcdb - Primary database  
  orclstb - Physical standby database  
    Error: ORA-16766: Redo Apply is stopped  
  
Fast-Start Failover: Disabled  
  
Configuration Status:  
ERROR (status updated 58 seconds ago)  
  
DGMGRL> █
```


ISSUE – PLUG IN PDB CRASHES DATAGUARD

```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ sqlplus sys/oracle@orclstb as sysdba  
  
SQL*Plus: Release 19.0.0.0.0 - Production on Sat Dec 7 08:07:16 2019  
Version 19.3.0.0.0  
  
Copyright (c) 1982, 2019, Oracle. All rights reserved.  
  
Connected to:  
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production  
Version 19.3.0.0.0  
  
SQL> set lin 230  
set pages 30  
col con_id form 999  
col name form a100  
select con_id,name from v$datafile  
union all  
select con_id,name from v$tempfile order by con_id;  
SQL> SQL> SQL> 2 3  
CON_ID NAME  
-----  
1 /u01/app/oracle/oradata/ORCLSTB/undotbs2.dbf  
1 /u01/app/oracle/oradata/ORCLSTB/temp01.dbf  
1 /u01/app/oracle/oradata/ORCLSTB/system01.dbf  
1 /u01/app/oracle/oradata/ORCLSTB/sysaux01.dbf  
1 /u01/app/oracle/oradata/ORCLSTB/users01.dbf  
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/undotbs01.dbf  
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/sysaux01.dbf  
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/system01.dbf  
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/temp012019-05-31 15-03-14-330-PM.dbf  
3 /u01/app/oracle/oradata/ORCLSTB/orcl/APEX_1291597703607401.dbf  
3 /u01/app/oracle/oradata/ORCLSTB/orcl/sysaux01.dbf  
3 /u01/app/oracle/oradata/ORCLSTB/orcl/undotbs2.dbf  
3 /u01/app/oracle/oradata/ORCLSTB/orcl/system01.dbf  
3 /u01/app/oracle/oradata/ORCLSTB/orcl/temp01.dbf  
3 /u01/app/oracle/oradata/ORCLSTB/orcl/users01.dbf  
5 /u01/app/oracle/oradata/ORCLSTB/pdb1/system01.dbf  
  
16 rows selected.
```

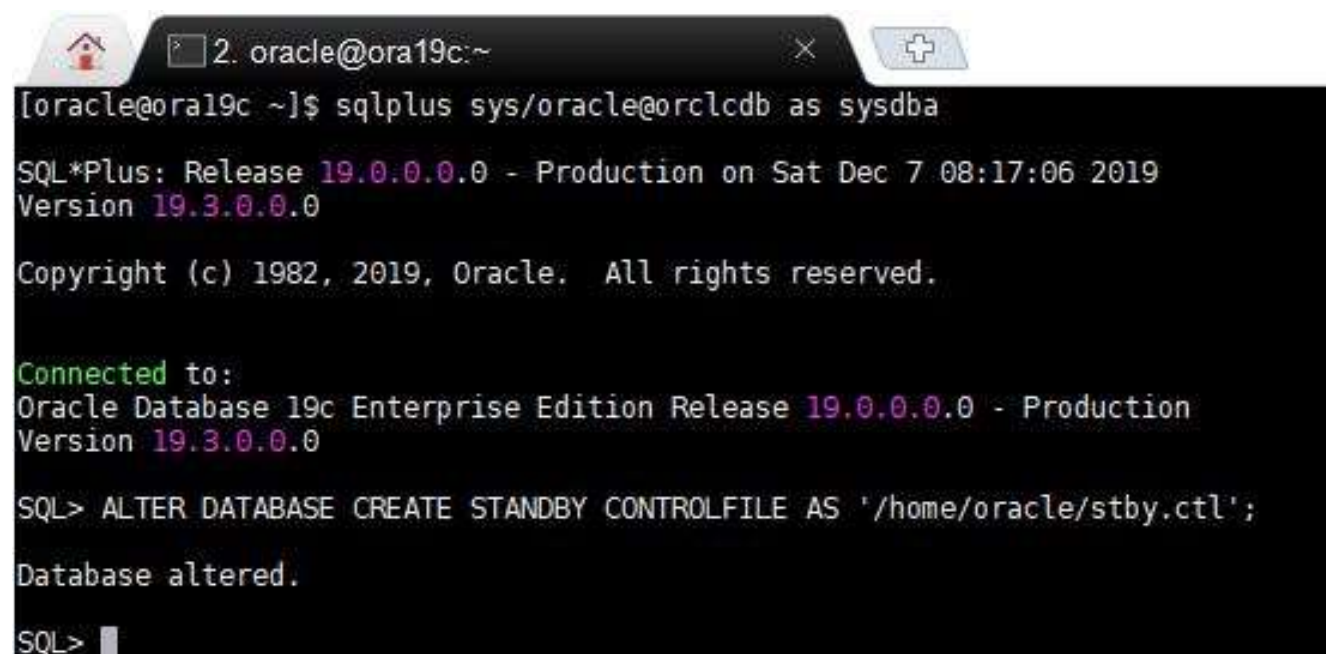
ISSUE – PLUG IN PDB CRASHES DATAGUARD

```

Recovery created pluggable database PDB1
2019-12-07T08:04:59.445106-05:00      I
PDB1(5):Errors in file /u01/app/oracle/diag/rdbms/orclstb/orclstb/trace/orclstb_mrp0_22249.trc:
ORA-01565: error in identifying file '/u01/app/oracle/oradata/ORCLSTB/pdb1/system01.dbf'
ORA-27037: unable to obtain file status
Linux-x86_64 Error: 2: No such file or directory
Additional information: 7
PDB1(5):Recovery was unable to create the file as:
PDB1(5):'/u01/app/oracle/oradata/ORCLSTB/pdb1/system01.dbf'
MRP0 (PID:22249): MRP0: Background Media Recovery terminated with error 1274
2019-12-07T08:04:59.451772-05:00
Errors in file /u01/app/oracle/diag/rdbms/orclstb/orclstb/trace/orclstb_mrp0_22249.trc:
ORA-01274: cannot add data file that was originally created as '/u01/app/oracle/oradata/ORCLCDB/pdb1/system01.dbf'
MRP0 (PID:22249): Managed Standby Recovery not using Real Time Apply
Recovery interrupted!
Recovery stopped due to failure in applying recovery marker (opcode 17.34).
Datafiles are recovered to a consistent state at change 3183846 but controlfile could be ahead of datafiles.
stopping change tracking
2019-12-07T08:04:59.566804-05:00
Errors in file /u01/app/oracle/diag/rdbms/orclstb/orclstb/trace/orclstb_mrp0_22249.trc:
ORA-01274: cannot add data file that was originally created as '/u01/app/oracle/oradata/ORCLCDB/pdb1/system01.dbf'
2019-12-07T08:04:59.566864-05:00
Background Media Recovery process shutdown (orclstb)
2019-12-07T08:09:20.597938-05:00
db_recovery_file_dest_size of 12918 MB is 0.37% used. This is a
user-specified limit on the amount of space that will be used by this
database for recovery-related files, and does not reflect the amount of
space available in the underlying filesystem or ASM diskgroup.

```

ISSUE – PLUG IN PDB CRASHES DATAGUARD



```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ sqlplus sys/oracle@orclpdb as sysdba  
SQL*Plus: Release 19.0.0.0.0 - Production on Sat Dec 7 08:17:06 2019  
Version 19.3.0.0.0  
Copyright (c) 1982, 2019, Oracle. All rights reserved.  
  
Connected to:  
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production  
Version 19.3.0.0.0  
SQL> ALTER DATABASE CREATE STANDBY CONTROLFILE AS '/home/oracle/stby.ctl';  
Database altered.  
SQL>
```

ISSUE – PLUG IN PDB CRASHES DATAGUARD

```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ rman target=sys/oracle@orclstb  
Recovery Manager: Release 19.0.0.0 - Production on Sat Dec 7 08:18:09 2019  
Version 19.3.0.0.0  
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved.  
connected to target database: ORCLCDB (DBID=2780785463, not open)  
RMAN> shutdown immediate  
using target database control file instead of recovery catalog  
database dismounted  
Oracle instance shut down  
RMAN> startup nomount  
connected to target database (not started)  
Oracle instance started  
Total System Global Area 1895823376 bytes  
Fixed Size 9136144 bytes  
Variable Size 436207616 bytes  
Database Buffers 1442840576 bytes  
Redo Buffers 7639040 bytes  
RMAN> restore controlfile from '/home/oracle/stby.ctl';  
Starting restore at 07-DEC-19  
allocated channel: ORA_DISK_1  
channel ORA_DISK_1: SID=39 device type=DISK  
channel ORA_DISK_1: copied control file copy  
output file name=/u01/app/oracle/oradata/ORCLSTB/control01.ctl  
output file name=/u01/app/oracle/fast_recovery_area/ORCLSTB/control02.ctl  
Finished restore at 07-DEC-19  
RMAN> █
```


ISSUE – PLUG IN PDB CRASHES DATAGUARD

```
oracle@ora19c ~]$ rman target=sys/oracle/orclstb

Recovery Manager: Release 19.0.0.0 - Production on Sat Dec 7 08:19:58 2019
Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved.

connected to target database: ORCLCDB (not mounted)

RMAN> alter database mount;

using target database control file instead of recovery catalog
Statement processed

RMAN> catalog start with '/u01/app/oracle/oradata/ORCLSTB/';

Starting implicit crosscheck backup at 07-DEC-19
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=54 device type=DISK
Crosschecked 3 objects
Finished implicit crosscheck backup at 07-DEC-19

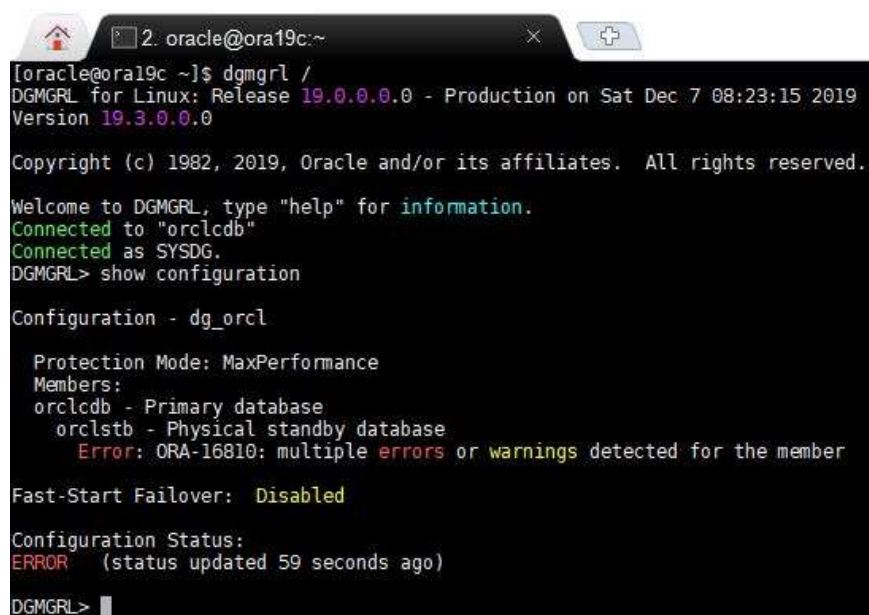
Starting implicit crosscheck copy at 07-DEC-19
using channel ORA_DISK_1
Finished implicit crosscheck copy at 07-DEC-19

searching for all files in the recovery area
cataloging files...
cataloging done

List of Cataloged Files
=====
File Name: /u01/app/oracle/fast_recovery_area/ORCLSTB/archivelog/2019_12_07/ol_mf_1_25_gyq4g4hz_.arc
File Name: /u01/app/oracle/fast_recovery_area/ORCLSTB/archivelog/2019_12_07/ol_mf_1_26_gyq5km3v_.arc
File Name: /u01/app/oracle/fast_recovery_area/ORCLSTB/archivelog/2019_12_07/ol_mf_1_27_gyq64bom_.arc
File Name: /u01/app/oracle/fast_recovery_area/ORCLSTB/archivelog/2019_12_07/ol_mf_1_28_gyq64n7f_.arc
File Name: /u01/app/oracle/fast_recovery_area/ORCLSTB/archivelog/2019_12_07/ol_mf_1_29_gyq64zy8_.arc
File Name: /u01/app/oracle/fast_recovery_area/ORCLSTB/archivelog/2019_12_07/ol_mf_1_30_gyq6vxq5_.arc
File Name: /u01/app/oracle/fast_recovery_area/ORCLSTB/archivelog/2019_12_07/ol_mf_1_32_gyq6vzrv_.arc
File Name: /u01/app/oracle/fast_recovery_area/ORCLSTB/archivelog/2019_12_07/ol_mf_1_31_gyq6vzs6_.arc
File Name: /u01/app/oracle/fast_recovery_area/ORCLSTB/archivelog/2019_12_07/ol_mf_1_33_gyq84b59_.arc
File Name: /u01/app/oracle/fast_recovery_area/ORCLSTB/archivelog/2019_12_07/ol_mf_1_34_gyq88dl1_.arc
File Name: /u01/app/oracle/fast_recovery_area/ORCLSTB/autobackup/2019_12_07/ol_mf_s_1026372241_gyq6h263_.bkp
File Name: /u01/app/oracle/fast_recovery_area/ORCLSTB/autobackup/2019_12_07/ol_mf_s_1026373077_gyq7r09k_.bkp

searching for all files that match the pattern /u01/app/oracle/oradata/ORCLSTB/
no files found to be unknown to the database
```

ISSUE – PLUG IN PDB CRASHES DATAGUARD



```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ dgmgrl /  
DGMGRL for Linux: Release 19.0.0.0.0 - Production on Sat Dec 7 08:23:15 2019  
Version 19.3.0.0.0  
  
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved.  
  
Welcome to DGMGRL, type "help" for information.  
Connected to "orclcdb"  
Connected as SYSDBA.  
DGMGRL> show configuration  
  
Configuration - dg_orcl  
  
Protection Mode: MaxPerformance  
Members:  
  orclcdb - Primary database  
  orclstb - Physical standby database  
    Error: ORA-16810: multiple errors or warnings detected for the member  
  
Fast-Start Failover: Disabled  
  
Configuration Status:  
ERROR (status updated 59 seconds ago)  
  
DGMGRL>
```

ISSUE – PLUG IN PDB CRASHES DATAGUARD

```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ dgmgrl /  
DGMGRL for Linux: Release 19.0.0.0.0 - Production on Sat Dec 7 08:23:15 2019  
Version 19.3.0.0.0  
  
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved.  
  
Welcome to DGMGRL, type "help" for information.  
Connected to "orclcdb"  
Connected as SYSDBA.  
DGMGRL> show configuration  
  
Configuration - dg_orcl  
  
Protection Mode: MaxPerformance  
Members:  
  orclcdb - Primary database  
  orclstb - Physical standby database  
    Error: ORA-16810: multiple errors or warnings detected for the member  
  
Fast-Start Failover: Disabled  
  
Configuration Status:  
ERROR (status updated 59 seconds ago)  
  
DGMGRL>
```

ISSUE – PLUG IN PDB CRASHES DATAGUARD

```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ rman target=sys/oracle@orclstb  
  
Recovery Manager: Release 19.0.0.0.0 - Production on Sat Dec 7 08:25:48 2019  
Version 19.3.0.0.0  
  
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved.  
  
connected to target database: ORCLCDB (DBID=2780785463, not open)  
  
RMAN> restore pluggable database pdb1 from service 'orclcdb';  
  
Starting restore at 07-DEC-19  
using target database control file instead of recovery catalog  
allocated channel: ORA_DISK_1  
channel ORA_DISK_1: SID=54 device type=DISK  
  
channel ORA_DISK_1: starting datafile backup set restore  
channel ORA_DISK_1: using network backup set from service orclcdb  
channel ORA_DISK_1: specifying datafile(s) to restore from backup set  
channel ORA_DISK_1: restoring datafile 00019 to /u01/app/oracle/oradata/ORCLSTB/pdb1/system01.dbf  
channel ORA_DISK_1: restore complete, elapsed time: 00:00:03  
channel ORA_DISK_1: starting datafile backup set restore  
channel ORA_DISK_1: using network backup set from service orclcdb  
channel ORA_DISK_1: specifying datafile(s) to restore from backup set  
channel ORA_DISK_1: restoring datafile 00020 to /u01/app/oracle/oradata/ORCLSTB/pdb1/sysaux01.dbf  
channel ORA_DISK_1: restore complete, elapsed time: 00:00:03  
channel ORA_DISK_1: starting datafile backup set restore  
channel ORA_DISK_1: using network backup set from service orclcdb  
channel ORA_DISK_1: specifying datafile(s) to restore from backup set  
channel ORA_DISK_1: restoring datafile 00021 to /u01/app/oracle/oradata/ORCLSTB/pdb1/undotbs01.dbf  
channel ORA_DISK_1: restore complete, elapsed time: 00:00:02  
Finished restore at 07-DEC-19  
  
RMAN> █
```

ISSUE – PLUG IN PDB CRASHES DATAGUARD

```

2019-12-07T08:26:21.090590-05:00
PDB1(5):Full restore complete of datafile 19 /u01/app/oracle/oradata/ORCLSTB/pdb1/system01.dbf. Elapsed time: 0:00:01
PDB1(5): checkpoint is 3190625
PDB1(5): last deallocation scn is 2161971
PDB1(5): Undo Optimization current scn is 3185341
2019-12-07T08:26:24.607394-05:00
PDB1(5):Full restore complete of datafile 20 /u01/app/oracle/oradata/ORCLSTB/pdb1/sysaux01.dbf. Elapsed time: 0:00:01
PDB1(5): checkpoint is 3190630
PDB1(5): last deallocation scn is 3185253
2019-12-07T08:26:26.382552-05:00
PDB1(5):Full restore complete of datafile 21 /u01/app/oracle/oradata/ORCLSTB/pdb1/undotbs01.dbf. Elapsed time: 0:00:00
PDB1(5): checkpoint is 3190637
PDB1(5): last deallocation scn is 3
PDB1(5): Undo Optimization current scn is 3185341
2019-12-07T08:27:44.837890-05:00
ALTER SYSTEM SET fal_server='orclcdb' SCOPE=BOTH;
ALTER DATABASE RECOVER MANAGED STANDBY DATABASE DISCONNECT NODELAY
2019-12-07T08:27:44.839546-05:00
Attempt to start background Managed Standby Recovery (orclstb)
Starting background process MRP0
2019-12-07T08:27:44.848298-05:00
MRP0 started with pid=58, OS id=24921
2019-12-07T08:27:44.849177-05:00
Background Managed Standby Recovery process started (orclstb)
2019-12-07T08:27:49.853531-05:00
Serial Media Recovery started
MRP0 (PID:24921): Managed Standby Recovery starting Real Time Apply
max_pdb is 5
stopping change tracking
2019-12-07T08:27:49.963713-05:00
MRP0 (PID:24921): Media Recovery Log /u01/app/oracle/fast_recovery_area/ORCLSTB/archivelog/2019_12_07/o1_mf_1_35_gyq9rvx9_.arc
2019-12-07T08:27:49.964255-05:00
TT02 (PID:24931): Waiting for all non-current ORLs to be archived
2019-12-07T08:27:49.964326-05:00
TT02 (PID:24931): All non-current ORLs have been archived
2019-12-07T08:27:50.856431-05:00
Completed: ALTER DATABASE RECOVER MANAGED STANDBY DATABASE DISCONNECT NODELAY
2019-12-07T08:27:51.198597-05:00
MRP0 (PID:24921): Media Recovery Waiting for T-LS-36 (in transit)
2019-12-07T08:27:51.198926-05:00
Recovery of Online Redo Log: Thread 1 Group 4 Seq 36 Reading mem 0
  Mem# 0: /u01/app/oracle/oradata/ORCLSTB/srl04.log
2019-12-07T08:33:56.980466-05:00
db recovery file dest size of 12918 MB is 0.14% used. This is a
user-specified limit on the amount of space that will be used by this
database for recovery-related files, and does not reflect the amount of
space available in the underlying filesystem or ASM diskgroup.
2019-12-07T08:37:59.134432-05:00

```


ISSUE – PLUG IN PDB CRASHES DATAGUARD

```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ dgmgrl /  
DGMGRL for Linux: Release 19.0.0.0.0 - Production on Sat Dec 7 08:43:37 2019  
Version 19.3.0.0.0  
  
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved.  
  
Welcome to DGMGRL, type "help" for information.  
Connected to "orclcdb"  
Connected as SYSDBA.  
DGMGRL> show configuration  
  
Configuration - dg_orcl  
  
Protection Mode: MaxPerformance  
Members:  
  orclcdb - Primary database  
  orclstb - Physical standby database  
  
Fast-Start Failover: Disabled  
  
Configuration Status:  
SUCCESS (status updated 39 seconds ago)  
DGMGRL>
```

ISSUE – PLUG IN PDB CRASHES DATAGUARD

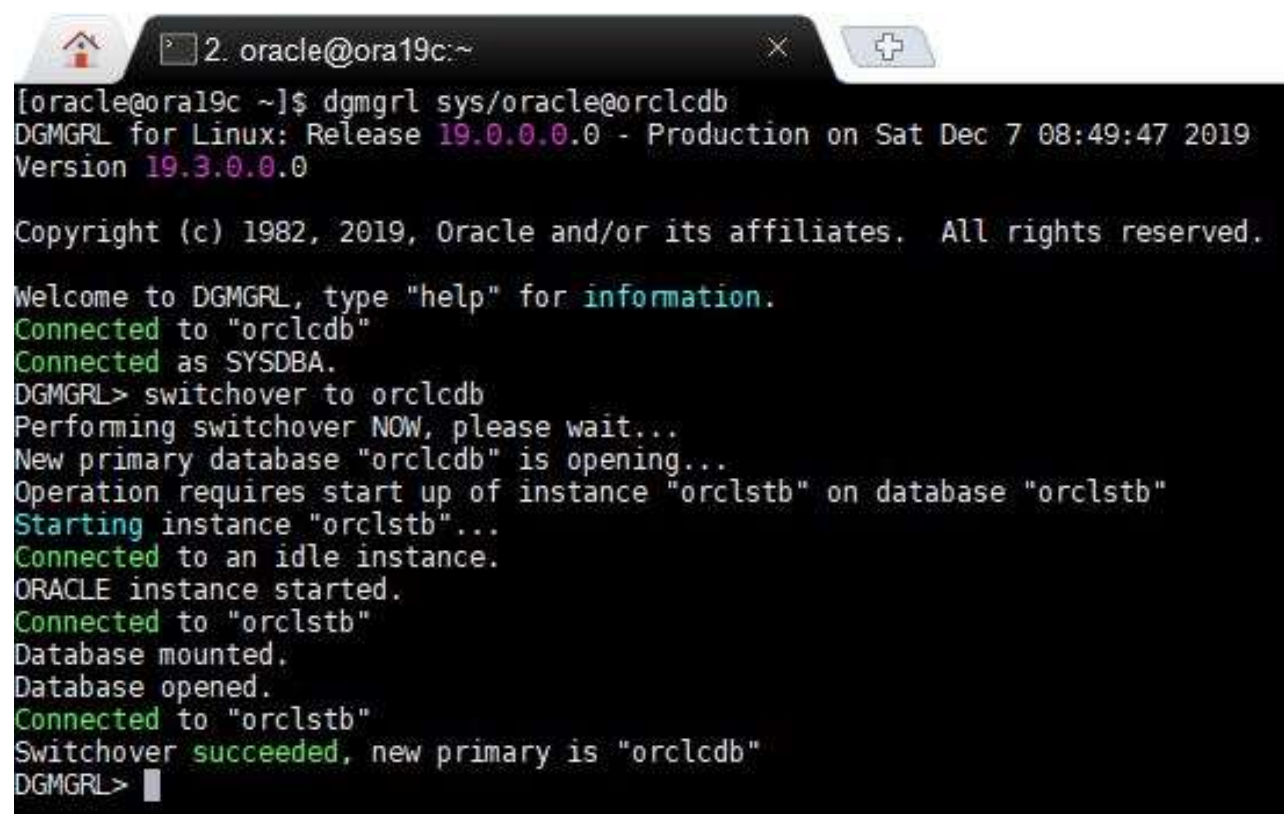
```
CON_ID NAME
-----
1 /u01/app/oracle/oradata/ORCLSTB/temp01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/users01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/sysaux01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/system01.dbf
1 /u01/app/oracle/oradata/ORCLSTB/undotbs2.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/system01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/temp012019-05-31_15-03-14-330-PM.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/undotbs01.dbf
2 /u01/app/oracle/oradata/ORCLSTB/pdbseed/sysaux01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/undotbs2.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/users01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/sysaux01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/system01.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/APEX_1291597703607401.dbf
3 /u01/app/oracle/oradata/ORCLSTB/orcl/temp01.dbf
5 /u01/app/oracle/oradata/ORCLSTB/pdb1/system01.dbf
5 /u01/app/oracle/oradata/ORCLSTB/pdb1/temp012019-05-31_15-03-14-330-PM.dbf
5 /u01/app/oracle/oradata/ORCLSTB/pdb1/undotbs01.dbf
5 /u01/app/oracle/oradata/ORCLSTB/pdb1/sysaux01.dbf

19 rows selected.
```

ISSUE – PLUG IN PDB CRASHES DATAGUARD

```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ dgmgrl sys/oracle@orclcdb  
DGMGRL for Linux: Release 19.0.0.0.0 - Production on Sat Dec 7 08:48:09 2019  
Version 19.3.0.0.0  
  
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved.  
  
Welcome to DGMGRL, type "help" for information.  
Connected to "orclcdb"  
Connected as SYSDBA.  
DGMGRL> switchover to orclstb  
Performing switchover NOW, please wait...  
Operation requires a connection to database "orclstb"  
Connecting ...  
Connected to "orclstb"  
Connected as SYSDBA.  
New primary database "orclstb" is opening...  
Operation requires start up of instance "orclcdb" on database "orclcdb"  
Starting instance "orclcdb"...  
Connected to an idle instance.  
ORACLE instance started.  
Connected to "orclcdb"  
Database mounted.  
Database opened.  
Connected to "orclcdb"  
Switchover succeeded, new primary is "orclstb"  
DGMGRL> █
```

ISSUE – PLUG IN PDB CRASHES DATAGUARD



```
2. oracle@ora19c:~  
[oracle@ora19c ~]$ dgmgrl sys/oracle@orclcdb  
DGMGRL for Linux: Release 19.0.0.0.0 - Production on Sat Dec 7 08:49:47 2019  
Version 19.3.0.0.0  
  
Copyright (c) 1982, 2019, Oracle and/or its affiliates. All rights reserved.  
  
Welcome to DGMGRL, type "help" for information.  
Connected to "orclcdb"  
Connected as SYSDBA.  
DGMGRL> switchover to orclcdb  
Performing switchover NOW, please wait...  
New primary database "orclcdb" is opening...  
Operation requires start up of instance "orclstb" on database "orclstb"  
Starting instance "orclstb"...  
Connected to an idle instance.  
ORACLE instance started.  
Connected to "orclstb"  
Database mounted.  
Database opened.  
Connected to "orclstb"  
Switchover succeeded, new primary is "orclcdb"  
DGMGRL> █
```




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