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## CLONACIÓN DE PDBs POR DBLINK

### Abstract:

La nueva arquitectura multitenant a partir de la versión 12c ha mostrado tener numerosas ventajas respecto de la arquitectura tradicional y promete facilitar tareas largas y complejas como parchados y clonaciones de base de datos. En particular el aprovisionar nuevas PDBs tan solo a través de un DBLink considero es una de las mejores opciones para migrar una base de datos entre servidores.

### Desarrollo:

El presente documento muestra el proceso de clonación de una base de datos PDB a través de un DBLink, la validación posterior y resolución de conflictos cuando se sube de versión.

### CLONACIÓN DE PDB DESDE PDB REMOTO CON DBLINK

La base de datos a clonar es FROM11G. Para ello se realiza la siguiente configuración previo a la clonación:

```
SQL> alter session set container=from11g;
```

```
Session altered.
```

```
SQL> create user admin identified by itcabarique;
```

```
User created.
```

```
SQL> grant connect, create pluggable database to admin;
```

```
Grant succeeded.
```

```
SQL> Disconnected from Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit  
Production
```

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

```
[oracle@ocml dmu]$ . oraenv
```

```
ORACLE_SID = [orcl] ? cdb
```

```
The Oracle base remains unchanged with value /u01/app/oracle
```

```
[oracle@ocml dmu]$ tns ping from11g
```

```
TNS Ping Utility for Linux: Version 12.1.0.2.0 - Production on 19-JUL-2018 22:51:44
```

```
Copyright (c) 1997, 2014, Oracle. All rights reserved.
```

```
Used parameter files:
```

```
Used TNSNAMES adapter to resolve the alias
Attempting to contact (DESCRIPTION = (ADDRESS_LIST = (ADDRESS = (PROTOCOL = TCP)(HOST =
ocml)(PORT = 1521))) (CONNECT_DATA = (SERVICE_NAME = from11g)))
OK (10 msec)
```

```
[oracle@ocml dmu]$ sqlplus / as sysdba
```

```
SQL*Plus: Release 12.1.0.2.0 Production on Thu Jul 19 22:51:49 2018
```

```
Copyright (c) 1982, 2014, Oracle. 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
```

```
SQL> create database link clonedb connect to admin identified by itcabarique using 'FROM11G';
```

```
Database link created.
```

```
SQL> select * from dual@clonedb;
```

```
D
-
X
```

Luego se clona así:

```
SQL> create pluggable database pdb1 from from11g@clonedb;
```

```
Pluggable database created.
```

```
SQL> show pdbs
```

CON_ID	CON_NAME	OPEN	MODE	RESTRICTED
2	PDB\$SEED	READ ONLY		NO
3	PDB1	MOUNTED		

```
SQL> alter pluggable database pdb1 open;
```

```
Warning: PDB altered with errors.
```

```
SQL> show pdbs
```

CON_ID	CON_NAME	OPEN	MODE	RESTRICTED
2	PDB\$SEED	READ ONLY		NO
3	PDB1	READ WRITE		YES

El error mostrado es por causa de falta del parche, esta vez sobre la CDB pues recién se creo para este laboratorio:

```
select * from pdb_plug_in_violations;
```

TIME	NAME	CAUSE	TYPE	ERROR_NUMBER	LINE	MESSAGE
19-JUL-18 10.59.38.346112000	PM PDB1	Parameter	WARNING	0	1	CDB parameter sga_target mismatch: Previous 2400M Current 1G
19-JUL-18 10.59.38.346112000	PM PDB1	Parameter	WARNING	0	2	CDB parameter pga_aggregate_target mismatch: Previous 798M Current 790M
19-JUL-18 10.59.38.424312000	PM PDB1	SQL Patch	ERROR	0	1	PSU bundle patch 160419 (Database Patch Set Update : 12.1.0.2.160419 (22291127)): Installed in the PDB but not in
19-JUL-18 10.59.38.426258000	PM PDB1	SQL Patch	ERROR	0	2	SQL patch ID/UIID 22674709/20057886 (Database PSU 12.1.0.2.160419, Oracle JavaVM Component (Apr2016)): Installed in

Dado que es un ERROR, este no puede ser ignorado. Se resuelve con el datapatch:

```
SQL> show pdbs
```

CON_ID	CON_NAME	OPEN	MODE	RESTRICTED
2	PDB\$SEED	READ ONLY		NO
3	PDB1	READ WRITE		YES

```
SQL> shutdown immediate
```

```
Database closed.
Database dismounted.
ORACLE instance shut down.
SQL> startup upgrade
ORACLE instance started.
```

```
Total System Global Area 1073741824 bytes
Fixed Size 2932632 bytes
Variable Size 377487464 bytes
Database Buffers 687865856 bytes
Redo Buffers 5455872 bytes
```

```
Database mounted.
Database opened.
SQL> alter pluggable database all open upgrade;
```

Pluggable database altered.

```
SQL> show pdbs
```

CON_ID	CON_NAME	OPEN MODE	RESTRICTED
2	PDB\$SEED	MIGRATE	YES
3	PDB1	MIGRATE	YES

```
SQL> Disconnected from Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit
Production
With the Partitioning, OLAP, Advanced Analytics and Real Application Testing options
[oracle@ocm1 dmu]$ /u01/app/oracle/product/12.1.0/dbhome_2/OPatch/datapatch -verbose
SQL Patching tool version 12.1.0.2.0 on Thu Jul 19 23:04:49 2018
Copyright (c) 2015, Oracle. All rights reserved.
```

```
Log file for this invocation:
/u01/app/oracle/cfgtoollogs/sqlpatch/sqlpatch_18356_2018_07_19_23_04_49/sqlpatch_invocation.log
```

Connecting to database...OK

```
Note: Datapatch will only apply or rollback SQL fixes for PDBs
that are in an open state, no patches will be applied to closed PDBs.
Please refer to Note: Datapatch: Database 12c Post Patch SQL Automation
(Doc ID 1585822.1)
```

```
Bootstrapping registry and package to current versions...done
Determining current state...done
```

Current state of SQL patches:

```
Patch 22674709 (Database PSU 12.1.0.2.160419, Oracle JavaVM Component (Apr2016)):
Installed in binary and PDB1
```

Bundle series PSU:

```
ID 160419 in the binary registry and ID 160419 in PDB PDB1
```

Adding patches to installation queue and performing prereq checks...

Installation queue:

```
For the following PDBs: CDB$ROOT PDB$SEED
```

Nothing to roll back

The following patches will be applied:

```
22674709 (Database PSU 12.1.0.2.160419, Oracle JavaVM Component (Apr2016))
```

```
22291127 (Database Patch Set Update : 12.1.0.2.160419 (22291127))
```

```
For the following PDBs: PDB1
```

Nothing to roll back

Nothing to apply

Installing patches...

Patch installation complete. Total patches installed: 4

Validating logfiles...

```
Patch 22674709 apply (pdb CDB$ROOT): SUCCESS
```

logfile:

```
/u01/app/oracle/cfgtoollogs/sqlpatch/22674709/20057886/22674709_apply_CDB_CDBROOT_2018Jul19_23
```

```

_05_42.log (no errors)
Patch 22291127 apply (pdb CDB$ROOT): SUCCESS
logfile:
/u01/app/oracle/cfgtoollogs/sqlpatch/22291127/19694308/22291127_apply_CDB_CDBROOT_2018Jul19_23_05_43.log (no errors)
Patch 22674709 apply (pdb PDB$SEED): SUCCESS
logfile:
/u01/app/oracle/cfgtoollogs/sqlpatch/22674709/20057886/22674709_apply_CDB_PDBSEED_2018Jul19_23_05_56.log (no errors)
Patch 22291127 apply (pdb PDB$SEED): SUCCESS
logfile:
/u01/app/oracle/cfgtoollogs/sqlpatch/22291127/19694308/22291127_apply_CDB_PDBSEED_2018Jul19_23_05_57.log (no errors)
SQL Patching tool complete on Thu Jul 19 23:06:01 2018
[oracle@ocml dmu]$ sqlplus / as sysdba

```

SQL\*Plus: Release 12.1.0.2.0 Production on Thu Jul 19 23:07:05 2018

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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

```

SQL> shutdown immediate
Database closed.
Database dismounted.
ORACLE instance shut down.
SQL> startup
ORACLE instance started.

```

```

Total System Global Area 1073741824 bytes
Fixed Size 2932632 bytes
Variable Size 398458984 bytes
Database Buffers 666894336 bytes
Redo Buffers 5455872 bytes
Database mounted.
Database opened.

```

SQL> show pdbs

CON_ID	CON_NAME	OPEN MODE	RESTRICTED
2	PDB\$SEED	READ ONLY	NO
3	PDB1	MOUNTED	

SQL> alter pluggable database pdb1 open;

Pluggable database altered.

SQL> show pdbs

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

```
select * from pdb_plug_in_violations;
```

TIME	NAME	CAUSE	TYPE	ERROR_NUMBER	LINE	MESSAGE	STATUS
19-JUL-18 10.59.38.346112000 PM	PDB1	Parameter	WARNING	0	1	CDB parameter sga_target mismatch: Previous 2400M Current 1G	RESOLVED
19-JUL-18 10.59.38.346112000 PM	PDB1	Parameter	WARNING	0	2	CDB parameter pga_aggregate_target mismatch: Previous 798M Cu...	RESOLVED
19-JUL-18 11.04.31.465690000 PM	PDB1	SQL Patch	ERROR	0	1	PSU bundle patch 160419 (Database Patch Set Update : 12.1.0.2...	RESOLVED
19-JUL-18 11.04.31.465690000 PM	PDB1	SQL Patch	ERROR	0	2	SQL patch ID/UID 22674709/20057886 (Database PSU 12.1.0.2.160...	RESOLVED

El status cambio a RESOLVED.

