Practice 10: Creating a Refreshable PDB

Practice Overview

In this practice you will create a refreshable PDB in `CDB2`, named `PDB3RO`, by cloning `PDB3` that is located in `CDB1`. You will then perform basic testing on it.

Practice Assumptions

- You have the `CDB1` (in `srv1`) and `CDB2` (in `srv2`) databases up and running.

Ahmed Baraka
Oracle Database Administrator

Creating a Refreshable PDB

In the following steps, you will create a refreshable PDB called PDB2RO in the machine srv2 by cloning PDB3 in that exists in CDB1.

PDB3 in CDB1 could be referred to in this practice as the source PDB, and PDB3RO in CDB2 could be referred to as the target PDB.

1. In srv2, connect to the root of CDB2 database as SYSDBA.

2. Verify that the database link to CDB1 is valid and working.

```
export ORACLE_SID=CDB2
sqlplus / as sysdba
SELECT SYSDATE FROM DUAL@CDB1_LNK;
```

3. In srv2, define the OMF at the session level.

   The value set to the parameter defines the location of the new PDB data files.

```
ALTER SESSION SET DB_CREATE_FILE_DEST='/u01/app/oracle/oradata';
```

4. Create the refreshable PDB by cloning PDB3 and set its refresh mode to manual.

```
CREATE PLUGGABLE DATABASE pdb3ro FROM pdb3@cdb1_lnk REFRESH MODE MANUAL;
```

5. Open the PDB3RO in READ ONLY mode.

```
ALTER PLUGGABLE DATABASE pdb3ro OPEN READ ONLY;
```

6. Retrieve the basic information about the created PDB.

```
col PDB_NAME format a10

SELECT CON_ID, PDB_NAME, STATUS, REFRESH_MODE
FROM CDB_PDBS WHERE PDB_NAME='PDB3RO';
```

7. Test connecting to PDB3RO

```
conn system/oracle@//srv2:1521/pdb3ro
```

Testing the Refreshable PDB

In the following steps, you will test the refreshable PDB that you created in the previous section. You will make some changes in the source PDB (create new tablespace, create new user and insert new rows), refresh the target PDB, and verify the changes have been applied in the target PDB.

8. In `srv1`, login as `SYSDBA` to `PDB3` and create a testing tablespace, user, and data, as shown in the following code block.

```
sqlplus / as sysdba
ALTER SESSION SET CONTAINER=pdb3;

CREATE TABLESPACE test_tbs;

CREATE USER testuser IDENTIFIED BY oracle
  DEFAULT TABLESPACE test_tbs
  QUOTA UNLIMITED ON test_tbs;

GRANT CREATE SESSION, CREATE TABLE TO testuser;

CREATE TABLE testuser.t1 ( RID NUMBER );
INSERT INTO testuser.t1 VALUES (1);
COMMIT;
```

9. Connect to `PDB3RO` and verify that none of these changes have been implemented in it.

```
conn system/oracle@//srv2:1521/pdb3ro
SELECT NAME FROM V$TABLESPACE WHERE NAME='TEST_TBS';
SELECT * FROM TESTUSER.T1;
```

10. Refresh `PDB3RO` (can be done only from the container itself, not from root).

You need to define the `DB_CREATE_FILE_DEST` in the session level, because OMF is enabled in the source CDB but it is not enabled in the target CDB.

```
conn sys/oracle@//srv2:1521/pdb3ro as sysdba
ALTER PLUGGABLE DATABASE CLOSE IMMEDIATE;
ALTER SESSION SET DB_CREATE_FILE_DEST='/u01/app/oracle/oradata';
ALTER PLUGGABLE DATABASE REFRESH;
ALTER PLUGGABLE DATABASE OPEN READ ONLY;
```

11. Verify that the new tablespace has been created and its data has been synchronized to `PDB3RO`.

```
SELECT NAME FROM V$TABLESPACE;
SELECT * FROM TESTUSER.T1;
```

12. Try opening `PDB3RO` in Read/write mode.

It should return an error because you can only open a refreshable PDB in READ ONLY mode.

```
ALTER PLUGGABLE DATABASE CLOSE IMMEDIATE;
ALTER PLUGGABLE DATABASE OPEN;
```

Clean up

In the following steps, you will drop the CDB2 database from srv2 because it is not needed any more for the remaining course practices.

You will end up having only PDB2 and PDB3 in CDB1.

13. In srv2, disconnect any sessions from CDB2, then run the dbca utility and drop the CDB2 database.

14. In srv1, drop PDB1 (because it has been relocated in the previous practice to CDB2).

```
conn /as sysdba
DROP PLUGGABLE DATABASE pdb1 INCLUDING DATAFILES;
```

```
-- verify:
col pdb_name format a10
SELECT PDB_NAME, STATUS FROM CDB_PDBS ORDER BY 1;
```

Ahmed Baraka Oracle Database Administrator

Summary

- You can refresh the contents of a remote hot cloned PDB provided it has been created as a refreshable PDB.
- Refreshable PDBs can only be opened in read only mode.

Ahmed Baraka
Oracle Database Administrator