Step-by-Step Lab: Creating and Managing a New Container Database (CDB) Named fenagoCB

Prerequisites

- Ensure that the Oracle Database software is installed.
- Set the ORACLE_HOME and ORACLE_SID environment variables appropriately.

Steps

1. Set Environment Variables

```
export ORACLE_HOME=/u01/app/oracle/product/19.3.0/dbhome_1
export ORACLE_SID=fenagoCB
```

Explanation: These commands set the environment variables required for Oracle to identify the correct database home and the instance to be managed.

2. Connect to SQL*Plus as SYSDBA

```
sqlplus / as sysdba
```

Explanation: This command connects you to the Oracle database as the SYSDBA user, which has administrative privileges.

3. Create the Initialization Parameter File (PFILE)

```
CREATE PFILE='/tmp/initfenagoCB.ora' FROM SPFILE;
```

Explanation: This command creates a PFILE from the SPFILE. The PFILE is a text file that contains initialization parameters for starting the database instance.

4. Edit the PFILE

Edit `/tmp/initfenagoCB.ora` to include the necessary parameters for creating the CDB. Ensure the following parameters are set:

```
db_name=fenagoCB
enable_pluggable_database=true
```

Explanation: Edit the PFILE to set the database name and enable the pluggable database feature, which allows the creation of PDBs within the CDB.

5. Start the Instance in NOMOUNT Mode

```
STARTUP NOMOUNT PFILE='/tmp/initfenagoCB.ora';
```

Explanation: This command starts the Oracle instance without mounting the database, allowing you to create the database structure.

6. Create the CDB

Execute the `CREATE DATABASE` command to create the CDB:

```
CREATE DATABASE fenagoCB
USER SYS IDENTIFIED BY password
USER SYSTEM IDENTIFIED BY password
LOGFILE GROUP 1 ('/u01/app/oracle/oradata/fenagoCB/redo01.log') SIZE 100M,
        GROUP 2 ('/u01/app/oracle/oradata/fenagoCB/redo02.log') SIZE 100M,
        GROUP 3 ('/u01/app/oracle/oradata/fenagoCB/redo03.log') SIZE 100M
EXTENT MANAGEMENT LOCAL
DATAFILE '/u01/app/oracle/oradata/fenagoCB/system01.dbf' SIZE 700M REUSE
SYSAUX DATAFILE '/u01/app/oracle/oradata/fenagoCB/sysaux01.dbf' SIZE 550M REUSE
DEFAULT TABLESPACE users
DEFAULT TEMPORARY TABLESPACE temp TEMPFILE
'/u01/app/oracle/oradata/fenagoCB/temp01.dbf' SIZE 20M REUSE
UNDO TABLESPACE undotbs1 DATAFILE '/u01/app/oracle/oradata/fenagoCB/undotbs01.dbf'
SIZE 200M REUSE
ENABLE PLUGGABLE DATABASE
SEED
  FILE_NAME_CONVERT = ('/u01/app/oracle/oradata/fenagoCB/',
'/u01/app/oracle/oradata/fenagoCB/pdbseed/')
  SYSTEM DATAFILES SIZE 125M AUTOEXTEND ON NEXT 10M MAXSIZE UNLIMITED
  SYSAUX DATAFILES SIZE 100M;
```

Explanation: This command creates the new CDB with the specified parameters, including the log files, data files, and the default tablespaces. The `FILE_NAME_CONVERT` clause is used to specify how the data files for the PDB$SEED are created.

7. Create SPFILE from PFILE

```
CREATE SPFILE FROM PFILE='/tmp/initfenagoCB.ora';
```

Explanation: This command creates an SPFILE from the PFILE. The SPFILE is a binary file that stores the database initialization parameters in a persistent manner.

8. Restart the Database

Shutdown the instance and restart it using the newly created SPFILE:

```
SHUTDOWN IMMEDIATE;
STARTUP;
```

Explanation: These commands shut down and then restart the database using the newly created SPFILE.

9. Verify the CDB Creation

Query the `V$DATABASE` view to verify the CDB creation:

```
SELECT name, open_mode, cdb FROM V$DATABASE;
```

Explanation: This query verifies the creation of the CDB by checking its name, open mode, and whether it is a CDB.

Additional Steps for Creating PFILE Manually if SPFILE is Missing

If the SPFILE is missing, you need to create the PFILE manually:

1. Create a PFILE Manually

Create a PFILE `/tmp/initfenagoCB.ora` with the following contents:

```
vi /tmp/initfenagoCB.ora
```

Add the following lines to the file:

```
db_name=fenagoCB
enable_pluggable_database=true
```

2. Start the Instance in NOMOUNT Mode

```
STARTUP NOMOUNT PFILE='/tmp/initfenagoCB.ora';
```

3. Create the CDB

```
CREATE DATABASE fenagoCB
USER SYS IDENTIFIED BY password
USER SYSTEM IDENTIFIED BY password
LOGFILE GROUP 1 ('/u01/app/oracle/oradata/fenagoCB/redo01.log') SIZE 100M,
        GROUP 2 ('/u01/app/oracle/oradata/fenagoCB/redo02.log') SIZE 100M,
        GROUP 3 ('/u01/app/oracle/oradata/fenagoCB/redo03.log') SIZE 100M
EXTENT MANAGEMENT LOCAL
DATAFILE '/u01/app/oracle/oradata/fenagoCB/system01.dbf' SIZE 700M REUSE
SYSAUX DATAFILE '/u01/app/oracle/oradata/fenagoCB/sysaux01.dbf' SIZE 550M REUSE
DEFAULT TABLESPACE users
DEFAULT TEMPORARY TABLESPACE temp TEMPFILE
'/u01/app/oracle/oradata/fenagoCB/temp01.dbf' SIZE 20M REUSE
UNDO TABLESPACE undotbs1 DATAFILE '/u01/app/oracle/oradata/fenagoCB/undotbs01.dbf'
SIZE 200M REUSE
ENABLE PLUGGABLE DATABASE
SEED
  FILE_NAME_CONVERT = ('/u01/app/oracle/oradata/fenagoCB/',
'/u01/app/oracle/oradata/fenagoCB/pdbseed/')
  SYSTEM DATAFILES SIZE 125M AUTOEXTEND ON NEXT 10M MAXSIZE UNLIMITED
  SYSAUX DATAFILES SIZE 100M;
```

4. Create SPFILE from PFILE

```
CREATE SPFILE FROM PFILE='/tmp/initfenagoCB.ora';
```

5. Restart the Database

```
SHUTDOWN IMMEDIATE;
STARTUP;
```

6. Verify the CDB Creation

```
SELECT name, open_mode, cdb FROM V$DATABASE;
```

Conclusion

You have successfully created a new Container Database (CDB) named fenagoCB and managed it using both standard and manual methods. These steps include setting environment variables, connecting to SQL*Plus, creating initialization parameter files, and verifying the database creation.

This guide provides a comprehensive approach to managing CDBs in Oracle, ensuring that you can handle both typical and exceptional scenarios effectively.