

# **Basic Multitenant Administration Tasks**

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# Objectives

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In this lecture, you will learn how to perform the following:

- Switch the current container
- Change CDB and PDB states
- Save the PDB Open State
- Manage the Initialization Parameters in PDBs
- Change the Global Database Name of a PDB

# Switching the Current Container

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- To change the current container (as CDB administrator):

```
ALTER SESSION SET CONTAINER= pdb1;
```

- Make sure to close the current session before switching to another PDB

- To know the current PDB in SQL\*Plus:

```
show CON_ID CON_NAME
```

- To know the current PDB in SQL:

```
SELECT SYS_CONTEXT('USERENV', 'CON_ID') CON_ID,  
       SYS_CONTEXT('USERENV', 'CON_NAME') CON_NAME  
FROM   DUAL;
```

# CDB and PDB States

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State	Description
<b>NOMOUNT (CDB only)</b>	CDB instance only is up. Control files are not read (therefore the CDB does not what PDBs associated with it)
<b>MOUNTED</b>	Users cannot connect. Only administrators to perform some administrative activities. Data is not accessible.
<b>MIGRATE</b>	Taken during an upgrade
<b>READ ONLY</b>	Users can connect for reading only operations
<b>READ WRITE</b>	Full accessible to users

# Startup and Shutdown a CDB

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- Same as starting up and shutting down a non-CDB instance:

```
sqlplus / as sysdba  
startup  
shutdown immediate
```



# Startup and Shutdown a PDB

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- Affecting the current container:

```
ALTER PLUGGABLE DATABASE OPEN [READ ONLY];  
ALTER PLUGGABLE DATABASE CLOSE [IMMEDIATE];
```

```
STARTUP  
SHUTDOWN
```

- Affecting a named container (from root):

```
ALTER PLUGGABLE DATABASE pdb1 OPEN;  
ALTER PLUGGABLE DATABASE ALL OPEN;  
ALTER PLUGGABLE DATABASE ALL EXCEPT pdb1 OPEN;
```

```
STARTUP PLUGGABLE DATABASE pdb1 [OPEN] [READ ONLY|WRITE] [FORCE]
```

# Retrieving PDB Open State

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- Query the **OPEN\_MODE** in **V\$PDBS**:

```
SELECT NAME, OPEN_MODE FROM V$PDBS WHERE NAME='PDB1' ;
```

OPEN_MODE	Description
MOUNTED	PDB is closed
READ WRITE	PDB is open in read/write mode
READ ONLY	PDB is open in read/only mode
MIGRATE	PDB is in migration

# Saving the PDB Open State

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- By default, after CDB restarted, PDBs are in **MOUNT** state.
- If you want to change the default restart state, switch the PDB to the desired state and save its state:

```
ALTER PLUGGABLE DATABASE pdb1 SAVE STATE;  
ALTER PLUGGABLE DATABASE ALL SAVE STATE;
```

- To query the saved states:

```
SELECT CON_NAME, STATE FROM DBA_PDB_SAVED_STATES;
```

- To clear save state setting:

```
ALTER PLUGGABLE DATABASE pdb1 DISCARD STATE ;
```



# PDB Initialization Parameters

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- SPFile is used only in the CDB level
- PDB parameter values are saved in **PDB\_SPFILE\$**
- PFILE can be created in the PDB, but cannot be used to start it up
- For the parameters where **ISPDB\_MODIFIABLE=TRUE**, they can be changed in the PDB level
- To make a change on a parameter take effect immediately:

```
ALTER SYSTEM SET TEMP_UNDO_ENABLED=TRUE CONTAINER=ALL SCOPE=BOTH;
```

- To list the initialization parameters modifiable at the PDB level:

```
SELECT NAME FROM V$SYSTEM_PARAMETER  
WHERE ISPDB_MODIFIABLE = 'TRUE'  
ORDER BY NAME;
```

# Modifying a Parameter in a PDB: Example

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- In the PDB:

```
CONNECT sys@pdb1 AS SYSDBA
ALTER SYSTEM SET ddl_lock_timeout=12 ;
```

- In the CDB root:

```
SQL> SELECT CON_ID, NAME, VALUE
        FROM V$SYSTEM_PARAMETER
        WHERE NAME='ddl_lock_timeout';
```

CON_ID	NAME	VALUE
0	ddl_lock_timeout	0
3	ddl_lock_timeout	12

**Note:** `V$SYSTEM_PARAMETER` for instance, `V$PARAMETER` for current session

# Changing the Global Database Name of a PDB

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- To rename PDB1 to PDB2:

```
ALTER PLUGGABLE DATABASE pdb1 CLOSE IMMEDIATE;  
ALTER PLUGGABLE DATABASE pdb1 OPEN RESTRICTED;  
ALTER SESSION SET CONTAINER=PDB1;  
ALTER PLUGGABLE DATABASE pdb1 RENAME GLOBAL_NAME to pdb2;  
ALTER PLUGGABLE DATABASE pdb2 CLOSE IMMEDIATE;  
ALTER PLUGGABLE DATABASE pdb2 OPEN;  
SELECT CON_ID, OPEN_MODE, RESTRICTED FROM V$PDBS WHERE NAME='PDB2';
```

# Summary

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In this lecture, you should have learnt how to perform the following:

- Switch the current container
- Change CDB and PDB states
- Save the PDB Open State
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- Change the Global Database Name of a PDB