Managing Local and Common Users

By Ahmed Baraka

Objectives

By the end of this lecture, you should be able to:

- Describe the difference between Local and Common Users
- Create local and common users
- Describe the difference between common and local grants
- Enable Common Users to Query Data in Specific PDBs
- Describe the difference between common and local roles

About Local and Common Users

- **A local user:**
  - Defined in the PDB and is not known outside of that PDB
  - Can connect only to the PDB where it is defined
  - Cannot be defined in the root

- **Common User:**
  - A common user is defined in the root
  - Only common users can be defined in the root
  - A common user is known in every existing and future PDB

About Common Users

- Must be created from a root

- User created common users must be prefixed by COMMON_USER_PREFIX (C##)

```
CREATE USER C##USER1 IDENTIFIED BY hispassword [CONTAINER=ALL];
```

- Although known to all PDBs, a common user needs privileges to connect and executer commands in the PDBs.

Ahmed Baraka
Oracle Database Administrator

Creating Local Users

- When you connect to a PDB, the user you create is a local user:

```
CREATE USER pdb1user1 IDENTIFIED BY hispassword
[CONTAINER=CURRENT];
```

- To obtain information about the users:

```
SELECT USERNAME, COMMON
FROM CDB_USERS WHERE ORACLE_MAINTAINED='N';
```

Local Grant

- When a privilege is granted in a PDB, is takes effect only in that PDB:

```
ALTER SESSION SET CONTAINER=PDB1;
GRANT CREATE SESSION TO PDBUSER [CONTIANER=CURRENT];
```

```
CONNECT SYSTEM@pdb1
GRANT CREATE SESSION TO PDBUSER;
```

- You can locally grant to a common user:

```
GRANT CREATE SESSION TO C##USER1;
```

Common Grant

- The CONTAINER=ALL clause specifies that the privilege or role is being granted commonly.

- Applies to all PDBs within the container in which the grant was given.

- Grantor is a common user, grantee is a common user or role

```
CONNECT SYSTEM@CDB1
GRANT CREATE ANY TABLE TO c##user2 CONTAINER=ALL;
```

Common and Local Granting Principles

- The basic principles of granting:
  - Both common and local user/role may grant and be granted locally.
  - Only common user/role may grant or be granted commonly.

- **Best Practice**: do not mix common and local privileges for the same users

- In Oracle documentation, the term "phenomena" refers to users and roles.

User Conflict Resolution

- **Conflict scenario**: plugged in PDB that has a common user that does not exist in the root.

- **Symptom**:

```
conn c##user1@pdb1
ORA-2800: the account is locked
```

- **Resolution**:
  – Close the PDB
  – Create the common user in the root
  – Open the PDB

Managing Users Best Practices

- Common users for administrators

- Local users are for application schemas

- Maintain the COMMON_USER_PREFIX and keep it to default value

- If external authentication is needed, you match the COMMON_USER_PREFIX with OS_AUTHENT_PREFIX

Enabling Common Users to Query Data in Specific PDBs

- By default, common users can query the X$ tables and the V$, GV$ and CDB_* views for all PDBs

- To restrict the PDB they can query:

```
ALTER USER <common user name>
SET CONTAINER_DATA = ALL | DEFAULT | (<container_names>)
[FOR <container_data_object>]
CONTAINER = CURRENT
```

- To query the CONTAINER_DATA of specific user:

```
SELECT * FROM CDB_CONTAINER_DATA WHERE USERNAME='<username>';
```

Enabling Common Users to Query Data in Specific PDBs Example

```
conn system@CDB1
ALTER USER c##user1
SET CONTAINER_DATA = (CDB$ROOT,PDB1)
[FOR V$SESSION] CONTAINER=CURRENT;
```

About Common Roles and Local Roles

- **Common Role**
  - Defined in the root and known in all existing and future PDBs
  - Cannot be created by local users

- **Local Role**
  - Defined only in a PDB and used within its PDB

- **Principles**
  - If you grant a common role locally, then its privileges apply only in the container where the role is granted.

Creating Common Roles

- Can be created only by common users
- Should with the value of the COMMON_USER_PREFIX

```
CREATE ROLE c##sec_admin CONTAINER=ALL;
```
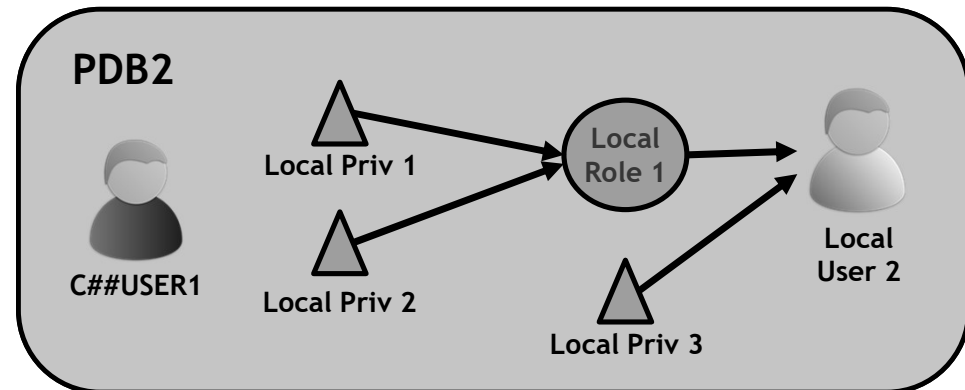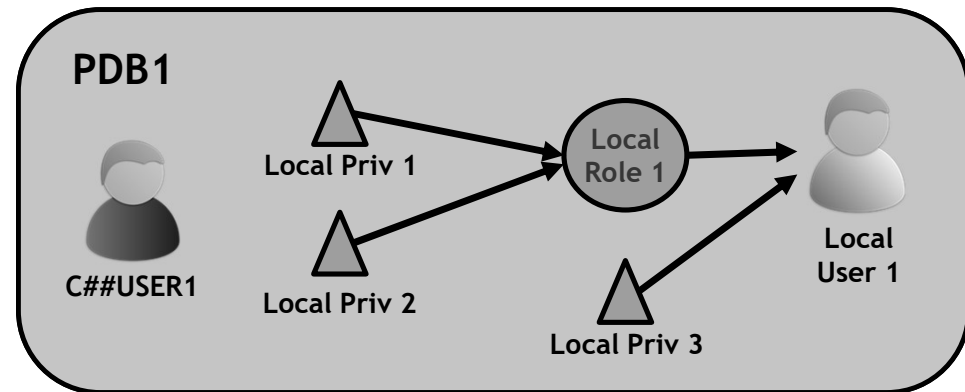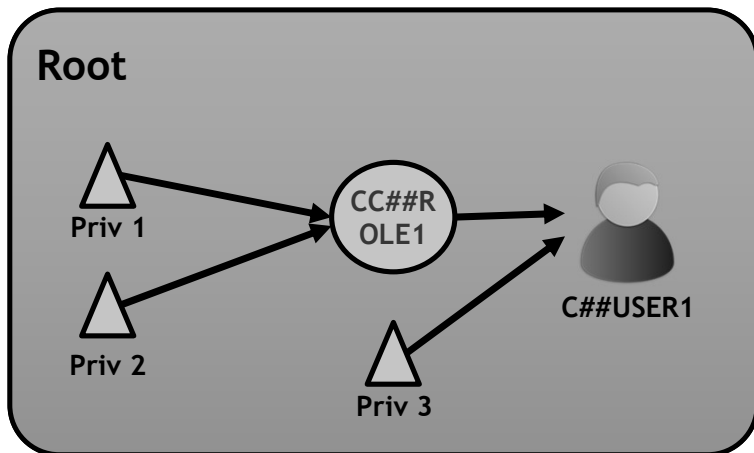
Creating Local Roles

- The current PDB should be the PDB in which you want to create the role

- The CREATE ROLE privilege is required.

```
CREATE ROLE sec_admin CONTAINER=CURRENT;
```

Local and Common Users Summary

Obtain Information about Users, Roles and Privileges

View	Description
CDB_USERS	Information about all users in a CDB. COMMON column flag distinguish between common and local users
CDB_ROLES	Information about all roles in a CDB. COMMON column indicates whether a given role is common.
CDB_ROLE_PRIVS	Information about the roles granted to all users and roles in the CDB. COMMON column indicates how the grant was made.
CDB_SYS_PRIVS	Describes system privileges granted to users and roles. COMMON column indicates how the grant was made.
CDB_TAB_PRIVS	Describes all object grants in the CDB. COMMON column indicates how the grant was made.

Ahmed Baraka
Oracle Database Administrator

Summary

In this lecture, you should have learnt how to:

- Describe the difference between Local and Common Users
- Create local and common users
- Describe the difference between common and local grants
- Enable Common Users to Query Data in Specific PDBs
- Describe the difference between common and local roles