ORACLE

13

Upgrade Methods

Objectives

After completing this lesson, you should be able to:

- Upgrade CDBs from 18c to 19c
- Upgrade regular PDBs from 18c to 19c
- Plug in a remote PDB into a target CDB by using RMAN

Upgrading CDB and PDBs to 19c: Methods

- Data Pump Export / Import
  - Can provide better performance depending on data volume, metadata volume
  - Ensures support for new data types
- Database Upgrade Assistant (DBUA)
  - Interactively walks you through the upgrade process
  - Automatically fixes some configuration settings
  - Provides a list of items to fix manually
  - Upgrades the CDB, including all PDBs or a defined list of PDBs
- Manual upgrade
  - Provides finer control over the upgrade process
  - Provides a list of items to fix manually
  - Upgrades the CDB, including all PDBs or a defined list of PDBs

Upgrading a CDB Including PDBs from 18c to 19c

1. Install the 19c Oracle Database software.
2. Execute the Pre-Upgrade Information Tool in the 18c CDB.

```
$ cd /u01/app/oracle/product/19.1.0/dbhome_1/rdbms/admin
$ $ORACLE_HOME/jdk/bin/java -jar preupgrade.jar
```

3. Back up the CDB.
4. Execute the `preupgrade_fixups.sql` script on the 18c CDB.

```
$ORACLE_HOME/perl/bin/perl -I$ORACLE_HOME/perl/lib -I$ORACLE_HOME/rdbms/admin
$ORACLE_HOME/rdbms/admin/catcon.pl -l /u01/app/oracle/cfgtoollogs/cdb18/preupgrade/ -b
preup_cdb18 /u01/app/oracle/cfgtoollogs/cdb18/preupgrade/preupgrade_fixups.sql
```

5. Shut down the instance.
6. Copy the 18c instance spfile to the 19c `$ORACLE_HOME/dbs` directory.
7. Adjust the parameter file with the Oracle Database 19c parameters.

Upgrading CDB Including PDBs from 18c to 19c

8. Start the CDB and all PDBs in UPGRADE mode in the 19c environment.

```
SQL> STARTUP UPGRADE
SQL> ALTER PLUGGABLE DATABASE ALL OPEN UPGRADE;
```

9. Execute the upgrade script on the CDB root and all PDBs.

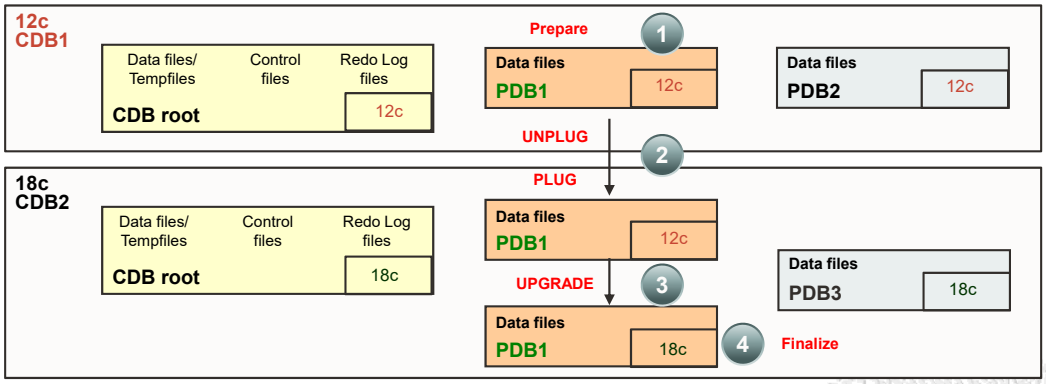
```
$ cd $ORACLE_HOME/rdbms/admin
$ ./catctl.pl [ -C 'PDB1 PDB2' ] [ -l /tmp] catupgrd.sql
```

10. Open the CDB and upgraded PDBs in normal mode.
11. Execute the `postupgrade_fixups.sql` script.

```
$ cd /u01/app/oracle/product/19.1.0/dbhome_1/rdbms/admin
$ $ORACLE_HOME/perl/bin/perl catcon.pl -c PDB1 -b postupgrade
    $ORACLE_BASE/cfgtoollogs/cdb18/preupgrade/postupgrade_fixups.sql
```

12. Shut the instance down to update the `/etc/oratab` file and create the password file.

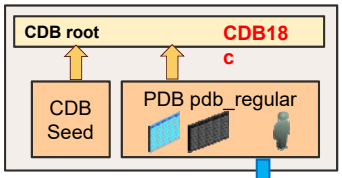
Upgrading a Single Regular PDB from 18c to 19c

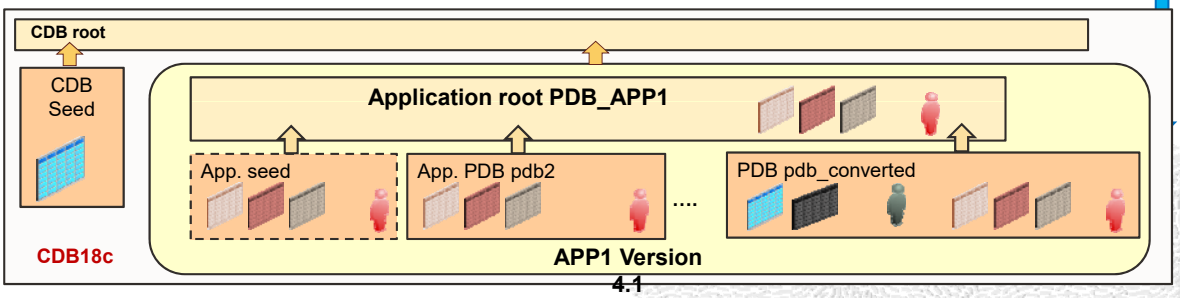


1. Execute `preupgrade.jar` and then the generated `preupgrade_fixups.sql` script in the 18c PDB.
2. Unplug the PDB from the 18c CDB and plug the PDB into the 19c CDB.
3. Open the PDB in UPGRADE mode and upgrade the PDB.
4. Finalize by executing the `postupgrade_fixups.sql` script.

Converting and Upgrading Regular PDBs to Application PDBs

1. Unplug the 18c regular PDB.
2. Plug 18c PDB as a regular PDB in 19c CDB.
3. Upgrade the application PDB to 19c.
4. Unplug the regular PDB and plug it into an application root.
5. Execute the `pdb_to_apppdb.sql` script in the application PDB.
6. Synchronize the application PDB with the application root.





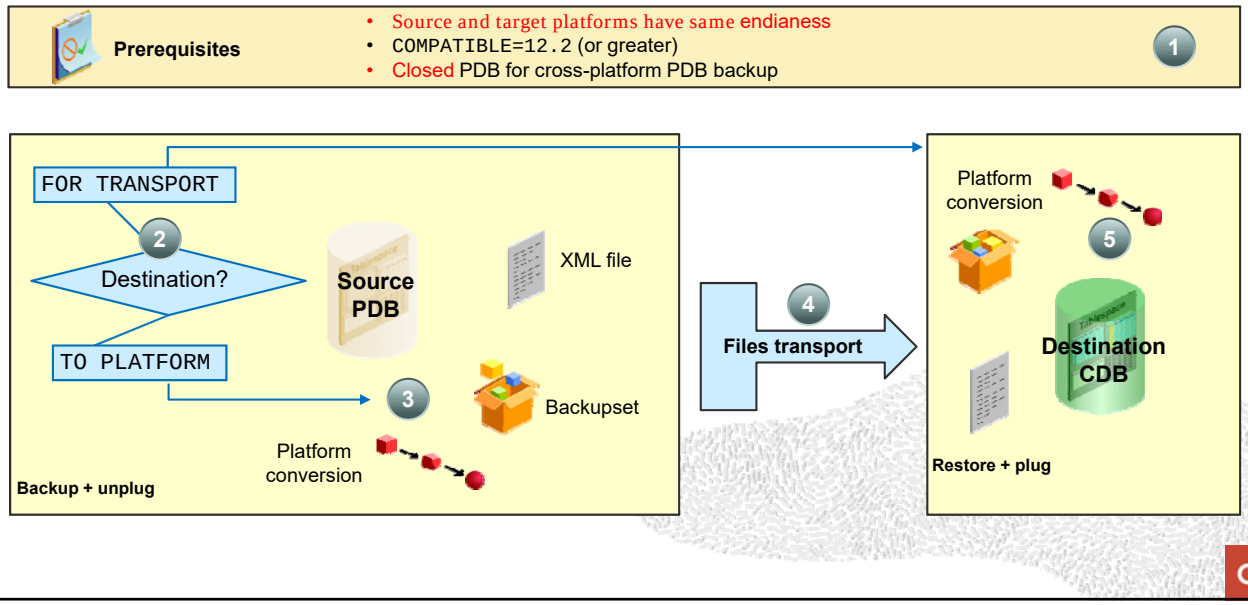
Oracle Database AutoUpgrade

- The AutoUpgrade utility is designed to automate the upgrade process, before starting upgrades, during upgrade deployments, and during postupgrade checks and configuration migration.
- The AutoUpgrade utility identifies issues before upgrades, performs pre- and postupgrade actions, deploys upgrades, performs postupgrade actions, and starts the upgraded Oracle Database.
- In Oracle Database 19c (19.3) and later target Oracle homes, the autoupgrade.jar file exists by default. However, AutoUpgrade support is available for Oracle Database 12c Release 2 (12.2) and Oracle Database 18c (18.5) target homes by applying the January 2019 Release Updates (DBJAN2019RU) and later updates.

Oracle Database AutoUpgrade

- Preventing Issues: Analyze and Fixup Modes
- Simplifying Upgrades: Deploy and Upgrade Modes
- Deploy and Upgrade Postupgrade Checks and Fixes

Cross-Platform Transportable PDB



Cross-Platform PDB Transport: Phase 1

Source PDB

1. Verify the prerequisites:
   - COMPATIBLE: Greater or equal to 12.2
   - OPEN_MODE: MOUNTED
2. Start an RMAN session to connect to the CDB of the PDB.
3. Query the exact name of the destination platform from the V$TRANSPORTABLE_PLATFORM view.
4. Back up the source PDB, including the XML file (*metadata*):
   - Conversion on the source host

```
RMAN> BACKUP TO PLATFORM 'Linux x86 64-bit'
      UNPLUG INTO '/tmp/pdb2.xml' PLUGGABLE DATABASE pdb1
      FORMAT '/bkp_dir/transport_%U';
```

   - Conversion at the destination host

```
RMAN> BACKUP FOR TRANSPORT UNPLUG INTO '/tmp/pdb2.xml'
      PLUGGABLE DATABASE pdb1 FORMAT '/bkp_dir/transport_%U';
```


Cross-Platform PDB Transport: Phase 2

Destination CDB

5. Disconnect from the source CDB.
6. Move the backup sets and XML file to destination host.
7. Start an RMAN session to connect to the new target CDB.
8. Restore the full backup set to create the new PDB with the RESTORE command by using the XML file.
   - When the conversion occurs on the source host

```
RMAN> RESTORE USING '/tmp/pdb2.xml'  FOREIGN PLUGGABLE DATABASE pdb1 TO NEW
      FROM BACKUPSET '/bkp_dir/transport_0gqoejqv_1_1';
```

   - When the conversion occurs at the destination host

```
RMAN> ALTER SYSTEM SET DB_CREATE_FILE_DEST='/oradata/new_pdb';
RMAN> RESTORE FROM PLATFORM 'Linux x86 64-bit' USING '/tmp/pdb2.xml'
      FOREIGN PLUGGABLE DATABASE pdb1 TO NEW
      FROM BACKUPSET '/bkp_dir/transport_0gqoejqv_1_1';
```

Summary

In this lesson, you should have learned how to:

- Upgrade CDBs from 18c to 19c
- Upgrade regular PDBs from 18c to 19c
- Plug in a remote PDB into a target CDB by using RMAN

Practice 13: Overview

- 13.1: Upgrading an 18c regular PDB to a 19c application PDB
- 13-2: Plugging remote PDBs through XTTS
- 13-3: Upgrading an 18c CDB to a 19c CDB