

EXTERNAL

Upgrading from Oracle 18c to Oracle 19c

With activated Oracle TDE

Document creation: 28.11.2019

Update: 15.04.2021

The purpose of this document is to provide a comprehensive overview and process flow of a successful Upgrade from SAP perspective!

Contents

1.	REFERENCES.....	4
2.	SYSTEM ENVIRONMENT.....	4
3.	PRE-UPGRADE STEPS.....	5
3.1.	Apply SAP Notes (Mandatory)	5
3.2.	Configure ABAP SSFS	5
3.3.	Update SAP Kernel	5
3.4.	Update SAP BR*Tools	6
3.5.	Update SAPCONN Role	7
3.6.	Update SAPDBA Role.....	7
3.7.	Update Oracle Instant Client	7
3.8.	Download Oracle Software.....	7
3.9.	Install Oracle Database 19c Software	8
3.9.	Install Patches on 19c Oracle Software	19
3.10.	Backup TDE Keystore and Auto-Open Wallet	19
3.11.	Check current Environment	20
3.12.	Create Oracle Upgrade Working Directory	21
3.13.	Run Pre-Upgrade Information Tool.....	21
3.14.	Set Environment ORACLE_PATH	25
3.15.	Run SAP-Specific Pre-Upgrade Scripts.....	26
3.16.	Run Database Object ID Check.....	32
3.17.	Run PUBLIC Role Check	33
3.18.	Drop SAP DBACockpit Database Views	41
3.19.	Check oratab entries	51
3.20.	Migrate Listener Manually	52
4.	UPGRADE STEPS.....	54
4.1.	Backup the Database.....	54
4.2.	Stop the SAP System	54
4.3.	Start Database Instance	54
4.4.	Backup of PFILE/SPFILE	54
4.5.	Create Guaranteed Restore Point (GRP) – OPTIONAL	55
4.6.	Run Pre-Upgrade fixups	56
4.7.	Add additional Database Parameters	57
4.8.	Run DBUA.....	58
4.8.1.	Set additional Env. variables.....	58
4.8.2.	Start DBUA in query mode.....	58
4.8.3.	Start DBUA.....	61
5.	POST-UPGRADE STEPS	69
5.1.	Check and Correct oratab	69
5.2.	Update Oracle Environment for ora<sid> and <sid>adm users	69
5.3.	Start Database Instance	71
5.4.	Set Environment ORACLE_PATH	71
5.5.	Migrate TDE Configuration.....	72
5.6.	Run Post-Upgrade fixups	73
5.7.	Run SAP-Specific Post-Upgrade Scripts.....	75
5.8.	Drop Guaranteed Restore Point (from before the Upgrade).....	86

5.9.	Check and Set COMPATIBLE parameter	87
5.10.	Finish SAP Bundle Patch Post-Installation	89
5.11.	Check for Invalid Objects	92
5.12.	Update Database Statistics	93
5.13.	Reinstall DBACockpit Views	93
5.14.	Check for symbolic links in directory objects.....	98
5.15.	Backup Database.....	98
5.16.	Deinstall Old Oracle Software	99
5.17.	Remove Link to Old Oracle Home.....	104
5.18.	Configure a link to SPFILE	104
5.19.	Update JDBC Driver	106
5.20.	Start SAP System	106

1. REFERENCES

SAP Notes:

- [2800001](#) - Upgrading to Oracle Database 19c (DBUA)
- [2540847](#) - SAP Guides for Oracle Database Upgrade
- [2799958](#) - Preliminary Information about Oracle Database 19c
- [2799900](#) - Central Technical Note for Oracle Database 19c
- [2817074](#) - Oracle Database 19c: Integration in SAP environment
- [2660017](#) - Oracle Database Software Installation on Unix
- [974876](#) - Oracle Transparent Data Encryption (TDE)
- [740897](#) - Info about the scope of the Oracle license; required Oracle options
- [2485122](#) - Support for Oracle Transparent Data Encryption (TDE) in SWPM

Oracle Guide

[Transparent Data Encryption Best Practices](#)

2. SYSTEM ENVIRONMENT

Operating System:

```
[root@ol2server ~]# uname -r
```

```
3.10.0-1062.4.1.el7.x86_64
```

```
[root@ol2server OL2]# uname -a
```

```
Linux ol2server 3.10.0-1062.4.1.el7.x86_64 #1 SMP Wed Oct 16 13:05:33 PDT 2019 x86_64 x86_64  
x86_64 GNU/Linux
```

```
[root@ol2server ~]# cat /etc/oracle-release
```

```
Oracle Linux Server release 7.7
```

Database Setup:

RDBMS: 18c with activated Oracle TDE

RDBMS Software owner: oraol2

```
SQL> set pagesize 100
```

```
SQL> set linesize 200
```

```
SQL> col status format A15
```

```
SQL> col WRL_PARAMETER format A50
```

```
SQL> SELECT WRL_PARAMETER, STATUS FROM V$ENCRYPTION_WALLET;
```

```
WRL_PARAMETER
```

```
STATUS
```

```
-----  
/oracle/OL2/orawallet/tde/
```

```
-----  
OPEN
```

SAP System:

SAP NW 7.5

3. PRE-UPGRADE STEPS

3.1. Apply SAP Notes (Mandatory)

Please Note: Check, whether your SAP Basis-SP level is within the range specified in the SAP note text, see section 'Reason and Prerequisites', before you implement the ABAP Correction Instruction. If not, implementation of ABAP Corrections is not necessary, even if they are applicable.

This is a mandatory step to ensure CDS Views w. parameters are working properly even if SQL Macros are not used at all!

[2801989](#) - SQL macros: CDS views with parameters

[2850113](#) - Error for CDS views with parameters with Oracle Version 19.5 in SAP NW 7.50 and higher

3.2. Configure ABAP SSFS

Follow SAP note below:

[1639578](#) - SSFS as password store for primary database connect

3.3. Update SAP Kernel

Follow SAP note below:

[19466](#) - Downloading SAP kernel patches

3.4. Update SAP BR*Tools

Follow SAP notes below:

[651812](#) - FAQ: BR*TOOLS and SAPDBA

```
ol2server:ol2adm 101> brtools -V  
BR06511 BRTOOLS 7.40 (39)
```

Patch Date Info

- 1 2013-03-26 Corrections in BR*Tools 7.40 patch 1 (note 1838852)
- 2 2013-05-28 Corrections in BR*Tools 7.40 patch 2 (note 1865897)
- 3 2013-07-03 Corrections in BR*Tools 7.40 patch 3 (note 1882181)
- 5 2013-09-05 Corrections in BR*Tools 7.40 patch 5 (note 1909451)
- 6 2013-11-14 Corrections in BR*Tools 7.40 patch 6 (note 1940675)
- 7 2014-02-24 Corrections in BR*Tools 7.40 patch 7 (note 1983045)
- 9 2014-04-30 Corrections in BR*Tools 7.40 patch 9 (note 2011892)
- 10 2014-06-25 Corrections in BR*Tools 7.40 patch 10 (note 2034605)
- 11 2014-08-27 Corrections in BR*Tools 7.40 patch 11 (note 2059497)
- 12 2014-10-29 Corrections in BR*Tools 7.40 patch 12 (note 2086963)
- 13 2015-01-28 Corrections in BR*Tools 7.40 patch 13 (note 2123623)
- 14 2015-03-25 BR*Tools support for Oracle 12.1 (note 2087004)
- 15 2015-03-25 Corrections in BR*Tools 7.40 patch 15 (note 2147658)
- 16 2015-05-27 Corrections in BR*Tools 7.40 patch 16 (note 2173298)
- 17 2015-09-02 Corrections in BR*Tools 7.40 patch 17 (note 2213142)
- 18 2015-11-26 Corrections in BR*Tools 7.40 patch 18 (note 2250026)
- 20 2015-12-29 Corrections in BR*Tools 7.40 patch 20 (note 2262235)
- 21 2016-02-25 Corrections in BR*Tools 7.40 patch 21 (note 2284927)
- 22 2016-05-25 Corrections in BR*Tools 7.40 patch 22 (note 2321888)
- 23 2016-06-21 Corrections in BR*Tools 7.40 patch 23 (note 2333360)
- 24 2016-06-22 BR*Tools support for Oracle multitenant database (note 2333995)
- 25 2016-07-21 Corrections in BR*Tools 7.40 patch 25 (note 2345914)
- 26 2016-08-24 Corrections in BR*Tools 7.40 patch 26 (note 2358969)
- 28 2016-10-26 Corrections in BR*Tools 7.40 patch 28 (note 2382987)
- 29 2017-02-03 Corrections in BR*Tools 7.40 patch 29 (note 2423979)
- 30 2017-05-10 Corrections in BR*Tools 7.40 patch 30 (note 2471317)
- 31 2017-08-09 Corrections in BR*Tools 7.40 patch 31 (note 2516663)
- 32 2017-11-30 Corrections in BR*Tools 7.40 patch 32 (note 2572188)
- 33 2018-02-22 Corrections in BR*Tools 7.40 patch 33 (note 2608382)
- 34 2018-05-29 Corrections in BR*Tools 7.40 patch 34 (note 2650065)
- 35 2018-10-18 Corrections in BR*Tools 7.40 patch 35 (note 2708468)
- 36 2018-11-29 Corrections in BR*Tools 7.40 patch 36 (note 2726436)
- 37 2019-02-14 Corrections in BR*Tools 7.40 patch 37 (note 2754527)
- 38 2019-05-02 Corrections in BR*Tools 7.40 patch 38 (note 2788165)
- 39 2019-07-04 Corrections in BR*Tools 7.40 patch 39 (note 2812370)

```
release note      1838850  
kernel release   740  
patch date       2019-07-04  
patch level      39  
make platform    linuxx86_64  
make codeline    753_REL  
make mode        OCI_112  
make date        Jul 5 2019
```

3.5. Update SAPCONN Role

```
ol2server:ol2adm 78> pwd
/sapmnt/OL2/exe/uc/linuxx86_64
ol2server:ol2adm 79> ls -al | grep sapconn
-rwxr-xr-x. 1 ol2adm sapsys 3076 Jul 5 20:04 sapconn_role.sql
ol2server:ol2adm 80> sqlplus /nolog @sapconn_role.sql
```

SQL*Plus: Release 18.0.0.0.0 - Production on Tue Dec 3 14:00:59 2019
Version 18.5.0.0.0

Copyright (c) 1982, 2018, Oracle. All rights reserved.

Disconnected from Oracle Database 18c Enterprise Edition Release 18.0.0.0.0 - Production
Version 18.5.0.0.0

3.6. Update SAPDBA Role

Follow SAP notes below:
[134592](#) - Import of SAPDBA role (sapdba_role.sql)

```
ol2server:ol2adm 81> pwd
/sapmnt/OL2/exe/uc/linuxx86_64
ol2server:ol2adm 82> sqlplus /nolog @sapdba_role SR3
```

SQL*Plus: Release 18.0.0.0.0 - Production on Tue Dec 3 14:04:10 2019
Version 18.5.0.0.0

Copyright (c) 1982, 2018, Oracle. All rights reserved.

Disconnected from Oracle Database 18c Enterprise Edition Release 18.0.0.0.0 - Production
Version 18.5.0.0.0

3.7. Update Oracle Instant Client

Follow SAP note below:
[819829](#) - Oracle Instant Client Installation and Configuration on Unix or Linux

3.8. Download Oracle Software

Follow SAP note below:
[2660020](#) - Central Technical Note for Oracle Database 18c

3.9. Install Oracle Database 19c Software

```
ol2server:oraol2 59> pwd
/installation/OracleRDBMS/SAP
ol2server:oraol2 60> ./RUNINSTALLER
.
*****
. Oracle Database 19c Software Installation
. Copyright (c) Oracle Corporation 2019. All Rights Reserved.
*****
. 19cinstall.sh 19.0.0 (19-014) 2019-08-30 Production
*****
.
. Host      : ol2server
. Platform  : linux_x86_64 (64-bit)
. Date      : 2019-12-03 14-08-09
. User      : oraol2
.
. Command line #: 6
. Command line : -caller RUNINSTALLER -oracle_stage_1 /installation/OracleRDBMS/SAP -oracle_stage_2
/installation/OracleRDBMS
. (INFO ) - TASK - Install Oracle Home (Extract+Register+Configure)
. (INFO ) - 2019-12-03 14-08-09
. (INFO ) - TASK - Prepare Installation and Installation Checks
. (INFO ) - 2019-12-03 14-08-09
.
. Performing Pre-Installation Checks ...
.
. (OK ) - unzip 6.00 or later available.
. (OK ) - There is enough free space in TEMP directory.
. (OK ) - /oracle/OL2/orainstall has 52 GByte free.
. (OK ) - Environment variable <DB_SID> is set to OL2
. (OK ) - Got value for <DB_SID> from environment.
. (OK ) - Got location for Oracle base from environment (ORACLE_BASE).
. (OK ) - Using new ORACLE_BASE=/oracle/OL2 instead of ORACLE_BASE=/oracle
. (OK ) - Environment variable DISPLAY is set.
. (OK ) - Directory /oracle/OL2 exists.
. (OK ) - Oracle base location /oracle/OL2 exists.
. (OK ) - oratab file /etc/oratab exists.
. (OK ) - Installation location /oracle/OL2/19.0.0 does not exist.
. (OK ) - Runtime location /oracle/OL2/19 does not exist.
. (OK ) - Inventory pointer file /etc/orainst.loc exists.
. (OK ) - OS group dba is defined.
. (OK ) - OS group oper is defined.
. (OK ) - OS group oper is defined.
. (OK ) - OS group dba is defined.
. (OK ) - OS group dba is defined.
. (OK ) - OS group dba is defined.
. (OK ) - OS group dba is defined.
. (OK ) - OS group dba is defined.
. (OK ) - New response file /oracle/OL2/orainstall/.19cinstall.rsp created.
.
. Pre-Installation Checks completed.
.
. (INFO ) - TASK - Verify Installation Settings
. (INFO ) - 2019-12-03 14-08-10
.
. Starting point:
.
. Started from DVD      : yes
. Oracle home image file : /installation/OracleRDBMS/LINUX.X64_193000_db_home.zip
. Checksum has been verified? : no
```



```

. Checksum is ok?          : not set
.
. Environment Variables:
.
. DB_SID                   : OL2
. DISPLAY                  : :0.0
. ORACLE_BASE              : /oracle
. ORACLE_HOME              : /oracle/OL2/18
.
. Installation Task:
.
. Preparing the Installation : yes
. Verifying Install Settings : yes
. Extracting Oracle Home    : yes
. Checking Prerequisites    : no
. Registering Oracle Home   : yes
. Configuring for SAP       : yes
.
. Installation Status:
.
. Oracle Home is extracted  : no
. Oracle Home is registered : no
. OHRDBMS is configured for SAP: no
.
. Oracle Home Version       : not set not set
. root.sh already executed? : no
.
. Installation Settings:
.
. Image file extraction     : unzip <image file> (-xprogress )
. UnZip tool path          : /bin/unzip
. UnZip tool banner        : UnZip 6.00 of 20 April 2009, by Info-ZIP. Maintained by C. Spieler. Send
. Oracle Database Release   : 19.0.0.0.0
. ORACLE_BASE              : /oracle/OL2
. ORACLE_HOME IHRDBMS (install): /oracle/OL2/19.0.0
. ORACLE_HOME OHRDBMS (runtime): /oracle/OL2/19
. ORACLE_HOME_NAME         : not specified
. oratab                   : /etc/oratab
. oratab new entry         : OL2:/oracle/OL2/19:N
.
. Oracle Home Administrative OS Groups:
.
. Inventory group          : dba
. OSDBA group (SYSDBA)     : dba
. OSOPER group (SYSOPER)   : oper
. OSBACKUPDBA group (SYSBACKUP): oper
. OSDGDBA group (SYSDG)    : dba
. OSKMDBA group (SYSKM)    : dba
. OSRACDBA group (SYSRAC)  : dba
.
. Oracle Database 19c Installer Settings:
.
. Installer location       : not set
. Version (oraparam.ini)   : 0.0.0.0.0
. Temporary directory      : /oracle/OL2/orainstall/.19cinstall.tmp
. Temporary error file     : /oracle/OL2/orainstall/.19cinstall.tmp/sap_runinstaller.err
. Available disk space: 52 GByte
. Response file            : /oracle/OL2/orainstall/.19cinstall.rsp
. RSA Root Script Automation : -
. Use response file        : yes

```

```

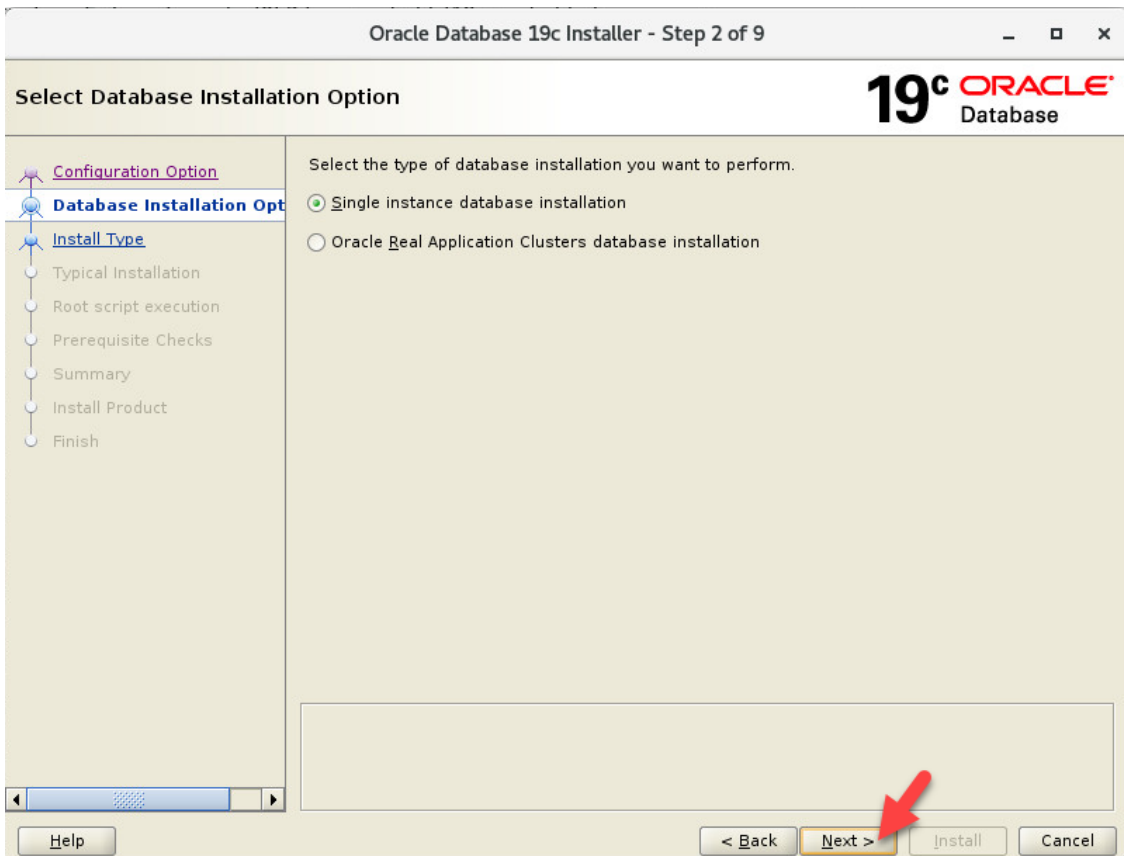
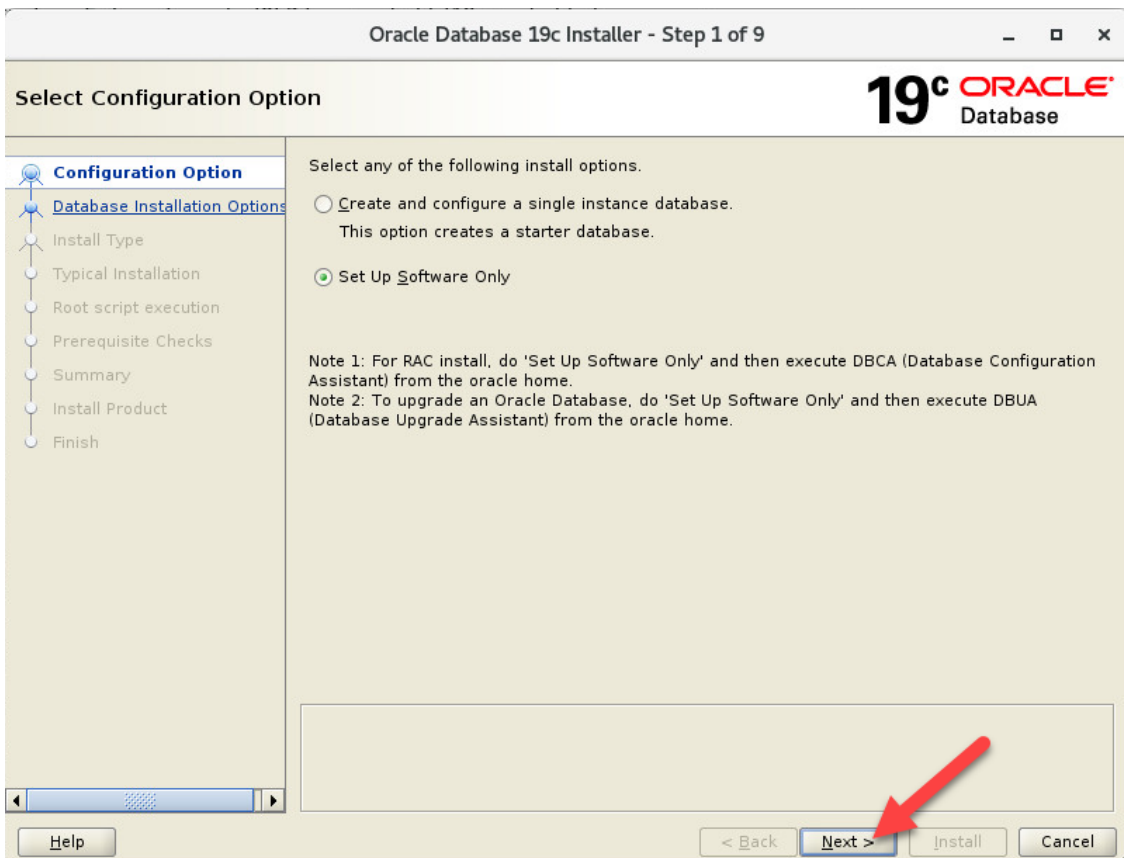
. Output log file      : /oracle/OL2/orainstall/.19cinstall.oui
. Options             : -waitForCompletion
. invPtrLoc option    : not set
. inventory location  : #INVENTORY_LOCATION=
. Ignore prereq check warnings : FALSE ( / )
.
. Post Installation Settings:
.
. Create symbolic link      : yes
. relative/absolute path   : relative
. OHRDBMS -> IHRDBMS       /oracle/OL2/19 -> 19.0.0
. Configure orabasetab     : yes
. Clean up temp. files     : yes
.
. Installation Log File Settings:
.
. Installation Log Directory : /oracle/OL2/orainstall
. Installation Log File      : /oracle/OL2/orainstall/19cinstall2019-12-03_14-08-09.log
. Installation Summary Log File: /oracle/OL2/orainstall/19cinstall.log
.
. (INFO ) - TASK - Extract Oracle Home Image File (unzip)
. (INFO ) - 2019-12-03 14-08-10
. (INFO ) - Creating Oracle home directory /oracle/OL2/19.0.0
. (INFO ) - Oracle home directory created.
. (INFO ) - Oracle home directory is empty.
. (INFO ) - Extracting Oracle home image file
. (INFO ) - This step can take a while, please wait ...
. unzip /installation/OracleRDBMS/LINUX.X64_193000_db_home.zip -d /oracle/OL2/19.0.0
2>/oracle/OL2/orainstall/.19cinstall.tmp/sap_runinstaller.err
. Number of files to extract: ~ 45000 (can vary, depending on platform)
..... 4000 files extracted ( 9 %)
..... 8000 files extracted ( 18 %)
..... 12000 files extracted ( 27 %)
..... 16000 files extracted ( 36 %)
..... 20000 files extracted ( 44 %)
..... 24000 files extracted ( 53 %)
..... 28000 files extracted ( 62 %)
..... 32000 files extracted ( 71 %)
..... 36000 files extracted ( 80 %)
..... 40000 files extracted ( 89 %)
..... 41878 files extracted (100 %)
. (INFO ) - Extracting Oracle home image file finished successfully.
. (INFO ) - Copying SAP RUNINSTALLER into Oracle home directory /oracle/OL2/19.0.0
. (INFO ) - Copying SAP RUNINSTALLER finished successfully.
. (INFO ) - TASK - Check Installation Prerequisites (runInstaller) - task not selected
. (INFO ) - TASK - Register Oracle Home (runInstaller)
. (INFO ) - 2019-12-03 14-17-14
. (INFO ) - Oracle Database 19c Installer command line:
LANG=C TMP=/oracle/OL2/orainstall/.19cinstall.tmp TMPDIR=/oracle/OL2/orainstall/.19cinstall.tmp
/oracle/OL2/19.0.0/runInstaller -responseFile /oracle/OL2/orainstall/.19cinstall.rsp -waitForCompletion
| tee /oracle/OL2/orainstall/.19cinstall.oui
. (INFO ) - Starting Oracle Database 19c Installer (runInstaller) in interactive mode - please wait ...
. (INFO ) - #####
. (INFO ) - Oracle Database 19c Installer started ...
. (INFO ) - #####
Launching Oracle Database Setup Wizard...

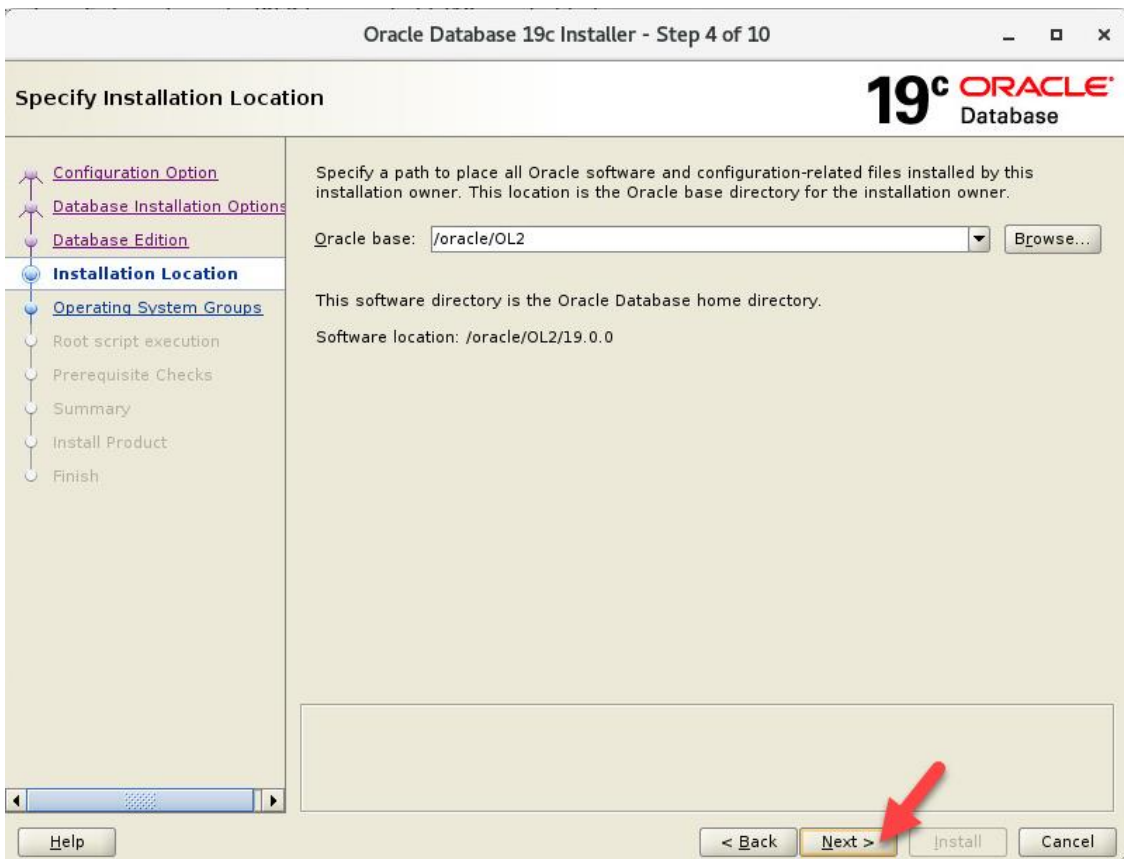
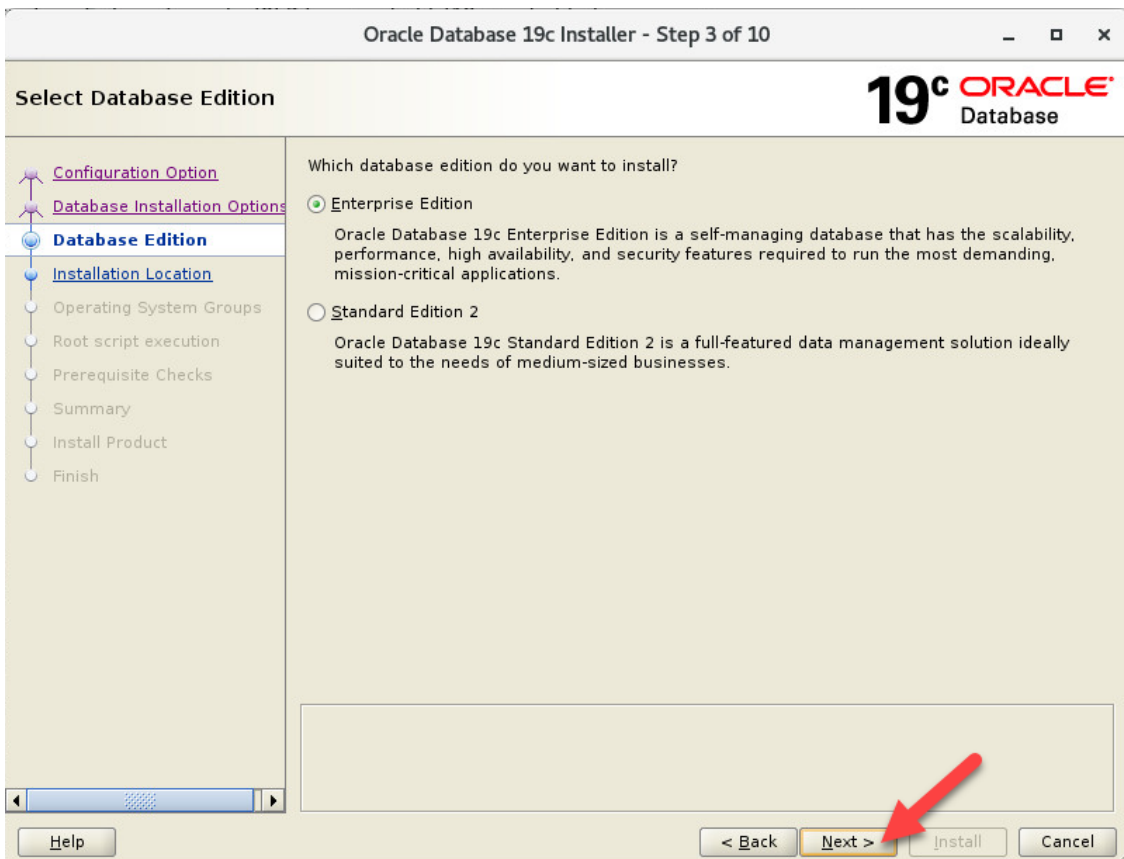
```

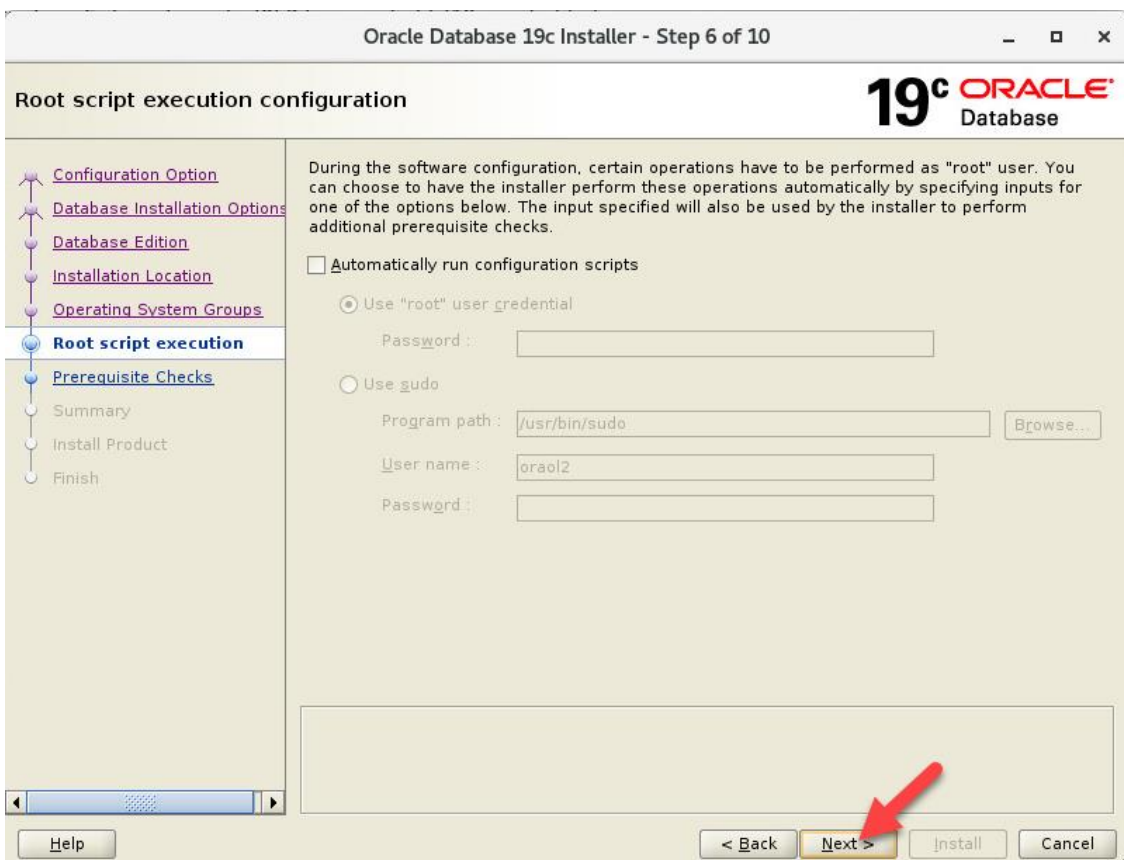
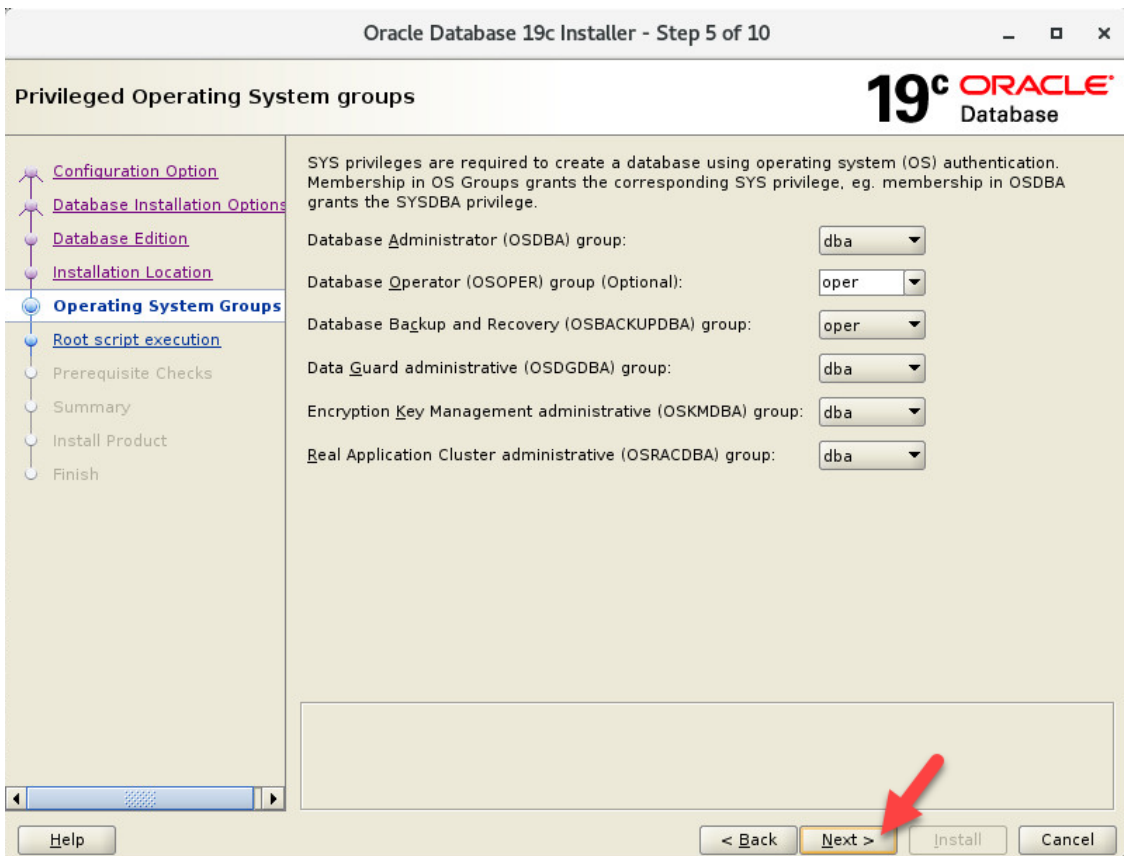
The response file for this session can be found at:
 /oracle/OL2/19.0.0/install/response/db_2019-12-03_02-17-36PM.rsp

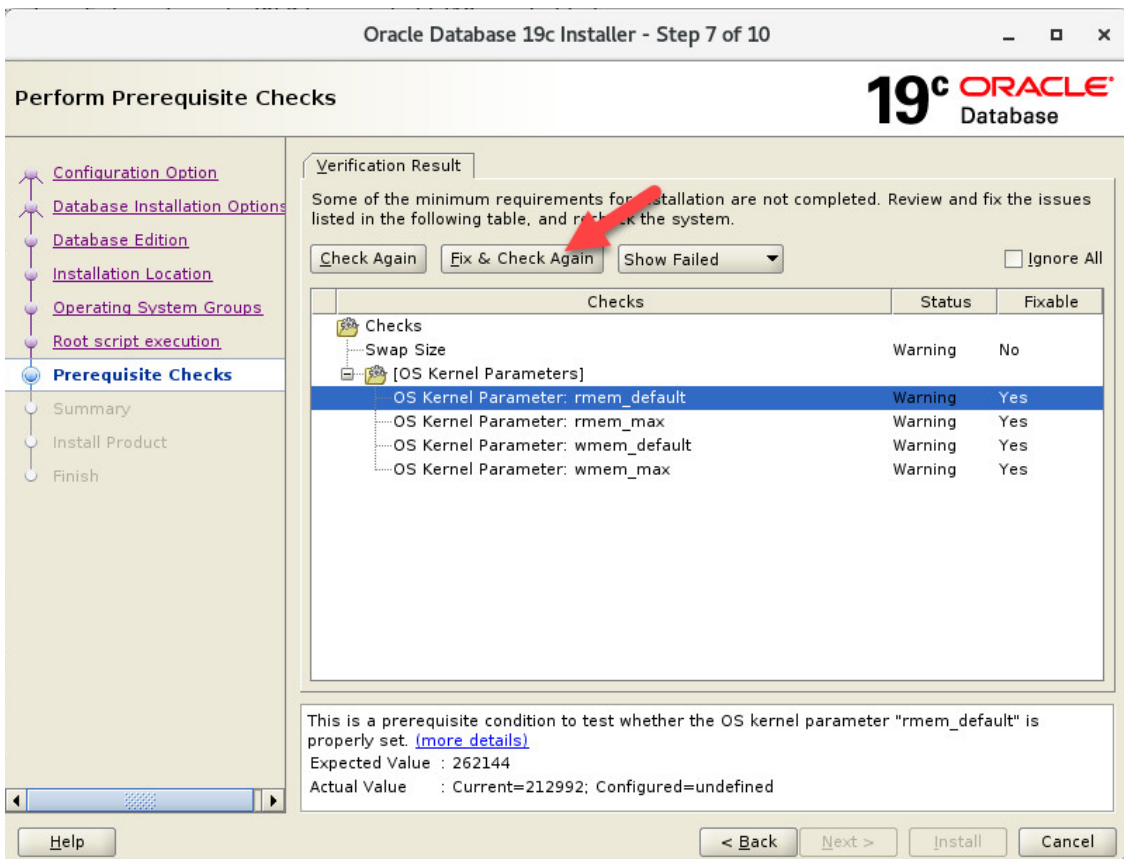
You can find the log of this install session at:

/oracle/oralInventory/logs/InstallActions2019-12-03_02-17-36PM/installActions2019-12-03_02-17-36PM.log

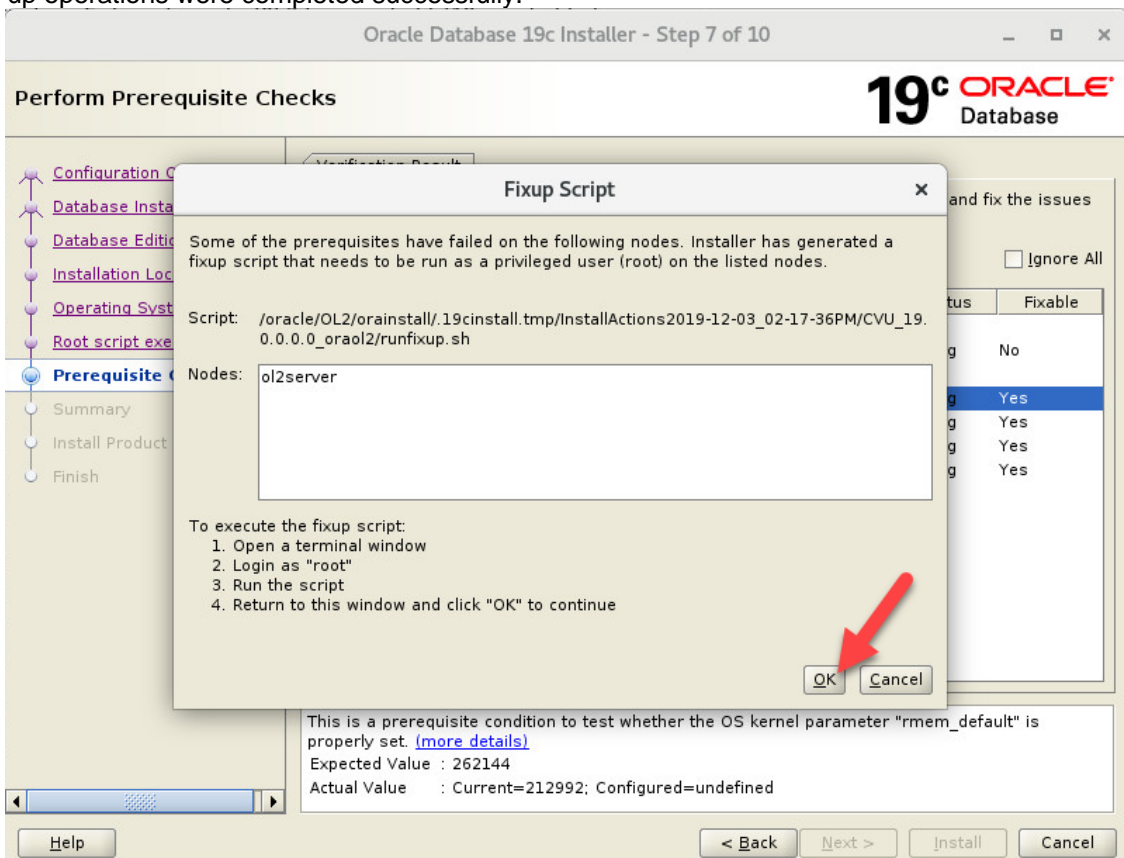


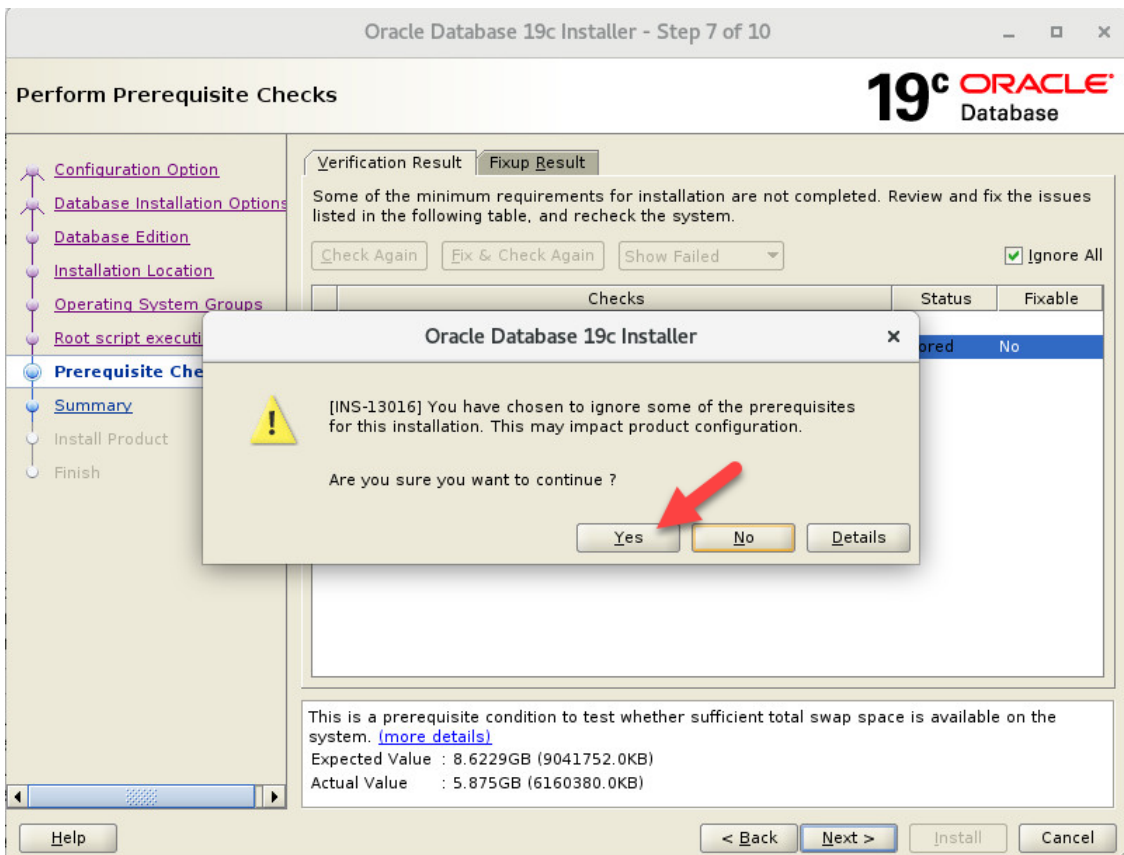
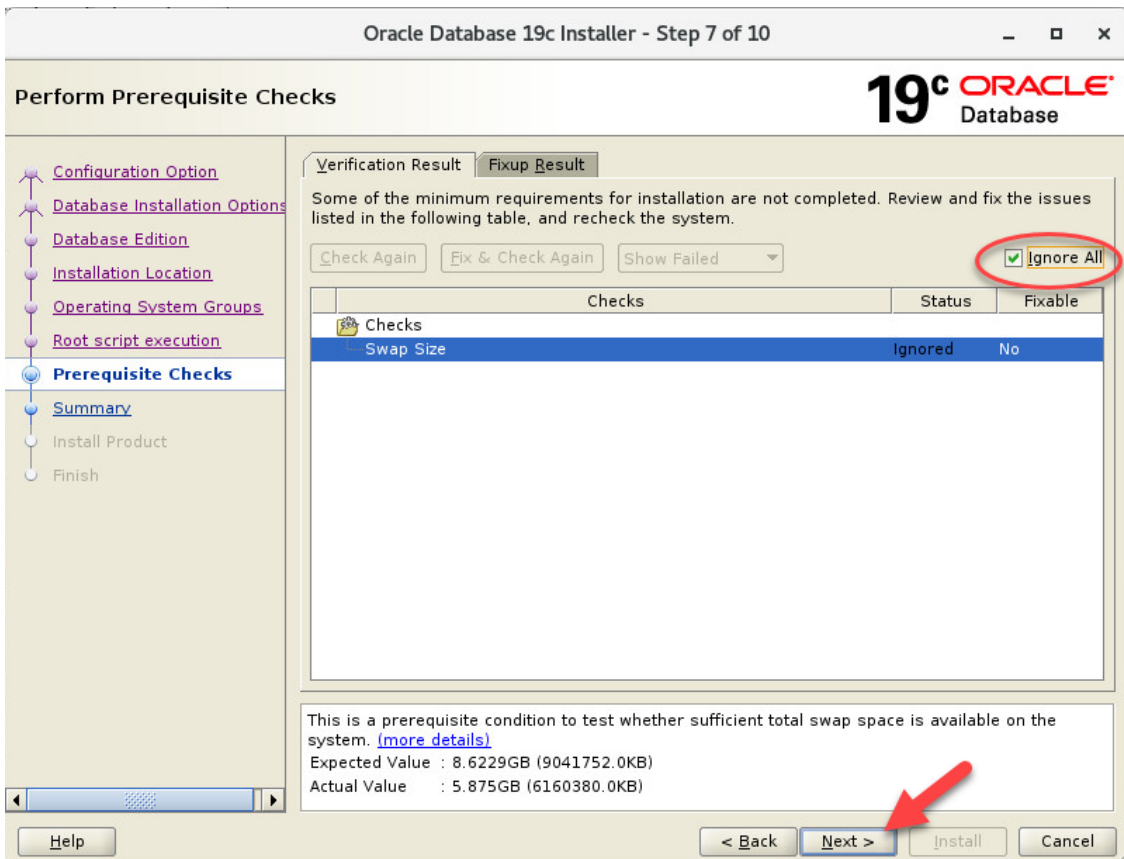


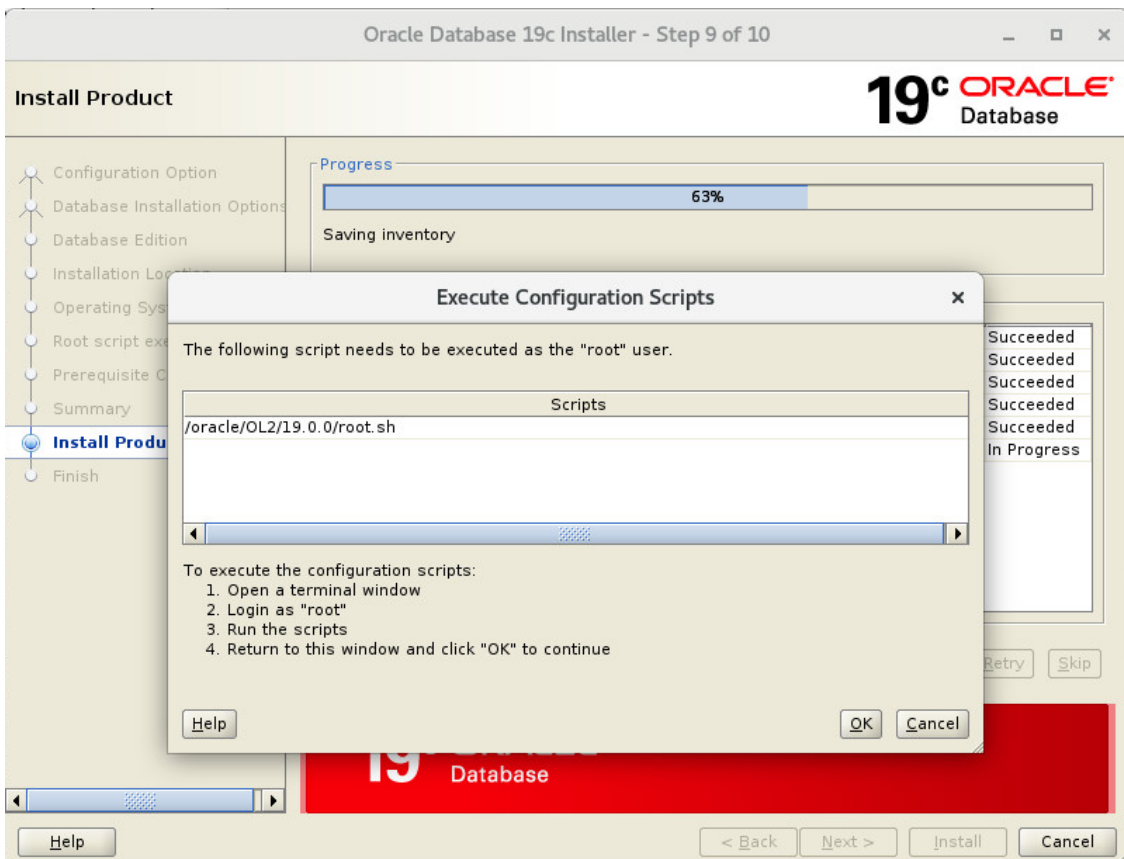
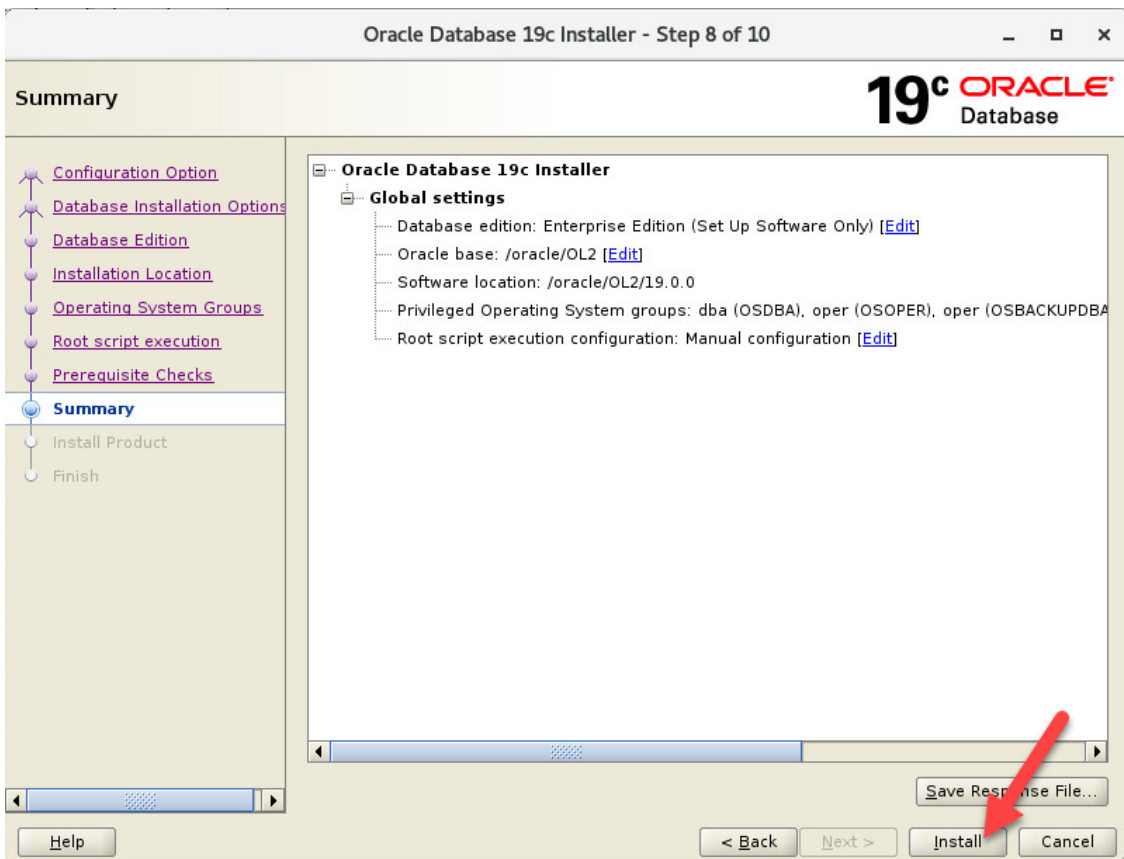




```
[root@ol2server run]# cd ~
[root@ol2server ~]# /oracle/OL2/orainstall/.19cinstall.tmp/InstallActions2019-12-03_02-17-36PM/CVU_19.0.0.0_oraol2/runfixup.sh
All Fix-up operations were completed successfully.
```








```
[root@ol2server ~]# /oracle/OL2/19.0.0/root.sh
Performing root user operation.
```

The following environment variables are set as:

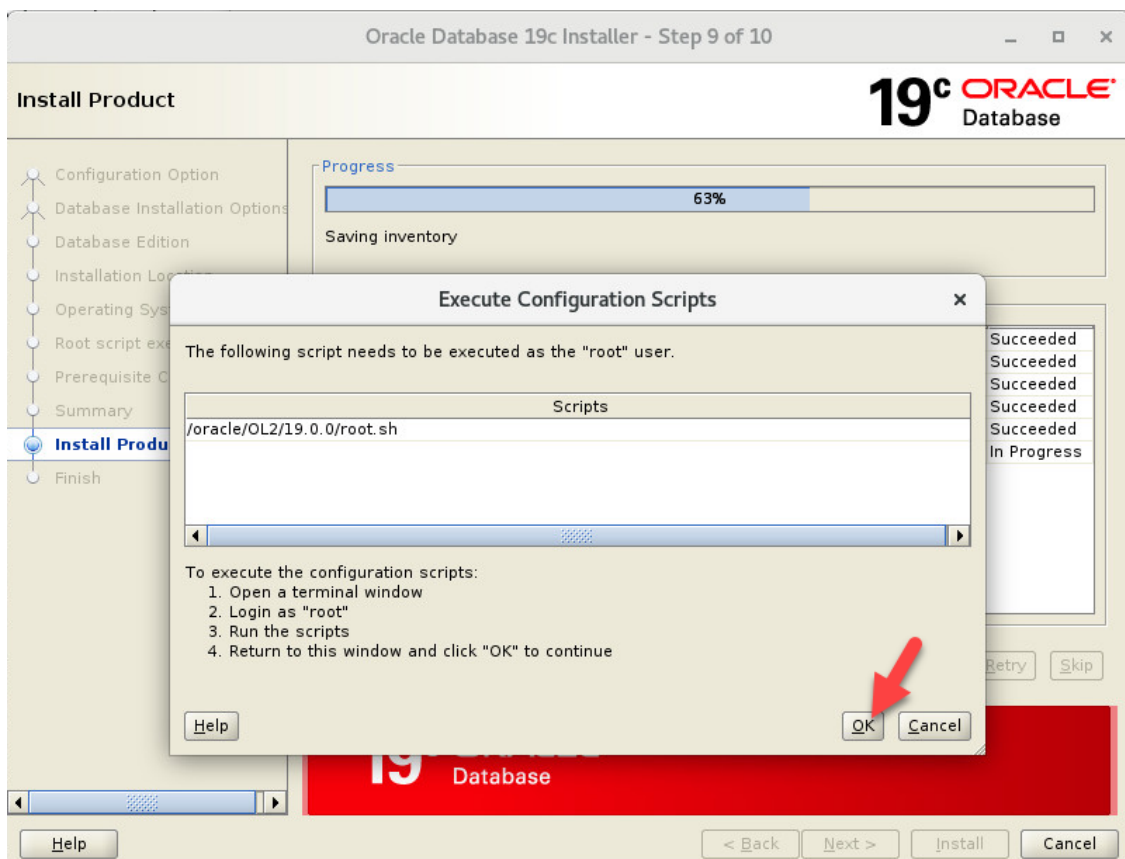
```
ORACLE_OWNER= oraol2
ORACLE_HOME= /oracle/OL2/19.0.0
```

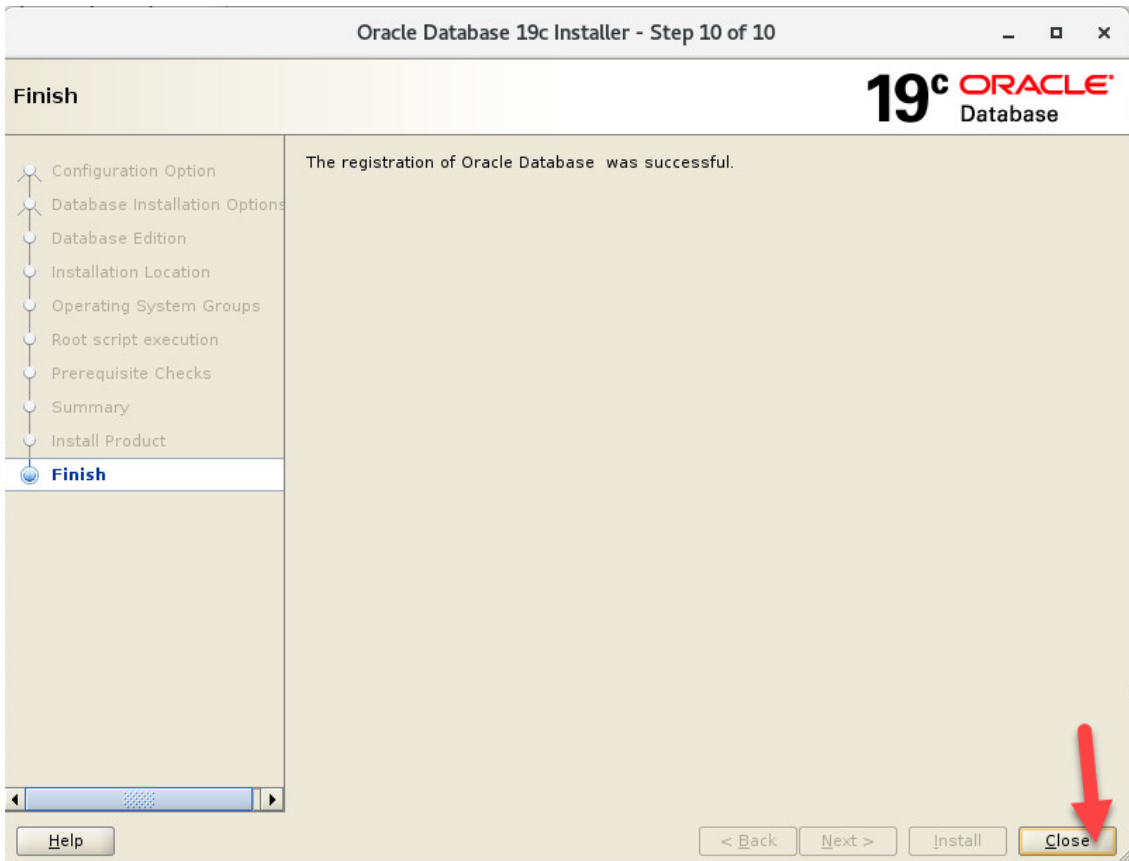
Enter the full pathname of the local bin directory: [/usr/local/bin]:
The contents of "dbhome" have not changed. No need to overwrite.
The contents of "oraenv" have not changed. No need to overwrite.
The contents of "coraenv" have not changed. No need to overwrite.

Entries will be added to the /etc/oratab file as needed by
Database Configuration Assistant when a database is created
Finished running generic part of root script.
Now product-specific root actions will be performed.
Oracle Trace File Analyzer (TFA - Standalone Mode) is available at :
/oracle/OL2/19.0.0/bin/tfactl

Note :

1. tfactl will use TFA Service if that service is running and user has been granted access
2. tfactl will configure TFA Standalone Mode only if user has no access to TFA Service or TFA is not installed





3.9. Install Patches on 19c Oracle Software

For more information, see SBP README.

Check if TFA (Trace File Analyzer) is running.

```
ol2server:oraol2 61> /oracle/OL2/19.0.0/bin/tfactl status
```

```
WARNING - TFA Software is older than 180 days. Please consider upgrading TFA to the latest version.
```

```
TFA-00002 Oracle Trace File Analyzer (TFA) is not running
```

```
ol2server:oraol2 62> /oracle/OL2/18.0.0/bin/tfactl status
```

```
WARNING - TFA Software is older than 180 days. Please consider upgrading TFA to the latest version.
```

```
TFA-00002 Oracle Trace File Analyzer (TFA) is not running
```

Proceed with the Patch Installation as documented in the README up to executing catsbp. CATSBP will be executed once the Upgrade finished successfully.

3.10. Backup TDE Keystore and Auto-Open Wallet

```
ol2server:oraol2 79> cd /oracle/OL2/orawallet/
```

```
ol2server:oraol2 80> mkdir backup_tde
```

```
ol2server:oraol2 81> cp /oracle/OL2/orawallet/tde/cwallet.sso /oracle/OL2/orawallet/tde/ewallet.p12
```

```
/oracle/OL2/orawallet/backup_tde/
```

```
ol2server:oraol2 92> ls -al /oracle/OL2/orawallet/backup_tde/
```

```
total 8
```

```
drwxr-xr-x. 2 oraol2 dba 42 Dec 4 10:35 .
```

```
drwxr-xr-x. 4 oraol2 dba 33 Dec 4 10:34 ..
```

```
-rw-----. 1 oraol2 dba 3032 Dec 4 10:35 cwallet.sso
```

```
-rw-----. 1 oraol2 dba 2987 Dec 4 10:35 ewallet.p12
```

3.11. Check current Environment

```
ol2server:oraol2 52> /oracle/OL2/19/sap/ora_upgrade/pre_upgrade/oraenvchk.sh
```

```
.  
. Oracle Database Environment Check for SAP NetWeaver Installations  
. Script      : 003 2019-02-14 Production  
. Host       : ol2server  
. Platform   : linux_x86_64  
. Date      : 2019-12-03 15:47:02  
. User      : oraol2  
. SAP note   : 2660017  
. (INFO ) - Performing Configuration Check  
. (INFO ) - SAP Database : OL2  
. (INFO ) - Oracle Release : 18c  
. (INFO ) - Current Environment Setting  
. (INFO ) - DB_SID      : OL2  
. (INFO ) - ORACLE_HOME : /oracle/OL2/18  
. (INFO ) - ORACLE_BASE : /oracle/OL2  
. (INFO ) - Current Oratab Configuration  
. (INFO ) - oratab path : /etc/oratab  
. (INFO ) - oratab exists : YES  
. (INFO ) - oratab entry : OL2:/oracle/OL2/18:N  
. (INFO ) - Current Orabasetab Configuration  
. (INFO ) - orabasetab path : /oracle/OL2/18/install/orabasetab  
. (INFO ) - orabasetab exists: YES  
. (INFO ) - orabasetab entry : <tbd>  
. (INFO ) - SAP Standard Configuration  
. (INFO ) - ORACLE_HOME : /oracle/OL2/18  
. (INFO ) - ORACLE_BASE : /oracle/OL2  
. (INFO ) - IHRDBMS     : /oracle/OL2/18.0.0  
. (INFO ) - OHRDBMS     : /oracle/OL2/18  
. (INFO ) - oratab entry : OL2:/oracle/OL2/18:N  
. (INFO ) - Configuration Checks  
. (OK ) - ORACLE_HOME is SAP standard.  
. (OK ) - ORACLE_BASE is SAP standard.  
. (OK ) - ORACLE_HOME is set to Runtime Oracle Home.  
. (OK ) - oratab entry is SAP standard.  
. (OK ) - Consistent configuration: ORACLE_BASE and ORACLE_HOME/bin/orabase  
. (INFO ) - 5 configuration check(s) completed successfully.  
. (INFO ) - Configuration Warnings  
. (INFO ) - 0 configuration check(s) completed with warnings.
```

3.12. Create Oracle Upgrade Working Directory

```
ol2server:oraol2 53> id;pwd
uid=1002(oraol2) gid=1003(dba) groups=1003(dba),1002(sapsys),1004(oper)
context=unconfined_u:unconfined_r:unconfined_t:s0-s0:c0.c1023
/home/oraol2
ol2server:oraol2 54> setenv ORA_UPGRADE_WORK_DIR /oracle/OL2/oraupgrade.19c
ol2server:oraol2 55> echo ORA_UPGRADE_WORK_DIR=$ORA_UPGRADE_WORK_DIR
ORA_UPGRADE_WORK_DIR=/oracle/OL2/oraupgrade.19c
ol2server:oraol2 56> mkdir -p $ORA_UPGRADE_WORK_DIR
ol2server:oraol2 57> cd $ORA_UPGRADE_WORK_DIR
ol2server:oraol2 58> pwd
/oracle/OL2/oraupgrade.19c
```

3.13. Run Pre-Upgrade Information Tool

```
ol2server:oraol2 60> setenv ORACLE_HOME_NEW /oracle/OL2/19
ol2server:oraol2 61> echo ORACLE_HOME_NEW=$ORACLE_HOME_NEW
ORACLE_HOME_NEW=/oracle/OL2/19
ol2server:oraol2 62> echo $ORACLE_SID
OL2
ol2server:oraol2 63> mkdir /tmp/ora_preupgrade
ol2server:oraol2 64> chmod 777 /tmp/ora_preupgrade
ol2server:oraol2 65> $ORACLE_HOME/jdk/bin/java -jar
$ORACLE_HOME_NEW/sap/ora_upgrade/pre_upgrade_utility/preupgrade.jar TERMINAL TEXT DIR
/tmp/ora_preupgrade
Report generated by Oracle Database Pre-Upgrade Information Tool Version
19.0.0.0.0 Build: 2 on 2019-12-04T09:26:00
```

Upgrade-To version: 19.0.0.0.0

```
=====
Status of the database prior to upgrade
=====
```

```
Database Name: OL2
Container Name: OL2
Container ID: 0
Version: 18.0.0.0.0
DB Patch Level: Database Release Update : 18.5.0.0.190115 (28822489)
Compatible: 18.0.0
Blocksize: 8192
Platform: Linux x86 64-bit
Timezone File: 31
Database log mode: ARCHIVELOG
Readonly: FALSE
Edition: EE
```

Oracle Component	Upgrade Action	Current Status
Oracle Server	[to be upgraded]	VALID
Real Application Clusters	[to be upgraded]	OPTION OFF
Oracle Label Security	[to be upgraded]	VALID
Oracle XML Database	[to be upgraded]	VALID

```
=====
BEFORE UPGRADE
=====
```

REQUIRED ACTIONS

=====

None

RECOMMENDED ACTIONS

=====

1. Run 18.0.0.0.0 \$ORACLE_HOME/rdbms/admin/utlrp.sql to recompile invalid objects. You can view the individual invalid objects with

```
SET SERVEROUTPUT ON;
EXECUTE DBMS_PREUP.INVALID_OBJECTS;
```

2 objects are INVALID.

There should be no INVALID objects in SYS/SYSTEM or user schemas before database upgrade.

2. Recreate any directory objects listed, using path names that contain no symbolic links.

Found 1 directories with symbolic links: EXT_DIR_DBAC_CLIENT..

Starting in Release 18c, symbolic links are not allowed in directory object path names used with BFILE data types, the UTL_FILE package, or external tables.

3. If an auto-login Oracle Transparent Data Encryption (TDE) Keystore is correctly set up, no action needs to be taken. Otherwise, before starting up the database in upgrade mode in the new Oracle Database Oracle Home, either open the TDE Keystore, or ensure that an auto-login TDE Keystore is configured for the system. If errors are seen while the database upgrade is running because the TDE Keystore is closed, then open the TDE Keystore and resume the upgrade (see "catctl.pl -R"). It may be necessary to open the TDE Keystore as the upgrade progresses in a non-CDB or CDB (e.g., in CDB\$ROOT and PDB) if no auto-login TDE Keystore has been configured, as the upgrade process can shut down and startup the database.

The database is using TDE. The database upgrade process can involve operations (certain SQL statements and/or database startups) that need to access the encryption key.

If Oracle Transparent Data Encryption (TDE) is in use, the database system must have access to its Oracle Transparent Data Encryption Master Encryption Key during database upgrade. For more information on configuring Transparent Data Encryption, refer to the 18.0 Oracle Database Advanced Security Guide, Section 3: Configuring Transparent Data Encryption.

4. Review and remove any unnecessary HIDDEN/UNDERSCORE parameters.

The database contains the following initialization parameters whose name begins with an underscore:

```
_use_single_log_writer
_securefiles_concurrency_estimate
_spacebg_sync_segblocks
_suppress_identifiers_on_dupkey
_mutex_wait_time
_mutex_wait_scheme
_kolfuseslf
```

```

_fix_control
_optimizer_extended_cursor_sharing_rel
_optimizer_adaptive_cursor_sharing
_optim_peek_user_binds
_optimizer_use_feedback
_optimizer_batch_table_access_by_rowid
_disable_directory_link_check
_rowsets_enabled
_optimizer_reduce_groupby_key
_log_segment_dump_parameter
_log_segment_dump_patch

```

Remove hidden parameters before database upgrade unless your application vendors and/or Oracle Support state differently. Changes will need to be made in the pfile/spfile.

5. Review and remove any unnecessary EVENTS.

The database contains events.

There are events set that should be removed before upgrade, unless your application vendors and/or Oracle Support state differently. Changes will need to be made in the pfile/spfile.

6. (AUTOFIXUP) Gather stale data dictionary statistics prior to database upgrade in off-peak time using:

```
EXECUTE DBMS_STATS.GATHER_DICTIONARY_STATS;
```

Dictionary statistics do not exist or are stale (not up-to-date).

Dictionary statistics help the Oracle optimizer find efficient SQL execution plans and are essential for proper upgrade timing. Oracle recommends gathering dictionary statistics in the last 24 hours before database upgrade.

For information on managing optimizer statistics, refer to the 18.0.0.0 Oracle Database Upgrade Guide.

INFORMATION ONLY

7. To help you keep track of your tablespace allocations, the following AUTOEXTEND tablespaces are expected to successfully EXTEND during the upgrade process.

Tablespace	Min Size	Size	For Upgrade
-----	-----	-----	-----
SYSTEM	730 MB		767 MB

Minimum tablespace sizes for upgrade are estimates.

8. Ensure there is additional disk space in LOG_ARCHIVE_DEST_1 for at least 2217 MB of archived logs. Check alert log during the upgrade that there is no write error to the destination due to lack of disk space.

Archiving cannot proceed if the archive log destination is full during upgrade.

Archive Log Destination:

Parameter : LOG_ARCHIVE_DEST_1
Destination : /oracle/OL2/oraarch/OL2arch

The database has archiving enabled. The upgrade process will need free disk space in the archive log destination(s) to generate archived logs to.

9. Check the Oracle Backup and Recovery User's Guide for information on how to manage an RMAN recovery catalog schema.

If you are using a version of the recovery catalog schema that is older than that required by the RMAN client version, then you must upgrade the catalog schema.

It is good practice to have the catalog schema the same or higher version than the RMAN client version you are using.

ORACLE GENERATED FIXUP SCRIPT

=====

All of the issues in database OL2 which are identified above as BEFORE UPGRADE "(AUTOFIXUP)" can be resolved by executing the following

```
SQL>@/tmp/ora_preupgrade/preupgrade_fixups.sql
```

=====

AFTER UPGRADE

=====

REQUIRED ACTIONS

=====

None

RECOMMENDED ACTIONS

=====

10. Upgrade the database time zone file using the DBMS_DST package.

The database is using time zone file version 31 and the target 19 release ships with time zone file version 32.

Oracle recommends upgrading to the desired (latest) version of the time zone file. For more information, refer to "Upgrading the Time Zone File and Timestamp with Time Zone Data" in the 19 Oracle Database Globalization Support Guide.

11. (AUTOFIXUP) Gather dictionary statistics after the upgrade using the command:

```
EXECUTE DBMS_STATS.GATHER_DICTIONARY_STATS;
```

Oracle recommends gathering dictionary statistics after upgrade.

Dictionary statistics provide essential information to the Oracle optimizer to help it find efficient SQL execution plans. After a database upgrade, statistics need to be re-gathered as there can now be tables that have significantly changed during the upgrade or new tables that do not have statistics gathered yet.

12. Gather statistics on fixed objects after the upgrade and when there is a representative workload on the system using the command:


```
EXECUTE DBMS_STATS.GATHER_FIXED_OBJECTS_STATS;
```

This recommendation is given for all preupgrade runs.

Fixed object statistics provide essential information to the Oracle optimizer to help it find efficient SQL execution plans. Those statistics are specific to the Oracle Database release that generates them, and can be stale upon database upgrade.

For information on managing optimizer statistics, refer to the 18.0.0.0 Oracle Database Upgrade Guide.

ORACLE GENERATED FIXUP SCRIPT

```
=====
```

All of the issues in database OL2 which are identified above as AFTER UPGRADE "(AUTOFIXUP)" can be resolved by executing the following

```
SQL> @/tmp/ora_preupgrade/postupgrade_fixups.sql
```

```
=====
```

PREUPGRADE SUMMARY

```
=====
```

```
/tmp/ora_preupgrade/preupgrade.log  
/tmp/ora_preupgrade/preupgrade_fixups.sql  
/tmp/ora_preupgrade/postupgrade_fixups.sql
```

Execute fixup scripts as indicated below:

Before upgrade:

Log into the database and execute the preupgrade fixups
@/tmp/ora_preupgrade/preupgrade_fixups.sql

After the upgrade:

Log into the database and execute the postupgrade fixups
@/tmp/ora_preupgrade/postupgrade_fixups.sql

Preupgrade complete: 2019-12-04T09:26:00

3.14. Set Environment ORACLE_PATH

```
ol2server:oraol2 86> setenv ORACLE_PATH  
$ORACLE_HOME_NEW/sap/ora_upgrade/pre_upgrade:$ORACLE_HOME_NEW/sap/ora_upgrade/post  
_upgrade:$ORACLE_HOME_NEW/sap/sapadmin  
ol2server:oraol2 87> echo $ORACLE_PATH  
/oracle/OL2/19/sap/ora_upgrade/pre_upgrade:/oracle/OL2/19/sap/ora_upgrade/post_upgrade:/oracle/OL2/1  
9/sap/sapadmin
```

3.15. Run SAP-Specific Pre-Upgrade Scripts

```
ol2server:oraol2 95> cd $ORA_UPGRADE_WORK_DIR
ol2server:oraol2 96> pwd
/oracle/OL2/oraupgrade.19c
ol2server:oraol2 97> sqlplus / as sysdba
```

```
SQL*Plus: Release 18.0.0.0.0 - Production on Wed Dec 4 11:15:53 2019
Version 18.5.0.0.0
```

Copyright (c) 1982, 2018, Oracle. All rights reserved.

```
Connected to:
Oracle Database 18c Enterprise Edition Release 18.0.0.0.0 - Production
Version 18.5.0.0.0
```

```
SQL> spool pre_upgrade_tasks.log
SQL> @pre_upgrade_tasks.sql
```

```
=====
ORACLE DATABASE 19C PRE-UPGRADE TASK: START
=====
```

```
Date      Time
-----
2019-12-04 11:16:57
```

```
=====
ORACLE DATABASE 19C PRE-UPGRADE TASK: ADDING INITIALIZATION PARAMETER TO SPFILE
=====
```

```
PARAMETER: _disable_directory_link_check
PARAMETER: _kolfuseslf
SQL> -- Added for database upgrade to 19c
SQL> -- Reference: SAP Note 2470718
SQL> alter system set "_disable_directory_link_check" = TRUE scope = spfile;
```

System altered.

```
SQL> alter system set "_kolfuseslf" = TRUE scope = spfile;
```

System altered.

```
SQL> SET ECHO OFF
```

```
=====
ORACLE DATABASE 19C PRE-UPGRADE TASK: REMOVING INITIALIZATION PARAMETER FROM
SPFILE
=====
```

```
PARAMETER: _bug12963364_spacebg_sync_segblocks
PARAMETER: _bug12963364_bug12963364_spacebg_sync_segblocks
You can ignore error "ORA-00922: missing or invalid option"
SQL> -- incident 397415/2019
SQL> -- Reference: SAP Note 2691682 / SAP Note 2470718
SQL> alter system reset "_bug12963364_spacebg_sync_segblocks" scope = spfile;
alter system reset "_bug12963364_spacebg_sync_segblocks" scope = spfile
*
```

```
ERROR at line 1:
ORA-00922: missing or invalid option
```

```
SQL> alter system reset "_bug12963364_bug12963364_spacebg_sync_segblocks" scope = spfile;
```

```
alter system reset "_bug12963364_bug12963364_spacebg_sync_segblocks" scope = spfile
```

```
*
```

```
ERROR at line 1:
```

```
ORA-00922: missing or invalid option
```

```
SQL> SET ECHO OFF
```

```
=====
ORACLE DATABASE 19C PRE-UPGRADE TASK: GATHERING ORACLE DICTIONARY STATISTICS
=====
```

```
SQL> EXECUTE dbms_stats.gather_dictionary_stats;
```

```
PL/SQL procedure successfully completed.
```

```
SQL> SET ECHO OFF
```

```
=====
ORACLE DATABASE 19C PRE-UPGRADE TASK: RECOMPILING INVALID OBJECTS
=====
```

```
Session altered.
```

```
TIMESTAMP
```

```
-----
COMP_TIMESTAMP UTLRP_BGN          2019-12-04 11:30:40
```

```
DOC> The following PL/SQL block invokes UTL_RECOMP to recompile invalid
DOC> objects in the database. Recompilation time is proportional to the
DOC> number of invalid objects in the database, so this command may take
DOC> a long time to execute on a database with a large number of invalid
DOC> objects.
```

```
DOC> Use the following queries to track recompilation progress:
```

```
DOC> 1. Query returning the number of invalid objects remaining. This
DOC> number should decrease with time.
```

```
DOC> SELECT COUNT(*) FROM obj$ WHERE status IN (4, 5, 6);
```

```
DOC> 2. Query returning the number of objects compiled so far. This number
DOC> should increase with time.
```

```
DOC> SELECT COUNT(*) FROM UTL_RECOMP_COMPILED;
```

```
DOC> This script automatically chooses serial or parallel recompilation
DOC> based on the number of CPUs available (parameter cpu_count) multiplied
DOC> by the number of threads per CPU (parameter parallel_threads_per_cpu).
DOC> On RAC, this number is added across all RAC nodes.
```

```
DOC> UTL_RECOMP uses DBMS_SCHEDULER to create jobs for parallel
DOC> recompilation. Jobs are created without instance affinity so that they
DOC> can migrate across RAC nodes. Use the following queries to verify
DOC> whether UTL_RECOMP jobs are being created and run correctly:
```

```
DOC> 1. Query showing jobs created by UTL_RECOMP
DOC> SELECT job_name FROM dba_scheduler_jobs
DOC> WHERE job_name like 'UTL_RECOMP_SLAVE_%';
```

```
DOC> 2. Query showing UTL_RECOMP jobs that are running
DOC> SELECT job_name FROM dba_scheduler_running_jobs
DOC> WHERE job_name like 'UTL_RECOMP_SLAVE_%';
```

```
DOC>#
```


SQL> spool pre_upgrade_checks.log

SQL> @pre_upgrade_checks.sql

Oracle Database Pre-Upgrade Information Utility for SAP

Date : 2019-12-04 13:09:15
Script Version : 19c
Script Revision : 19-003
Script Date : 2019-07-08
Supported Releases : 11.2.0.4, 12.1.0.2, 12.2.0.1, 18c

Database Information

--> Host Name : ol2server
--> Host Platform : Linux x86 64-bit (Platform ID: 13)
--> Platform type : Unix
--> Instance Name (Status) : OL2 (OPEN)
--> Database Name : OL2
--> Database Version : 18.0.0.0.0

--> Database Configuration
--> Database Character Set : UTF8
--> National Character Set : UTF8
--> Database Log Mode : ARCHIVELOG
--> Database Flashback Mode : NO
--> AWR Retention : 8

--> Database Parameter
--> COMPATIBLE : 18.0.0
--> REMOTE_OS_AUTHENT : FALSE

--> Database Timezone
--> Timezone File Version : V31
--> Database Timezone : +02:00
--> Session Timezone : +01:00

--> Oracle RAC System : FALSE
--> Oracle DV System : FALSE
--> SAP BW/DW/BI System : FALSE
--> SAP Unicode System : TRUE
--> SAP ABAP Stack/Java Stack : TRUE/FALSE

--> Database Security Configuration
--> User Profile SAPUPROF : TRUE
--> DEFAULT.FAILED_LOGIN_ATTEMPTS: 10
--> DEFAULT.PASSWORD_LIFE_TIME : 180

--> Database Key Values
--> Current max(dba_objects.object_id): 180262 (0 %)
--> Current max(obj\$.dataobj#) : 180266 (0 %)

--> Fast Recovery Area (FRA) Configuration
--> FRA Destination : /oracle/OL2/oraflash
--> FRA Size : 30000 M

--> FRA Space Limit : 30000 M
--> FRA Space Used : 0 M / 0 %

Database Restore Points

There are no restore points defined.

Database Components

The following database components are installed:

Component ID	Version	Status
CATALOG	18.0.0.0.0	VALID
CATPROC	18.0.0.0.0	VALID
RAC	18.0.0.0.0	OPTION OFF
XDB	18.0.0.0.0	VALID
OLS	18.0.0.0.0	VALID

Underscore (hidden) parameters

The following underscore parameters are set:

- _use_single_log_writer
- _securefiles_concurrency_estimate
- _spacebg_sync_segblocks
- _suppress_identifiers_on_dupkey
- _mutex_wait_time
- _mutex_wait_scheme
- _kolfuseslf
- _fix_control
- _optimizer_extended_cursor_sharing_rel
- _optimizer_adaptive_cursor_sharing
- _optim_peek_user_binds
- _optimizer_use_feedback
- _optimizer_batch_table_access_by_rowid
- _disable_directory_link_check
- _rowsets_enabled
- _optimizer_reduce_groupby_key
- _log_segment_dump_parameter
- _log_segment_dump_patch
- _enable_view_pdb

Events and Trace Events

The following events are set:

- 10027
- 10028
- 10142
- 10183
- 10191

10995 level 2
38068 level 100
38085
38087
44951 level 1024
60025

The following trace events are set:

```
.
*****
Database Maintenance Jobs
*****
JOB_NAME          Owner          Status
-----          -
MGMT_CONFIG_JOB   ORACLE_OCM     FALSE
MGMT_STATS_CONFIG_JOB ORACLE_OCM     FALSE
FGR$AUTOPURGE_JOB   SYS            FALSE
HM_CREATE_OFFLINE_DICTIONARY SYS            FALSE
LOAD_OPATCH_INVENTORY SYS            FALSE
ORA$PREPLUGIN_BACKUP_JOB SYS            FALSE
XMLDB_NFS_CLEANUP_JOB SYS            FALSE
BSLN_MAINTAIN_STATS_JOB SYS            TRUE
CLEANUP_NON_EXIST_OBJ SYS            TRUE
CLEANUP_ONLINE_IND_BUILD SYS            TRUE
CLEANUP_ONLINE_PMO  SYS            TRUE
CLEANUP_TAB_IOT_PMO  SYS            TRUE
CLEANUP_TRANSIENT_PKG SYS            TRUE
CLEANUP_TRANSIENT_TYPE SYS            TRUE
DRA_REEVALUATE_OPEN_FAILURES SYS            TRUE
FILE_SIZE_UPD      SYS            TRUE
ORA$AUTOTASK_CLEAN  SYS            TRUE
PMO_DEFERRED_GIDX_MAINT_JOB SYS            TRUE
PURGE_LOG          SYS            TRUE
RSE$CLEAN_RECOVERABLE_SCRIPT SYS            TRUE
SM$CLEAN_AUTO_SPLIT_MERGE SYS            TRUE
.
```

Invalid Objects

```
*****
Number of invalid objects based on SYS.DBA_OBJECTS
Number of invalid objects (SYS): 0
Number of invalid objects (SAP): 0
Number of invalid objects (all): 0
.
```

No invalid objects found.

Generic Pre-Upgrade Warnings

SAP-Specific Pre-Upgrade Warnings

```
*****
WARNING: ----> WRONG_AWR_RETENTION
The retention time for the Automatic Workload Repository (AWR)
is not configured as recommended.
.
```

Current AWR retention is set to 8 days.
Recommended AWR retention is 42 days or longer.
See SAP Note 1326067.

WARNING: ----> PLAN_TABLE_EXISTS_IN_SAP_SCHEMA
Table(s) PLAN_TABLE exist(s) in SAP schema.
The table(s) will get dropped after the upgrade and
recreated with new structure.
SAPSR3.PLAN_TABLE

FINISHED - Oracle Database Pre-Upgrade Information Utility for SAP

PL/SQL procedure successfully completed.

3.16. Run Database Object ID Check

```
ol2server:oraol2 98> cd $ORA_UPGRADE_WORK_DIR
ol2server:oraol2 99> sqlplus / as sysdba
```

SQL*Plus: Release 18.0.0.0.0 - Production on Wed Dec 4 13:37:42 2019
Version 18.5.0.0.0

Copyright (c) 1982, 2018, Oracle. All rights reserved.

Connected to:
Oracle Database 18c Enterprise Edition Release 18.0.0.0.0 - Production
Version 18.5.0.0.0

```
SQL> spool objidchk.log
```

```
SQL> @objidchk.sql
```

```
*****
***      Oracle Database Object ID Checker for SAP      ***
*****
DATABASE NAME           : OL2
DATABASE CREATION TIME  : 2018-JUN-25 09:51:59
DATABASE AGE            : 1 years 162 days
```

```
DATAOBJ# (current max.) : 180266
OBJECT ID (current max.) : 180262
OBJECT ID (system limit) : 4254950911
OBJECT ID (check limit ) : 3221225472
```

Checking whether object id is above critical value of 3221225472

```
*****
***              OK              ***
*****
```

Object ID numbers are not critical.

For further information see SAP Note 2137109

PL/SQL procedure successfully completed.

SQL> spool off

3.17. Run PUBLIC Role Check

Follow SAP note below:

[2553347](#) - Oracle Database Role PUBLIC

```
ol2server:oraol2 100> cd $ORA_UPGRADE_WORK_DIR
ol2server:oraol2 101> sqlplus / as sysdba
```

SQL*Plus: Release 18.0.0.0.0 - Production on Wed Dec 4 13:39:03 2019
Version 18.5.0.0.0

Copyright (c) 1982, 2018, Oracle. All rights reserved.

Connected to:

Oracle Database 18c Enterprise Edition Release 18.0.0.0.0 - Production
Version 18.5.0.0.0

SQL> @check_public_role.sql

currently spooling to check_public_role.log

*** 01 @<le/OL2/19/sap/sapadmin/check_public_role.sql ***

UTL% PACKAGES

The following UTL% packages are currently granted to database role PUBLIC

PUBLIC: #packages UTL%

26

1 row selected.

UTL% PACKAGE	PRIVILEGE
UTL_ALL_IND_COMPS	READ
UTL_BINARYINPUTSTREAM	EXECUTE
UTL_BINARYOUTPUTSTREAM	EXECUTE
UTL_CALL_STACK	EXECUTE
UTL_CHARACTERINPUTSTREAM	EXECUTE
UTL_CHARACTEROUTPUTSTREAM	EXECUTE
UTL_COLL	EXECUTE
UTL_COMPRESS	EXECUTE
UTL_ENCODE	EXECUTE
UTL_FILE	EXECUTE
UTL_GDK	EXECUTE
UTL_HTTP	EXECUTE
UTL_I18N	EXECUTE
UTL_IDENT	EXECUTE
UTL_INADDR	EXECUTE
UTL_LMS	EXECUTE
UTL_MATCH	EXECUTE
UTL_NLA	EXECUTE
UTL_NLA_ARRAY_DBL	EXECUTE
UTL_NLA_ARRAY_FLT	EXECUTE
UTL_NLA_ARRAY_INT	EXECUTE

```

UTL_RAW          EXECUTE
UTL_REF          EXECUTE
UTL_SMTP         EXECUTE
UTL_TCP          EXECUTE
UTL_URL          EXECUTE

```

26 rows selected.

DBMS% PACKAGES

The following DBMS% packages are currently granted to database role PUBLIC

PUBLIC: #packages DBMS%

221

1 row selected.

DBMS% PACKAGE	PRIVILEGE
DBMSOUTPUT_LINESARRAY	EXECUTE
DBMS_ADDM	EXECUTE
DBMS_ADVISOR	EXECUTE
DBMS_APPLICATION_INFO	EXECUTE
DBMS_APP_CONT_PRIVT	EXECUTE
DBMS_AQJMS	EXECUTE
DBMS_AQ_EXP_CMT_TIME_TABLES	EXECUTE
DBMS_AQ_EXP_DEQUEUELOG_TABLES	EXECUTE
DBMS_AQ_EXP_HISTORY_TABLES	EXECUTE
DBMS_AQ_EXP_INDEX_TABLES	EXECUTE
DBMS_AQ_EXP_QUEUES	EXECUTE
DBMS_AQ_EXP_QUEUE_TABLES	EXECUTE
DBMS_AQ_EXP_SIGNATURE_TABLES	EXECUTE
DBMS_AQ_EXP_SUBSCRIBER_TABLES	EXECUTE
DBMS_AQ_EXP_TIMEMGR_TABLES	EXECUTE
DBMS_AQ_IMP_INTERNAL	EXECUTE
DBMS_AQ_INV	EXECUTE
DBMS_ASH	EXECUTE
DBMS_ASSERT	EXECUTE
DBMS_AUTO_REPORT	EXECUTE
DBMS_AUTO_TASK	EXECUTE
DBMS_AW	EXECUTE
DBMS_AW\$_COLUMNLIST_T	EXECUTE
DBMS_AW\$_DIMENSION_SOURCES_T	EXECUTE
DBMS_AW\$_DIMENSION_SOURCE_T	EXECUTE
DBMS_AW_EXP	EXECUTE
DBMS_AW_STATS	EXECUTE
DBMS_CLOBUTIL	EXECUTE
DBMS_COMPRESSION	EXECUTE
DBMS_CREDENTIAL	EXECUTE
DBMS_CSX_INT	EXECUTE
DBMS_CSX_INT2	EXECUTE
DBMS_CUBE_LOG	EXECUTE
DBMS_DATAPUMP	EXECUTE
DBMS_DATA_MINING	EXECUTE
DBMS_DATA_MINING_TRANSFORM	EXECUTE
DBMS_DB_VERSION	EXECUTE

DBMS_DDL	EXECUTE
DBMS_DEBUG	EXECUTE
DBMS_DEBUG_JDWP	EXECUTE
DBMS_DEBUG_JDWP_CUSTOM	EXECUTE
DBMS_DEBUG_VC2COLL	EXECUTE
DBMS_DESCRIBE	EXECUTE
DBMS_DIMENSION	EXECUTE
DBMS_DM_MODEL_EXP	EXECUTE
DBMS_DM_MODEL_IMP	EXECUTE
DBMS_EDITIONS_UTILITIES	EXECUTE
DBMS_EPG	EXECUTE
DBMS_ERRLOG	EXECUTE
DBMS_EXPORT_EXTENSION	EXECUTE
DBMS_FBT	EXECUTE
DBMS_FILE_GROUP_EXP	EXECUTE
DBMS_FILE_GROUP_IMP	EXECUTE
DBMS_FREQUENT_ITEMSET	EXECUTE
DBMS_GOLDENGATE_EXP	EXECUTE
DBMS_GOLDENGATE_IMP	EXECUTE
DBMS_GSM_NOPRIV	EXECUTE
DBMS_HADOOP	EXECUTE
DBMS_HEAT_MAP	EXECUTE
DBMS_HIERARCHY	EXECUTE
DBMS_HS_PARALLEL	EXECUTE
DBMS_ILM	EXECUTE
DBMS_INDEX_UTL	EXECUTE
DBMS_INMEMORY	EXECUTE
DBMS_ITRIGGER_UTL	EXECUTE
DBMS_JOB	EXECUTE
DBMS_JOB\$	EXECUTE
DBMS_JSON	EXECUTE
DBMS_LCR	EXECUTE
DBMS_LDAP	EXECUTE
DBMS_LDAP_UTL	EXECUTE
DBMS_LOB	EXECUTE
DBMS_LOBUTIL	EXECUTE
DBMS_LOBUTIL_DEDUPSET_T	EXECUTE
DBMS_LOBUTIL_INODE_T	EXECUTE
DBMS_LOBUTIL_LOBEXTENTS_T	EXECUTE
DBMS_LOBUTIL_LOBEXTENT_T	EXECUTE
DBMS_LOBUTIL_LOBMAP_T	EXECUTE
DBMS_LOGREP_EXP	EXECUTE
DBMS_LOGREP_IMP	EXECUTE
DBMS_LOGSTDBY_CONTEXT	EXECUTE
DBMS_MDX_ODBO	EXECUTE
DBMS_MDX_ODBO_FUNCTION_R	EXECUTE
DBMS_MDX_ODBO_FUNCTION_T	EXECUTE
DBMS_MDX_ODBO_KEYWORD_R	EXECUTE
DBMS_MDX_ODBO_KEYWORD_T	EXECUTE
DBMS_MDX_ODBO_PROPVAL_R	EXECUTE
DBMS_MDX_ODBO_PROPVAL_T	EXECUTE
DBMS_MEMOPTIMIZE	EXECUTE
DBMS_METADATA	EXECUTE
DBMS_METADATA_DIFF	EXECUTE
DBMS_METADATA_PARSE_ITEMS	READ
DBMS_METADATA_TRANSFORMS	READ
DBMS_METADATA_TRANSFORM_PARAMS	READ
DBMS_MVIEW_STATS	EXECUTE
DBMS_NETWORK_ACL_UTILITY	EXECUTE
DBMS_OBFUSCATION_TOOLKIT	EXECUTE

DBMS_OBJECTS_UTILS	EXECUTE
DBMS_ODCI	EXECUTE
DBMS_OUTPUT	EXECUTE
DBMS_PARALLEL_EXECUTE	EXECUTE
DBMS_PART	EXECUTE
DBMS_PCLXUTIL	EXECUTE
DBMS_PDB_CHECK_LOCKDOWN	EXECUTE
DBMS_PDB_IS_VALID_PATH	EXECUTE
DBMS_PICKLER	EXECUTE
DBMS_PLSQL_CODE_COVERAGE	EXECUTE
DBMS_PREDICTIVE_ANALYTICS	EXECUTE
DBMS_PREPROCESSOR	EXECUTE
DBMS_PROFILER	EXECUTE
DBMS_PSP	EXECUTE
DBMS_RANDOM	EXECUTE
DBMS_REFRESH	EXECUTE
DBMS_REPORT	EXECUTE
DBMS_RESCONFIG	EXECUTE
DBMS_RESOURCE_MANAGER	EXECUTE
DBMS_RESOURCE_MANAGER_PRIVS	EXECUTE
DBMS_RESULT_CACHE_API	EXECUTE
DBMS_RMGR_GROUP_EXPORT	EXECUTE
DBMS_RMGR_PACT_EXPORT	EXECUTE
DBMS_RMGR_PLAN_EXPORT	EXECUTE
DBMS_RMIN	EXECUTE
DBMS_ROWID	EXECUTE
DBMS_RULE	EXECUTE
DBMS_RULEADM_INTERNAL	EXECUTE
DBMS_RULE_ADM	EXECUTE
DBMS_RULE_EXP_EV_CTXS	EXECUTE
DBMS_RULE_EXP_RULES	EXECUTE
DBMS_RULE_EXP_RULE_SETS	EXECUTE
DBMS_RULE_EXP_UTLI	EXECUTE
DBMS_RULE_IMP_OBJ	EXECUTE
DBMS_SCHEDULER	EXECUTE
DBMS_SCHED_ATTRIBUTE_EXPORT	EXECUTE
DBMS_SCHED_CHAIN_EXPORT	EXECUTE
DBMS_SCHED_CLASS_EXPORT	EXECUTE
DBMS_SCHED_CONSTRAINT_EXPORT	EXECUTE
DBMS_SCHED_CREDENTIAL_EXPORT	EXECUTE
DBMS_SCHED_EXPORT_CALLOUTS	EXECUTE
DBMS_SCHED_FILE_WATCHER_EXPORT	EXECUTE
DBMS_SCHED_JOB_EXPORT	EXECUTE
DBMS_SCHED_PROGRAM_EXPORT	EXECUTE
DBMS_SCHED_SCHEDULE_EXPORT	EXECUTE
DBMS_SCHED_WINDOW_EXPORT	EXECUTE
DBMS_SCHED_WINGRP_EXPORT	EXECUTE
DBMS_SCN	EXECUTE
DBMS_SESSION	EXECUTE
DBMS_SNAPSHOT	EXECUTE
DBMS_SNAPSHOT_UTL	EXECUTE
DBMS_SODA	EXECUTE
DBMS_SODA_DOM	EXECUTE
DBMS_SPACE	EXECUTE
DBMS_SPD	EXECUTE
DBMS_SPM	EXECUTE
DBMS_SQL	EXECUTE
DBMS_SQLDIAG	EXECUTE
DBMS_SQLPA	EXECUTE
DBMS_SQLSET	EXECUTE

DBMS_SQLTUNE	EXECUTE
DBMS_SQLTUNE_UTIL2	EXECUTE
DBMS_SQL_MONITOR	EXECUTE
DBMS_SQL_TRANSLATOR	EXECUTE
DBMS_SQL_TRANSLATOR_EXPORT	EXECUTE
DBMS_STANDARD	EXECUTE
DBMS_STATS	EXECUTE
DBMS_STATS_ADVISOR	EXECUTE
DBMS_STATS_INTERNAL_AGG	EXECUTE
DBMS_STAT_FUNCS	EXECUTE
DBMS_STAT_FUNCS_AUX	EXECUTE
DBMS_STREAMS	EXECUTE
DBMS_STREAMS_PUB_RPC	EXECUTE
DBMS_SUMMARY	EXECUTE
DBMS_SUM_RWEQ_EXPORT	EXECUTE
DBMS_SYNC_REFRESH	EXECUTE
DBMS_TF	EXECUTE
DBMS_TRACE	EXECUTE
DBMS_TRANSACTION	EXECUTE
DBMS_TRANSFORM_EXIMP	EXECUTE
DBMS_TYPES	EXECUTE
DBMS_UTILITY	EXECUTE
DBMS_WARNING	EXECUTE
DBMS_XA	EXECUTE
DBMS_XA_XID	EXECUTE
DBMS_XA_XID_ARRAY	EXECUTE
DBMS_XDB	EXECUTE
DBMS_XDBNFS	EXECUTE
DBMS_XDBRESOURCE	EXECUTE
DBMS_XDBUTIL_INT	EXECUTE
DBMS_XDBZ	EXECUTE
DBMS_XDBZ0	EXECUTE
DBMS_XDB_CONFIG	EXECUTE
DBMS_XDB_CONSTANTS	EXECUTE
DBMS_XDB_CONTENT	EXECUTE
DBMS_XDB_PRINT	EXECUTE
DBMS_XDB_REPOS	EXECUTE
DBMS_XDB_VERSION	EXECUTE
DBMS_XEVENT	EXECUTE
DBMS_XLSB	EXECUTE
DBMS_XMLDOM	EXECUTE
DBMS_XMLGEN	EXECUTE
DBMS_XMLINDEX	EXECUTE
DBMS_XMLINDEX0	EXECUTE
DBMS_XMLPARSER	EXECUTE
DBMS_XMLSCHEMA	EXECUTE
DBMS_XMLSCHEMA_ANNOTATE	EXECUTE
DBMS_XMLSCHEMA_INT	EXECUTE
DBMS_XMLSCHEMA_LSB	EXECUTE
DBMS_XMLSCHEMA_RESMD	EXECUTE
DBMS_XMLSCHEMA_RESMDARR	EXECUTE
DBMS_XMLSCHEMA_TABMD	EXECUTE
DBMS_XMLSCHEMA_TABMDARR	EXECUTE
DBMS_XMLSTORAGE_MANAGE	EXECUTE
DBMS_XMLSTORE	EXECUTE
DBMS_XMLTRANSLATIONS	EXECUTE
DBMS_XPLAN	EXECUTE
DBMS_XPLAN_TYPE	EXECUTE
DBMS_XPLAN_TYPE_TABLE	EXECUTE
DBMS_XSLPROCESSOR	EXECUTE

```
DBMS_XS_NSATTR          EXECUTE
DBMS_XS_NSATTRLIST     EXECUTE
DBMS_XS_SESSIONS       EXECUTE
DBMS_ZHELP_IR          EXECUTE
```

221 rows selected.

```
*****
ALL PRIVILEGES
*****
```

PUBLIC: #roles

```
-----
          0
```

1 row selected.

PUBLIC: #system privs

```
-----
          0
```

1 row selected.

PUBLIC: #object privs

```
-----
        4777
```

1 row selected.

```
*****
```

currently spooling to check_public_role.log

```
*****
```

```
*****
```

Check finished.

```
*****
```

```

SQL> @check_public_role_18c_pkgprivs.sql
currently spooling to check_public_role_18c_pkgprivs.log
*** 01@</sapadmin/check_public_role_18c_pkgprivs.sql ***
USER is "SYS"
*****

This check is valid for Oracle Database 18c
*****
*****

Checking database version
*****
*****

Checking for missing privileges for execute on UTL% packages for PUBLIC:
*****

Creating temp. table

PL/SQL procedure successfully completed.

Table created.

Populating temp. table

PL/SQL procedure successfully completed.

Running check ...

no rows selected

Dropping temp. table
Table dropped.

PL/SQL procedure successfully completed.

*****

Check finished.
*****
*****

Checking for missing privileges for execute on DBMS% packages for PUBLIC:
*****

Creating temp. table

PL/SQL procedure successfully completed.

Table created.

Populating temp. table

PL/SQL procedure successfully completed.

Running check ...

Missing DBMS Package Privilege
-----
DBMS_CRYPTO_TOOLKIT

1 row selected.

Dropping temp. table
Table dropped.

```

PL/SQL procedure successfully completed.

```
*****
currently spooling to check_public_role_18c_pkgprivs.log
*****
Check finished.
*****
```


3.18. Drop SAP DBACockpit Database Views

Download the SQL scripts (dbac_drop.sql and dbac_install.sql) from SAP note 706927 and copy them into one of the location of ORACLE_PATH.

```
ol2server:oraol2 102> pwd
/oracle/OL2/oraupgrade.19c
ol2server:oraol2 103> sqlplus / as sysdba
```

```
SQL*Plus: Release 18.0.0.0.0 - Production on Wed Dec 4 14:08:45 2019
Version 18.5.0.0.0
```

Copyright (c) 1982, 2018, Oracle. All rights reserved.

```
Connected to:
Oracle Database 18c Enterprise Edition Release 18.0.0.0.0 - Production
Version 18.5.0.0.0
```

```
SQL> REM
SQL> REM Preparation: Check for invalid objects
SQL> REM
SQL> spool pre_dbac_drop.log
SQL> @pre_upgrade_checks.sql
*****
```

```
Oracle Database Pre-Upgrade Information Utility for SAP
*****
```

```
Date : 2019-12-04 14:09:21
Script Version : 19c
Script Revision : 19-003
Script Date : 2019-07-08
Supported Releases : 11.2.0.4, 12.1.0.2, 12.2.0.1, 18c
.
```

```
*****
Database Information
*****
```

```
--> Host Name : ol2server
--> Host Platform : Linux x86 64-bit (Platform ID: 13)
--> Platform type : Unix
--> Instance Name (Status) : OL2 (OPEN)
--> Database Name : OL2
--> Database Version : 18.0.0.0

--> Database Configuration
--> Database Character Set : UTF8
--> National Character Set : UTF8
--> Database Log Mode : ARCHIVELOG
--> Database Flashback Mode : NO
--> AWR Retention : 8

--> Database Parameter
--> COMPATIBLE : 18.0.0
--> REMOTE_OS_AUTHENT : FALSE

--> Database Timezone
--> Timezone File Version : V31
```

```

--> Database Timezone      : +02:00
--> Session Timezone      : +01:00

--> Oracle RAC System      : FALSE
--> Oracle DV System       : FALSE
--> SAP BW/DW/BI System    : FALSE
--> SAP Unicode System     : TRUE
--> SAP ABAP Stack/Java Stack : TRUE/FALSE

--> Database Security Configuration
--> User Profile SAPUPROF   : TRUE
--> DEFAULT_FAILED_LOGIN_ATTEMPTS: 10
--> DEFAULT_PASSWORD_LIFE_TIME      : 180

--> Database Key Values
--> Current max(dba_objects.object_id): 180356 (0 %)
--> Current max(obj$.dataobj#)       : 180361 (0 %)

--> Fast Recovery Area (FRA) Configuration
--> FRA Destination         : /oracle/OL2/oraflash
--> FRA Size                : 30000 M
--> FRA Space Limit        : 30000 M
--> FRA Space Used         : 0 M / 0 %

```

```

.
*****
Database Restore Points
*****

```

There are no restore points defined.

```

.
*****
Database Components
*****

```

The following database components are installed:

Component ID	Version	Status
CATALOG	18.0.0.0.0	VALID
CATPROC	18.0.0.0.0	VALID
RAC	18.0.0.0.0	OPTION OFF
XDB	18.0.0.0.0	VALID
OLS	18.0.0.0.0	VALID

```

.
*****
Underscore (hidden) parameters
*****

```

The following underscore parameters are set:

```

_use_single_log_writer
_securefiles_concurrency_estimate
_spacebg_sync_segblocks
_suppress_identifiers_on_dupkey
_mutex_wait_time
_mutex_wait_scheme
_kolfuseslf
_fix_control
_optimizer_extended_cursor_sharing_rel
_optimizer_adaptive_cursor_sharing

```

```

_optim_peek_user_binds
_optimizer_use_feedback
_optimizer_batch_table_access_by_rowid
_disable_directory_link_check
_rowsets_enabled
_optimizer_reduce_groupby_key
_log_segment_dump_parameter
_log_segment_dump_patch
.

```

```

*****
Events and Trace Events
*****

```

The following events are set:

```

10027
10028
10142
10183
10191
10995 level 2
38068 level 100
38085
38087
44951 level 1024
60025

```

The following trace events are set:

```

.
*****
Database Maintenance Jobs
*****

```

JOB_NAME	Owner	Status
MGMT_CONFIG_JOB	ORACLE_OCM	FALSE
MGMT_STATS_CONFIG_JOB	ORACLE_OCM	FALSE
FGR\$AUTOPURGE_JOB	SYS	FALSE
HM_CREATE_OFFLINE_DICTIONARY	SYS	FALSE
LOAD_OPATCH_INVENTORY	SYS	FALSE
ORA\$PREPLUGIN_BACKUP_JOB	SYS	FALSE
XMLDB_NFS_CLEANUP_JOB	SYS	FALSE
BSLN_MAINTAIN_STATS_JOB	SYS	TRUE
CLEANUP_NON_EXIST_OBJ	SYS	TRUE
CLEANUP_ONLINE_IND_BUILD	SYS	TRUE
CLEANUP_ONLINE_PMO	SYS	TRUE
CLEANUP_TAB_IOT_PMO	SYS	TRUE
CLEANUP_TRANSIENT_PKG	SYS	TRUE
CLEANUP_TRANSIENT_TYPE	SYS	TRUE
DRA_REEVALUATE_OPEN_FAILURES	SYS	TRUE
FILE_SIZE_UPD	SYS	TRUE
ORA\$AUTOTASK_CLEAN	SYS	TRUE
PMO_DEFERRED_GIDX_MAINT_JOB	SYS	TRUE
PURGE_LOG	SYS	TRUE
RSE\$CLEAN_RECOVERABLE_SCRIPT	SYS	TRUE
SM\$CLEAN_AUTO_SPLIT_MERGE	SYS	TRUE

```

.
*****
Invalid Objects
*****

```

Number of invalid objects based on SYS.DBA_OBJECTS
Number of invalid objects (SYS): 0
Number of invalid objects (SAP): 0
Number of invalid objects (all): 0

No invalid objects found.

.

Generic Pre-Upgrade Warnings

.

SAP-Specific Pre-Upgrade Warnings

WARNING: ----> WRONG_AWR_RETENTION
The retention time for the Automatic Workload Repository (AWR)
is not configured as recommended.
Current AWR retention is set to 8 days.
Recommended AWR retention is 42 days or longer.
See SAP Note 1326067.

WARNING: ----> PLAN_TABLE_EXISTS_IN_SAP_SCHEMA
Table(s) PLAN_TABLE exist(s) in SAP schema.
The table(s) will get dropped after the upgrade and
recreated with new structure.
SAPSR3.PLAN_TABLE

.

FINISHED - Oracle Database Pre-Upgrade Information Utility for SAP

PL/SQL procedure successfully completed.

SQL> spool off

```
SQL> REM
SQL> REM Drop DBACockpit Views
SQL> REM
SQL> @/oracle/OL2/18/sap/ora_upgrade/pre_upgrade/dbac_drop.sql
Connected.
```

~~~~~  
Check for Error Messages in the following spool file:

DBACockpit\_drop\_2019-12-04\_14-16-02.log  
~~~~~

```
*** 01@<18/sap/ora_upgrade/pre_upgrade/dbac_drop.sql ***
*****
```

Database Name : OL2

Database Architecture : Non-Container Database (Non-CDB)

Database Container : -

Database Container Type : -

```
*****
*****
```

CONNECTING TO PDB (IF SPECIFIED)

```
*****
*****
```

NOW CONNECTED TO PDB (IF SPECIFIED)

```
*****
*****
```

Database Name : OL2

Database Architecture : Non-Container Database (Non-CDB)

Database Container : -

Database Container Type : -

```
*****
*****
```

Running on Non-CDB.
OK.

```
*****
ACTION - BEGIN
*****
```

```
*****
SAP DBACOCKPIT: DROPPING SAP-SPECIFIC DATABASE OBJECTS
*****
```

THIS CAN TAKE A WHILE - PLEASE BE PATIENT ...

...
...
...

```
*****
SAP DBACOCKPIT: SAP-SPECIFIC DATABASE OBJECTS DROPPED.
*****
```

ACTION - FINISHED

~~~~~  
Check for Error Messages in the following spool file:

DBACockpit\_drop\_2019-12-04\_14-16-02.log

~~~~~

END OF LOG FILE DBACockpit_drop_2019-12-04_14-16-02.log

EXITING FROM SQL*PLUS

Disconnected from Oracle Database 18c Enterprise Edition Release 18.0.0.0.0 - Production
Version 18.5.0.0.0

```
ol2server:oraol2 105> pwd
/oracle/OL2/oraupgrade.19c
ol2server:oraol2 106> sqlplus / as sysdba
```

```
SQL*Plus: Release 18.0.0.0.0 - Production on Wed Dec 4 14:20:45 2019
Version 18.5.0.0.0
```

```
Copyright (c) 1982, 2018, Oracle. All rights reserved.
```

```
Connected to:
Oracle Database 18c Enterprise Edition Release 18.0.0.0.0 - Production
Version 18.5.0.0.0
```

```
SQL> REM
SQL> REM Post-dbac_drop: Check for invalid objects
SQL> REM
SQL> spool post_dbac_drop.log
SQL> @pre_upgrade_checks.sql
```

```
*****
Oracle Database Pre-Upgrade Information Utility for SAP
*****
```

```
Date           : 2019-12-04 14:22:15
Script Version  : 19c
Script Revision : 19-003
Script Date     : 2019-07-08
Supported Releases : 11.2.0.4, 12.1.0.2, 12.2.0.1, 18c
.
```

```
*****
Database Information
*****
```

```
--> Host Name           : ol2server
--> Host Platform       : Linux x86 64-bit (Platform ID: 13)
--> Platform type      : Unix
--> Instance Name (Status) : OL2 (OPEN)
--> Database Name       : OL2
--> Database Version    : 18.0.0.0.0
```

```
--> Database Configuration
--> Database Character Set : UTF8
--> National Character Set : UTF8
--> Database Log Mode     : ARCHIVELOG
--> Database Flashback Mode : NO
--> AWR Retention         : 8
```

```
--> Database Parameter
--> COMPATIBLE             : 18.0.0
--> REMOTE_OS_AUTHENT     : FALSE
```

```
--> Database Timezone
--> Timezone File Version  : V31
--> Database Timezone     : +02:00
--> Session Timezone      : +01:00
```

```
--> Oracle RAC System    : FALSE
--> Oracle DV System     : FALSE
--> SAP BW/DW/BI System   : FALSE
--> SAP Unicode System    : TRUE
```

--> SAP ABAP Stack/Java Stack : TRUE/FALSE

--> Database Security Configuration

--> User Profile SAPUPROF : TRUE

--> DEFAULT.FAILED_LOGIN_ATTEMPTS: 10

--> DEFAULT.PASSWORD_LIFE_TIME : 180

--> Database Key Values

--> Current max(dba_objects.object_id): 180356 (0 %)

--> Current max(obj\$.dataobj#) : 180361 (0 %)

--> Fast Recovery Area (FRA) Configuration

--> FRA Destination : /oracle/OL2/oraflash

--> FRA Size : 30000 M

--> FRA Space Limit : 30000 M

--> FRA Space Used : 0 M / 0 %

Database Restore Points

There are no restore points defined.

Database Components

The following database components are installed:

Component ID	Version	Status
CATALOG	18.0.0.0.0	VALID
CATPROC	18.0.0.0.0	VALID
RAC	18.0.0.0.0	OPTION OFF
XDB	18.0.0.0.0	VALID
OLS	18.0.0.0.0	VALID

Underscore (hidden) parameters

The following underscore parameters are set:

_use_single_log_writer
_securefiles_concurrency_estimate
_spacebg_sync_segblocks
_suppress_identifiers_on_dupkey
_mutex_wait_time
_mutex_wait_scheme
_kolfuseslf
_fix_control
_optimizer_extended_cursor_sharing_rel
_optimizer_adaptive_cursor_sharing
_optim_peek_user_binds
_optimizer_use_feedback
_optimizer_batch_table_access_by_rowid
_disable_directory_link_check
_rowsets_enabled
_optimizer_reduce_groupby_key
_log_segment_dump_parameter

_log_segment_dump_patch

Events and Trace Events

The following events are set:

- 10027
- 10028
- 10142
- 10183
- 10191
- 10995 level 2
- 38068 level 100
- 38085
- 38087
- 44951 level 1024
- 60025

The following trace events are set:

Database Maintenance Jobs

JOB_NAME	Owner	Status
MGMT_CONFIG_JOB	ORACLE_OCM	FALSE
MGMT_STATS_CONFIG_JOB	ORACLE_OCM	FALSE
FGR\$AUTOPURGE_JOB	SYS	FALSE
HM_CREATE_OFFLINE_DICTIONARY	SYS	FALSE
LOAD_OPATCH_INVENTORY	SYS	FALSE
ORA\$PREPLUGIN_BACKUP_JOB	SYS	FALSE
XMLDB_NFS_CLEANUP_JOB	SYS	FALSE
BSLN_MAINTAIN_STATS_JOB	SYS	TRUE
CLEANUP_NON_EXIST_OBJ	SYS	TRUE
CLEANUP_ONLINE_IND_BUILD	SYS	TRUE
CLEANUP_ONLINE_PMO	SYS	TRUE
CLEANUP_TAB_IOT_PMO	SYS	TRUE
CLEANUP_TRANSIENT_PKG	SYS	TRUE
CLEANUP_TRANSIENT_TYPE	SYS	TRUE
DRA_REEVALUATE_OPEN_FAILURES	SYS	TRUE
FILE_SIZE_UPD	SYS	TRUE
ORA\$AUTOTASK_CLEAN	SYS	TRUE
PMO_DEFERRED_GIDX_MAINT_JOB	SYS	TRUE
PURGE_LOG	SYS	TRUE
RSE\$CLEAN_RECOVERABLE_SCRIPT	SYS	TRUE
SM\$CLEAN_AUTO_SPLIT_MERGE	SYS	TRUE

Invalid Objects

Number of invalid objects based on SYS.DBA_OBJECTS
 Number of invalid objects (SYS): 0
 Number of invalid objects (SAP): 0
 Number of invalid objects (all): 0

No invalid objects found.

Generic Pre-Upgrade Warnings

SAP-Specific Pre-Upgrade Warnings

WARNING: ----> WRONG_AWR_RETENTION
The retention time for the Automatic Workload Repository (AWR)
is not configured as recommended.
Current AWR retention is set to 8 days.
Recommended AWR retention is 42 days or longer.
See SAP Note 1326067.

WARNING: ----> PLAN_TABLE_EXISTS_IN_SAP_SCHEMA
Table(s) PLAN_TABLE exist(s) in SAP schema.
The table(s) will get dropped after the upgrade and
recreated with new structure.
SAPSR3.PLAN_TABLE

FINISHED - Oracle Database Pre-Upgrade Information Utility for SAP

PL/SQL procedure successfully completed.

3.19. Check oratab entries

```
ol2server:oraol2 107> cat /etc/oratab
#
# This file is used by ORACLE utilities. It is created by root.sh
# and updated by either Database Configuration Assistant while creating
# a database or ASM Configuration Assistant while creating ASM instance.

# A colon, ':', is used as the field terminator. A new line terminates
# the entry. Lines beginning with a pound sign, '#', are comments.
#
# Entries are of the form:
# $ORACLE_SID:$ORACLE_HOME:<N|Y>:
#
# The first and second fields are the system identifier and home
# directory of the database respectively. The third field indicates
# to the dbstart utility that the database should, "Y", or should not,
# "N", be brought up at system boot time.
#
# Multiple entries with the same $ORACLE_SID are not allowed.
#
#
# OL2:/oracle/OL2/122:N # added by SAP RUNINSTALLER 2018_06_25-08-07-26
# added by SWPM
# OL2:/oracle/OL2/18:N # uncomment this line after upgrade - added by SAP RUNINSTALLER 2019-04-
03_09-21-07
# OL2:/oracle/OL2/18.0.0:N #<IHRDBMS>, added by DBUA
OL2:/oracle/OL2/18:N #<OHRDBMS>
# OL2:/oracle/OL2/19:N # uncomment this line after upgrade - added by SAP RUNINSTALLER 2019-11-
05_14-27-18
```

3.20. Migrate Listener Manually

```
ol2server:oraol2 110> setenv ORACLE_HOME_OLD /oracle/OL2/18
ol2server:oraol2 111> echo $ORACLE_HOME_OLD
/oracle/OL2/18
ol2server:oraol2 112> echo $ORACLE_HOME_NEW
/oracle/OL2/19
ol2server:oraol2 113> cd $ORACLE_HOME_OLD/network/admin
ol2server:oraol2 114> cp listener.ora sqlnet.ora tnsnames.ora $ORACLE_HOME_NEW/network/admin
ol2server:oraol2 115> cd $ORACLE_HOME_NEW/network/admin
ol2server:oraol2 116> ll
total 16
-rw-r--r--. 1 oraol2 dba 845 Dec 6 13:30 listener.ora
drwxr-xr-x. 2 oraol2 dba 61 Apr 17 2019 samples
-rw-r--r--. 1 oraol2 dba 1536 Feb 14 2018 shrept.lst
-rw-r--r--. 1 oraol2 dba 512 Dec 6 13:30 sqlnet.ora
-rw-r--r--. 1 oraol2 dba 538 Dec 6 13:30 tnsnames.ora
```

*Edit all SQL*Net configuration files in /oracle/OL2/19/network/admin/*.ora and adapt/replace all ORACLE_HOME referencies!*

Backup the original SQL Net Files in TNS_ADMIN!

```
ol2server:ol2adm 83> cd /usr/sap/OL2/SYS/profile/oracle/
ol2server:ol2adm 84> mkdir B419_upg_cfg
ol2server:ol2adm 85> cp listener.ora tnsnames.ora sqlnet.ora B419_upg_cfg/
```

*Edit all SQL*Net configuration files in /usr/sap/OL2/SYS/profile/oracle/*.ora and adapt/replace all ORACLE_HOME referencies!*

```
ol2server:ol2adm 88> echo $ORACLE_HOME
/oracle/OL2/18
ol2server:ol2adm 89> lsnrctl stop listener
```

LSNRCTL for Linux: Version 18.0.0.0.0 - Production on 08-NOV-2019 14:48:29

Copyright (c) 1991, 2018, Oracle. All rights reserved.

```
Connecting to (ADDRESS=(PROTOCOL=IPC)(KEY=OL2.WORLD))
The command completed successfully
ol2server:ol2adm 92> setenv ORACLE_HOME /oracle/OL2/19
ol2server:ol2adm 93> lsnrctl start listener
```

LSNRCTL for Linux: Version 18.0.0.0.0 - Production on 06-DEC-2019 13:35:16

Copyright (c) 1991, 2018, Oracle. All rights reserved.

Starting /oracle/OL2/19/bin/tnslsnr: please wait...

```
TNSLSNR for Linux: Version 19.0.0.0.0 - Production
System parameter file is /usr/sap/OL2/SYS/profile/oracle/listener.ora
Log messages written to /oracle/OL2/19/network/log/listener.log
Listening on: (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=OL2.WORLD)))
Listening on: (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=OL2)))
Listening on:
(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=ol2server.dhcp.budl.sap.corp)(PORT=1521)))
```

```
Connecting to (ADDRESS=(PROTOCOL=IPC)(KEY=OL2.WORLD))
STATUS of the LISTENER
-----
```

```
Alias                listener
Version             TNSLSNR for Linux: Version 19.0.0.0.0 - Production
Start Date          06-DEC-2019 13:35:16
Uptime              0 days 0 hr. 0 min. 0 sec
Trace Level         off
Security            ON: Local OS Authentication
SNMP                OFF
Listener Parameter File /usr/sap/OL2/SYS/profile/oracle/listener.ora
Listener Log File   /oracle/OL2/19/network/log/listener.log
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=OL2.WORLD)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=OL2)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=ol2server.dhcp.budl.sap.corp)(PORT=1521)))
Services Summary...
Service "OL2" has 1 instance(s).
  Instance "OL2", status UNKNOWN, has 1 handler(s) for this service...
The command completed successfully

ol2server:ol2adm 94> setenv ORACLE_HOME /oracle/OL2/18
ol2server:ol2adm 95> echo $ORACLE_HOME
/oracle/OL2/18
```

4. UPGRADE STEPS

4.1. Backup the Database

```
[ol2server:ol2adm 100> brbackup -u / -t offline -m all
```

*OR in case BR*TOOLS SSFS is configured*

```
[ol2server:ol2adm 100> brbackup -u // -t offline -m all
```

4.2. Stop the SAP System

```
ol2server:ol2adm 102> sapcontrol -nr 00 -function Stop
```

```
06.12.2019 13:37:48
```

```
Stop
```

```
OK
```

```
ol2server:ol2adm 103> sapcontrol -nr 01 -function Stop
```

```
06.12.2019 13:37:58
```

```
Stop
```

```
OK
```

4.3. Start Database Instance

```
SQL> select INSTANCE_NUMBER,INSTANCE_NAME,VERSION,STATUS,CON_ID,DATABASE_TYPE  
from v$instance;
```

INSTANCE_NUMBER	INSTANCE_NAME	VERSION	STATUS	CON_ID	DATABASE_TYPE
1	OL2	18.0.0.0.0	OPEN	0	SINGLE

4.4. Backup of PFILE/SPFILE

```
SQL> create pfile='/oracle/OL2/oraupgrade.19c/initOL2.ora_before_upgrade' from spfile;
```

```
File created.
```

```
SQL> !ls -al /oracle/OL2/oraupgrade.19c/initOL2.ora_before_upgrade
```

```
-rw-r--r--. 1 oraol2 dba 3503 Dec 6 13:39 /oracle/OL2/oraupgrade.19c/initOL2.ora_before_upgrade
```

4.5. Create Guaranteed Restore Point (GRP) – OPTIONAL

In case database runs with NOARCHIVELOG mode, enable ARCHIVELOG Mode!

```
ol2server:oraol2 125> sqlplus / as sysdba
```

```
SQL*Plus: Release 18.0.0.0.0 - Production on Fri Dec 6 13:40:50 2019  
Version 18.5.0.0.0
```

```
Copyright (c) 1982, 2018, Oracle. All rights reserved.
```

```
Connected to:  
Oracle Database 18c Enterprise Edition Release 18.0.0.0.0 - Production  
Version 18.5.0.0.0
```

```
SQL> !pwd  
/oracle/OL2/oraupgrade.19c
```

```
SQL> spool grp_create.log  
SQL> @grp_create_restore_point.sql
```

```
Creating guaranteed restore point GRP_BEFORE_UPGRADE_19
```

```
Restore point created.
```

```
SQL> @grp_list_restore_point.sql
```

Restore Point Name	Guaranteed?	GRP Creation Time	Storage Size [Mb]
DATABASE_INCARNATION#			

GRP_BEFORE_UPGRADE_19	YES	2019-DEC-06 13:41:32	200
1			

```
SQL> quit  
Disconnected from Oracle Database 18c Enterprise Edition Release 18.0.0.0.0 - Production  
Version 18.5.0.0.0
```

4.6. Run Pre-Upgrade fixups

```
ol2server:oraol2 126> cd /tmp/ora_preupgrade/  
ol2server:oraol2 127> sqlplus / as sysdba
```

```
SQL*Plus: Release 18.0.0.0.0 - Production on Fri Dec 6 13:42:34 2019  
Version 18.5.0.0.0
```

Copyright (c) 1982, 2018, Oracle. All rights reserved.

```
Connected to:  
Oracle Database 18c Enterprise Edition Release 18.0.0.0.0 - Production  
Version 18.5.0.0.0
```

```
SQL> @preupgrade_fixups.sql  
Executing Oracle PRE-Upgrade Fixup Script
```

```
Auto-Generated by: Oracle Preupgrade Script  
Version: 19.0.0.0.0 Build: 2  
Generated on: 2019-12-04 09:25:46
```

```
For Source Database: OL2  
Source Database Version: 18.0.0.0.0  
For Upgrade to Version: 19.0.0.0.0
```

Preup Action Number	Preupgrade Issue Is Check Name	Remedied	Further DBA Action
1.	invalid_objects_exist	YES	None.
2.	dir_symlinks_exist	NO	Manual fixup recommended.
3.	tde_in_use	NO	Manual fixup recommended.
4.	hidden_params	NO	Informational only. Further action is optional.
5.	underscore_events	NO	Informational only. Further action is optional.
6.	dictionary_stats	YES	None.
7.	tablespaces_info	NO	Informational only. Further action is optional.
8.	min_archive_dest_size	NO	Informational only. Further action is optional.
9.	rman_recovery_version	NO	Informational only. Further action is optional.

The fixup scripts have been run and resolved what they can. However, there are still issues originally identified by the preupgrade that have not been remedied and are still present in the database. Depending on the severity of the specific issue, and the nature of the issue itself, that could mean that your database is not ready for upgrade. To resolve the outstanding issues, start by reviewing the preupgrade_fixups.sql and searching it for the name of the failed CHECK NAME or Preupgrade Action Number listed above. There you will find the original corresponding diagnostic message from the preupgrade which explains in more detail what still needs to be done.

PL/SQL procedure successfully completed.

4.7. Add additional Database Parameters

```
ol2server:oraol2 75> sqlplus / as sysdba
```

```
SQL*Plus: Release 18.0.0.0.0 - Production on Sat Nov 9 11:57:12 2019  
Version 18.5.0.0.0
```

```
Copyright (c) 1982, 2018, Oracle. All rights reserved.
```

```
Connected to:  
Oracle Database 18c Enterprise Edition Release 18.0.0.0.0 - Production  
Version 18.5.0.0.0
```

```
SQL> show parameter disable_directory_link_check
```

NAME	TYPE	VALUE
-----	-----	-----
_disable_directory_link_check	boolean	TRUE

```
SQL> show parameter kolfuseslf
```

NAME	TYPE	VALUE
-----	-----	-----
_kolfuseslf	boolean	TRUE

No need to set these parameters again.

4.8. Run DBUA

4.8.1. Set additional Env. variables

```
ol2server:oraol2 130> echo $DB_SID ; echo $DISPLAY
OL2
:0.0
ol2server:oraol2 131> setenv ORACLE_HOME_SRC /oracle/OL2/18
ol2server:oraol2 132> setenv ORACLE_HOME_TGT /oracle/OL2/19.0.0
ol2server:oraol2 133> echo ORACLE_HOME_SRC=$ORACLE_HOME_SRC
ORACLE_HOME_SRC=/oracle/OL2/18
ol2server:oraol2 134> echo ORACLE_HOME_TGT=$ORACLE_HOME_TGT
ORACLE_HOME_TGT=/oracle/OL2/19.0.0
ol2server:oraol2 135> echo $TNS_ADMIN
TNS_ADMIN: Undefined variable.
```

4.8.2. Start DBUA in query mode

```
ol2server:oraol2 136> cd $ORACLE_HOME_TGT/sap/ora_upgrade/post_upgrade/
ol2server:oraol2 137> pwd
/oracle/OL2/19.0.0/sap/ora_upgrade/post_upgrade
ol2server:oraol2 138> ./dbua.sap.sh -q
.
. Oracle Database Upgrade
. Version 19-022 Release Date 2019-08-28
. Copyright (c) Oracle Corporation 2019. All Rights Reserved.
. SAP note NN <td>
. Oracle Database Release: 19c
.
. Host      : ol2server
. Platform  : linux_x86_64 (64-bit)
. Date      : 2019_12_06 15:50:12
. User      : oraol2
. Log file   : /home/oraol2/19cupgrade-19.0.0-OL2.log
. History log : /home/oraol2/19cupgrade-19.0.0-OL2_hist.log
.
. Checking environment ...
. Environment checked.
.
. Performing Pre-Upgrade checks ...
.
. STEP: >>> Checking Source Oracle Home
. (OK) - Source Oracle home directory /oracle/OL2/18 exists.
. STEP: >>> Checking Target Oracle Home
. (OK) - Target Oracle home directory /oracle/OL2/19.0.0 exists.
. STEP: >>> Checking Source Release and Target Release
. (OK) - Source Release checked: 18.0.0.0.0
. (OK) - Target Release checked: 19.0.0.0.0
. (OK) - Target version checked: 19.4.0.0.0
. STEP: >>> Checking Timezone File Version Upgrade
. (OK) - Timezone file version will be upgraded.
. STEP: >>> Checking write permissions for ORACLE_BASE /oracle/OL2
. (OK) - You have write permissions for ORACLE_BASE /oracle/OL2
. STEP: >>> Checking oratab
. (OK) - /etc/oratab exists.
. (OK) - You have write permissions for /etc/oratab.
. STEP: >>> Checking existence of TDE encryption wallets
```

```

. (WARNING) - TDE Encryption wallet /oracle/OL2/18/dbs/ewallet.p12 exists.
. (WARNING) - TDE Encryption wallet /oracle/OL2/18/dbs/cwallet.sso exists.
. STEP: >>> Checking custom post-upgrade scripts
. STEP: >>> Checking/Copying TDE encryption wallets
. (OK) - File /oracle/OL2/19.0.0/dbs/ewallet.p12 already exists.
. (OK) - File /oracle/OL2/19.0.0/dbs/cwallet.sso already exists.
. STEP: >>> Checking CRS Registration (Only for RAC or ASM)
.
. Pre-Upgrade checks completed.
.
.
. Building DBUA command ...
.
.
. DBUA command complete.
.
.
. dbua.sap.sh Settings
.
. Script log file   : /home/oraol2/19cupgrade-19.0.0-OL2.log
. Script command line : -q
. Query mode       : enabled
.
. Environment Settings
.
. ORACLE_HOME_SRC   : /oracle/OL2/18
. ORACLE_HOME_TGT   : /oracle/OL2/19.0.0
. ORACLE_BASE       : /oracle/OL2
.
. DB_SID            : OL2
. ORACLE_SID        : OL2
.
. DISPLAY           : :0.0
.
. Directory Settings
.
. Current directory  : /oracle/OL2/19.0.0/sap/ora_upgrade/post_upgrade
. Upgrade scripts    : /oracle/OL2/19.0.0/sap/ora_upgrade/post_upgrade
.
. Database information
.
. Database Name      : OL2
. Database type      : Single instance
. Database Instance  : OL2
.
. Upgrade Settings
.
. Upgrade from 18.0.0.0.0 to 19.0.0.0.0
.
. Source Oracle home      : /oracle/OL2/18
. Source Release (from SQL*Plus) : 18.0.0.0.0
.
. Target Oracle home      : /oracle/OL2/19.0.0
. Target Release (from SQL*Plus) : 19.0.0.0.0
. Target Version (from SQL*Plus) : 19.4.0.0.0
.
. DBUA Settings
.
. DBUA silent mode      : disabled
. DBUA timezone upgrade: enabled

```

```
. Use of custom scripts: enabled
. EM Configuration : disabled
. Listener Migration : -skipListenersMigration
.
. DBUA Custom Scripts
.
. Script directory : /oracle/OL2/19.0.0/sap/ora_upgrade/post_upgrade
. post_upgrade_tasks.sql
. set_compatible.sql
.
. DBUA Command line
.
. /oracle/OL2/19.0.0/bin/dbua -dbName OL2 -oracleHome /oracle/OL2/18 -recompile_invalid_objects true
-emConfiguration NONE -upgradeTimezone true -skipListenersMigration -postUpgradeScripts
/oracle/OL2/19.0.0/sap/ora_upgrade/post_upgrade/post_upgrade_tasks.sql,/oracle/OL2/19.0.0/sap/ora_upgr
ade/post_upgrade/set_compatible.sql | tee /home/oraol2/.19cupgrade_19.0.0.dbua
.
.
. Post-Upgrade Settings
.
.
. The log file of dbua.sap.sh is /home/oraol2/19cupgrade-19.0.0-OL2.log
. Exiting because dbua.sap.sh was started in query mode.
. (EXIT) - (0)
```

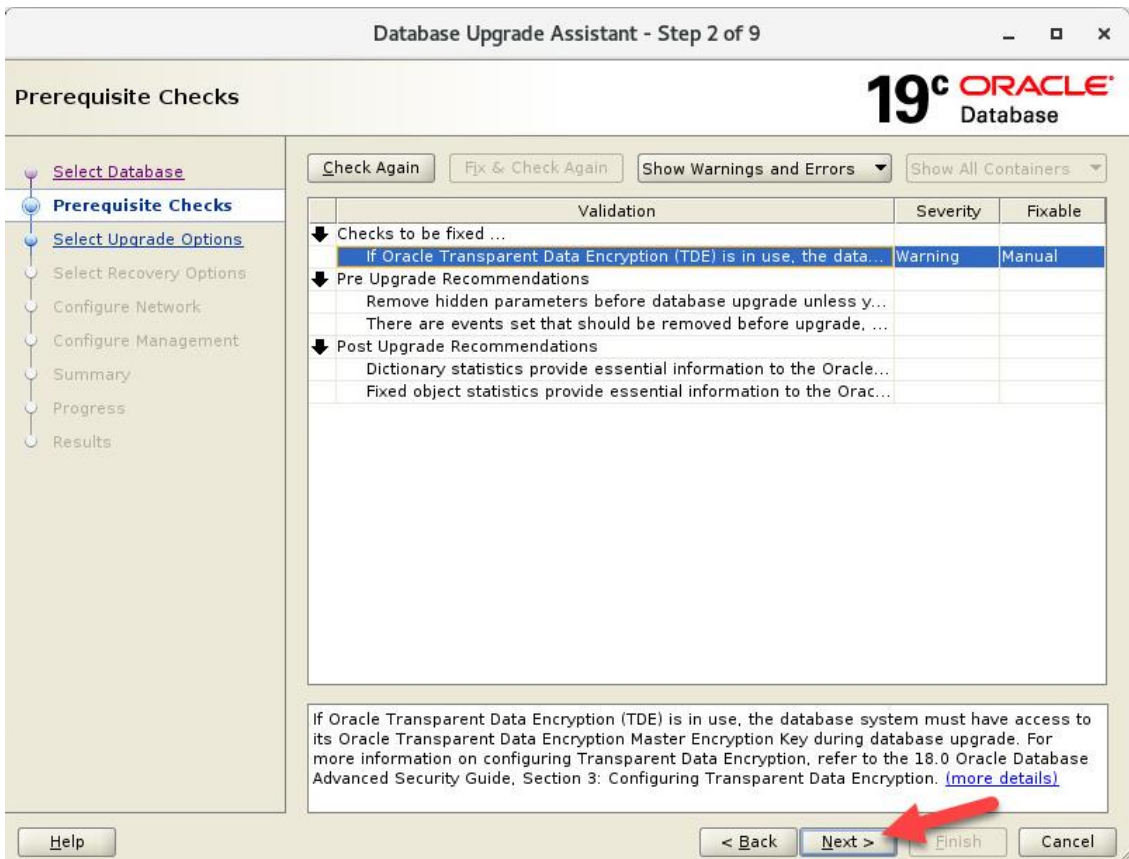
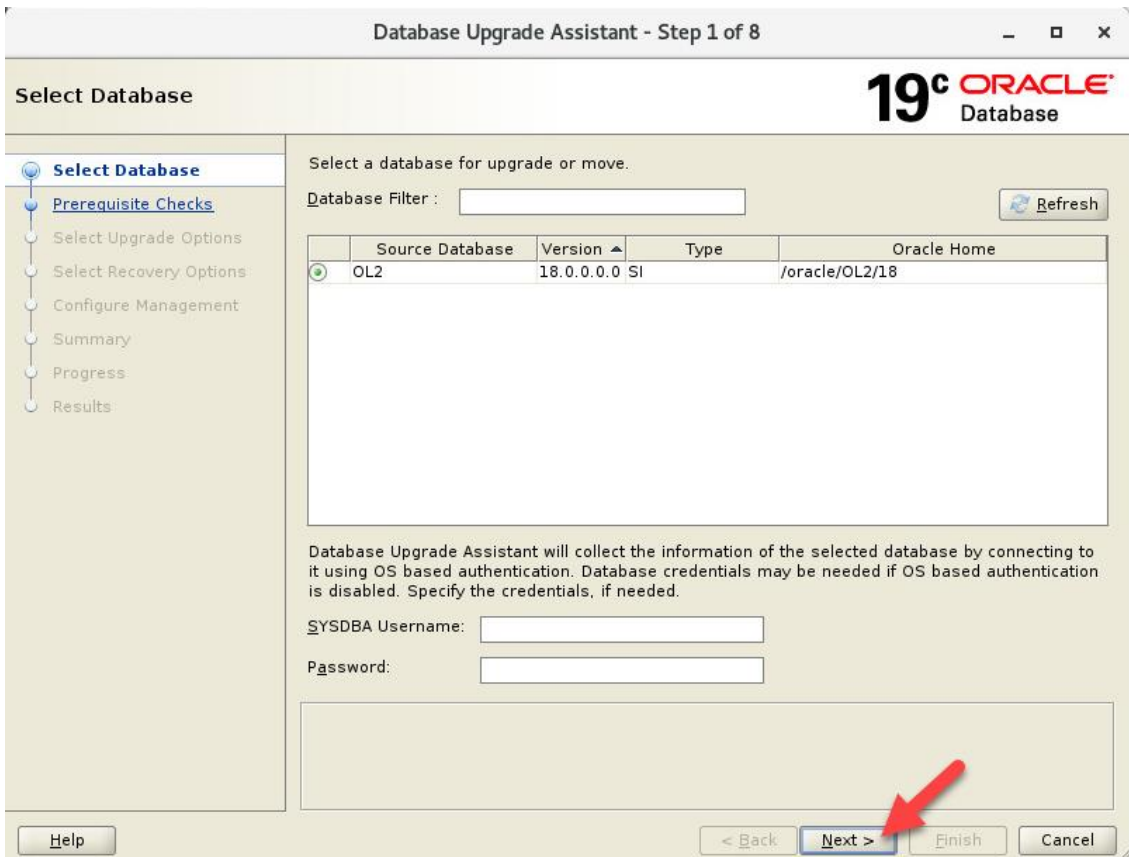
4.8.3.Start DBUA

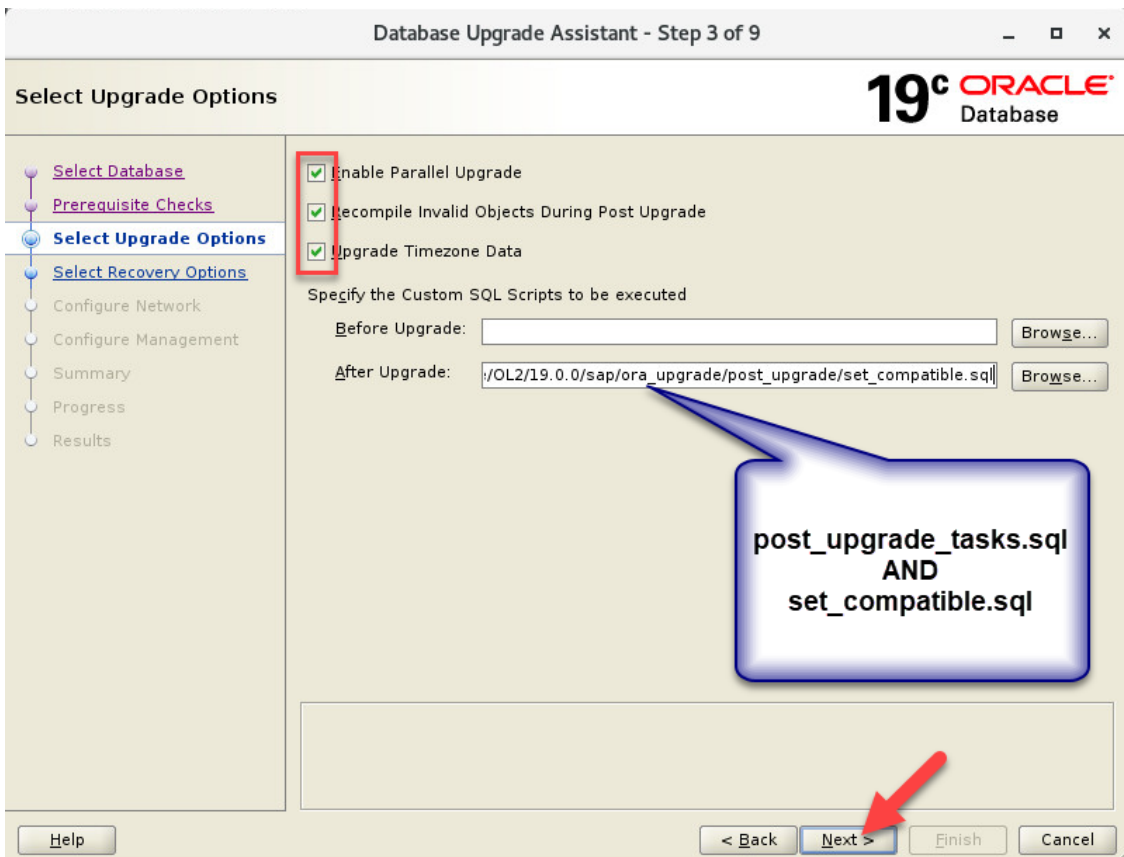
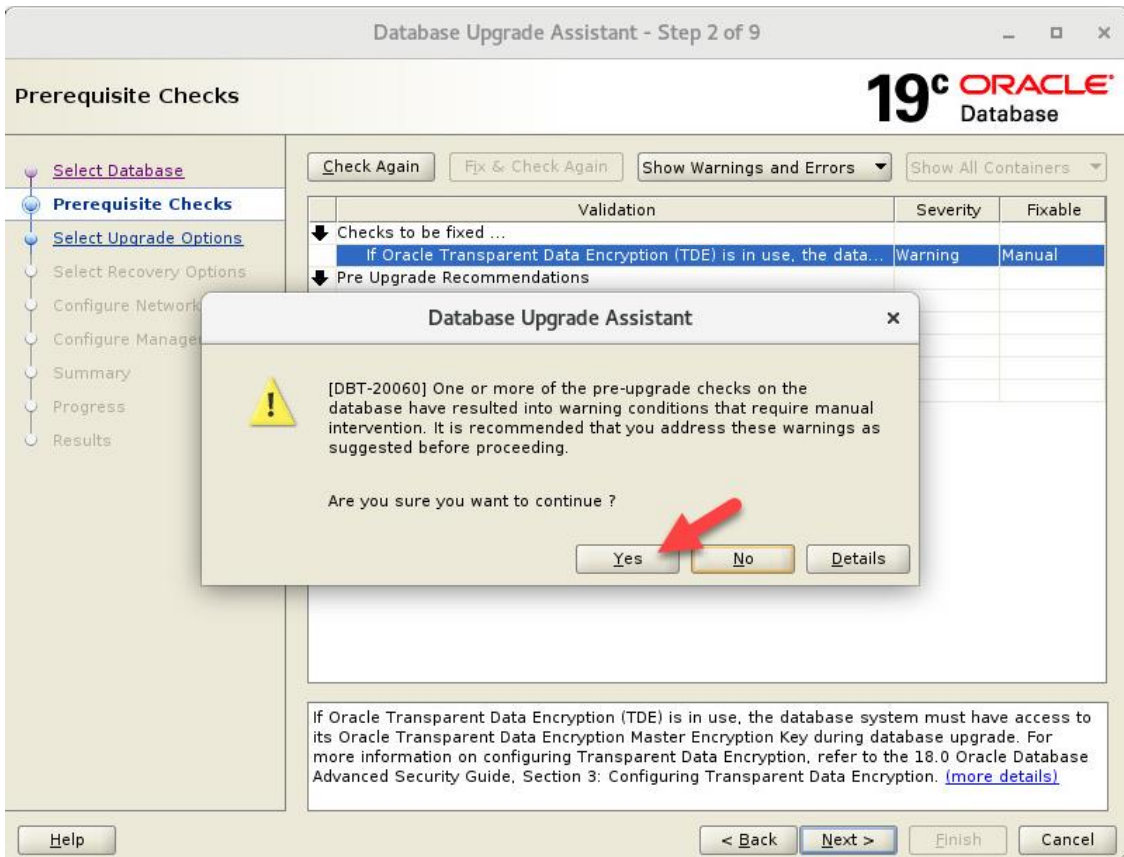
```
ol2server:oraol2 140> ./dbua.sap.sh
.
. Oracle Database Upgrade
. Version 19-022 Release Date 2019-08-28
. Copyright (c) Oracle Corporation 2019. All Rights Reserved.
. SAP note NN <td>
. Oracle Database Release: 19c
.
. Host      : ol2server
. Platform  : linux_x86_64 (64-bit)
. Date      : 2019_12_07 09:40:48
. User      : oraol2
. Log file   : /home/oraol2/19cupgrade-19.0.0-OL2.log
. History log : /home/oraol2/19cupgrade-19.0.0-OL2_hist.log
.
. Checking environment ...
. Environment checked.
.
. Performing Pre-Upgrade checks ...
.
. STEP: >>> Checking Source Oracle Home
. (OK) - Source Oracle home directory /oracle/OL2/18 exists.
. STEP: >>> Checking Target Oracle Home
. (OK) - Target Oracle home directory /oracle/OL2/19.0.0 exists.
. STEP: >>> Checking Source Release and Target Release
. (OK) - Source Release checked: 18.0.0.0.0
. (OK) - Target Release checked: 19.0.0.0.0
. (OK) - Target version checked: 19.4.0.0.0
. STEP: >>> Checking Timezone File Version Upgrade
. (OK) - Timezone file version will be upgraded.
. STEP: >>> Checking write permissions for ORACLE_BASE /oracle/OL2
. (OK) - You have write permissions for ORACLE_BASE /oracle/OL2
. STEP: >>> Checking oratab
. (OK) - /etc/oratab exists.
. (OK) - You have write permissions for /etc/oratab.
. STEP: >>> Checking existence of TDE encryption wallets
. (WARNING) - TDE Encryption wallet /oracle/OL2/18/dbs/ewallet.p12 exists.
. (WARNING) - TDE Encryption wallet /oracle/OL2/18/dbs/cwallet.sso exists.
. STEP: >>> Checking custom post-upgrade scripts
. STEP: >>> Checking/Copying TDE encryption wallets
. (OK) - File /oracle/OL2/19.0.0/dbs/ewallet.p12 already exists.
. (OK) - File /oracle/OL2/19.0.0/dbs/cwallet.sso already exists.
. STEP: >>> Checking CRS Registration (Only for RAC or ASM)
.
. Pre-Upgrade checks completed.
.
.
. Building DBUA command ...
.
. DBUA command complete.
.
. dbua.sap.sh Settings
.
. Script log file   : /home/oraol2/19cupgrade-19.0.0-OL2.log
. Script command line :
```

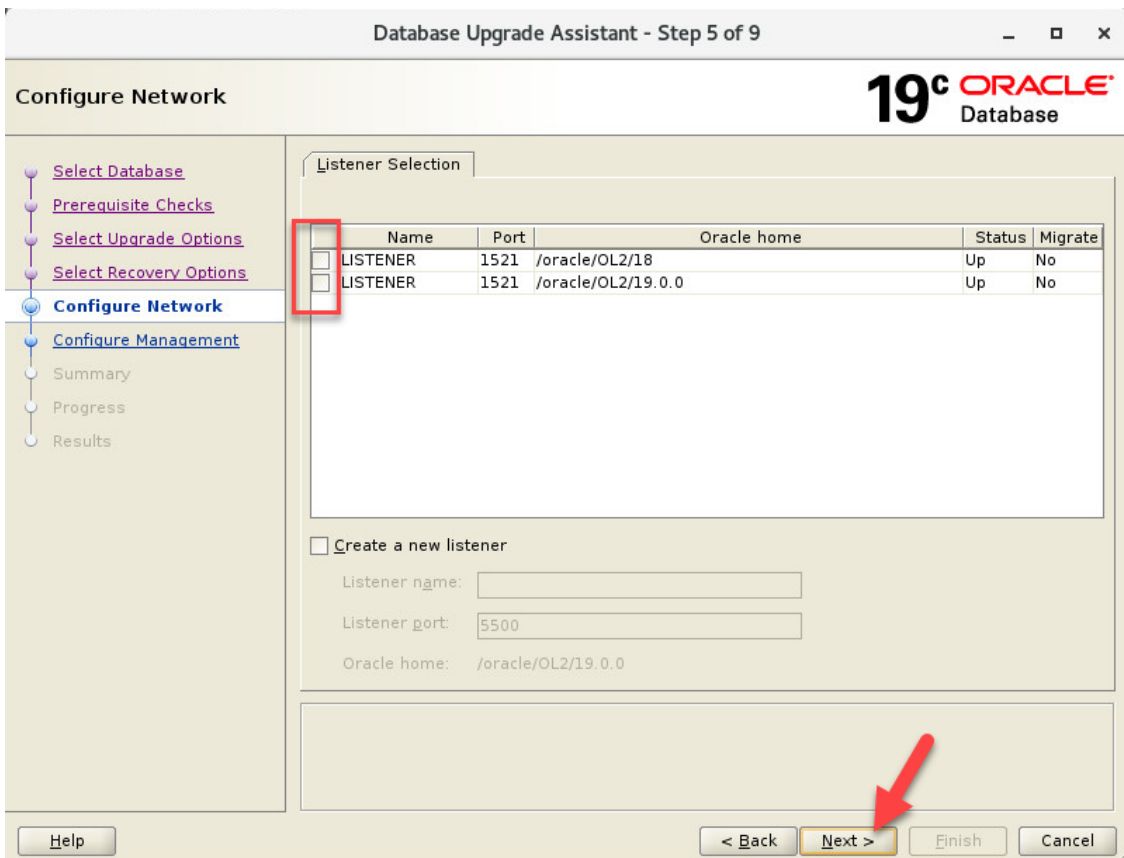
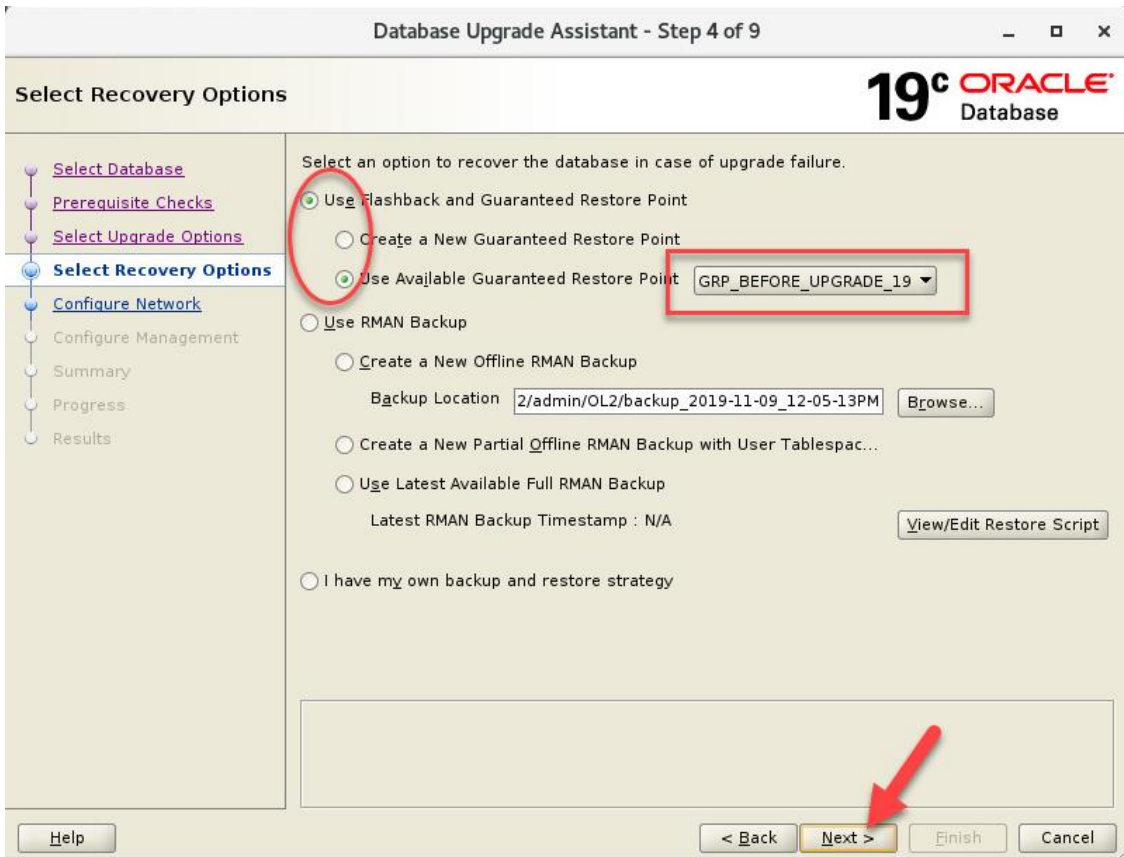
```

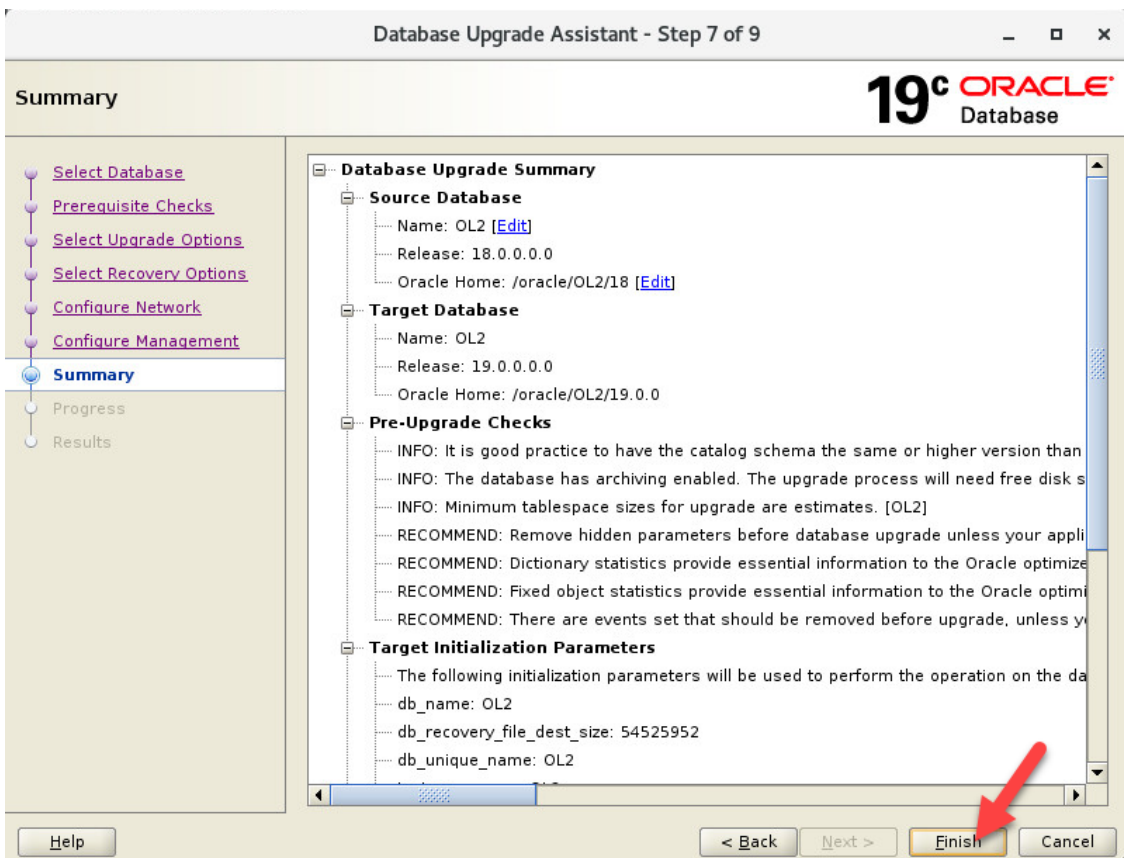
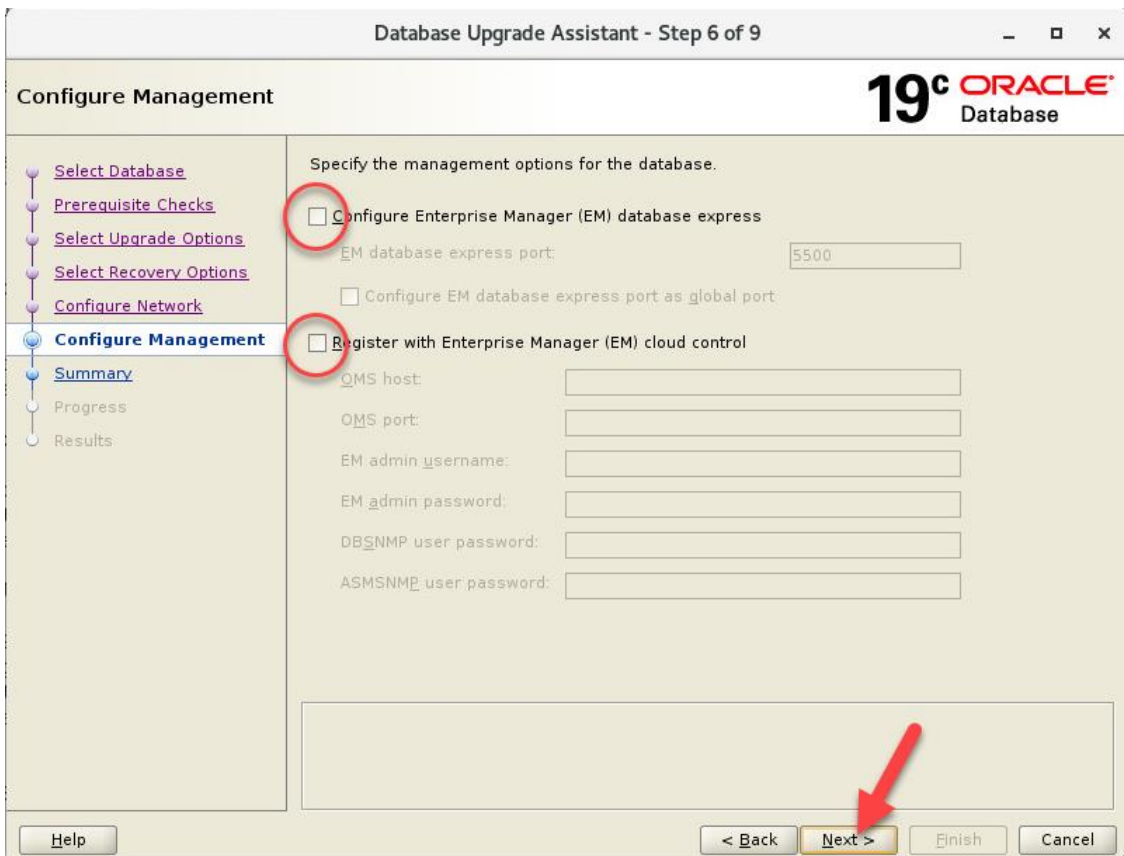
. Environment Settings
.
. ORACLE_HOME_SRC      : /oracle/OL2/18
. ORACLE_HOME_TGT     : /oracle/OL2/19.0.0
. ORACLE_BASE         : /oracle/OL2
.
. DB_SID              : OL2
. ORACLE_SID         : OL2
.
. DISPLAY             : :0.0
.
. Directory Settings
.
. Current directory   : /oracle/OL2/19.0.0/sap/ora_upgrade/post_upgrade
. Upgrade scripts    : /oracle/OL2/19.0.0/sap/ora_upgrade/post_upgrade
.
. Database information
.
. Database Name       : OL2
. Database type       : Single instance
. Database Instance   : OL2
.
. Upgrade Settings
.
. Upgrade from 18.0.0.0.0 to 19.0.0.0.0
.
. Source Oracle home   : /oracle/OL2/18
. Source Release (from SQL*Plus) : 18.0.0.0.0
.
. Target Oracle home   : /oracle/OL2/19.0.0
. Target Release (from SQL*Plus) : 19.0.0.0.0
. Target Version (from SQL*Plus) : 19.4.0.0.0
.
. DBUA Settings
.
. DBUA silent mode    : disabled
. DBUA timezone upgrade: enabled
. Use of custom scripts: enabled
. EM Configuration    : disabled
. Listener Migration  : -skipListenersMigration
.
. DBUA Custom Scripts
.
. Script directory : /oracle/OL2/19.0.0/sap/ora_upgrade/post_upgrade
. post_upgrade_tasks.sql
. set_compatible.sql
.
. DBUA Command line
.
. /oracle/OL2/19.0.0/bin/dbua -dbName OL2 -oracleHome /oracle/OL2/18 -recompile_invalid_objects true
-emConfiguration NONE -upgradeTimezone true -skipListenersMigration -postUpgradeScripts
/oracle/OL2/19.0.0/sap/ora_upgrade/post_upgrade/post_upgrade_tasks.sql,/oracle/OL2/19.0.0/sap/ora_upgr
ade/post_upgrade/set_compatible.sql | tee /home/oraol2/.19cupgrade_19.0.0.dbua
.
.
. Post-Upgrade Settings
.
.
.
. Starting Database Upgrade Assistant in interactive mode ...

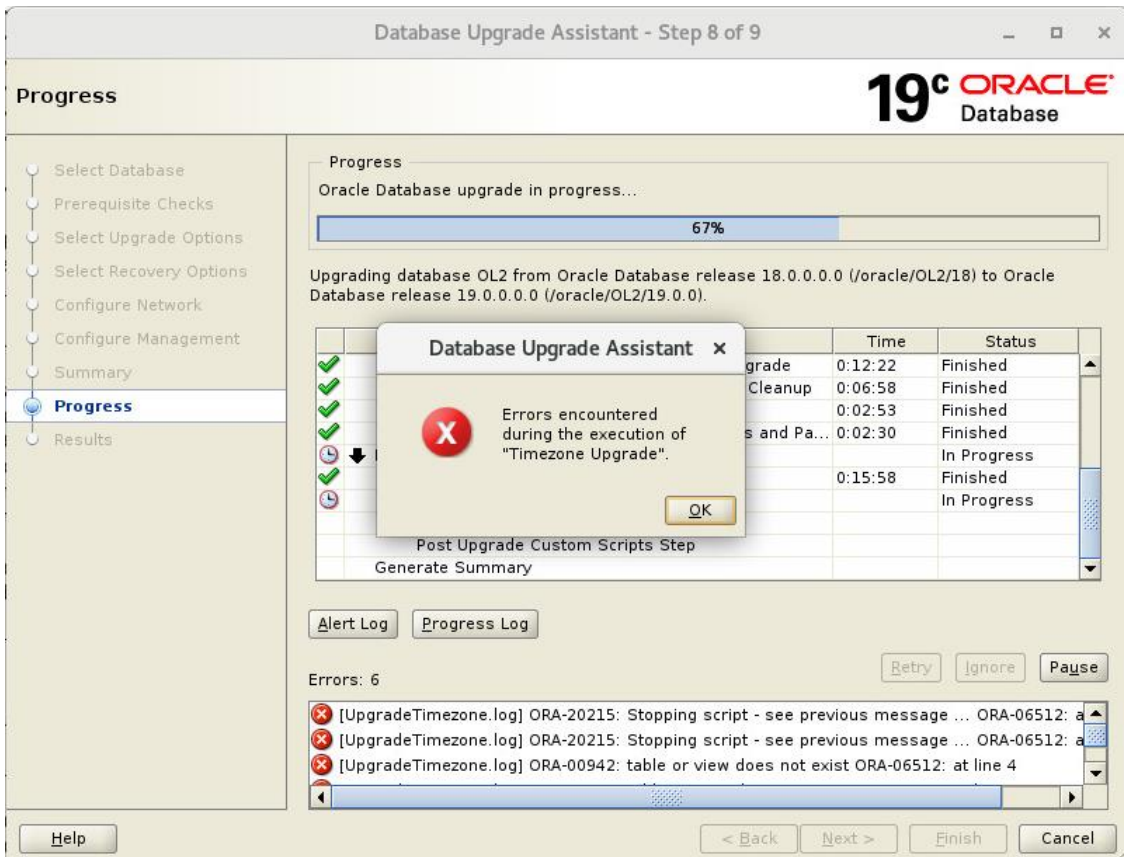
```



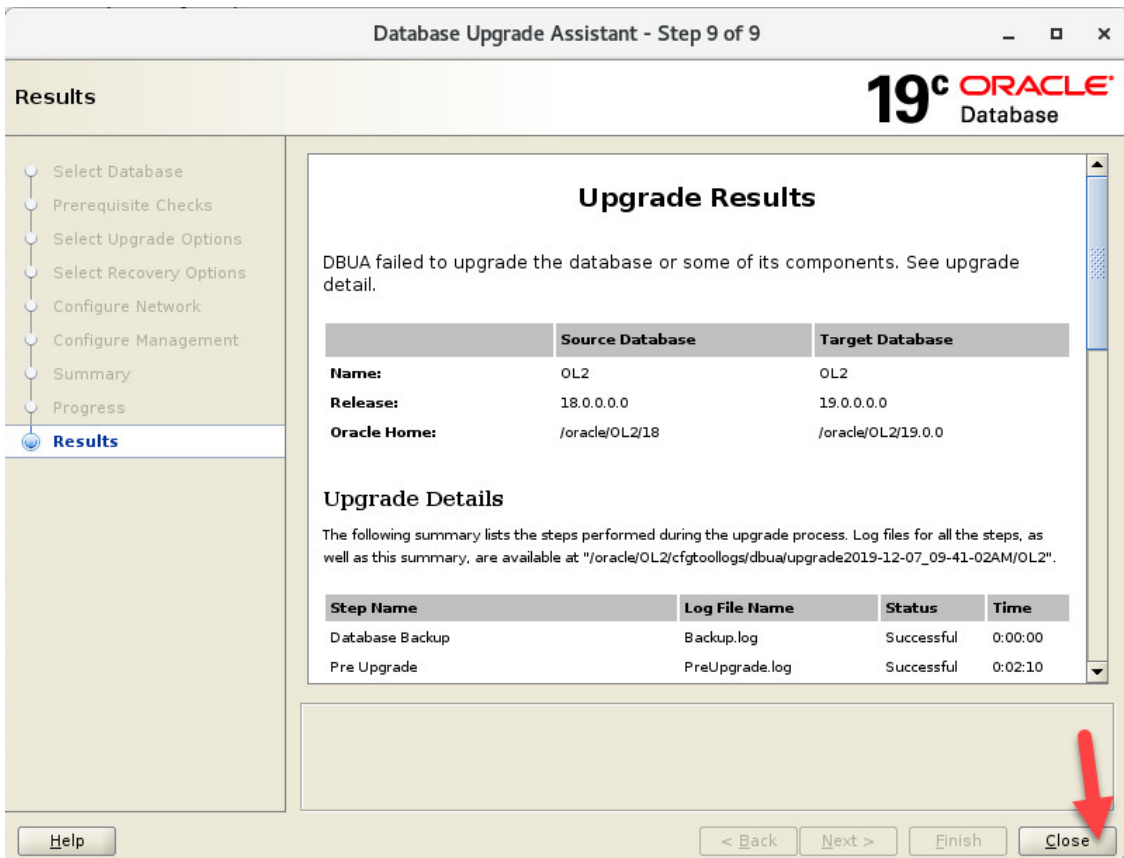








Note: There was an error here only relevant for this test system, which was easily solved. Nothing specific, that generally would affect all other Oracle Installations!



Logs directory: /oracle/OL2/cfgtoollogs/dbua/upgrade2019-12-07_09-41-02AM
DBUA failed to upgrade the database or some of its components. See
/oracle/OL2/cfgtoollogs/dbua/upgrade2019-12-07_09-41-02AM/OL2 for more details.. Database Upgrade
Assistant finished with return code 6.

. Post-Upgrade

.

. Upgrade Results

.

. (INFO) - DBUA finished with return code 6.

. (INFO) - Check the DBUA logfile(s) for more details.

. The log file of dbua.sap.sh is /home/oraol2/19cupgrade-19.0.0-OL2.log

. (EXIT) - (0)

5. POST-UPGRADE STEPS

5.1. Check and Correct oratab

```
ol2server:oraol2 144> ls -al /oracle/OL2/19
lrwxrwxrwx. 1 oraol2 dba 6 Dec  3 14:47 /oracle/OL2/19 -> 19.0.0
```

BEFORE

```
ol2server:oraol2 145> cat /etc/oratab
...
# OL2:/oracle/OL2/122:N # added by SAP RUNINSTALLER 2018_06_25-08-07-26
# added by SWPM
# OL2:/oracle/OL2/18:N # uncomment this line after upgrade - added by SAP RUNINSTALLER 2019-04-
03_09-21-07
# OL2:/oracle/OL2/18.0.0:N #<IHRDBMS>, added by DBUA
# OL2:/oracle/OL2/19:N # uncomment this line after upgrade - added by SAP RUNINSTALLER 2019-12-
03_14-08-09
OL2:/oracle/OL2/19.0.0:N
```

AFTER

```
ol2server:oraol2 147> cat /etc/oratab
...
# OL2:/oracle/OL2/122:N # added by SAP RUNINSTALLER 2018_06_25-08-07-26
# added by SWPM
# OL2:/oracle/OL2/18:N # uncomment this line after upgrade - added by SAP RUNINSTALLER 2019-04-
03_09-21-07
# OL2:/oracle/OL2/18.0.0:N #<IHRDBMS>, added by DBUA
# OL2:/oracle/OL2/19:N # uncomment this line after upgrade - added by SAP RUNINSTALLER 2019-12-
03_14-08-09
# OL2:/oracle/OL2/19.0.0:N #<IHRDBMS>, added by DBUA
OL2:/oracle/OL2/19:N #<OHRDBMS>
```

5.2. Update Oracle Environment for ora<sid> and <sid>adm users

Update SAP-specific environment configuration scripts '.dbenv' for OS users 'ora<dbsid>' and '<sapsid>adm': Replace occurrences of <ORACLE_HOME_OLD> with <ORACLE_HOME_NEW>.*

```
ol2server:oraol2 150> mkdir dbenv.18c
ol2server:oraol2 151> mkdir dbenv.19c
ol2server:oraol2 152> cp -p .dbenv* dbenv.18c
ol2server:oraol2 153> cp -p .dbenv* dbenv.19c
ol2server:oraol2 154> echo $SHELL
/bin/csh
ol2server:oraol2 155> vi dbenv.19c/.dbenv_ol2server.csh
ol2server:oraol2 156> vi dbenv.19c/.dbenv.csh
ol2server:oraol2 157> vi dbenv.19c/.dbenv_ol2server.sh
ol2server:oraol2 158> vi dbenv.19c/.dbenv.sh
ol2server:oraol2 159> cd ; cp dbenv.19c/.dbenv*sh .
ol2server:oraol2 160> exit
logout
[root@ol2server ~]# su - oraol2
Last login: Sun Dec  8 15:42:57 CET 2019 on pts/2
ol2server:oraol2 51> env | grep ORA ; env | grep PATH
dbms_type=ORA
ORACLE_SID=OL2
ORACLE_HOME=/oracle/OL2/19
```

```
ORACLE_BASE=/oracle/OL2
PATH=/oracle/OL2/19/bin:/usr/lib64/qt-
3.3/bin:/usr/local/bin:/bin:/usr/bin:/usr/local/sbin:/usr/sbin:/usr/sap/OL2/SYS/exe/uc/linuxx86_64:/usr/sap/OL2
/SYS/exe/run:/home/oraol2:.
QT_PLUGIN_PATH=/usr/lib64/kde4/plugins:/usr/lib/kde4/plugins
RSEC_SSFS_DATAPATH=/usr/sap/OL2/SYS/global/security/rsecsfs/data
RSEC_SSFS_KEYPATH=/usr/sap/OL2/SYS/global/security/rsecsfs/key
LD_LIBRARY_PATH=/usr/sap/OL2/SYS/exe/run:/usr/sap/OL2/SYS/exe/uc/linuxx86_64:/oracle/OL2/19/lib
```

```
ol2server:ol2adm 102> cd ~
ol2server:ol2adm 103> mkdir dbenv.18c
ol2server:ol2adm 104> mkdir dbenv.19c
ol2server:ol2adm 105> cp -p .dbenv* dbenv.18c
ol2server:ol2adm 106> cp -p .dbenv* dbenv.19c
ol2server:ol2adm 107> echo $SHELL
/bin/csh
ol2server:ol2adm 108> vi dbenv.19c/dbenv_ol2server.csh
ol2server:ol2adm 109> vi dbenv.19c/dbenv_ol2server.sh
ol2server:ol2adm 110> vi dbenv.19c/dbenv.csh
ol2server:ol2adm 111> vi dbenv.19c/dbenv.sh
ol2server:ol2adm 112> cd ; cp dbenv.19c/dbenv*.sh .
ol2server:ol2adm 113> exit
logout
[root@ol2server ~]# su - ol2adm
Last login: Tue Dec 10 14:09:39 CET 2019 on pts/0
ol2server:ol2adm 51> env | grep ORA ; env | grep PATH
dbms_type=ORA
ORACLE_SID=OL2
ORACLE_HOME=/oracle/OL2/19
ORACLE_BASE=/oracle/OL2
PATH=/oracle/OL2/19/bin:/usr/lib64/qt-
3.3/bin:/usr/local/bin:/bin:/usr/bin:/usr/local/sbin:/usr/sbin:/usr/sap/OL2/SYS/exe/uc/linuxx86_64:/usr/sap/OL2
/SYS/exe/run:/home/ol2adm:.
QT_PLUGIN_PATH=/usr/lib64/kde4/plugins:/usr/lib/kde4/plugins
RSEC_SSFS_DATAPATH=/usr/sap/OL2/SYS/global/security/rsecsfs/data
RSEC_SSFS_KEYPATH=/usr/sap/OL2/SYS/global/security/rsecsfs/key
LD_LIBRARY_PATH=/usr/sap/OL2/SYS/exe/run:/usr/sap/OL2/SYS/exe/uc/linuxx86_64:/oracle/client/122/ins
tantclient
```

5.3. Start Database Instance

```
ol2server:oraol2 54> setenv IHRDBMS /oracle/OL2/19.0.0
ol2server:oraol2 55> setenv ORACLE_HOME $IHRDBMS
ol2server:oraol2 56> sqlplus / as sysdba
```

```
SQL*Plus: Release 19.0.0.0.0 - Production on Sun Nov 10 16:38:34 2019
Version 19.4.0.0.0
```

Copyright (c) 1982, 2019, Oracle. All rights reserved.

```
Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.4.0.0.0
```

```
SQL> shutdown immediate;
Database closed.
Database dismounted.
ORACLE instance shut down.
SQL> quit
Disconnected from Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.4.0.0.0
ol2server:oraol2 57> exit
logout
[root@ol2server ~]# su - oraol2
Last login: Tue Dec 10 14:06:30 CET 2019 on pts/1
ol2server:oraol2 51> setenv OHRDBMS /oracle/OL2/19
ol2server:oraol2 52> setenv ORACLE_HOME $OHRDBMS
ol2server:oraol2 53> sqlplus / as sysdba
```

```
SQL*Plus: Release 19.0.0.0.0 - Production on Sun Nov 10 16:43:01 2019
Version 19.4.0.0.0
```

Copyright (c) 1982, 2019, Oracle. All rights reserved.

Connected to an idle instance.

```
SQL> startup
ORACLE instance started.
```

```
Total System Global Area 1660940944 bytes
Fixed Size 8897168 bytes
Variable Size 939524096 bytes
Database Buffers 704643072 bytes
Redo Buffers 7876608 bytes
Database mounted.
Database opened.
```

5.4. Set Environment ORACLE_PATH

```
sol2server:oraol2 54> setenv ORACLE_HOME_NEW /oracle/OL2/19
ol2server:oraol2 55> setenv ORACLE_PATH
$ORACLE_HOME_NEW/sap/ora_upgrade/pre_upgrade:$ORACLE_HOME_NEW/sap/ora_upgrade/post
_upgrade:$ORACLE_HOME_NEW/sap/sapadmin
ol2server:oraol2 56> echo $ORACLE_PATH
/oracle/OL2/19/sap/ora_upgrade/pre_upgrade:/oracle/OL2/19/sap/ora_upgrade/post_upgrade:/oracle/OL2/1
9/sap/sapadmin
```

5.5. Migrate TDE Configuration

```
SQL> alter system set wallet_root='/oracle/OL2/orawallet' scope=spfile;
```

System altered.

```
SQL> ALTER SYSTEM SET TDE_CONFIGURATION="KEYSTORE_CONFIGURATION=FILE"  
SCOPE=SPFILE;
```

System altered.

```
SQL> SELECT WRL_PARAMETER, STATUS FROM V$ENCRYPTION_WALLET;
```

```
WRL_PARAMETER  
-----  
STATUS  
-----
```

NOT_AVAILABLE

```
SQL> shutdown immediate;
```

Database closed.

Database dismounted.

ORACLE instance shut down.

```
SQL> startup
```

ORACLE instance started.

Total System Global Area 1660940944 bytes

Fixed Size 8897168 bytes

Variable Size 939524096 bytes

Database Buffers 704643072 bytes

Redo Buffers 7876608 bytes

Database mounted.

Database opened.

```
SQL> SELECT WRL_PARAMETER, STATUS FROM V$ENCRYPTION_WALLET;
```

```
WRL_PARAMETER  
-----  
STATUS  
-----
```

/oracle/OL2/orawallet/tde/

OPEN

5.6. Run Post-Upgrade fixups

```
ol2server:oraol2 58> setenv ORA_UPGRADE_WORK_DIR /oracle/OL2/oraupgrade.19c
ol2server:oraol2 59> echo ORA_UPGRADE_WORK_DIR=$ORA_UPGRADE_WORK_DIR
ORA_UPGRADE_WORK_DIR=/oracle/OL2/oraupgrade.19c
ol2server:oraol2 60> cd $ORA_UPGRADE_WORK_DIR
ol2server:oraol2 61> pwd
/oracle/OL2/oraupgrade.19c
ol2server:oraol2 62> sqlplus / as sysdba
```

```
SQL*Plus: Release 19.0.0.0.0 - Production on Sun Nov 10 16:53:55 2019
Version 19.4.0.0.0
```

Copyright (c) 1982, 2019, Oracle. All rights reserved.

```
Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.4.0.0.0
```

```
SQL> @/tmp/ora_preupgrade/postupgrade_fixups.sql
```

Session altered.

PL/SQL procedure successfully completed.

PL/SQL procedure successfully completed.

PL/SQL procedure successfully completed.

Package created.

No errors.

Package body created.

PL/SQL procedure successfully completed.

No errors.

Package created.

No errors.

Package body created.

No errors.

Executing Oracle POST-Upgrade Fixup Script

Auto-Generated by: Oracle Preupgrade Script
Version: 19.0.0.0.0 Build: 2

Generated on: 2019-12-04 09:26:00

For Source Database: OL2
Source Database Version: 18.0.0.0.0
For Upgrade to Version: 19.0.0.0.0

Preup Action Number	Preupgrade Check Name	Issue Is	Remedied	Further DBA Action
10.	old_time_zones_exist	YES	None.	
11.	post_dictionary	YES	None.	
12.	post_fixed_objects	NO	Informational only.	Further action is optional.

The fixup scripts have been run and resolved what they can. However, there are still issues originally identified by the preupgrade that have not been remedied and are still present in the database. Depending on the severity of the specific issue, and the nature of the issue itself, that could mean that your database upgrade is not fully complete. To resolve the outstanding issues, start by reviewing the `postupgrade_fixups.sql` and searching it for the name of the failed CHECK NAME or Preupgrade Action Number listed above. There you will find the original corresponding diagnostic message from the preupgrade which explains in more detail what still needs to be done.

PL/SQL procedure successfully completed.

Session altered.

5.7. Run SAP-Specific Post-Upgrade Scripts

```
ol2server:oraol2 67> cd $ORA_UPGRADE_WORK_DIR
ol2server:oraol2 68> pwd
/oracle/OL2/oraupgrade.19c
ol2server:oraol2 69> sqlplus / as sysdba
```

```
SQL*Plus: Release 19.0.0.0.0 - Production on Tue Dec 10 15:21:24 2019
Version 19.4.0.0.0
```

```
Copyright (c) 1982, 2019, Oracle. All rights reserved.
```

```
Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.4.0.0.0
```

```
SQL> spool post_upgrade_tasks.log
```

```
SQL> @post_upgrade_tasks.sql
```

```
*****
```

```
Oracle Database Post-Upgrade Tasks Tool for SAP
```

```
*****
```

```
>>> STARTED <<<
```

```
Date : 2019-12-10 15:21:43
```

```
Script Version : 19.0.0
```

```
Script Revision : 001
```

```
Script Date : 2019-05-20
```

```
Parameter Settings : SAP note 2470718
```

```
.
```

```
.
```

```
=====
TASK: Configuring Scheduler Jobs (SAP note 974781)
=====
```

```
.
Job ORACLE_OCM.MGMT_CONFIG_JOB has been disabled.
```

```
Job ORACLE_OCM.MGMT_STATS_CONFIG_JOB has been disabled.
```

```
.
```

```
=====
TASK: Configuring Auto Tasks (SAP note 974781)
=====
```

```
.
```

```
SQL> execute DBMS_AUTO_TASK_ADMIN.DISABLE;
```

```
.
```

```
SQL> execute DBMS_AUTO_TASK_ADMIN.DISABLE('AUTO OPTIMIZER STATS COLLECTION',NULL
,NULL);
```

```
.
```

```
SQL> execute DBMS_AUTO_TASK_ADMIN.DISABLE('AUTO SPACE ADVISOR',NULL,NULL);
```

```
.
```

```
SQL> execute DBMS_AUTO_TASK_ADMIN.DISABLE('SQL TUNING ADVISOR',NULL,NULL);
```

```
.
```

```
Autotasks have been disabled.
```

```
.
```

```
=====
TASK: Validating SAP_$KSLEI / SAP$KSLEI (SAP note 706927)
=====
```

.
.

=====
TASK: Recreating PLAN_TABLE in SAP schema(s)
=====

.
List of PLAN_TABLEs in SAP schema(s)
List of PLAN_TABLEs in SAP schema(s)
.

=====
TASK: Performing clean up for SAP note 519448
=====

.
Description:
Dropping obsolete SAP-specific synonyms/views that (might) have been implemented
as workaround in release 9.2 according to SAP note 519448)

.
Checking private synonyms from SAP note 519448 ...
Checking views from SAP note 519448 ...
Dropping private synonyms from SAP note 519448 ...
Dropping database views from SAP note 519448 ...
.

=====
TASK: Resetting Database Parameters (remove from SPFILE)
=====

.
=====
TASK: Removing obsolete database parameter from SPFILE
=====

.
SQL> ALTER SYSTEM RESET "event" SCOPE = SPFILE
.

=====
TASK: Removing obsolete underscore parameter from SPFILE
=====

.
SQL> ALTER SYSTEM RESET "_optimizer_batch_table_access_by_rowid" SCOPE = SPFILE
.

.
SQL> ALTER SYSTEM RESET "_optimizer_reduce_groupby_key" SCOPE = SPFILE
.

.
SQL> ALTER SYSTEM RESET "_rowsets_enabled" SCOPE = SPFILE
.

.
SQL> ALTER SYSTEM RESET "_use_single_log_writer" SCOPE = SPFILE
.

=====
TASK: Setting Underscore Parameters(SAP Note 2470718)
=====

.
SQL> ALTER SYSTEM SET "_disable_directory_link_check" = TRUE COMMENT

```

= 'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'
SCOPE=SPFILE
.
.
SQL> ALTER SYSTEM SET "_kolfuseslf" = TRUE COMMENT
= 'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'
SCOPE=SPFILE
.
.
SQL> ALTER SYSTEM SET "_LOG_SEGMENT_DUMP_PARAMETER" = FALSE
COMMENT
T = 'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'
SCOPE=SPFILE
.
.
SQL> ALTER SYSTEM SET "_LOG_SEGMENT_DUMP_PATCH" = FALSE COMMENT
T = 'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'
SCOPE=SPFILE
.
.
SQL> ALTER SYSTEM SET "_MUTEX_WAIT_SCHEME" = 1 COMMENT =
'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'
SCOPE=SPFILE
.
.
SQL> ALTER SYSTEM SET "_MUTEX_WAIT_TIME" = 10 COMMENT =
'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'
SCOPE=SPFILE
.
.
SQL> ALTER SYSTEM SET "_OPTIM_PEEK_USER_BINDS" = FALSE COMMENT
T = 'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'
SCOPE=SPFILE
.
.
SQL> ALTER SYSTEM SET "_OPTIMIZER_ADAPTIVE_CURSOR_SHARING" = FALSE COMMENT
T = 'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'
SCOPE=SPFILE
.
.
SQL> ALTER SYSTEM SET "_OPTIMIZER_BATCH_TABLE_ACCESS_BY_ROWID" = FALSE
COMMENT
T = 'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'
SCOPE=SPFILE
.
.
SQL> ALTER SYSTEM SET "_OPTIMIZER_EXTENDED_CURSOR_SHARING_REL" = NONE
COMMENT
= 'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'
SCOPE=SPFILE
.
.
SQL> ALTER SYSTEM SET "_OPTIMIZER_REDUCE_GROUPBY_KEY" = FALSE
COMMENT
T = 'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'
SCOPE=SPFILE
.
.
SQL> ALTER SYSTEM SET "_OPTIMIZER_USE_FEEDBACK" = FALSE COMMENT
T = 'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'

```

```

' SCOPE=SPFILE
.
SQL> ALTER SYSTEM SET "_ROWSSETS_ENABLED" = FALSE COMMENT =
T = 'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'
' SCOPE=SPFILE
.
SQL> ALTER SYSTEM SET "_SECUREFILES_CONCURRENCY_ESTIMATE" = 50 COMMENT =
'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL' S
COPE=SPFILE
.
SQL> ALTER SYSTEM SET "_SPACEBG_SYNC_SEGBLOCKS" = TRUE COMMENT
= 'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'
SCOPE=SPFILE
.
SQL> ALTER SYSTEM SET "_SUPPRESS_IDENTIFIERS_ON_DUPKEY" = TRUE COMMENT
= 'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'
SCOPE=SPFILE
.
SQL> ALTER SYSTEM SET "_USE_SINGLE_LOG_WRITER" = TRUE COMMENT
= 'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL'
SCOPE=SPFILE

```

```

=====
TASK: Setting Database Parameter _FIX_CONTROL (SAP Note 2470718)
=====

```

Current FIX_CONTROL Status

Bug#	Value	Default
5099019	1	0
6055658	0	0
6120483	0	0
6399597	1	0
6430500	1	0
6972291	1	0
7324224	0	0
8932139	1	1
8937971	1	0
9196440	1	0
9495669	1	0
13627489	1	0
14255600	1	0
14595273	1	0
18405517	2	0
20355502	10	0
20636003	0	0
22540411	1	0
25643889	1	0
26536320	1	1
27321179	1	1
27466597	1	1

Check for which bug(s) fix_control can be set ...

```
.
5099019 - Entry found. Adding '5099019:ON'
6055658 - Entry found. Adding '6055658:OFF'
6120483 - Entry found. Adding '6120483:OFF'
6399597 - Entry found. Adding '6399597:ON'
6430500 - Entry found. Adding '6430500:ON'
6972291 - Entry found. Adding '6972291:ON'
7324224 - Entry found. Adding '7324224:OFF'
8932139 - Entry found. Adding '8932139:ON'
8937971 - Entry found. Adding '8937971:ON'
9196440 - Entry found. Adding '9196440:ON'
9495669 - Entry found. Adding '9495669:ON'
13627489 - Entry found. Adding '13627489:ON'
14255600 - Entry found. Adding '14255600:ON'
14595273 - Entry found. Adding '14595273:ON'
18405517 - Entry found. Adding '18405517:2'
20355502 - Entry found. Adding '20355502:10'
20636003 - Entry found. Adding '20636003:OFF'
22540411 - Entry found. Adding '22540411:ON'
25643889 - Entry found. Adding '25643889:ON'
26536320 - Entry found. Adding '26536320:ON'
27321179 - Entry found. Adding '27321179:ON'
27466597 - Entry found. Adding '27466597:ON'
```

```
.
Setting _FIX_CONTROL
Setting _FIX_CONTROL for 22 bug IDs.
```

```
.
SQL> ALTER SYSTEM SET "_FIX_CONTROL" = '5099019:ON','6055658:OFF','6120483:OFF',
'6399597:ON','6430500:ON','6972291:ON','7324224:OFF','8932139:ON','8937971:ON',
'9196440:ON','9495669:ON','13627489:ON','14255600:ON','14595273:ON','18405517:2',
'20355502:10','20636003:OFF','22540411:ON','25643889:ON','26536320:ON','27321179
:ON','27466597:ON' COMMENT = 'SAP RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET
BY POST_UPGRADE_TASKS.SQL' SCOPE=SPFILE
```

```
.
=====
TASK: Setting Database Parameter EVENT (SAP Note 2470718)
=====
```

```
.
SQL> ALTER SYSTEM SET EVENT = '10027','10028','10142','10183','10191','10995 lev
el 2','38068 level 100','38085','38087','44951 level 1024','60025' COMMENT = 'SA
P RECOMMENDED SETTINGS - SAP NOTE 2470718 - SET BY POST_UPGRADE_TASKS.SQL' SCOPE
=SPFILE
```

```
.
*****
Oracle Database Post-Upgrade Tasks Tool for SAP
*****
```

```
>>> FINISHED <<<
```

```
PL/SQL procedure successfully completed.
```

```
SQL> spool off;
```

```
SQL> spool post_upgrade_checks.log
SQL> @post_upgrade_checks.sql
*****
Oracle Database Post-Upgrade Information Utility for SAP
*****
```

```
Date           : 2019-12-10 15:24:01
Script Version  : 19.0.0
Script Revision : 19-002
Script Date    : 2019-05-27
```

```
.
*****
Database Information
*****
```

```
--> Host Name           : ol2server
--> Host Platform       : Linux x86 64-bit (Platform ID: 13)
--> Platform type      : Unix
--> Instance Name (Status) : OL2 (OPEN)
--> Database Name       : OL2
--> Database Version    : 19.0.0.0.0
```

```
--> Database Configuration
--> Database Character Set : UTF8
--> National Character Set : UTF8
--> Database Log Mode      : ARCHIVELOG
--> Database Flashback Mode : RESTORE POINT ONLY
--> AWR Retention         : 8
```

```
--> Database Parameter
--> COMPATIBLE             : 18.0.0
--> REMOTE_OS_AUTHENT     : FALSE
```

```
--> Database Timezone
--> Timezone File Version  : V32
--> Database Timezone     : +02:00
--> Session Timezone     : +01:00
```

```
--> Oracle RAC System    : FALSE
--> Oracle DV System     : FALSE
--> SAP BW/DW/BI System   : FALSE
--> SAP Unicode System    : TRUE
--> SAP ABAP Stack/Java Stack : TRUE/FALSE
```

```
--> Database Security Configuration
--> User Profile SAPUPROF : TRUE
--> DEFAULT_FAILED_LOGIN_ATTEMPTS: 10
--> DEFAULT_PASSWORD_LIFE_TIME : 180
```

```
--> Fast Recovery Area (FRA) Configuration
--> FRA Destination      : /oracle/OL2/oraflash
--> FRA Size             : 30000 M
--> FRA Space Limit      : 30000 M
--> FRA Space Used       : 1000 M / 3.33 %
```

```
.
*****
Database Restore Points
*****
```

The following restore points are defined:


```

.
Guaranteed Time          Name
----- ----
YES      2019-12-06 13:41:32 GRP_BEFORE_UPGRADE_19

```

```

*****
Database Components
*****

```

The following database components are installed:

```

Component ID          Version      Status
CATALOG               19.0.0.0.0  VALID
CATPROC              19.0.0.0.0  VALID
RAC                   19.0.0.0.0  OPTION OFF
XDB                   19.0.0.0.0  VALID
OLS                   19.0.0.0.0  VALID

```

```

*****
Underscore (hidden) parameters
*****

```

The following underscore parameters are set:

```

_use_single_log_writer
_securefiles_concurrency_estimate
_spacebg_sync_segblocks
_suppress_identifiers_on_dupkey
_mutex_wait_time
_mutex_wait_scheme
_kolfuseslf
_fix_control
_optimizer_extended_cursor_sharing_rel
_optimizer_adaptive_cursor_sharing
_optim_peek_user_binds
_optimizer_use_feedback
_optimizer_batch_table_access_by_rowid
_disable_directory_link_check
_rowsets_enabled
_optimizer_reduce_groupby_key
_log_segment_dump_parameter
_log_segment_dump_patch

```

```

*****
Events and Trace Events
*****

```

The following events are set:

```

10027
10028
10142
10183
10191
10995 level 2
38068 level 100
38085
38087
44951 level 1024

```

60025

The following trace events are set:

```
.
*****
Database Maintenance Jobs
*****
JOB_NAME          Owner          Status
-----          -
MGMT_CONFIG_JOB   ORACLE_OCM     FALSE
MGMT_STATS_CONFIG_JOB ORACLE_OCM     FALSE
FGR$AUTOPURGE_JOB SYS             FALSE
FILE_WATCHER      SYS             FALSE
HM_CREATE_OFFLINE_DICTIONARY SYS             FALSE
LOAD_OPATCH_INVENTORY SYS             FALSE
ORA$PREPLUGIN_BACKUP_JOB SYS             FALSE
XMLDB_NFS_CLEANUP_JOB SYS             FALSE
BSLN_MAINTAIN_STATS_JOB SYS             TRUE
CLEANUP_NON_EXIST_OBJ SYS             TRUE
CLEANUP_ONLINE_IND_BUILD SYS             TRUE
CLEANUP_ONLINE_PMO SYS             TRUE
CLEANUP_TAB_IOT_PMO SYS             TRUE
CLEANUP_TRANSIENT_PKG SYS             TRUE
CLEANUP_TRANSIENT_TYPE SYS             TRUE
DRA_REEVALUATE_OPEN_FAILURES SYS             TRUE
FILE_SIZE_UPD     SYS             TRUE
ORA$AUTOTASK_CLEAN SYS             TRUE
PMO_DEFERRED_GIDX_MAINT_JOB SYS             TRUE
PURGE_LOG         SYS             TRUE
RSE$CLEAN_RECOVERABLE_SCRIPT SYS             TRUE
SM$CLEAN_AUTO_SPLIT_MERGE SYS             TRUE
```

```
Operation Name          Status
-----
auto optimizer stats job          DISABLED
auto space advisor job           DISABLED
automatic sql tuning task        DISABLED
```

Invalid Objects

```
WARNING: ----> Invalid Objects in SAP schema
.... USER SAPSR3 has 59 INVALID object(s).
```

Number of invalid objects (SYS): 0
Number of invalid objects (SAP): 59
Number of invalid objects (all): 59

List of invalid objects:

- SAPSR3.ACMAUT8F06E70F9F#G (PROCEDURE)
- SAPSR3.ACMAUTD44D71ADB#G (PROCEDURE)
- SAPSR3.ACMTST_SQLV_PROD#G (PROCEDURE)
- SAPSR3.ACMTST_SQLV_SOI#G (PROCEDURE)
- SAPSR3.ACM_BPA_V_2#G (PROCEDURE)
- SAPSR3.ACM_SO_V_2#G (PROCEDURE)
- SAPSR3.DEMO_CDS_CURR#G (PROCEDURE)
- SAPSR3.DEMO_CDS_DATFNC#G (PROCEDURE)
- SAPSR3.DEMO_CDS_OUTJOIN#G (PROCEDURE)

SAPSR3.DEMO_CDS_PARA#G (PROCEDURE)
SAPSR3.DEMO_CDS_PARJOIN#G (PROCEDURE)
SAPSR3.DEMO_CDS_PTYPE#G (PROCEDURE)
SAPSR3.DEMO_CDS_SYST#G (PROCEDURE)
SAPSR3.DEMO_CDS_T100_LG#G (PROCEDURE)
SAPSR3.DEMO_CDS_UNTCNV#G (PROCEDURE)
SAPSR3.DEMO_CDS_USE_ASC#G (PROCEDURE)
SAPSR3.DEMO_VIEW_ANNOT#G (PROCEDURE)
SAPSR3.DEMO_VIEW_TEXTS#G (PROCEDURE)
SAPSR3.RSWHM_PM_V4#G (PROCEDURE)
SAPSR3.SADL_CDS_SO_R_PA#G (PROCEDURE)
SAPSR3.SADL_QE_CDS_PARS#G (PROCEDURE)
SAPSR3.SADL_V_CC_VHELP#G (PROCEDURE)
SAPSR3.SADL_V_E_PROD_C#G (PROCEDURE)
SAPSR3.SADL_V_PAR#G (PROCEDURE)
SAPSR3.SADL_V_PARCLNT#G (PROCEDURE)
SAPSR3.SADL_V_PAR_AN#G (PROCEDURE)
SAPSR3.SADL_V_PAR_SYST#G (PROCEDURE)
SAPSR3.SADL_V_PAR_SYSTA#G (PROCEDURE)
SAPSR3.SADL_V_SC_AN#G (PROCEDURE)
SAPSR3.SADL_V_SC_VP#G (PROCEDURE)
SAPSR3.SADL_V_SC_VP_AN#G (PROCEDURE)
SAPSR3.SDDICAUNITPARA#G (PROCEDURE)
SAPSR3.SDDICAUNITPARA01#G (PROCEDURE)
SAPSR3.SEPM_CCURRENCY#G (PROCEDURE)
SAPSR3.SEPM_CDS_CTG#G (PROCEDURE)
SAPSR3.SEPM_CDS_CUSTOM#G (PROCEDURE)
SAPSR3.SEPM_CDS_CUSTOMT#G (PROCEDURE)
SAPSR3.SEPM_CMPIMGDRFT#G (PROCEDURE)
SAPSR3.SEPM_CMPPRODDRFT#G (PROCEDURE)
SAPSR3.SEPM_CMPPRODUCT#G (PROCEDURE)
SAPSR3.SEPM_CRAUSER#G (PROCEDURE)
SAPSR3.SEPM_CSHCART#G (PROCEDURE)
SAPSR3.SEPM_CSHCARTITEM#G (PROCEDURE)
SAPSR3.SEPM_CSHPRODUCT#G (PROCEDURE)
SAPSR3.SEPM_CSHREVIEW#G (PROCEDURE)
SAPSR3.SEPM_CSUPPLIER#G (PROCEDURE)
SAPSR3.SEPM_CUNIT#G (PROCEDURE)
SAPSR3.SEPM_IRAUSER#G (PROCEDURE)
SAPSR3.SEPM_OPINVAM#G (PROCEDURE)
SAPSR3.SEPM_OPINVAMG#G (PROCEDURE)
SAPSR3.SEPM_OPINVAMT#G (PROCEDURE)
SAPSR3.SEPM_OPINVDT#G (PROCEDURE)
SAPSR3.SEPM_OPINVDY#G (PROCEDURE)
SAPSR3.SEPM_OPINVDYA#G (PROCEDURE)
SAPSR3.SEPM_PCONTACTPA#G (PROCEDURE)
SAPSR3.SFPM_IDA_TEST_ET#G (PROCEDURE)
SAPSR3.UCONHTTP_ATTR#G (PROCEDURE)
SAPSR3.UCONRFCREJ_ATTR#G (PROCEDURE)
SAPSR3.UCONRFC_ATTR#G (PROCEDURE)

Generic Database Configuration Warnings

WARNING: ----> There are invalid objects in an SAP schema.
Check why these objects are invalid.

SAP-Specific Database Configuration Warnings

WARNING: ----> The retention time for the Automatic Workload Repository (AWR) is not configured as recommended.
Current AWR retention is set to 8 days.
Recommended AWR retention is 42 or more days.
See SAP note 1326067.

WARNING: ----> Check recommendation for database parameter COMPATIBLE.
Current setting : COMPATIBLE=18.0.0
Recommended setting: COMPATIBLE=19.0.0
See SAP note 1739274.

FINISHED - Oracle Database Post-Upgrade Information Utility for SAP

PL/SQL procedure successfully completed.

SQL> **spool off**

SQL> @?/rdbms/admin/utlrp.sql

Session altered.

TIMESTAMP

COMP_TIMESTAMP UTLRP_BGN 2019-12-10 15:38:57

DOC> The following PL/SQL block invokes UTL_RECOMP to recompile invalid objects in the database. Recompilation time is proportional to the number of invalid objects in the database, so this command may take a long time to execute on a database with a large number of invalid objects.

DOC> Use the following queries to track recompilation progress:

DOC> 1. Query returning the number of invalid objects remaining. This number should decrease with time.

DOC> SELECT COUNT(*) FROM obj\$ WHERE status IN (4, 5, 6);

DOC> 2. Query returning the number of objects compiled so far. This number should increase with time.

DOC> SELECT COUNT(*) FROM UTL_RECOMP_COMPILED;

DOC> This script automatically chooses serial or parallel recompilation based on the number of CPUs available (parameter `cpu_count`) multiplied by the number of threads per CPU (parameter `parallel_threads_per_cpu`). On RAC, this number is added across all RAC nodes.

DOC> UTL_RECOMP uses DBMS_SCHEDULER to create jobs for parallel recompilation. Jobs are created without instance affinity so that they can migrate across RAC nodes. Use the following queries to verify whether UTL_RECOMP jobs are being created and run correctly:

DOC> 1. Query showing jobs created by UTL_RECOMP

DOC> SELECT job_name FROM dba_scheduler_jobs
WHERE job_name like 'UTL_RECOMP_SLAVE_%';

DOC> 2. Query showing UTL_RECOMP jobs that are running

```
DOC> SELECT job_name FROM dba_scheduler_running_jobs
DOC> WHERE job_name like 'UTL_RECOMP_SLAVE_%';
DOC>#
```

PL/SQL procedure successfully completed.

TIMESTAMP

```
-----
COMP_TIMESTAMP UTLRP_END      2019-12-10 15:39:23
```

DOC> The following query reports the number of invalid objects.

DOC>

DOC> If the number is higher than expected, please examine the error
DOC> messages reported with each object (using SHOW ERRORS) to see if they
DOC> point to system misconfiguration or resource constraints that must be
DOC> fixed before attempting to recompile these objects.

DOC>#

OBJECTS WITH ERRORS

```
-----
0
```

DOC> The following query reports the number of exceptions caught during

DOC> recompilation. If this number is non-zero, please query the error
DOC> messages in the table UTL_RECOMP_ERRORS to see if any of these errors
DOC> are due to misconfiguration or resource constraints that must be
DOC> fixed before objects can compile successfully.

DOC> Note: Typical compilation errors (due to coding errors) are not

DOC> logged into this table: they go into DBA_ERRORS instead.

DOC>#

ERRORS DURING RECOMPILATION

```
-----
0
```

Function created.

PL/SQL procedure successfully completed.

Function dropped.

PL/SQL procedure successfully completed.

```
SQL> select count(*) from dba_invalid_objects;
```

```
  COUNT(*)
-----
0
```

```
SQL> select count(*) from dba_objects where status != 'VALID';
```

```
  COUNT(*)
-----
0
```

5.8. Drop Guaranteed Restore Point (from before the Upgrade)

```
ol2server:oraol2 70> sqlplus / as sysdba
```

```
SQL*Plus: Release 19.0.0.0.0 - Production on Tue Dec 10 15:46:33 2019  
Version 19.4.0.0.0
```

```
Copyright (c) 1982, 2019, Oracle. All rights reserved.
```

```
Connected to:  
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production  
Version 19.4.0.0.0
```

```
SQL> @grp_list_restore_point.sql
```

Restore Point Name	Guaranteed?	GRP Creation Time	Storage Size [Mb]
DATABASE_INCARNATION#			

GRP_BEFORE_UPGRADE_19	YES	2019-DEC-06 13:41:32	800
1			

```
SQL> @grp_drop_restore_point.sql
```

```
Listing restore points before dropping restore point GRP_BEFORE_UPGRADE_19
```

NAME	GUARANTEE_FLASH

GRP_BEFORE_UPGRADE_19	YES

```
Dropping guaranteed restore point GRP_BEFORE_UPGRADE_19
```

```
Restore point dropped.
```

```
Listing restore points after dropping restore point GRP_BEFORE_UPGRADE_19
```

```
no rows selected
```

```
SQL> quit
```

```
Disconnected from Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production  
Version 19.4.0.0.0
```

5.9. Check and Set COMPATIBLE parameter

```
ol2server:oraol2 72> pwd
/oracle/OL2/oraupgrade.19c
ol2server:oraol2 73> sqlplus / as sysdba
```

```
SQL*Plus: Release 19.0.0.0.0 - Production on Tue Dec 10 15:47:55 2019
Version 19.4.0.0.0
```

Copyright (c) 1982, 2019, Oracle. All rights reserved.

```
Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.4.0.0.0
```

```
SQL> show parameter compatible
```

NAME	TYPE	VALUE
compatible	string	18.0.0
noncdb_compatible	boolean	FALSE

```
SQL> select value "compatible" from v$parameter where name = 'compatible';
```

```
compatible
```

```
-----
18.0.0
```

```
SQL> spool set_compatible.log
```

```
SQL> @set_compatible.sql
```

```
SET_COMPATIBLE.SQL
```

```
Oracle Database Version      : 19.4.0.0.0
```

```
COMPATIBLE (current value   ): 18.0.0
```

```
COMPATIBLE (SAP Default value): 19.0.0
```

```
COMPATIBLE: update required.
```

```
COMPATIBLE: updating to new value.
```

```
Executing now ALTER SYSTEM SET COMPATIBLE = '19.0.0' COMMENT = 'SAP recommended value'
```

```
SCOPE =
```

```
SPFILE
```

```
PL/SQL procedure successfully completed.
```

```
SQL> spool off
```

```
SQL> shutdown immediate;
```

```
Database closed.
```

```
Database dismounted.
```

```
ORACLE instance shut down.
```

```
SQL> startup
```

```
ORACLE instance started.
```

```
Total System Global Area 1660940944 bytes
```

```
Fixed Size                  8897168 bytes
```

```
Variable Size              939524096 bytes
```

```
Database Buffers          704643072 bytes
```

```
Redo Buffers               7876608 bytes
```

```
Database mounted.
```

```
Database opened.
```

SQL> **show parameter compatible;**

NAME	TYPE	VALUE
compatible	string	19.0.0
noncdb_compatible	boolean	FALSE

SQL> **select value "compatible" from v\$parameter where name = 'compatible';**

compatible

19.0.0

1 row selected.

SQL> **quit**

Disconnected from Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production

Version 19.4.0.0.0

5.10. Finish SAP Bundle Patch Post-Installation

```
ol2server:oraol2 74> setenv IHRDBMS /oracle/OL2/19.0.0
ol2server:oraol2 75> setenv OHRDBMS /oracle/OL2/19
ol2server:oraol2 76> env ORACLE_HOME=$OHRDBMS ORACLE_SID=$ORACLE_SID
$OHRDBMS/sapbundle/catsbp
```

catsbp - Post-process Installation of an SAP Bundle Patch.
Copyright (c) 2015, 2019, Oracle and/or its affiliates. All rights reserved.

Log file: \$ORACLE_BASE/cfgtoollogs/sqlpatch/SAP201908_APPLY_OL2_2019_12_10-15-56-20.log

Connecting to database...
Connecting to database...done.

Initializing database session...
Initializing database session...done.

Preparing for Datapatch execution...
Preparing for Datapatch execution...done.

Determining patch state...
Determining patch state...done.

Operations to be executed:
none

Executing Datapatch...
Executing Datapatch...skipped.
Reason: Patches already up-to-date

Loading style sheets...
Loading style sheets...skipped.
Reason: Style sheets already loaded

Recompiling objects with utlsp...
Recompiling objects with utlsp...skipped.
Reason: Objects already compiled

Post-processing Datapatch execution...
Post-processing Datapatch execution...done.

Log file: \$ORACLE_BASE/cfgtoollogs/sqlpatch/SAP201908_APPLY_OL2_2019_12_10-15-56-20.log

catsbp completed successfully.

Overall Status: COMPLETE

SQL> set pages 50

SQL> select PATCH_ID,PATCH_TYPE,ACTION,STATUS,ACTION_TIME,DESCRIPTION from
dba_registry_sqlpatch order by ACTION_TIME desc;

```
PATCH_ID PATCH_TYPE ACTION      STATUS
-----
ACTION_TIME
-----
DESCRIPTION
-----
 29651520 INTERIM  APPLY      SUCCESS
07-DEC-19 11.38.34.256460 AM
ENTRIES IN SYS.ILM_RESULT$$, SYS.ILM_EXECUTION$ NOT DELETED WHEN ILM_TASK_COMPLE
TE = 3

 29834717 RU      APPLY      SUCCESS
07-DEC-19 11.38.34.200305 AM
Database Release Update : 19.4.0.0.190716 (29834717)
```

SQL> set pages 100

SQL> select * from dba_registry_history order by ACTION_TIME desc;

```
ACTION_TIME
-----
ACTION              NAMESPACE
-----
VERSION            ID
-----
COMMENTS
-----
BUNDLE_SERIES
-----

BOOTSTRAP          DATAPATCH
12.2.0.1
RDBMS_12.2.0.1.0DBOCT2018RU_LINUX.X64_181002

BOOTSTRAP          DATAPATCH
18
RDBMS_18.5.0.0.0DBRU_LINUX.X64_181215

BOOTSTRAP          DATAPATCH
19
RDBMS_19.4.0.0.0DBRU_LINUX.X64_190626

10-DEC-19 03.56.49.969366 PM
APPLY              SERVER
19.0.0.0           201908
SBP 19.4.0.0.190716 201908 containing CPUJul2019
SAP

07-DEC-19 11.41.40.808130 AM
UPGRADE            SERVER
19.0.0.0
Upgraded from 18.5.0.0.0 to 19.4.0.0.0
```

07-DEC-19 11.38.15.558938 AM
RU_APPLY SERVER
19.0.0.0.0
Patch applied on 19.4.0.0.0: Release_Update - 190626171128

06-APR-19 02.10.08.418468 PM
APPLY SERVER
18.0.0.0 201902
SBP 18.5.0.0.190115 201902 containing CPUJan2019
SAP

05-APR-19 04.15.31.833972 PM
UPGRADE SERVER
18.0.0.0.0
Upgraded from 12.2.0.1.0 to 18.5.0.0.0

05-APR-19 04.15.26.270630 PM
VIEW INVALIDATE 8289601
view invalidation

11-FEB-19 12.46.32.585922 PM
APPLY SERVER
12.2.0.1 201811
SBP 12.2.0.1.181016 201811 containing CPUOct2018
SAP

25-JUN-18 11.29.13.758065 AM
APPLY SERVER
12.2.0.1 201802
SBP 12.2.0.1.180116 201802 containing CPUJan2018
SAP

11 rows selected.

```
SQL> ALTER SYSTEM SET "_FIX_CONTROL"=  
'5099019:ON','6055658:OFF','6120483:OFF','6399597:ON','6430500:ON','6972291:ON',  
'7324224:OFF','7658097:ON','8932139:ON','8937971:ON','9196440:ON','9495669:ON',  
'13627489:ON','14255600:ON','14595273:ON','18405517:2','20355502:10','20636003:OFF',  
'22540411:ON','25643889:ON','26423085:ON','26536320:ON','27321179:ON','27466597:ON',  
'28072567:ON','28558645:ON','28835937:ON','29450812:ON'  
COMMENT='SAP_19400190716_201908 RECOMMENDED SETTINGS'  
SCOPE=SPFILE;
```

System altered.

```
SQL> ALTER SYSTEM SET EVENT=
'10027',
'10028',
'10142',
'10183',
'10191',
'10995 level 2',
'38068 level 100',
'38085',
'38087',
'44951 level 1024',
'60025'
COMMENT='SAP_19400190716_201908 RECOMMENDED SETTINGS'
SCOPE=SPFILE;
```

System altered.

```
SQL> shutdown immediate;
Database closed.
Database dismounted.
ORACLE instance shut down.
SQL> startup
ORACLE instance started.
```

```
Total System Global Area 1660940944 bytes
Fixed Size                  8897168 bytes
Variable Size               939524096 bytes
Database Buffers            704643072 bytes
Redo Buffers                 7876608 bytes
Database mounted.
Database opened.
```

5.11. Check for Invalid Objects

```
SQL> select owner, object_name, object_type from dba_objects where status = 'INVALID';
```

no rows selected

```
SQL> select owner, object_name, object_type from dba_invalid_objects;
```

no rows selected

5.12. Update Database Statistics

```
ol2server:oraol2 79> brconnect -u // -c -f stats -t system_stats
ol2server:oraol2 80> brconnect -u // -c -f stats -t oradict_stats
ol2server:oraol2 81> brconnect -u // -c -f stats -t all -f collect -p 4
```

5.13. Reinstall DBACockpit Views

```
ol2server:oraol2 78> pwd
/oracle/OL2/oraupgrade.19c
ol2server:oraol2 79> sqlplus / as sysdba
```

```
SQL*Plus: Release 19.0.0.0.0 - Production on Wed Dec 11 09:35:01 2019
Version 19.4.0.0.0
```

Copyright (c) 1982, 2019, Oracle. All rights reserved.

```
Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.4.0.0.0
```

```
SQL> REM Check for invalid objects
```

```
SQL> spool pre_dbac_install.log
```

```
SQL> @post_upgrade_checks.sql
```

```
*****
Oracle Database Post-Upgrade Information Utility for SAP
*****
```

```
Date           : 2019-12-11 09:35:48
Script Version  : 19.0.0
Script Revision : 19-002
Script Date    : 2019-05-27
```

```
*****
Database Information
*****
```

```
--> Host Name           : ol2server
--> Host Platform       : Linux x86 64-bit (Platform ID: 13)
--> Platform type      : Unix
--> Instance Name (Status) : OL2 (OPEN)
--> Database Name       : OL2
--> Database Version    : 19.0.0.0.0
```

```
--> Database Configuration
--> Database Character Set : UTF8
--> National Character Set : UTF8
--> Database Log Mode     : ARCHIVELOG
--> Database Flashback Mode : NO
--> AWR Retention         : 8
```

```
--> Database Parameter
--> COMPATIBLE             : 19.0.0
--> REMOTE_OS_AUTHENT     : FALSE
```

```
--> Database Timezone
--> Timezone File Version  : V32
--> Database Timezone     : +02:00
```

```

--> Session Timezone      : +01:00

--> Oracle RAC System     : FALSE
--> Oracle DV System      : FALSE
--> SAP BW/DW/BI System    : FALSE
--> SAP Unicode System     : TRUE
--> SAP ABAP Stack/Java Stack : TRUE/FALSE

--> Database Security Configuration
--> User Profile SAPUPROF   : TRUE
--> DEFAULT_FAILED_LOGIN_ATTEMPTS: 10
--> DEFAULT_PASSWORD_LIFE_TIME      : 180

--> Fast Recovery Area (FRA) Configuration
--> FRA Destination        : /oracle/OL2/oraflash
--> FRA Size               : 30000 M
--> FRA Space Limit        : 30000 M
--> FRA Space Used         : 0 M / 0 %

```

```

*****
Database Restore Points
*****

```

There are no restore points defined.

```

*****
Database Components
*****

```

The following database components are installed:

Component ID	Version	Status
CATALOG	19.0.0.0.0	VALID
CATPROC	19.0.0.0.0	VALID
RAC	19.0.0.0.0	OPTION OFF
XDB	19.0.0.0.0	VALID
OLS	19.0.0.0.0	VALID

```

*****
Underscore (hidden) parameters
*****

```

The following underscore parameters are set:

- _use_single_log_writer
- _securefiles_concurrency_estimate
- _spacebg_sync_segblocks
- _suppress_identifiers_on_dupkey
- _mutex_wait_time
- _mutex_wait_scheme
- _kolfuseslf
- _fix_control
- _optimizer_extended_cursor_sharing_rel
- _optimizer_adaptive_cursor_sharing
- _optim_peek_user_binds
- _optimizer_use_feedback
- _optimizer_batch_table_access_by_rowid
- _disable_directory_link_check
- _rowsets_enabled

_optimizer_reduce_groupby_key
_log_segment_dump_parameter
_log_segment_dump_patch

Events and Trace Events

The following events are set:

10027
10028
10142
10183
10191
10995 level 2
38068 level 100
38085
38087
44951 level 1024
60025

The following trace events are set:

Database Maintenance Jobs

JOB_NAME	Owner	Status
MGMT_CONFIG_JOB	ORACLE_OCM	FALSE
MGMT_STATS_CONFIG_JOB	ORACLE_OCM	FALSE
FGR\$AUTOPURGE_JOB	SYS	FALSE
FILE_WATCHER	SYS	FALSE
HM_CREATE_OFFLINE_DICTIONARY	SYS	FALSE
LOAD_OPATCH_INVENTORY	SYS	FALSE
ORA\$PREPLUGIN_BACKUP_JOB	SYS	FALSE
XMLDB_NFS_CLEANUP_JOB	SYS	FALSE
BSLN_MAINTAIN_STATS_JOB	SYS	TRUE
CLEANUP_NON_EXIST_OBJ	SYS	TRUE
CLEANUP_ONLINE_IND_BUILD	SYS	TRUE
CLEANUP_ONLINE_PMO	SYS	TRUE
CLEANUP_TAB_IOT_PMO	SYS	TRUE
CLEANUP_TRANSIENT_PKG	SYS	TRUE
CLEANUP_TRANSIENT_TYPE	SYS	TRUE
DRA_REEVALUATE_OPEN_FAILURES	SYS	TRUE
FILE_SIZE_UPD	SYS	TRUE
ORA\$AUTOTASK_CLEAN	SYS	TRUE
PMO_DEFERRED_GIDX_MAINT_JOB	SYS	TRUE
PURGE_LOG	SYS	TRUE
RSE\$CLEAN_RECOVERABLE_SCRIPT	SYS	TRUE
SM\$CLEAN_AUTO_SPLIT_MERGE	SYS	TRUE

Operation Name	Status
auto optimizer stats job	DISABLED
auto space advisor job	DISABLED
automatic sql tuning task	DISABLED

Invalid Objects

Number of invalid objects (SYS): 0
Number of invalid objects (SAP): 0
Number of invalid objects (all): 0

No invalid objects found.

.

Generic Database Configuration Warnings

.

SAP-Specific Database Configuration Warnings

WARNING: ----> The retention time for the Automatic Workload Repository (AWR)
is not configured as recommended.
Current AWR retention is set to 8 days.
Recommended AWR retention is 42 or more days.
See SAP note 1326067.

.

FINISHED - Oracle Database Post-Upgrade Information Utility for SAP

PL/SQL procedure successfully completed.

SQL> **spool off**


```
SQL> REM Install DBACockpit Views in a Non-CDB Database
SQL> @dbac_install.sql
Connected.
```

```
-----
Check for Error Messages in the following spool file:
```

```
DBACockpit_install_2019-12-11_09-40-24.log
```

```
-----
*** 01 @<ap/ora_upgrade/post_upgrade/dbac_install.sql ***
*****
```

```
Database Name           : OL2
```

```
Database Architecture  : Non-Container Database (Non-CDB)
```

```
Database Container     : -
```

```
Database Container Type : -
```

```
*****
```

```
...
```

```
...
```

```
...
```

```
Check for Error Messages in the following spool file:
```

```
DBACockpit_install_2019-12-11_09-40-24.log
```

```
-----
END OF LOG FILE DBACockpit_install_2019-12-11_09-40-24.log
```

```
EXITING FROM SQL*PLUS
```

```
Disconnected from Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.4.0.0.0
```

Check for INVALID objects again:

```
ol2server:oraol2 80> sqlplus / as sysdba
```

```
SQL*Plus: Release 19.0.0.0.0 - Production on Wed Dec 11 09:44:39 2019  
Version 19.4.0.0.0
```

Copyright (c) 1982, 2019, Oracle. All rights reserved.

```
Connected to:  
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production  
Version 19.4.0.0.0
```

```
SQL> select owner, object_name, object_type from dba_objects where status = 'INVALID';
```

no rows selected

5.14. Check for symbolic links in directory objects

```
ol2server:oraol2 82> sqlplus / as sysdba
```

```
SQL*Plus: Release 19.0.0.0.0 - Production on Wed Dec 11 09:45:21 2019  
Version 19.4.0.0.0
```

Copyright (c) 1982, 2019, Oracle. All rights reserved.

```
Connected to:  
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production  
Version 19.4.0.0.0
```

```
SQL> @?/rdbms/admin/utldirsymlink.sql
```

The following DIRECTORY OBJECTS contain symlinks:

```
'EXT_DIR_DBAC_CLIENT'  
'JAVA$JOX$CUJSS$DIRECTORY$'  
'PREUPGRADE_DIR'
```

3 DIRECTORY OBJECTS with symlinks found.

PL/SQL procedure successfully completed.

No errors.

```
SQL> show parameter _disable_directory_link_check
```

NAME	TYPE	VALUE

_disable_directory_link_check	boolean	TRUE

5.15. Backup Database

Use Admin Tool of your choice.

5.16. Deinstall Old Oracle Software

```
ol2server:oraol2 92> /oracle/OL2/18/deinstall/deinstall -checkonly
```

```
Checking for required files and bootstrapping ...
```

```
Please wait ...
```

```
Location of logs /oracle/oraInventory/logs/
```

```
##### ORACLE DECONFIG TOOL START #####
```

```
##### DECONFIG CHECK OPERATION START #####
```

```
## [START] Install check configuration ##
```

```
Checking for existence of the Oracle home location /oracle/OL2/18.0.0
```

```
Oracle Home type selected for deinstall is: Oracle Single Instance Database
```

```
Oracle Base selected for deinstall is: /oracle/OL2
```

```
Checking for existence of central inventory location /oracle/oraInventory
```

```
## [END] Install check configuration ##
```

```
Network Configuration check config START
```

```
Network de-configuration trace file location: /oracle/oraInventory/logs/netdc_check2019-12-11_10-01-46AM.log
```

```
Specify all Single Instance listeners that are to be de-configured. Enter .(dot) to deselect all. [LISTENER]:
```

```
Network Configuration check config END
```

```
Database Check Configuration START
```

```
Database de-configuration trace file location: /oracle/oraInventory/logs/databasedc_check2019-12-11_10-01-46AM.log
```

```
Use comma as separator when specifying list of values as input
```

```
Specify the list of database names that are configured in this Oracle home []:
```

```
Database Check Configuration END
```

```
##### DECONFIG CHECK OPERATION END #####
```

```
##### DECONFIG CHECK OPERATION SUMMARY #####
```

```
Oracle Home selected for deinstall is: /oracle/OL2/18.0.0
```

```
Inventory Location where the Oracle home registered is: /oracle/oraInventory
```

```
Following Single Instance listener(s) will be de-configured: LISTENER
```

```
Location of response file generated: '/tmp/deinstall2019-12-11_09-56-
```

```
41AM/response/deinstall_OraDB18Home1.rsp'
```

```
A log of this session will be written to: '/oracle/oraInventory/logs/deinstall_deconfig2019-12-11_10-01-22-AM.out'
```

```
Any error messages from this session will be written to: '/oracle/oraInventory/logs/deinstall_deconfig2019-12-11_10-01-22-AM.err'
```

```
##### ORACLE DECONFIG TOOL END #####
```

ol2server:oraol2 94> /oracle/OL2/18/deinstall/deinstall

Checking for required files and bootstrapping ...

Please wait ...

Location of logs /oracle/oraInventory/logs/

ORACLE DECONFIG TOOL START

DECONFIG CHECK OPERATION START

[START] Install check configuration

Checking for existence of the Oracle home location /oracle/OL2/18.0.0

Oracle Home type selected for deinstall is: Oracle Single Instance Database

Oracle Base selected for deinstall is: /oracle/OL2

Checking for existence of central inventory location /oracle/oraInventory

[END] Install check configuration

Network Configuration check config START

Network de-configuration trace file location: /oracle/oraInventory/logs/netdc_check2019-12-11_10-13-33AM.log

Specify all Single Instance listeners that are to be de-configured. Enter .(dot) to deselect all. [LISTENER]:

Network Configuration check config END

Database Check Configuration START

Database de-configuration trace file location: /oracle/oraInventory/logs/databasedc_check2019-12-11_10-13-33AM.log

Use comma as separator when specifying list of values as input

Specify the list of database names that are configured in this Oracle home []:

Database Check Configuration END

DECONFIG CHECK OPERATION END

DECONFIG CHECK OPERATION SUMMARY

Oracle Home selected for deinstall is: /oracle/OL2/18.0.0

Inventory Location where the Oracle home registered is: /oracle/oraInventory

Following Single Instance listener(s) will be de-configured: LISTENER

Do you want to continue (y - yes, n - no)? [n]: y

A log of this session will be written to: /oracle/oraInventory/logs/deinstall_deconfig2019-12-11_10-13-22-AM.out'

Any error messages from this session will be written to: /oracle/oraInventory/logs/deinstall_deconfig2019-12-11_10-13-22-AM.err'

DECONFIG CLEAN OPERATION START

Database de-configuration trace file location: /oracle/oraInventory/logs/databasedc_clean2019-12-11_10-13-33AM.log

Network Configuration clean config START

Network de-configuration trace file location: /oracle/oraInventory/logs/netdc_clean2019-12-11_10-13-33AM.log

De-configuring Single Instance listener(s): LISTENER

De-configuring listener: LISTENER

Stopping listener: LISTENER

Warning: Failed to stop listener.

Deleting listener: LISTENER

Listener deleted successfully.

Listener de-configured successfully.

De-configuring Listener configuration file...

Listener configuration file de-configured successfully.

De-configuring Naming Methods configuration file...

Naming Methods configuration file de-configured successfully.

De-configuring Local Net Service Names configuration file...

Local Net Service Names configuration file de-configured successfully.

De-configuring backup files...

Backup files de-configured successfully.

The network configuration has been cleaned up successfully.

Network Configuration clean config END

DECONFIG CLEAN OPERATION END

DECONFIG CLEAN OPERATION SUMMARY

Following Single Instance listener(s) were de-configured successfully: LISTENER

#####

ORACLE DECONFIG TOOL END

Using properties file /tmp/deinstall2019-12-11_10-09-48AM/response/deinstall_2019-12-11_10-13-22-AM.rsp

Location of logs /oracle/oraInventory/logs/

ORACLE DEINSTALL TOOL START

DEINSTALL CHECK OPERATION SUMMARY

A log of this session will be written to: '/oracle/oraInventory/logs/deinstall_deconfig2019-12-11_10-13-22-AM.out'

Any error messages from this session will be written to: '/oracle/oraInventory/logs/deinstall_deconfig2019-12-11_10-13-22-AM.err'

DEINSTALL CLEAN OPERATION START

[START] Preparing for Deinstall

Setting LOCAL_NODE to ol2server

Setting CRS_HOME to false

Setting oracle.installer.invPtrLoc to /tmp/deinstall2019-12-11_10-09-48AM/oraInst.loc

Setting oracle.installer.local to false

[END] Preparing for Deinstall

Setting the force flag to false
Setting the force flag to cleanup the Oracle Base
Oracle Universal Installer clean START

Detach Oracle home '/oracle/OL2/18.0.0' from the central inventory on the local node : Done

Failed to delete the file '/oracle/OL2/18.0.0/dbs/ewallet.p12'. Either the file is in use or there are not enough permissions to delete the file.

Failed to delete the directory '/oracle/OL2/18.0.0/dbs'. The directory is not empty.

Failed to delete the directory '/oracle/OL2/18.0.0'. The directory is not empty.

Delete directory '/oracle/OL2/18.0.0' on the local node : Failed <<<<

The Oracle Base directory '/oracle/OL2' will not be removed on local node. The directory is in use by Oracle Home '/oracle/OL2/19.0.0'.

Oracle Universal Installer cleanup was successful.

Oracle Universal Installer clean END

[START] Oracle install clean

[END] Oracle install clean

DEINSTALL CLEAN OPERATION END

DEINSTALL CLEAN OPERATION SUMMARY

Run '/oracle/OL2/tfa/ol2server/tfa_home/bin/tfactl uninstall' as root to uninstall tfa.

Successfully detached Oracle home '/oracle/OL2/18.0.0' from the central inventory on the local node.

Failed to delete directory '/oracle/OL2/18.0.0' on the local node due to error : Either user has no permission to delete or file is in use.

Review the permissions and manually delete '/oracle/OL2/18.0.0' on local node.

Oracle Universal Installer cleanup was successful.

Review the permissions and contents of '/oracle/OL2' on nodes(s) 'ol2server'.

If there are no Oracle home(s) associated with '/oracle/OL2', manually delete '/oracle/OL2' and its contents.

Oracle deinstall tool successfully cleaned up temporary directories.

#####

ORACLE DEINSTALL TOOL END

Note! Previous representation of the ewallet.p12 caused above issue with /oracle/OL2/18.0.0

```
[root@ol2server dbs]# cd /oracle/OL2/18.0.0/
[root@ol2server 18.0.0]# ll
total 0
drwxr-xr-x. 2 oraol2 dba 24 Dec 11 10:14 dbs
[root@ol2server 18.0.0]# cd dbs
[root@ol2server dbs]# ll
total 4
-rw-----. 1 oraol2 dba 2987 Nov 27 12:32 ewallet.p12
[root@ol2server dbs]# chattr -i ewallet.p12
[root@ol2server OL2]# cd /oracle/OL2
[root@ol2server OL2]# rm -rf 18.0.0
[root@ol2server OL2]# ls -al | grep 18.0.0
```

5.17. Remove Link to Old Oracle Home

```
ol2server:oraol2 97> cd /oracle/OL2
ol2server:oraol2 98> pwd
/oracle/OL2
ol2server:oraol2 99> ls -al | grep 18.0.0
lrwxrwxrwx. 1 oraol2 dba 6 Apr 3 2019 18 -> 18.0.0
ol2server:oraol2 100> rm 18
ol2server:oraol2 101> ls -al | grep 18.0.0
```

5.18. Configure a link to SPFILE

```
ol2server:oraol2 103> cd /oracle/OL2/19.0.0/dbs
ol2server:oraol2 104> pwd
/oracle/OL2/19.0.0/dbs
ol2server:oraol2 105> ls -al
total 48
drwxr-xr-x. 2 oraol2 dba 4096 Dec 11 09:24 .
drwxr-xr-x. 74 oraol2 dba 4096 Dec 7 09:45 ..
-rw-----. 1 oraol2 dba 3032 Dec 3 15:39 cwallet.sso
-rw-----. 1 oraol2 dba 2987 Dec 3 15:39 ewallet.p12
-rw-rw----. 1 oraol2 dba 1544 Dec 11 09:25 hc_OL2.dat
-rw-r-----. 1 oraol2 dba 1917 Dec 7 09:51 initOL2.ora
-rw-r--r--. 1 oraol2 dba 3079 May 14 2015 init.ora
-rw-r-----. 1 oraol2 dba 24 Dec 7 09:51 lkOL2
-rw-r-----. 1 oraol2 dba 2048 Dec 7 09:51 orapwOL2
-rw-r-----. 1 oraol2 dba 8704 Dec 11 09:25 spfileOL2.ora
ol2server:oraol2 106> mv initOL2.ora initOL2.ora_old
ol2server:oraol2 107> sqlplus / as sysdba
```

SQL*Plus: Release 19.0.0.0.0 - Production on Wed Dec 11 10:28:44 2019
Version 19.4.0.0.0

Copyright (c) 1982, 2019, Oracle. All rights reserved.

Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.4.0.0.0

SQL> show parameter spfile

NAME	TYPE	VALUE
spfile	string	/oracle/OL2/19/dbs/spfileOL2.ora


```
SQL> quit
Disconnected from Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.4.0.0.0
ol2server:oraol2 108> cd; pwd; sqlplus /nolog
/home/oraol2
```

```
SQL*Plus: Release 19.0.0.0.0 - Production on Wed Dec 11 10:29:59 2019
Version 19.4.0.0.0
```

Copyright (c) 1982, 2019, Oracle. All rights reserved.

```
SQL> conn / as sysdba
Connected.
SQL> set verify off
SQL> set echo off
SQL> set heading off
SQL> set feedback off
SQL> host echo DB_SID=$DB_SID
DB_SID=OL2
```

```
SQL> host echo Creating init$DB_SID.ora
Creating initOL2.ora
```

```
SQL> spool init$DB_SID.ora
SQL> select 'spfile=(' || value || ')' from v$parameter where name = 'spfile';
```

```
spfile=(/oracle/OL2/19/dbs/spfileOL2.ora)
SQL> spool off
SQL> host ls -l init$DB_SID.ora
-rw-r--r--. 1 oraol2 dba 176 Dec 11 10:32 initOL2.ora
```

```
SQL> host cat init$DB_SID.ora
SQL> select 'spfile=(' || value || ')' from v$parameter where name = 'spfile';
```

```
spfile=(/oracle/OL2/19/dbs/spfileOL2.ora)
SQL> spool off
```

```
SQL> host cp init$DB_SID.ora init$DB_SID.raw
```

```
SQL> host cat init$DB_SID.raw | sed '/^SQL>/d' | sed '/^$/d' > init$DB_SID.ora
```

```
SQL> host cat init$DB_SID.ora
spfile=(/oracle/OL2/19/dbs/spfileOL2.ora)
```

```
SQL> host cp init$DB_SID.ora $ORACLE_HOME/dbs
```

```
SQL> quit
Disconnected from Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.4.0.0.0
```

+++

*Make sure that init<DBSID>.ora does not contain entries other than 'spfile=<path to spfile>' or comments.
Remove other entries.*

+++

5.19. Update JDBC Driver

See SAP Guide.

5.20. Start SAP System

multitenant:tenadm 80> **startsap -r3**

© 2019 SAP SE or an SAP affiliate company. All rights reserved. No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP SE or an SAP affiliate company.

SAP and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP SE (or an SAP affiliate company) in Germany and other countries. All other product and service names mentioned are the trademarks of their respective companies. Please see <http://www.sap.com/trademark> for additional trademark information and notices.

Copyright/Trademark