



Cisco IoT Field Network Director — Oracle Upgrade from 18c to 19c

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Cisco IoT Field Network Director — Oracle Upgrade from 18c to 19c

This document provides the latest information about upgrading from Oracle 18c to Oracle 19c in support of IoT Field Network Director (IoT FND), Release 4.7 installations.

Organization

This guide includes the following sections.

Conventions	Provides details on the use of bold and italic keywords, brackets and parentheses within the document.
Minimum Hardware Requirements	Summarizes minimum server requirements (RAM, disk space, tmp directory) necessary to support the Oracle 19c database software install.
Installing Oracle 19c Database	Step-by-step instructions for installing Oracle 19c database software.
Upgrading from Oracle 18c to 19c	Step-by-step instructions for upgrading Oracle 18c to Oracle 19c database software.
Post Upgrade Steps, on page 32	Step-by-step instructions on how to start up the IoT-FND with Oracle 19c Database.

Conventions

This document uses the following conventions.

Conventions	Indication
bold font	Commands and keywords and user-entered text appear in bold font.
<i>italic font</i>	Document titles, new or emphasized terms, and arguments for which you supply values are in <i>italic font</i> .
[]	Elements in square brackets are optional.
{x y z }	Required alternative keywords are grouped in braces and separated by vertical bars.
[x y z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.

Conventions	Indication
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
courier font	Terminal sessions and information the system displays appear in courier font.
< >	Nonprinting characters such as passwords are in angle brackets.
[]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.



Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

Caution: Means reader be careful. In this situation, you might perform an action that could result in equipment damage or loss of data.

Warning: IMPORTANT SAFETY INSTRUCTIONS

Means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS

Minimum Hardware Requirements

Ensure that your FND system meets the following physical memory requirements in the below table.

The recommendations in the Minimum Hardware Requirements table below are specified in the [Server Configuration Checklist for Oracle Database Installation](#) and [Storage Checklist for Oracle Database Installation](#). Additional RAM and swap space may be required to tune and/or improve the RDBMS performance as provided in Additional Requirements to Support Oracle Install table.

Table 1: Minimum Hardware Requirements to Upgrade from 18c to 19c

RAM	Swap Space Allocation Relative to RAM
Between 1GB (minimum) and 2GB (recommended)	1.5 times the size of RAM
Between 2GB and 16GB	Equal to the size of RAM
Greater than 16GB	16GB

Table 2: Additional Requirements to Support Oracle Install

Item	Requirement
Disk space allocated to the <code>/tmp</code> directory	At least 1 GB of space in the <code>/tmp</code> directory.

Item	Requirement
Local disk space for Database software files	7.2 GB

Installing Oracle 19c Database

You can follow the below procedure to install Oracle 19c database.

Procedure

-
- Step 1** Verify that IoT FND is running with Oracle 18c database software.
- Step 2** Stop the FND application by entering **service cgms stop**.
- Step 3** Install the Oracle 19c database software on the database server where Oracle 18c is currently running.
- Step 4** Follow these steps to install the Oracle 19c database:
- Option 1: Use the “oracle-database-preinstall-19c” package to perform all of your prerequisite setup steps by entering:
- yum install -y oracle-database-preinstall-19c**
- Option 2: If you are unable to use the yum update, then manually set the following parameters as detailed in the [Manual Setup of Oracle 19c Database](#) section below.
-

Prerequisites for Manual Setup of Oracle 19c Database

If you have not used the 'oracle-database-preinstall-19c' package to perform all the prerequisites, you need to manually perform the following setup tasks:

Procedure

-
- Step 1** Add the following lines to the **/etc/sysctl.conf** file, or in a file called **/etc/sysctl.d/98-oracle.conf**.

Example:

```
fs.file-max = 6815744
kernel.sem = 250 32000 100 128
kernel.shmni = 4096
kernel.shmall = 1073741824
kernel.shmmax = 4398046511104
kernel.panic_on_oops = 1
net.core.rmem_default = 262144
net.core.rmem_max = 4194304
net.core.wmem_default = 262144
net.core.wmem_max = 1048576
net.ipv4.conf.all.rp_filter = 2
net.ipv4.conf.default.rp_filter = 2
fs.aio-max-nr = 1048576
net.ipv4.ip_local_port_range = 9000 65500
```

- Step 2** Run one of the following commands to change the current kernel parameters, depending on which file you edited.

Example:

```
/sbin/sysctl -p
# Or
/sbin/sysctl -p /etc/sysctl.d/98-oracle.conf
```

Step 3 Add the following lines to a file called **/etc/security/limits.d/oracle-database-preinstall-19c.conf**.

Example:

```
oracle soft nofile 1024
oracle hard nofile 65536
oracle soft nproc 16384
oracle hard nproc 16384
oracle soft stack 10240
oracle hard stack 32768
oracle hard memlock 134217728
oracle soft memlock 134217728
```

Step 4 Set secure Linux to permissive by editing the **/etc/selinux/config** file (edits are noted in **bold type**):

Example:

```
#vi /etc/selinux/config
SELINUX=permissive
```

Once the change is complete, run the following command:

```
# setenforce Permissive
```

Step 5 Disable the Linux firewall by entering:

Example:

```
# systemctl stop firewalld
# systemctl disable firewalld
```

Step 6 Create the following Directories in which the Oracle software will be installed:

Example:

```
mkdir -p /home/oracle/app/oracle/product/19.0.0/dbhome_1
chown -R oracle:dba /home/oracle/app/oracle/product/19.0.0/dbhome_1
chmod -R 775 /home/oracle/app/oracle/product/19.0.0/dbhome_1
```

Step 7 Download Oracle19cSoftware and unzip the file by doing the following:

```
cd /home/oracle/app/oracle/product/product/19.0.0/dbhome_1
unzip -oq /home/oracle/LINUX.X64_193000_db_home.zip
```

Step 8 Run the installer:

```
cd /home/oracle/app/oracle/product/19.0.0/dbhome_1/
./runInstaller <--Note that there is a period before the forward slash
```

Manual Setup of Oracle 19c Database

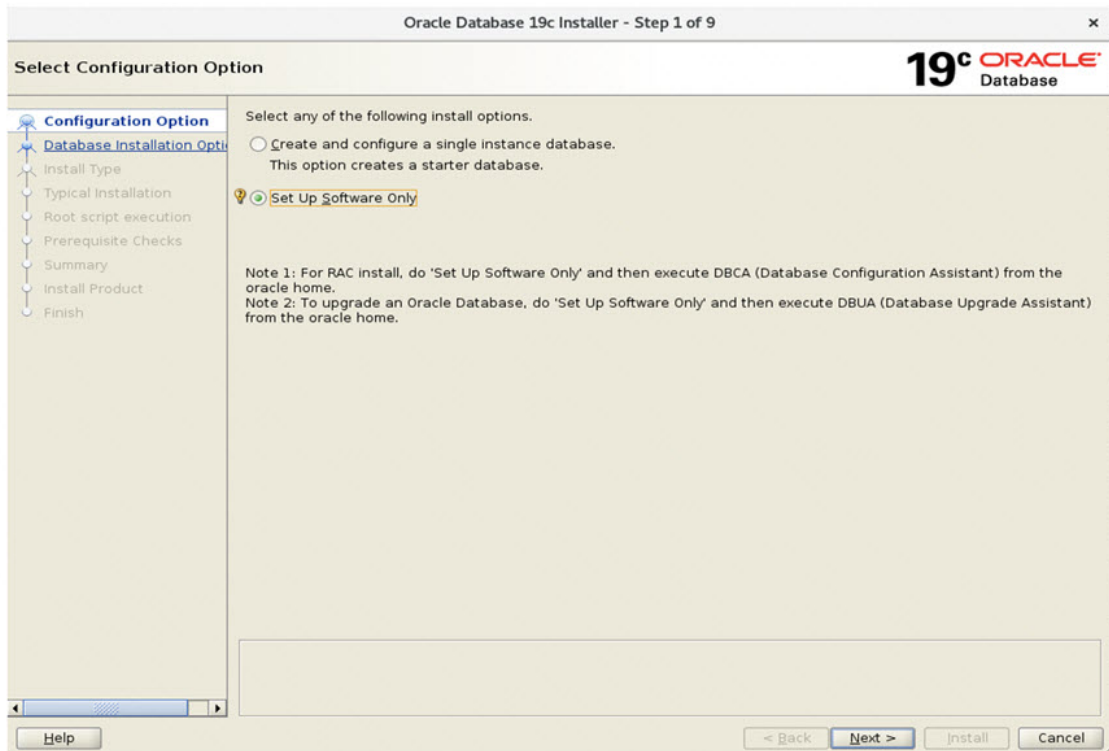
To complete the setup, enter the settings as shown below.



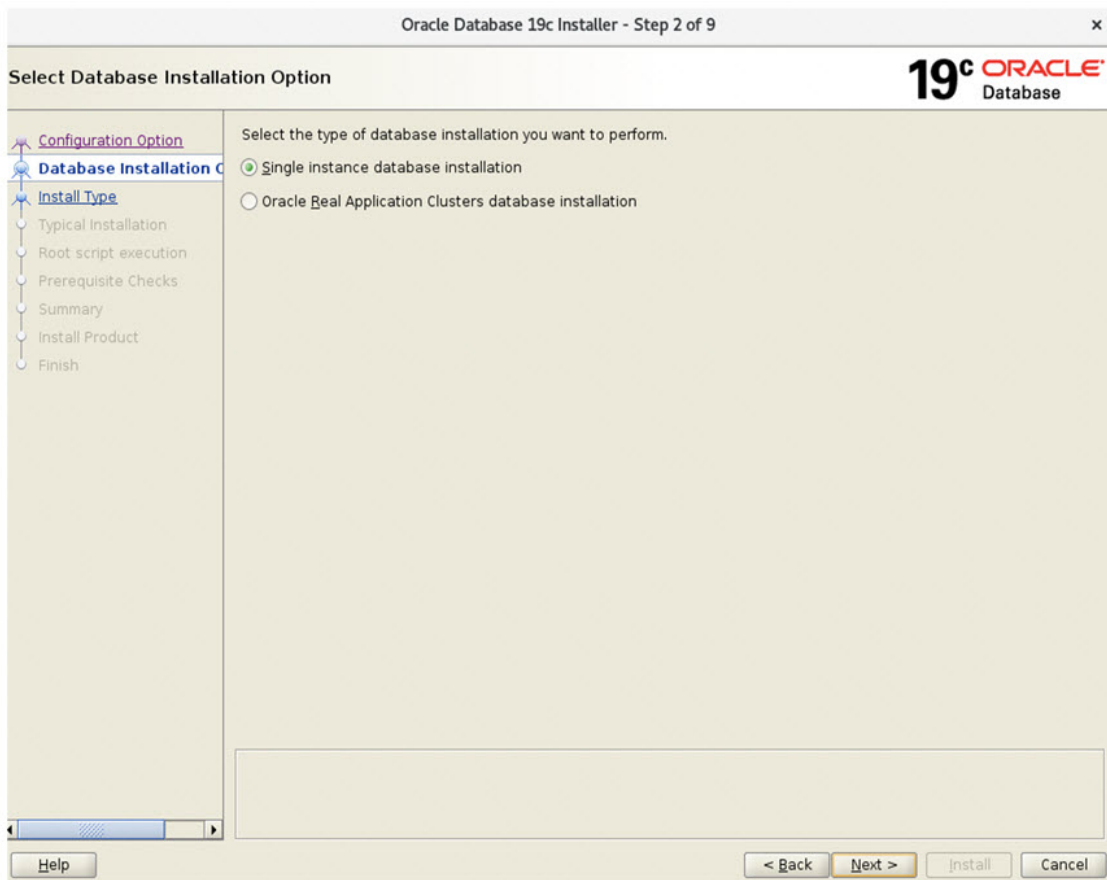
Tip For each step in this install procedure, click **Next** to proceed to the next screen until setup is complete.

Procedure

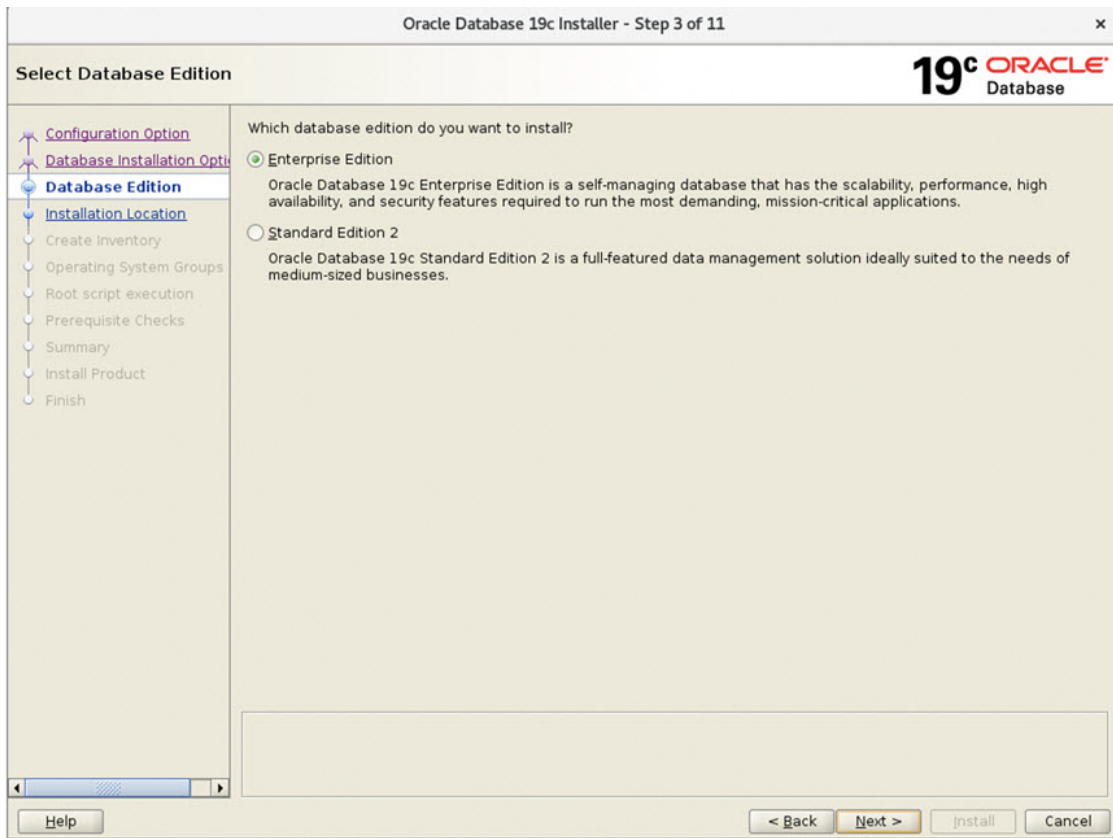
Step 1 Select Configuration Option. Click Set Up Software Only button.



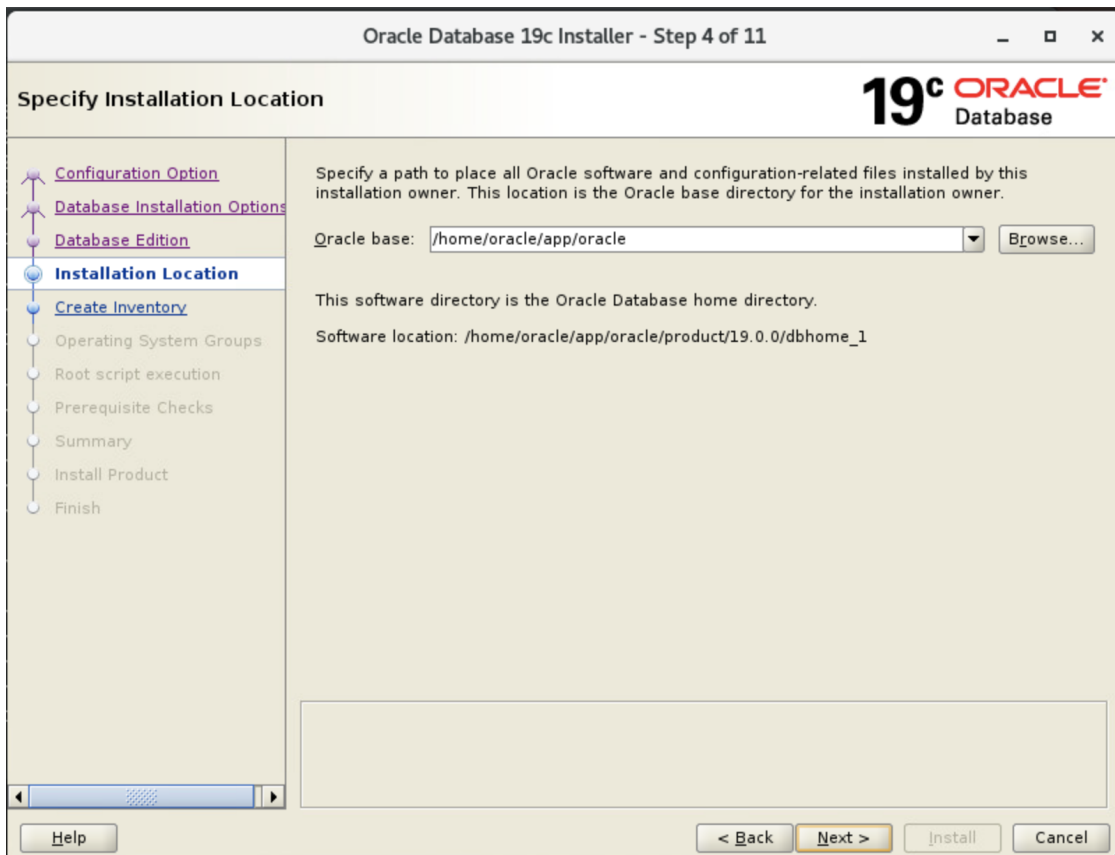
Step 2 Select Single instance database installation option in the Database Installation Option menu.



Step 3 Select Enterprise Edition option in Database Edition menu.



Step 4 Select Installation Location and enter `/home/oracle/app/oracle` (with no parenthesis) in the Oracle base field.



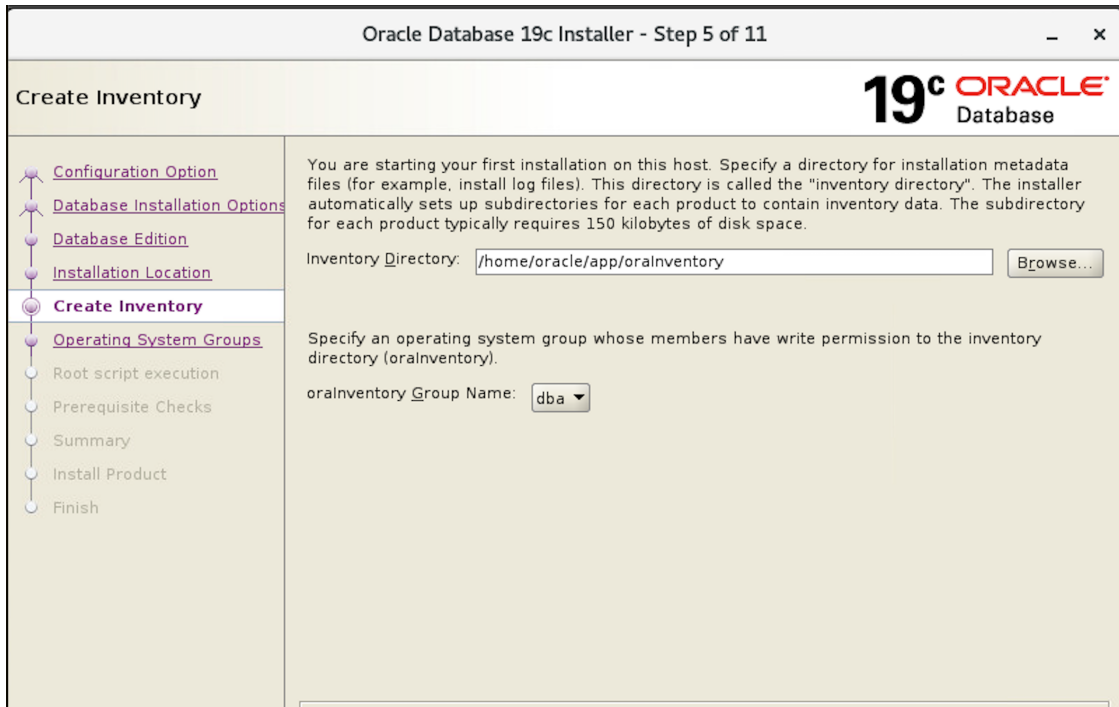
Step 5

Select Create Inventory.

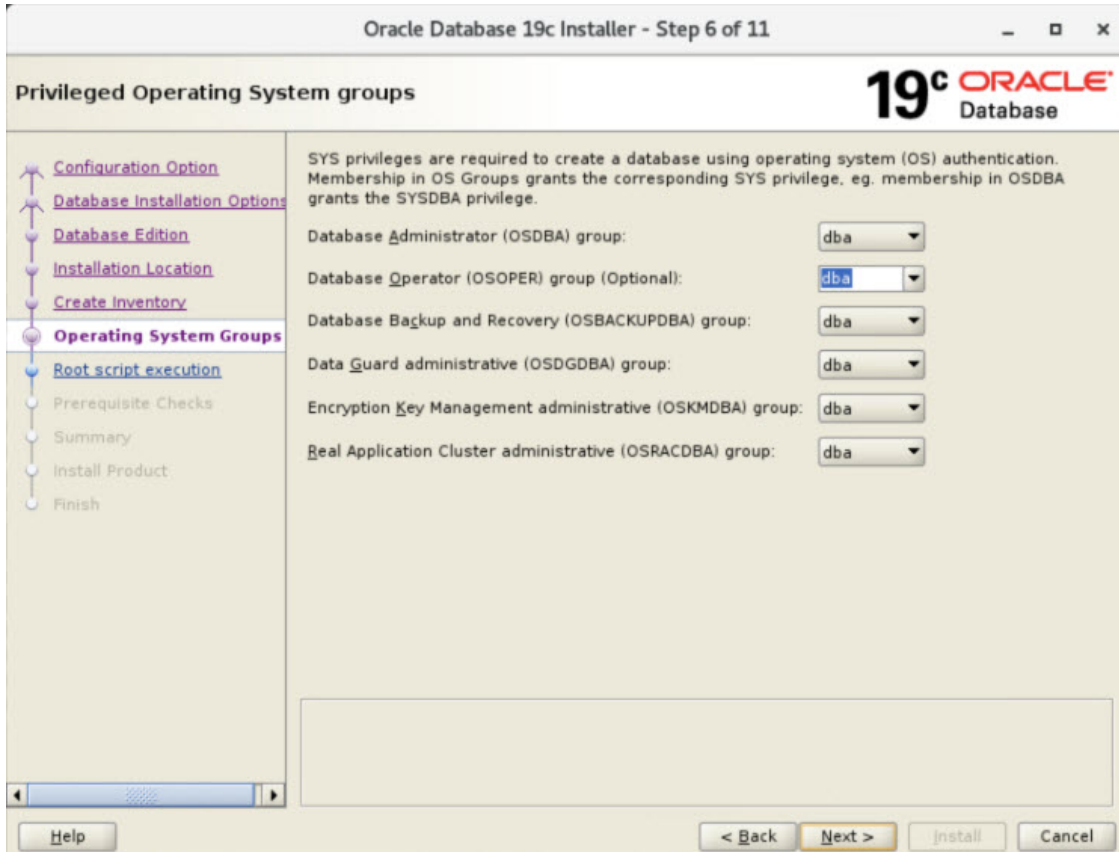
- Select **Create Inventory** (left pane) and in the right-pane enter the following path in the Inventory Directory field (right-pane): /home/oracle/app/oraInventory.

Note Installer automatically sets up the relevant sub-directories for each product and its inventory data. Ensure 150 kilobytes of disk space is available.

- Select dba from the oraInventory Group Name drop-down menu.



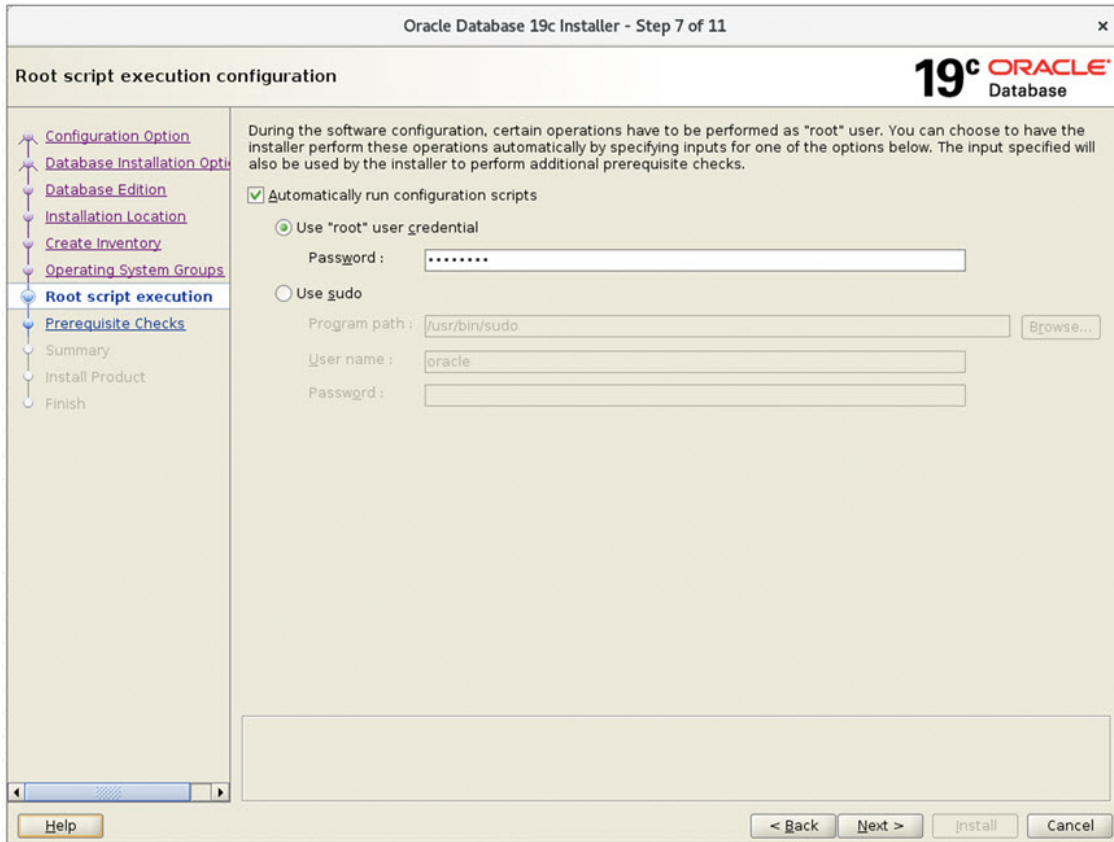
Step 6 Select the 'dba' option in all drop-down menu for all six groups (Privileges).



Step 7

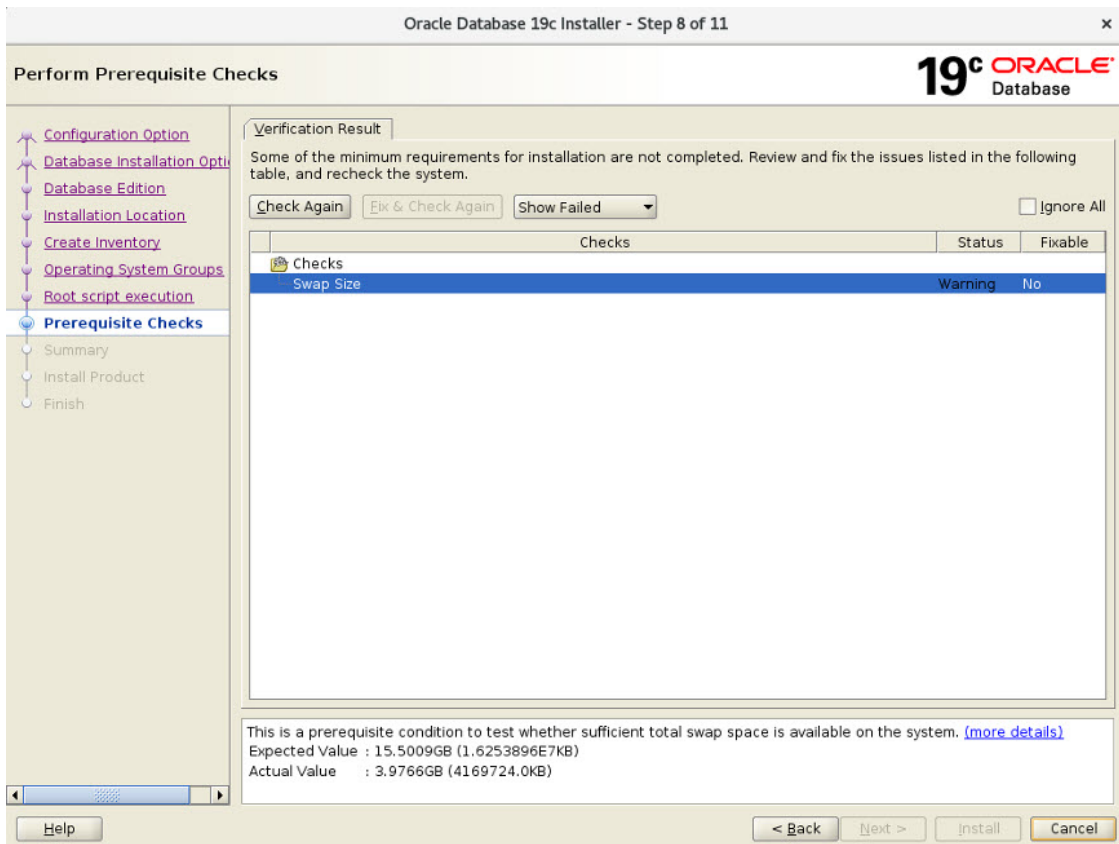
Root script execution menu

- In the left pane, select **Root script execution**.
- In the right-pane, select the **Automatically run configuration scripts** check box.
- In the right-pane, select the **Use "root" user credential** button and enter the root user password in the Password field.



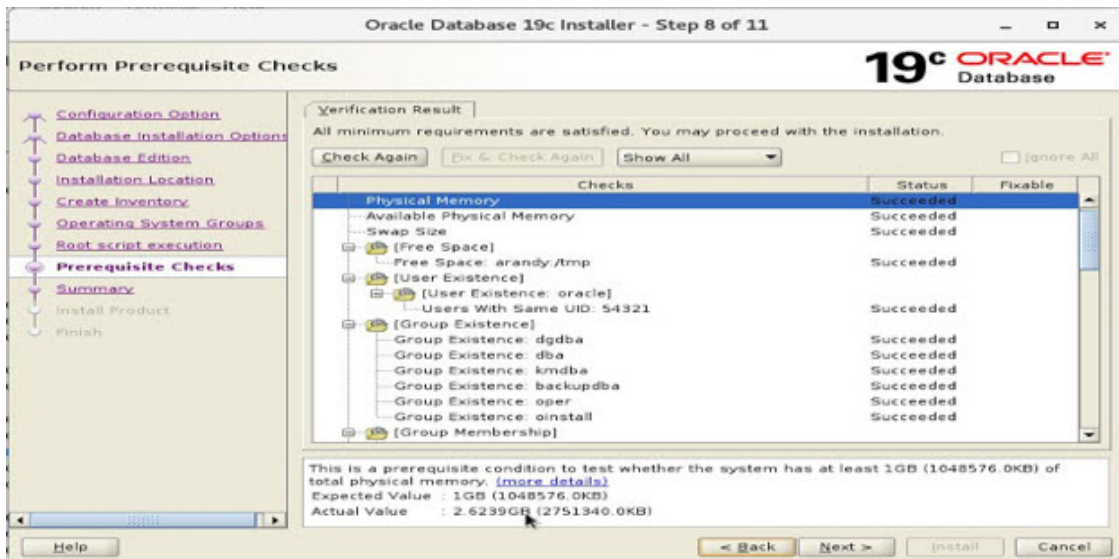
Step 8

In the Prerequisite Checks Menu, select the **Ignore All** check box (top-right hand corner of screen).



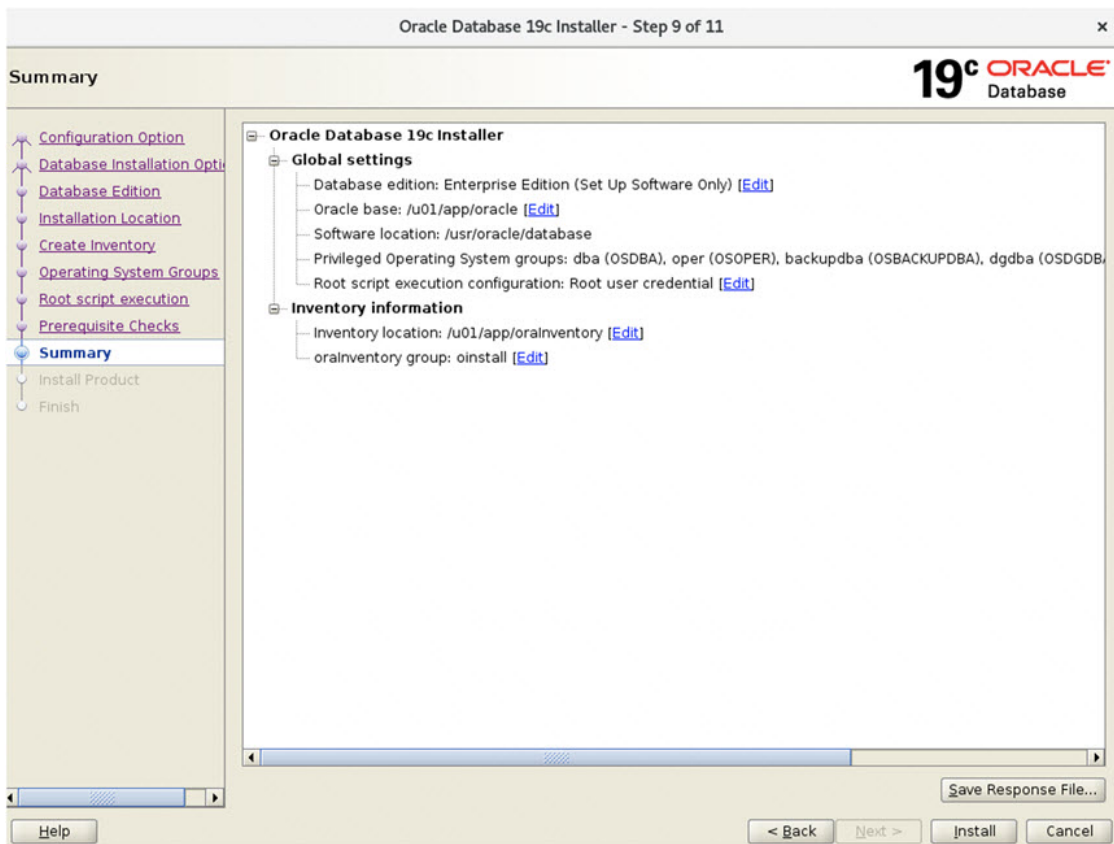
Step 9 Prerequisite Checks Menu

At the Perform Prerequisite Checks screen, click **Next >**. The Oracle Database 19c Installer Summary screen confirm that all minimum requirements are met.



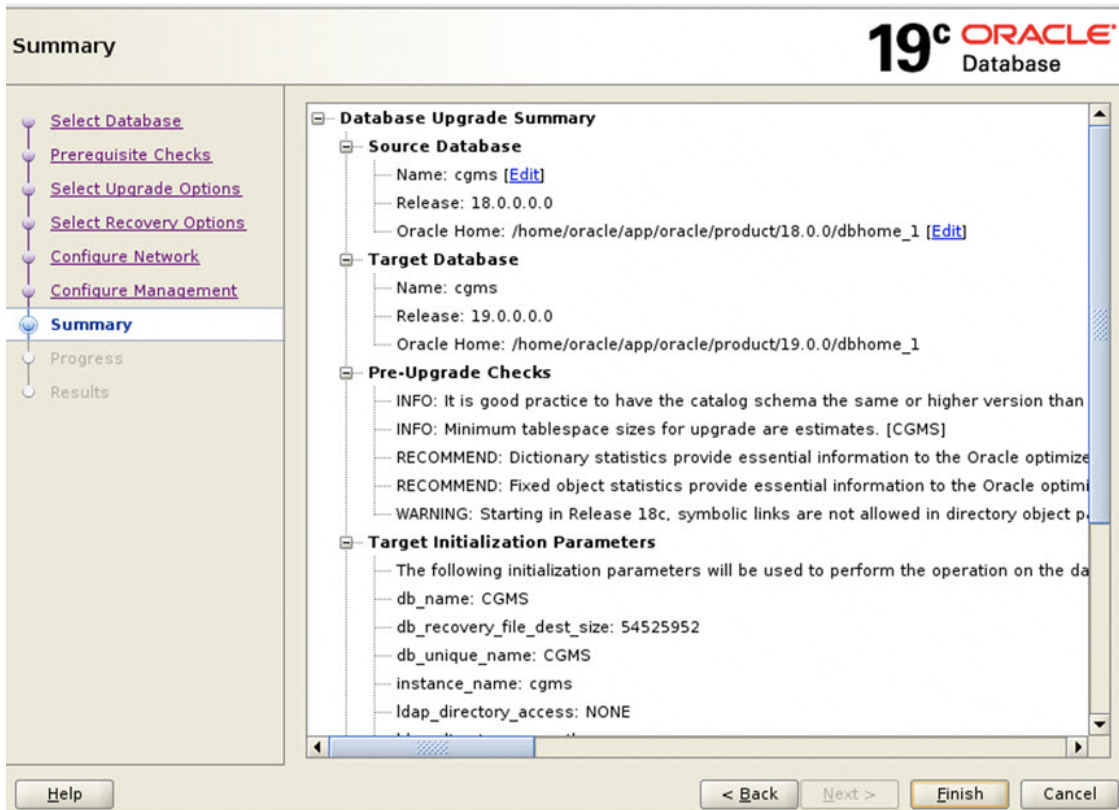
Step 10 Summary Menu:

At the Summary screen, click **Install**.



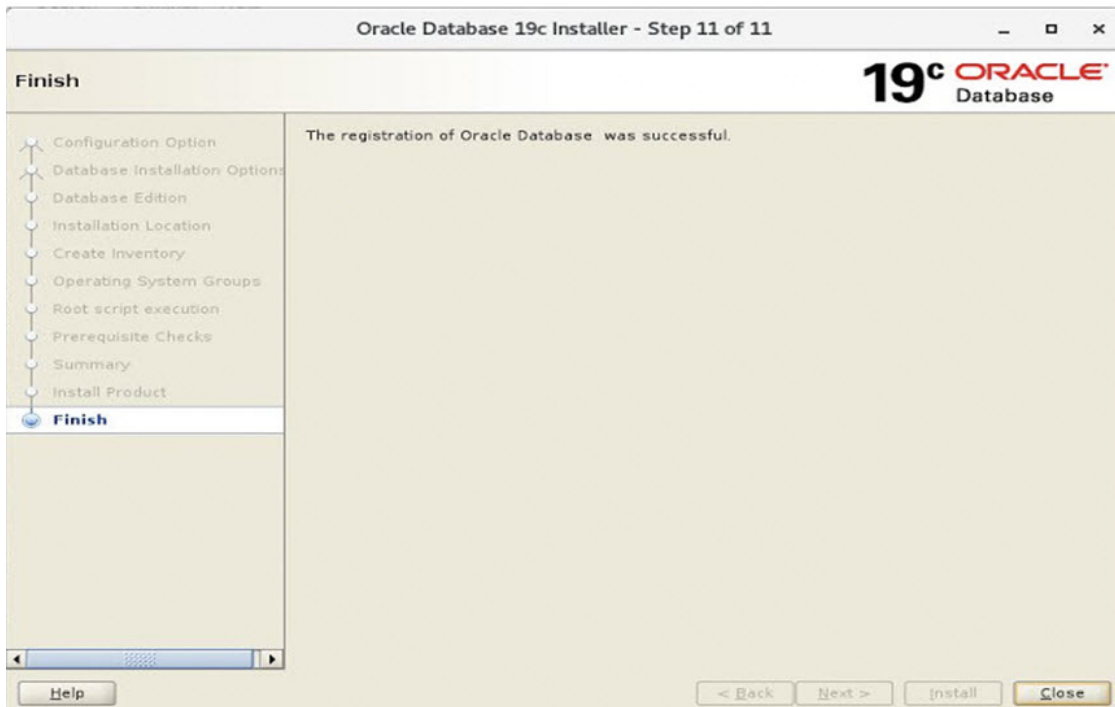
Step 11 Database Upgrade Summary

Review the Summary panel. Take a screenshot of the page for future reference. Then, click **Finish** to complete the Oracle 19c database installation and registration.



Step 12 The Oracle 19c registration is successful.

The Finish screen appears confirming successful registration of the Oracle 19c database. Click **Close**.



You must now upgrade from Oracle 18c to Oracle 19c by following the steps below.

Oracle Patch Installation (Optional)

To install the Oracle patch:

Before you begin



Note This is an illustration of the Oracle 19c patch installation (from 19.3.0.0.0 to 19.18.0.0.0).

1. Check the current Oracle version.

```
[root@iot-fnd-oracle ~]# su - oracle
[oracle@iot-fnd-oracle ~]$ sqlplus / as sysdba
SQL*Plus: Release 19.0.0.0.0 - Production on Wed Mar 29 20:59:44 2023
Version 19.3.0.0.0

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

Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.3.0.0.0

SQL> exit;
```

2. Stop the FND application (if running).

```
service cgms stop
```

3. Log into Oracle.

```
su - oracle
```

4. Stop the Oracle service (if running).

```
cd /opt/cgms-oracle/scripts  
./stopOracle.sh
```

5. Apply the patch file: p34765931_190000_Linux-x86-64.zip.

Procedure

Step 1 Create a patches directory under the /home/oracle folder to place the patch zip files.

```
mkdir /home/oracle/patches
```

Step 2 Download the database patch zip file (p34765931_190000_Linux-x86-64.zip) from [Oracle Database 19c Release Update & Release Update Revision January 2023 Known Issues](#).

Step 3 Copy the patch zip files to the /home/oracle/patches folder.

Step 4 Unzip the patch files (p34765931_190000_Linux-x86-64.zip) in the /home/oracle/patches folder.

```
su - oracle  
cd /home/oracle/patches/  
unzip p34765931_190000_Linux-x86-64.zip
```

Step 5 Go to the patch directory `cd /home/oracle/patches/34765931/` and run the following command to check if the prerequisites are passing.

```
[oracle@iot-fnd-oracle 34765931]$  
/home/oracle/app/oracle/product/19.0.0/dbhome_1/OPatch/opatch prereq  
CheckConflictAgainstOHWithDetail -ph ./  
Oracle Interim Patch Installer version 12.2.0.1.17  
Copyright (c) 2023, Oracle Corporation. All rights reserved.  
  
PREREQ session  
  
Oracle Home      : /home/oracle/app/oracle/product/19.0.0/dbhome_1  
Central Inventory : /home/oracle/app/oraInventory  
from             : /home/oracle/app/oracle/product/19.0.0/dbhome_1/oraInst.loc  
OPatch version   : 12.2.0.1.17  
OUI version      : 12.2.0.7.0  
Log file location :  
/home/oracle/app/oracle/product/19.0.0/dbhome_1/cfgtoollogs/opatch/opatch2023-02-10_07-15-33AM_1.log  
  
Invoking prereq "checkconflictagainsthwithdetail"  
  
Prereq "checkConflictAgainstOHWithDetail" passed.  
  
OPatch succeeded.
```

The minimum OPatch version required is 12.2.0.1.34. The patch installation FAILS if the OPatch version is below 12.2.0.1.34. For more information on applying the minimum OPatch version, see [Upgrading OPatch, on page 19](#).

Step 6 Run the following command to apply the patch.


```

[oracle@iot-fnd-oracle 34765931]$
/home/oracle/app/oracle/product/19.0.0/dbhome_1/OPatch/opatch apply

Oracle Interim Patch Installer version 12.2.0.1.36
Copyright (c) 2023, Oracle Corporation. All rights reserved.

Oracle Home      : /home/oracle/app/oracle/product/19.0.0/dbhome_1
Central Inventory : /home/oracle/app/oraInventory
from             : /home/oracle/app/oracle/product/19.0.0/dbhome_1/oraInst.loc
OPatch version   : 12.2.0.1.36
OUI version      : 12.2.0.7.0
Log file location :
/home/oracle/app/oracle/product/19.0.0/dbhome_1/cfgtoollogs/opatch/opatch2023-03-23_11-45-20AM_1.log

Verifying environment and performing prerequisite checks...
OPatch continues with these patches: 34765931

Do you want to proceed? [y|n] y
User Responded with: Y
All checks passed.

Please shutdown Oracle instances running out of this ORACLE_HOME on the local system.
(Oracle Home = '/home/oracle/app/oracle/product/19.0.0/dbhome_1')

Is the local system ready for patching? [y|n] y
User Responded with: Y
Backing up files...
Applying interim patch '34765931' to OH '/home/oracle/app/oracle/product/19.0.0/dbhome_1'
ApplySession: Optional component(s) [ oracle.network.gsm, 19.0.0.0.0 ] ,
[ oracle.rdbms.ic, 19.0.0.0.0 ] , [ oracle.rdbms.tg4db2, 19.0.0.0.0 ] ,
[ oracle.tfa, 19.0.0.0.0 ] , [ oracle.sdo.companion, 19.0.0.0.0 ] ,
[ oracle.options.olap.api, 19.0.0.0.0 ] , [ oracle.oid.client, 19.0.0.0.0 ] ,
[ oracle.xdk.companion, 19.0.0.0.0 ] , [ oracle.network.cman, 19.0.0.0.0 ] ,
[ oracle.rdbms.tg4msql, 19.0.0.0.0 ] , [ oracle.ons.eons.bwcompat, 19.0.0.0.0 ] ,
[ oracle.net.cman, 19.0.0.0.0 ] , [ oracle.rdbms.tg4tera, 19.0.0.0.0 ] ,
[ oracle.options.olap, 19.0.0.0.0 ] , [ oracle.rdbms.tg4sybs, 19.0.0.0.0 ] ,
[ oracle.ons.cclient, 19.0.0.0.0 ] , [ oracle.rdbms.tg4ifmx, 19.0.0.0.0 ] ,
[ oracle.jdk, 1.8.0.191.0 ] not present in the Oracle Home or a higher version is found.

Patching component oracle.slax.rsfl, 19.0.0.0.0...
Patching component oracle.ordim.jai, 19.0.0.0.0...
Patching component oracle.bali.jewt, 11.1.1.6.0...
Patching component oracle.bali.ewt, 11.1.1.6.0...
Patching component oracle.help.ohj, 11.1.1.7.0...
Patching component oracle.rdbms.locator, 19.0.0.0.0...
Patching component oracle.perlint.expat, 2.0.1.0.4...
Patching component oracle.rdbms.util, 19.0.0.0.0...
Patching component oracle.rdbms, 19.0.0.0.0...
Patching component oracle.rdbms.rsfl, 19.0.0.0.0...
Patching component oracle.assistants.acf, 19.0.0.0.0...
Patching component oracle.assistants.deconfig, 19.0.0.0.0...
Patching component oracle.assistants.server, 19.0.0.0.0...
Patching component oracle.blaslapack, 19.0.0.0.0...
Patching component oracle.buildtools.rsfl, 19.0.0.0.0...
Patching component oracle.ctx, 19.0.0.0.0...
Patching component oracle.dbdev, 19.0.0.0.0...
Patching component oracle.dbjava.ic, 19.0.0.0.0...
Patching component oracle.dbjava.jdbc, 19.0.0.0.0...
Patching component oracle.dbjava.ucp, 19.0.0.0.0...
Patching component oracle.duma, 19.0.0.0.0...
Patching component oracle.javavm.client, 19.0.0.0.0...
Patching component oracle.ldap.owm, 19.0.0.0.0...
Patching component oracle.ldap.rsfl, 19.0.0.0.0...

```

```

Patching component oracle.ldap.security.osdt, 19.0.0.0.0...
Patching component oracle.marvel, 19.0.0.0.0...
Patching component oracle.network.rsfc, 19.0.0.0.0...
Patching component oracle.odbccic, 19.0.0.0.0...
Patching component oracle.ons, 19.0.0.0.0...
Patching component oracle.ons.ic, 19.0.0.0.0...
Patching component oracle.oracore.rsfc, 19.0.0.0.0...
Patching component oracle.perlint, 5.28.1.0.0...
Patching component oracle.precomp.common.core, 19.0.0.0.0...
Patching component oracle.precomp.rsfc, 19.0.0.0.0...
Patching component oracle.rdbms.crs, 19.0.0.0.0...
Patching component oracle.rdbms.dbscripts, 19.0.0.0.0...
Patching component oracle.rdbms.deconfig, 19.0.0.0.0...
Patching component oracle.rdbms.oci, 19.0.0.0.0...
Patching component oracle.rdbms.rsfc.ic, 19.0.0.0.0...
Patching component oracle.rhp.db, 19.0.0.0.0...
Patching component oracle.sdo, 19.0.0.0.0...
Patching component oracle.sdo.locator.jrf, 19.0.0.0.0...
Patching component oracle.sqlplus, 19.0.0.0.0...
Patching component oracle.sqlplus.ic, 19.0.0.0.0...
Patching component oracle.wwg.plsql, 19.0.0.0.0...
Patching component oracle.ldap.rsfc.ic, 19.0.0.0.0...
Patching component oracle.network.listener, 19.0.0.0.0...
Patching component oracle.rdbms.lbac, 19.0.0.0.0...
Patching component oracle.nlsrtl.rsfc, 19.0.0.0.0...
Patching component oracle.rdbms.hs_common, 19.0.0.0.0...
Patching component oracle.network.client, 19.0.0.0.0...
Patching component oracle.sdo.locator, 19.0.0.0.0...
Patching component oracle.xdk.rsfc, 19.0.0.0.0...
Patching component oracle.rdbms.drdaas, 19.0.0.0.0...
Patching component oracle.oraolap, 19.0.0.0.0...
Patching component oracle.rdbms.dv, 19.0.0.0.0...
Patching component oracle.javavm.server, 19.0.0.0.0...
Patching component oracle.ldap.ssl, 19.0.0.0.0...
Patching component oracle.ctx.atg, 19.0.0.0.0...
Patching component oracle.rdbms.hsodbc, 19.0.0.0.0...
Patching component oracle.xdk, 19.0.0.0.0...
Patching component oracle.mgw.common, 19.0.0.0.0...
Patching component oracle.oraolap.dbscripts, 19.0.0.0.0...
Patching component oracle.xdk.xquery, 19.0.0.0.0...
Patching component oracle.rdbms.rman, 19.0.0.0.0...
Patching component oracle.odbcc, 19.0.0.0.0...
Patching component oracle.rdbms.install.plugins, 19.0.0.0.0...
Patching component oracle.oraolap.api, 19.0.0.0.0...
Patching component oracle.rdbms.scheduler, 19.0.0.0.0...
Patching component oracle.rdbms.install.common, 19.0.0.0.0...
Patching component oracle.xdk.parser.java, 19.0.0.0.0...
Patching component oracle.ovm, 19.0.0.0.0...
Patching component oracle.ctx.rsfc, 19.0.0.0.0...
Patching component oracle.ldap.client, 19.0.0.0.0...
Patching component oracle.install.deinstalltool, 19.0.0.0.0...
Patching component oracle.dbtoolslistener, 19.0.0.0.0...
Patching component oracle.precomp.lang, 19.0.0.0.0...
Patching component oracle.precomp.common, 19.0.0.0.0...
Patching component oracle.jdk, 1.8.0.201.0...
Patch 34765931 successfully applied.
Sub-set patch [29517242] has become inactive due to the application of a super-set patch [34765931].
Please refer to Doc ID 2161861.1 for any possible further required actions.
og file location:
/home/oracle/app/oracle/product/19.0.0/dbhome_1/cfgtoollogs/patch/patch2023-03-23_11-45-20AM_1.log

OPatch succeeded.

```

Step 7 Check if the upgraded patch version is 19.18.0 in the interim patches.

```
[oracle@iot-fnd-oracle ~]$  
/home/oracle/app/oracle/product/19.0.0/dbhome_1/OPatch/opatch lsinventory -details  
  
Patch 34765931      : applied on Thu Mar 23 11:51:24 EDT 2023  
Unique Patch ID: 25098466  
Patch description:  
"DATABASE RELEASE UPDATE : 19.18.0.0.230117 (REL-JAN230131) (34765931)"  
Created on 27 Jan 2023, 11:25:14 hrs UTC
```

Step 8 Confirm the upgraded patch.

```
[root@iok-oracle ~]# su - oracle  
[oracle@iok-oracle ~]$ sqlplus / as sysdba  
SQL*Plus: Release 19.0.0.0.0 - Production on Wed Mar 29 15:34:04 2023  
Version 19.18.0.0.0  
  
Copyright (c) 1982, 2022, Oracle. All rights reserved.  
  
Connected to:  
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production  
Version 19.18.0.0.0  
  
SQL> exit;  
Disconnected from Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production  
Version 19.18.0.0.0  
[oracle@iok-oracle ~]$exit
```

What to do next

Start Oracle.

```
su - oracle  
cd /opt/cgms-oracle/scripts  
./startOracle.sh
```

Upgrading OPatch

To apply the Oracle patch 19.18, the minimum required OPatch version is 12.2.0.1.34. If the OPatch version is low, you will see the following error. You can resolve this issue by applying the minimum OPatch version 12.2.0.1.34.

```
[oracle@iot-fnd-oracle 34765931]$  
/home/oracle/app/oracle/product/19.0.0/dbhome_1/OPatch/opatch apply  
Oracle Interim Patch Installer version 12.2.0.1.17  
Copyright (c) 2023, Oracle Corporation. All rights reserved.  
Oracle Home      : /home/oracle/app/oracle/product/19.0.0/dbhome_1  
Central Inventory : /home/oracle/app/oraInventory  
from            : /home/oracle/app/oracle/product/19.0.0/dbhome_1/oraInst.loc  
OPatch version   : 12.2.0.1.17  
OUI version      : 12.2.0.7.0  
Log file location :  
/home/oracle/app/oracle/product/19.0.0/dbhome_1/cfgtoollogs/opatch/opatch2023-02-10_07-16-05AM_1.log  
Verifying environment and performing prerequisite checks...  
Prerequisite check "CheckMinimumOPatchVersion" failed.  
The details are:  
The OPatch being used has version 12.2.0.1.17 while the following patch(es) require higher versions:  
Patch 34765931 requires OPatch version 12.2.0.1.34.  
Please download latest OPatch from My Oracle Support.  
UtilSession failed: Prerequisite check "CheckMinimumOPatchVersion" failed.  
Log file location:  
/home/oracle/app/oracle/product/19.0.0/dbhome_1/cfgtoollogs/opatch/opatch2023-02-10_07-16-05AM_1.log  
OPatch failed with error code 73
```

The steps are an illustration for requesting the minimum OPatch version 12.2.0.1.34 to apply the 19.18 patch on an old OPatch version 12.2.0.1.17.

Procedure

Step 1 To upgrade the OPatch version, download the **12.2.0.1.36** OPatch version from the Oracle support [Patch 6880880 \(oracle.com\)](#) .

Step 2 Place the zip file in the **\$ORACLE_HOME** directory and follow the steps that are given below.

The OPatch file is: **p6880880_190000_Linux-x86-64.zip**

a) Change directory to **\$ORACLE_HOME/OPatch/**

```
[oracle@iot-fnd-oracle 34765931]$  
cd $ORACLE_HOME/OPatch/
```

b) Check the current version of OPatch.

```
[oracle@iot-fnd-oracle OPatch]$ ./opatch version  
OPatch Version: 12.2.0.1.17  
OPatch succeeded.
```

c) Take backup of the present OPatch in the following directory.

```
[oracle@iot-fnd-oracle ]$  
cd /home/oracle/app/oracle/product/19.0.0/dbhome_1  
[oracle@iot-fnd-oracle dbhome_1]$  
tar -cvzPpf OPatch_backup.tar OPatch/
```

d) Remove the OPatch folder.

```
[oracle@iot-fnd-oracle dbhome_1]$  
rm -rf OPatch
```

e) Unzip 12.2.0.1.36 the OPatch version and check if the OPatch folder is created under the **dbhome_1** directory.

```
[oracle@iot-fnd-oracle dbhome_1]$  
unzip p6880880_190000_Linux-x86-64.zip
```

f) Check the upgraded OPatch version.

```
[oracle@iot-fnd-oracle dbhome_1]$ cd OPatch  
[oracle@iot-fnd-oracle OPatch]$ ./opatch version  
OPatch Version: 12.2.0.1.36  
OPatch succeeded.
```

What to do next

Continue with [Step 6](#) in the Oracle Patch Installation procedure.

Upgrading from Oracle 18c to 19c

After you have successfully installed the Oracle 19c database, you can now upgrade your Oracle 18c software to Oracle 19c software by following the information noted under each step (for example, 1, 2 and 3, etc.) and sub-step (a, b, c, etc.) summarized below:

Procedure

Step 1 Go to the following directory:

```
/home/oracle/app/oracle/product/19.0.0.0/dbhome_1/bin
```

Step 2 Before running the upgrade process, run the following queries on the 18c database:

```
/home/oracle/app/oracle/product/18.1.0/dbhome_1/jdk/bin/java-jar
```

```
/home/oracle/app/oracle/product/19.0.0.0/dbhome_1/rdbms/admin/preupgrade.jar
```

```
SQL>@/home/oracle/app/oracle/cfgtoollogs/CGMS/preupgrade/preupgrade_fixups.sql
```

```
SQL>@$ORACLE_HOME/rdbms/admin/utlrp.sql
```

- Remove Spatial

```
connect / as sysdba
alter session set current_schema="MDSYS";
@?/md/admin/deinssdo.sql
```
- Remove Oracle Multimedia

```
connect / as sysdba
@?/ord/im/admin/imremov.sql
Enter "Y" when prompted
```
- Remove the parameters:

```
NLS_SORT='BINARY' _CI'
NLS_COMP='LINGUISTIC'
```

by entering the following commands

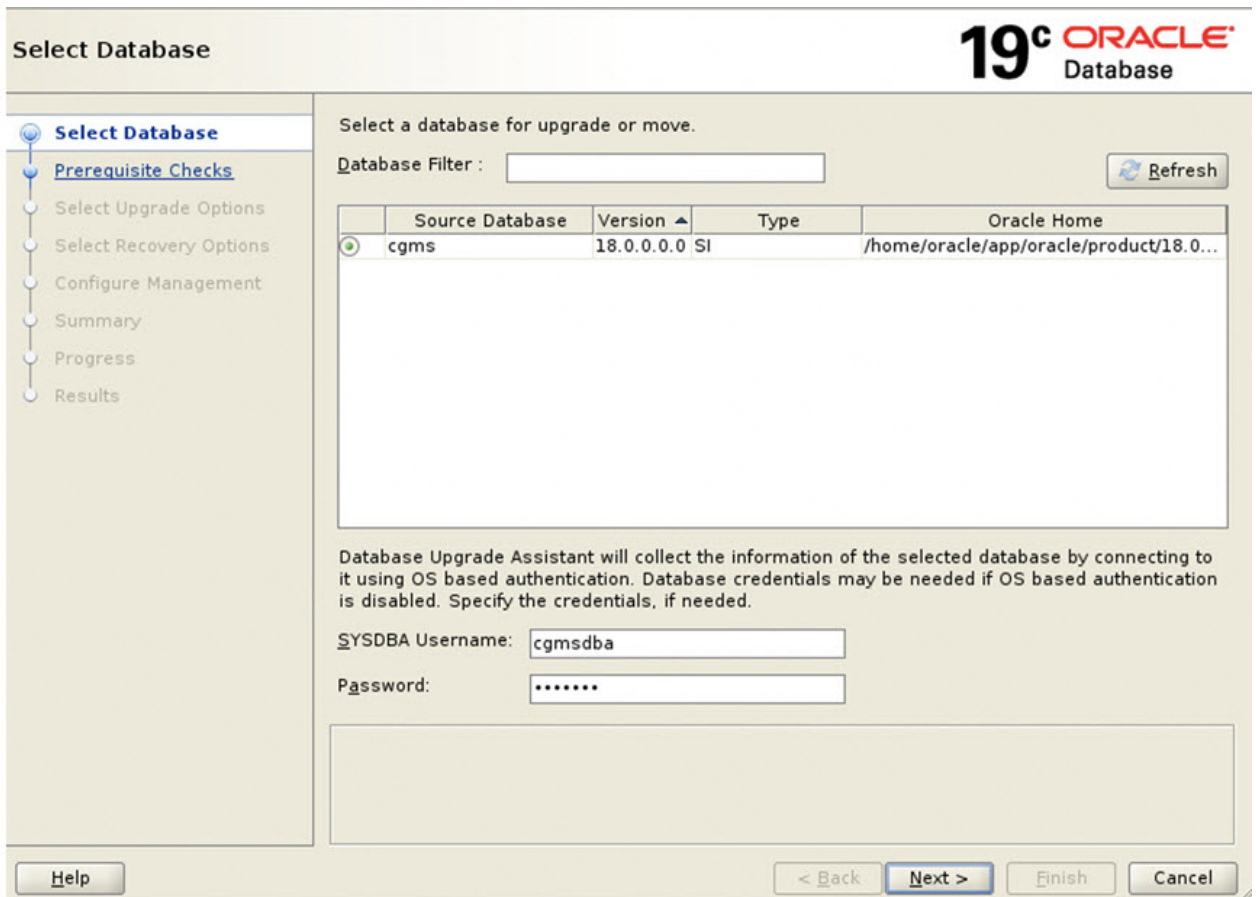
```
alter system reset NLS_SORT;
alter system reset NLS_COMP;
```
- connect / as sysdba

```
@$ORACLE_HOME/rdbms/admin/utlrp.sql
```
- SET SERVEROUTPUT ON;

```
EXECUTE DBMS_PREUP.INVALID_OBJECTS;
```

Once done, start the upgrade process by entering: **./dbua**. Follow the screen instructions in the Database Upgrade Assistant.

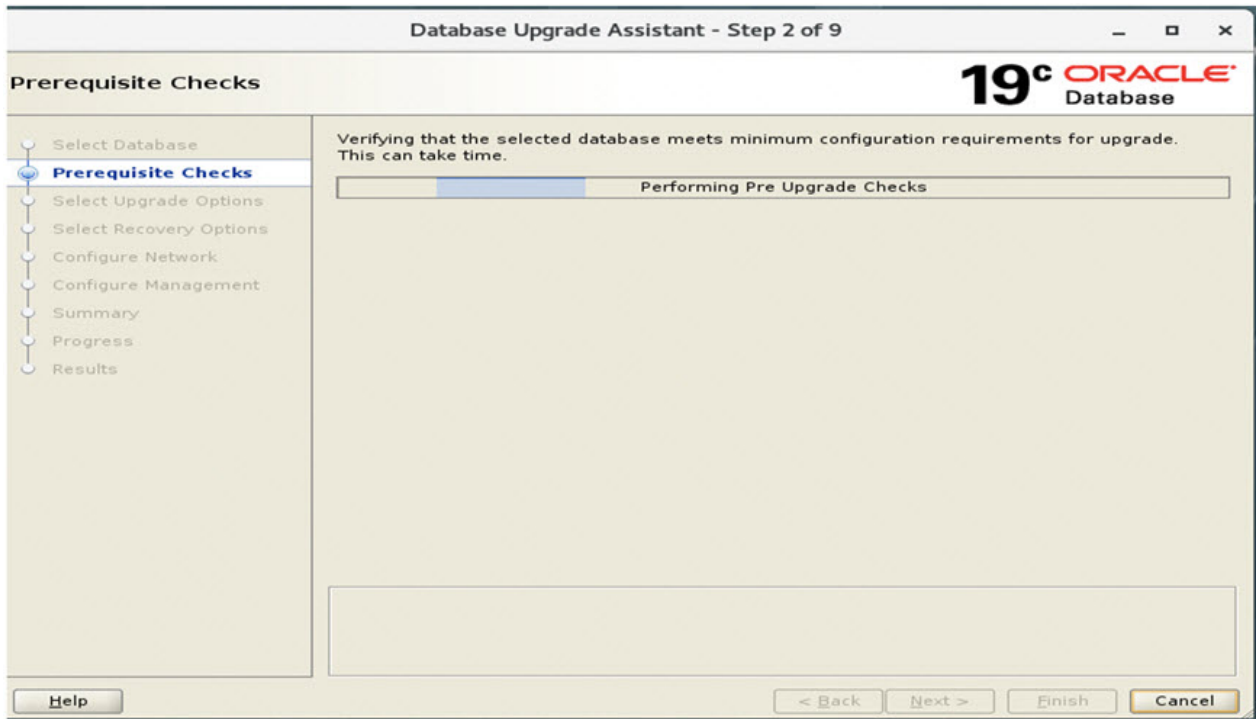
Select the database and click **Next >**. The Database Upgrade Assistant ensures the database meets the necessary requirements by performing a prerequisite check.



Step 3

Database Upgrade Assistant : Prerequisite Checks

Click **Next >**. The upgrade begins. If there are any issues with the upgrade, a screen displays the issues that need to be resolved.



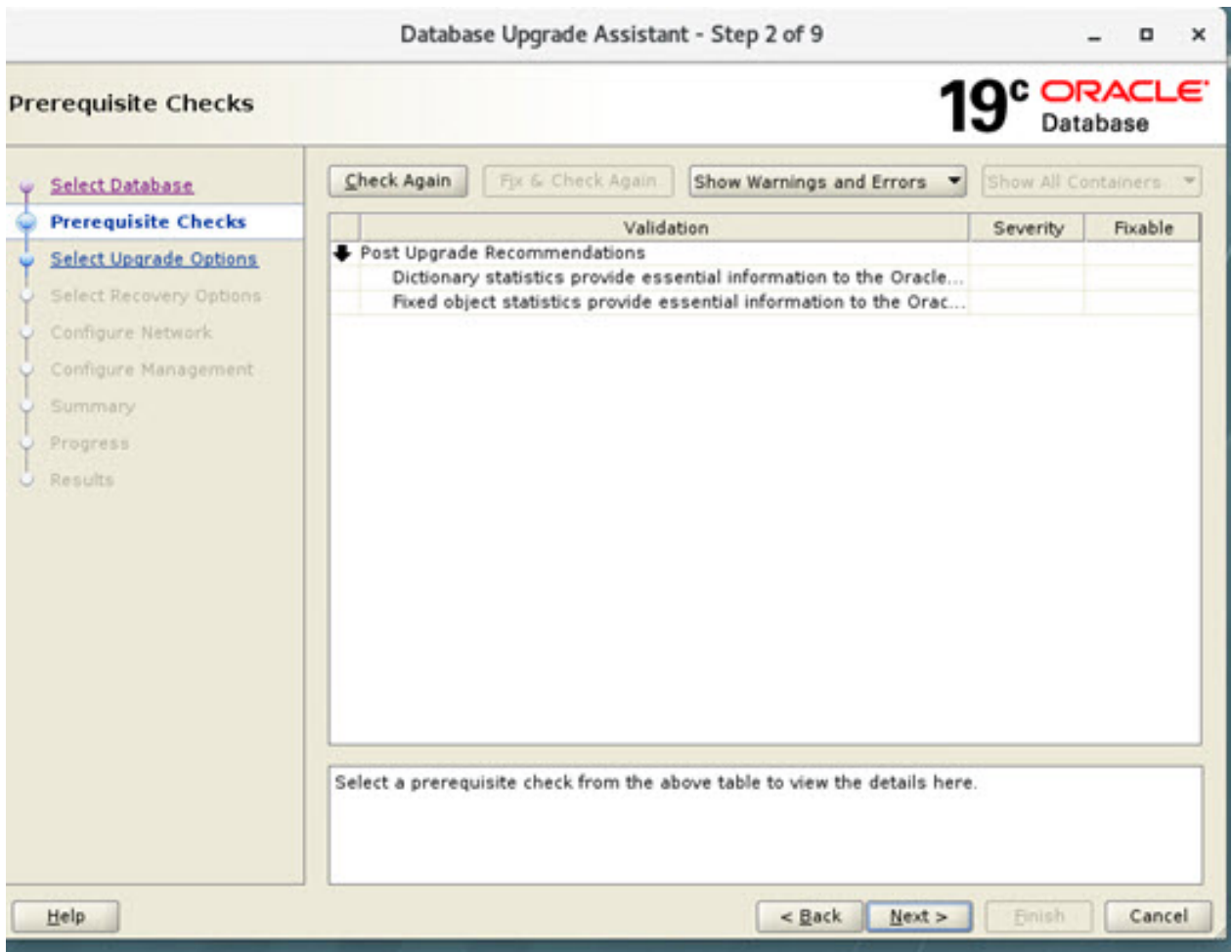
Step 4 Database Upgrade Assistant : Displays Issues to Fix Before and After Upgrade
After resolving any outstanding issues noted under Checks to be fixed, click **Next >**.

Prerequisite Checks **19^c** ORACLE Database

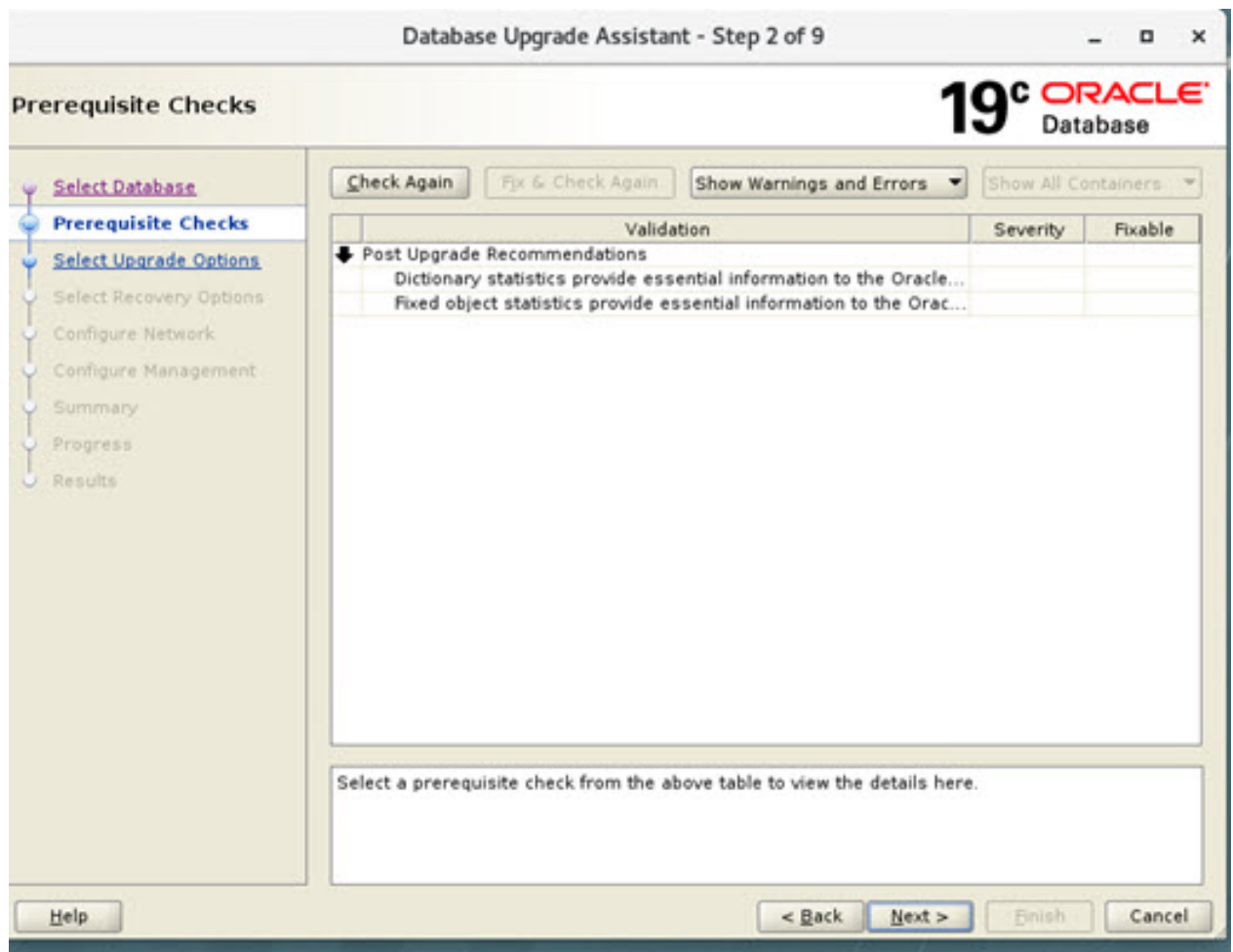
Validation	Severity	Fixable
↓ Checks to be fixed ... There should be no INVALID objects in SYS/SYSTEM or user sc...	Warning	Manual
↓ Post Upgrade Recommendations Dictionary statistics provide essential information to the Oracle... Fixed object statistics provide essential information to the Orac...		

Select a prerequisite check from the above table to view the details here.

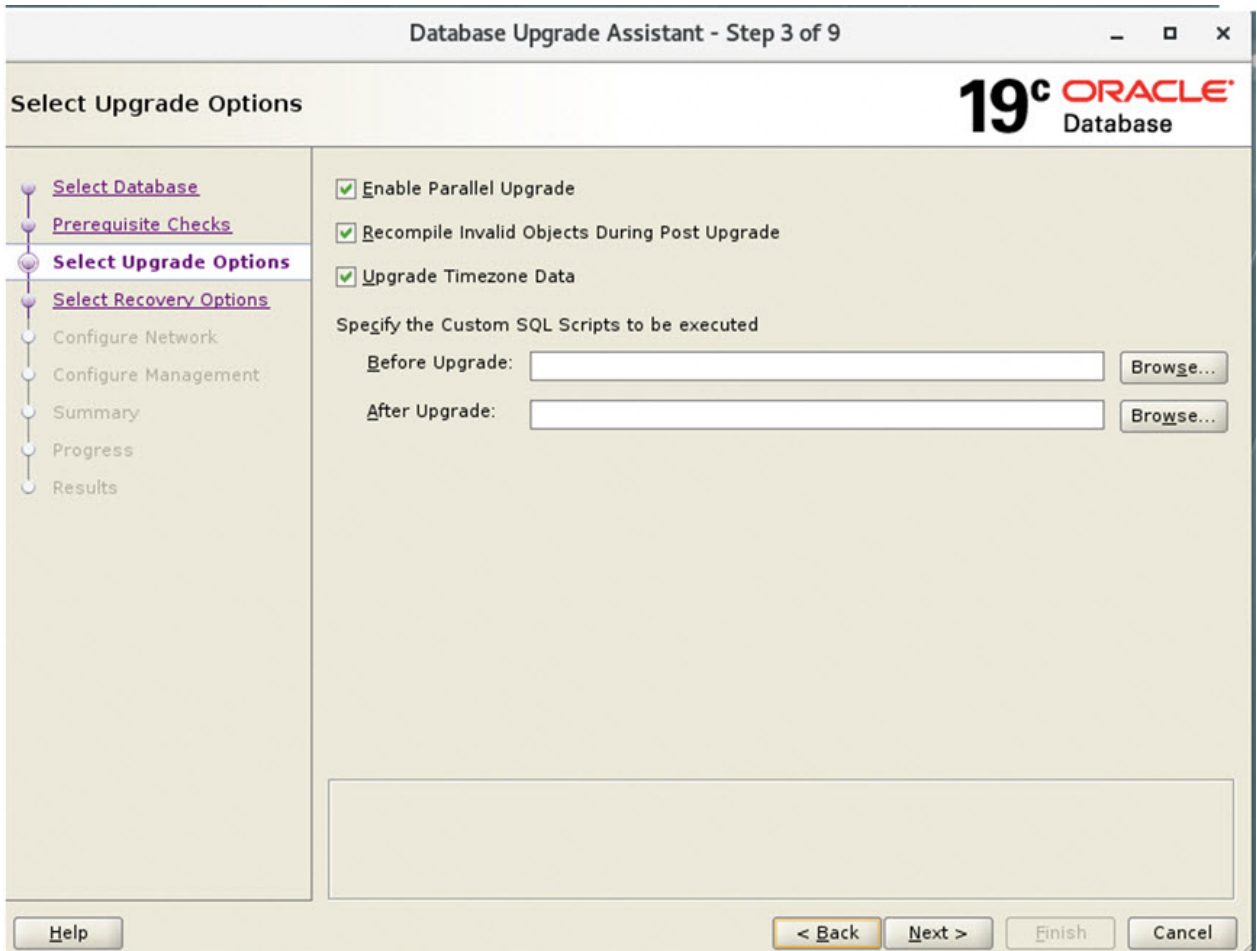
A page displays Recommendations for items that you should address after the upgrade completes (Post Upgrade).



Step 5 Displays Issues to Fix After Upgrade
Click **Next >** to go to the next screen.



Step 6 Select Upgrade Options. Uncheck the Recompile Invalid Object During Post Upgrade option. Ensure that the Enable Parallel Upgrade and Unable Timezone Data options remain checked. Click **Next >**.



Step 7

Select Recovery Options. Select Use Flashback and Guaranteed Restore Point and Create a New Guaranteed Restore Point. Click **Next >**.

19^c ORACLE[®]
Database

Select Recovery Options

Select an option to recover the database in case of upgrade failure.

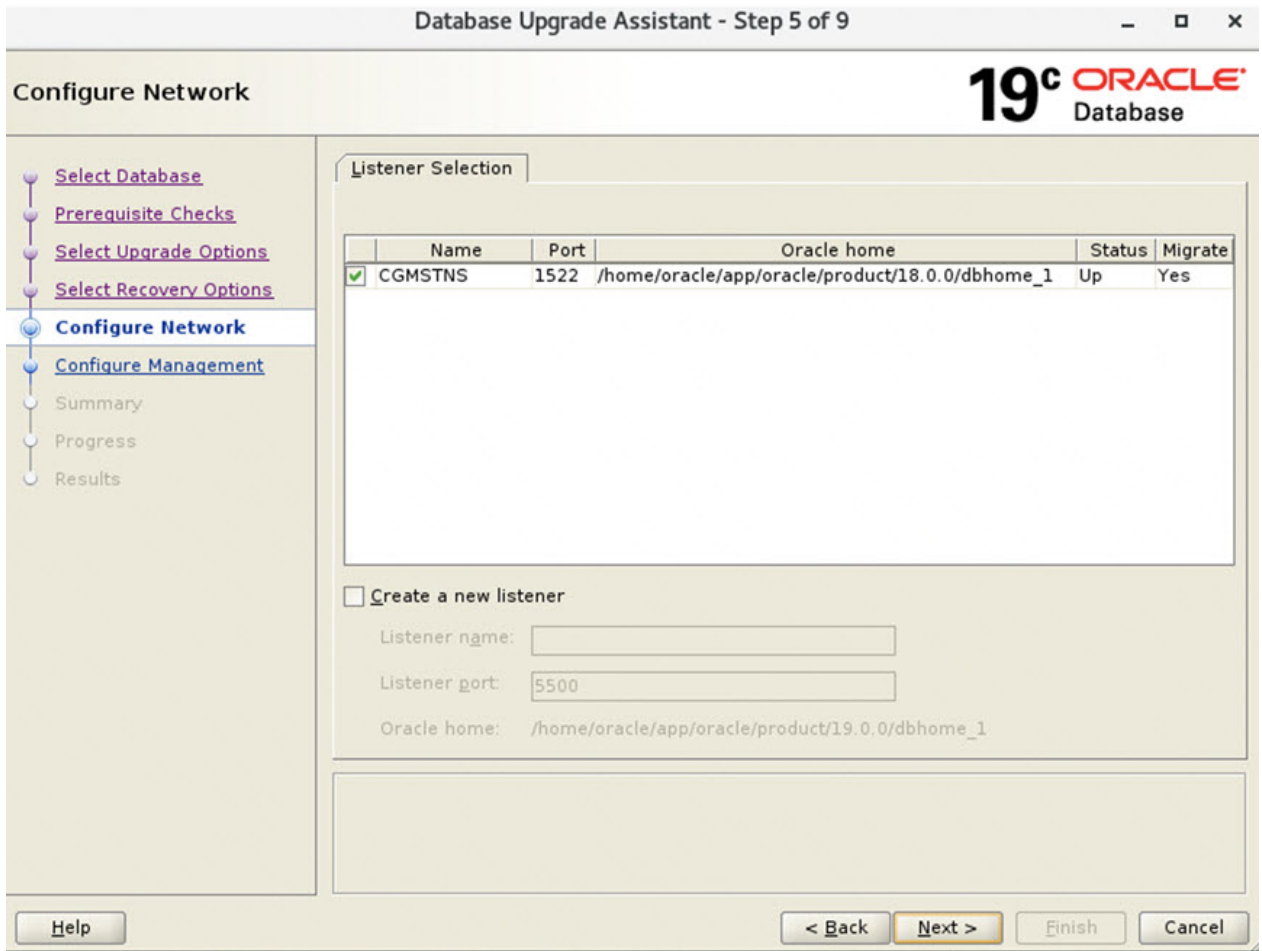
- Use Flashback and Guaranteed Restore Point
 - Create a New Guaranteed Restore Point
 - Use Available Guaranteed Restore Point ▼
- Use RMAN Backup
 - Create a New Offline RMAN Backup

Backup Location Browse...
 - Create a New Partial Offline RMAN Backup with User Tablespac...
 - Use Latest Available Full RMAN Backup

Latest RMAN Backup Timestamp : N/A View/Edit Restore Script
- I have my own backup and restore strategy

Help
< Back
Next >
Finish
Cancel

Step 8 Configure Network. In the Listener Selection window, select the check box for 'CGMSTNS' (if not already checked). Click **Next >**.



Step 9

Configure Management. Ensure that the check box next to Configure Enterprise Manager (EM) database express option is unchecked. Click **Next >**.

Configure Management **19^c ORACLE[®]**
Database

[Select Database](#)
[Prerequisite Checks](#)
[Select Upgrade Options](#)
[Select Recovery Options](#)
[Configure Network](#)
Configure Management
[Summary](#)
Progress
Results

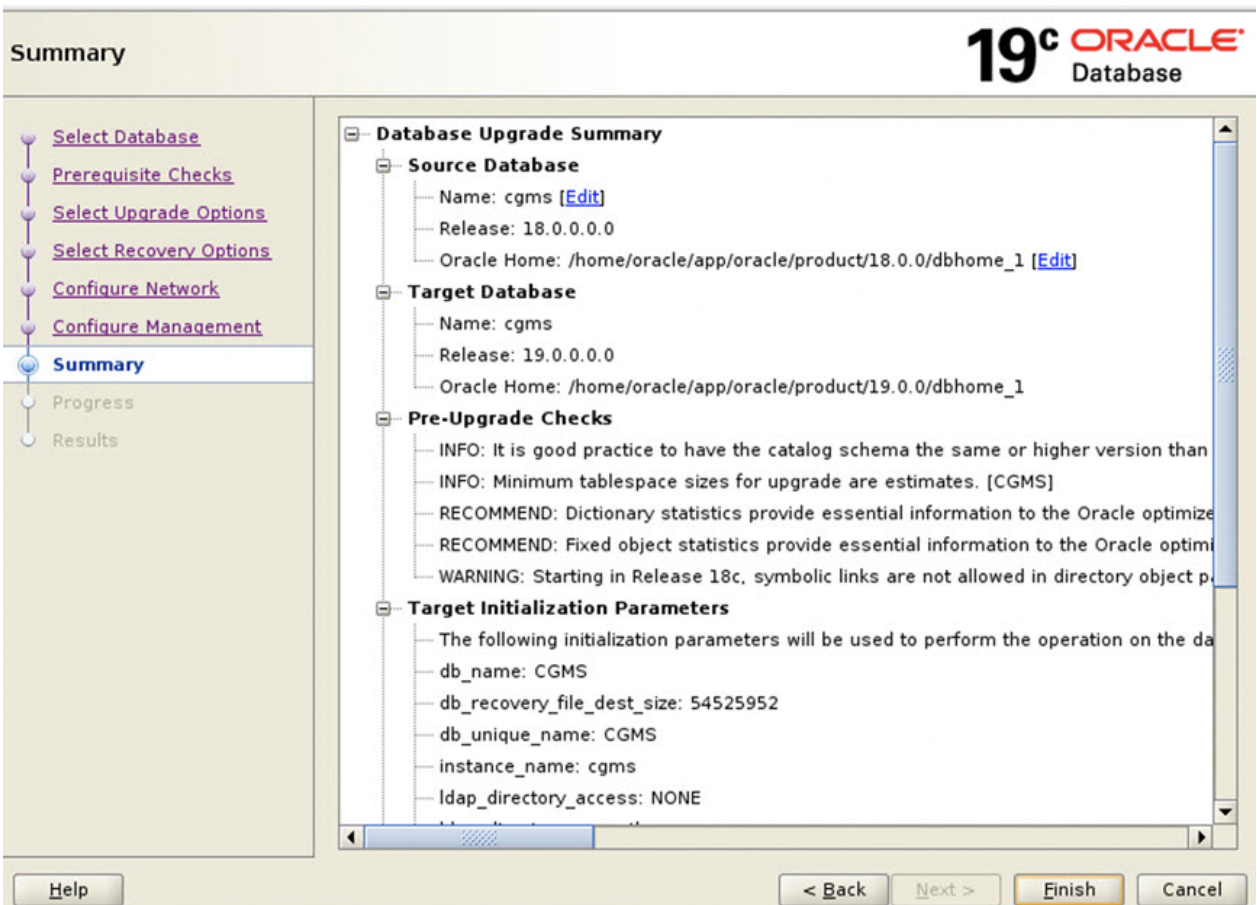
Specify the management options for the database.

Configure Enterprise Manager (EM) database express
EM database express port:
 Configure EM database express port as global port

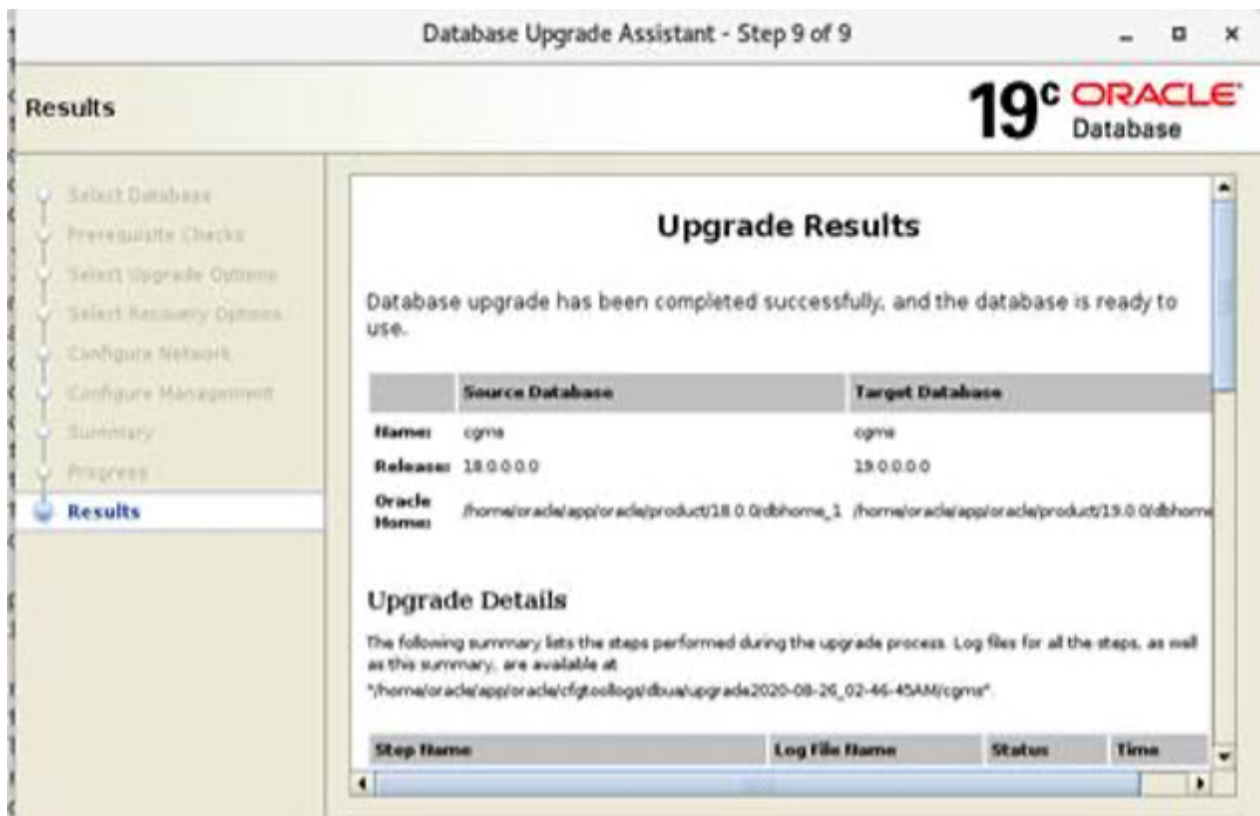
Register with Enterprise Manager (EM) cloud control
OMS host:
OMS port:
EM_admin_username:
EM_admin_password:
DBSNMP user password:
ASMSNMP user password:

Step 10 Database Upgrade Summary Page

At the Database Upgrade Summary page, click **Finish**. The Database Upgrade Assistant page appears noting that the Oracle 18c to Oracle 19c upgrade was a success.



The database upgrade results are displayed.



Post Upgrade Steps

Procedure

Step 1 Once the DBUA process is successfully executed, update the `/home/oracle/.bashrc` file with the Oracle 19.0.0 path by removing the old 18c path.

```
vim /home/oracle/.bashrc
```

```
#Oracle Settings updated with Oracle 19.0.0 path
export ORACLE_BASE=/home/oracle/app/oracle
export ORACLE_HOME=/home/oracle/app/oracle/product/19.0.0/dbhome_1
export PATH=$PATH:/home/oracle/app/oracle/product/19.0.0/dbhome_1/bin
export LD_LIBRARY_PATH=/home/oracle/app/oracle/product/19.0.0/dbhome_1/lib:
export ORACLE_SID=cgms
```

Step 2 Restart the Database.

```
su - oracle
```

```
cd /opt/cgms-oracle/scripts
```

```
./stopOracle.sh
```



```
./startOracle.sh
```

Step 3 Update Cron job points to Oracle 19.0.0 to auto-start the Oracle for VM reboot.

```
./deinstallOracleJob.sh
```

```
./installOracleJob.sh
```

Step 4 Start FND service by entering:

```
service cgms start
```

Step 5 Check whether the listener is pointing to 19.0.0.0 database instead of 18c by entering:

```
ps -ef | grep oracle
```

```
00:00:02 /home/oracle/app/oracle/product/19.0.0.0/dbhome_1/bin/tnslsnr CGMSTNS -inherit
```

Step 6 Once FND service is started, log into the FND UI and verify the data. If there is no issue, the Oracle 18c to 19c upgrade process is completed.



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