DOYENSYS
VALUE INNOVATION

Managing oracle instance

Manage Oracle Instance

What is pfile in oracle?

In Oracle, a “pfile” is a text-based configuration file that contains initialization parameters for an Oracle instance. The term “pfile” stands for “parameter file.”

When an Oracle instance is started up, it requires certain initialization parameters to be set. These parameters specify things like the location of database files, the size of the database buffer cache, and the number of database connections that can be made concurrently.

The pfile is used to specify these initialization parameters. It is a plain text file that contains a list of parameter-value pairs, one per line. The file is typically named init{SID}.ora, where {SID} is the system identifier of the instance.

When an Oracle instance is started up, it reads the pfile to determine the initialization parameters that should be used. If a pfile is not specified, the instance will use a default set of parameters.

Manage Oracle Instance

What is spfile in oracle?

In Oracle, an SPFILE (Server Parameter File) is a binary file that contains initialization parameters for an Oracle instance.

The SPFILE is a more advanced and flexible way to specify initialization parameters than the older pfile (parameter file) format.

Like a pfile, an SPFILE contains a set of initialization parameters that determine how an Oracle instance runs.

However, unlike a pfile, the SPFILE can be modified dynamically, while the instance is running.

This means that changes made to the SPFILE take effect immediately, without requiring a database restart.

Manage Oracle Instance

What is spfile in oracle?

An SPFILE is typically named “spfileSID.ora”, where “SID” is the system identifier of the Oracle instance.

The file is stored in a location specified by the “SPFILE” initialization parameter.

One of the key advantages of using an SPFILE is that it allows you to manage initialization parameters more easily.

For example, you can view and modify the current values of initialization parameters using the ALTER SYSTEM command, without having to modify a text-based configuration file.

In addition, the SPFILE supports parameter settings for individual instances, or for all instances in a clustered environment.

Difference between pfile vs spfile

The main difference between an Oracle pfile and spfile is that a pfile is a text-based configuration file that contains initialization parameters for an Oracle instance, whereas an spfile is a binary file that contains the same initialization parameters.

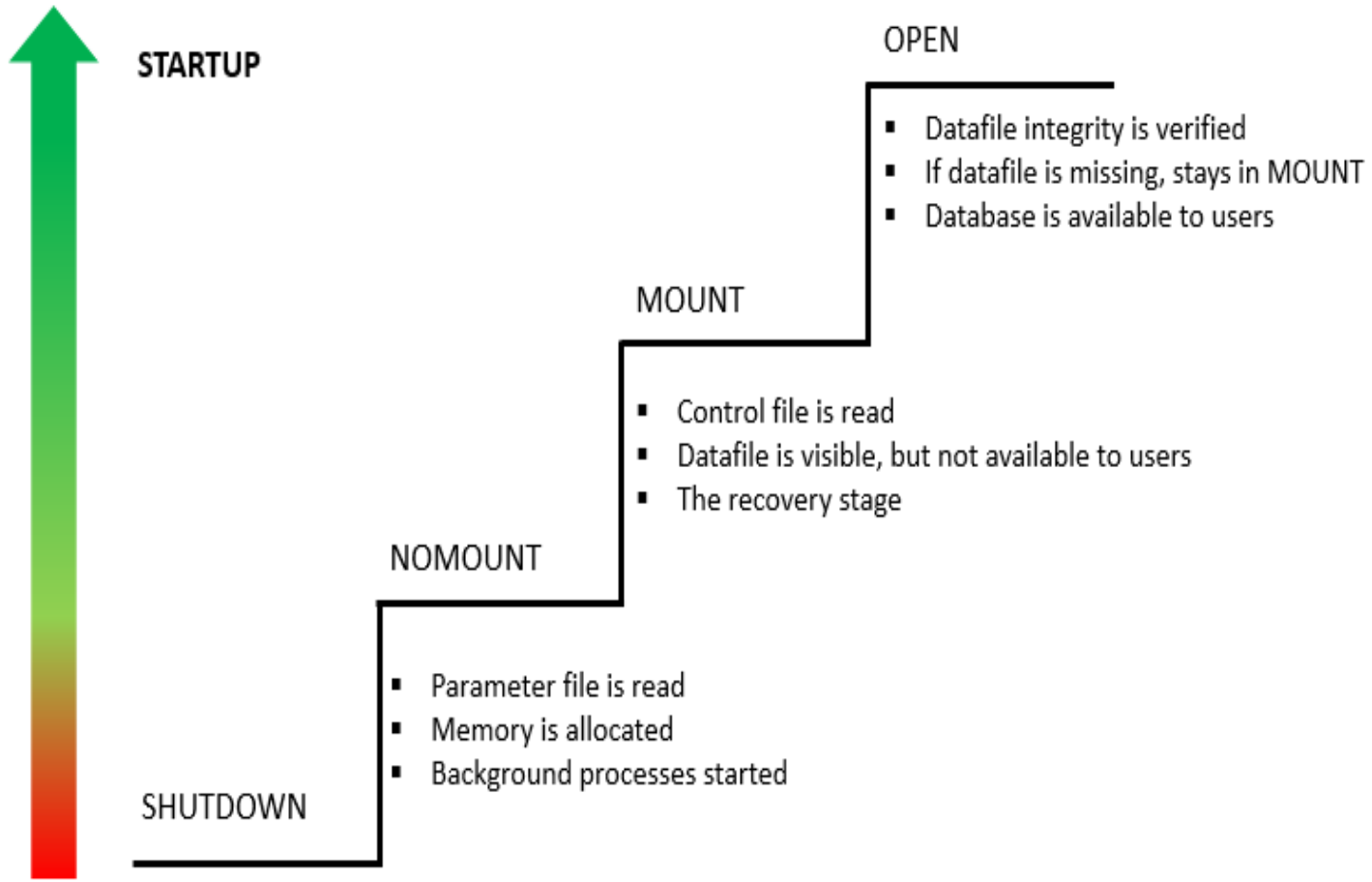
Here are some additional differences between pfile and spfile:

- **Format:** The pfile is a text file, while the spfile is a binary file.
- **Flexibility:** The pfile can be edited manually with a text editor, while the spfile can be modified dynamically using the ALTER SYSTEM command.
- **Persistence:** Changes to the pfile are not persistent and require a database restart to take effect, whereas changes to the spfile are persistent and take effect immediately.
- **Security:** The pfile can be easily modified by anyone with access to the file, while the spfile is more secure because it is a binary file and can be protected by file system permissions.
- **Clustering:** The spfile supports parameter settings for individual instances or all instances in a clustered environment, while the pfile does not.
- **Performance:** The spfile can offer improved performance because it is read by the Oracle server in binary format, which can be faster than parsing a text-based pfile.

Startup and shut down sequence

Startup mode and sequence:-

- Startup nomount
- Startup mount
- Startup
- Startup restrict
- Startup force
- Startup suspend
- Startup upgrade



Startup and shut down sequence

Shut down mode and sequence:-

- Shutdown /shut/shutdown normal
- Shutdown Transactional
- Shutdown immediate
- Shutdown abort

Shutdown /shut/shutdown normal :

- New connections are not allowed
- Connected user can perform ongoing transaction
- Idle sessions will not disconnected.
- When connected user's logout manually then the database gets shutdown.
- It is also graceful shutdown, So it doesn’t require ICR in next startup.
- A common scn number will be updated to control files and datafiles before the database shutdown.

Startup and shut down sequence

Shutdown Transnational :

- New connections are not allowed
- Connected user can perform ongoing transaction
- Idle sessions will be disconnected
- The database gets shutdown once ongoing tx’s gets completed(commit/rollback)
- Hence, It is also graceful shutdown, So it doesn’t require I CR in next startup.

Shutdown immediate :

- New connections are not allowed
- Connected uses can’t perform ongoing transaction
- Idle sessions will be disconnected
- Oracle performs rollback’s the ongoing tx’s(uncommitted) and database gets shutdown.
- A common scn number will be updated to control files and datafiles before the database shutdown.
- Hence, It is also graceful shutdown, So it doesn’t require ICR in next startup.

Startup and shut down sequence

Shutdown Abort :

- New connections are not allowed
- Connected uses can’t perform ongoing transaction
- Idle sessions will be disconnected
- Db gets shutdown abruptly(NO Commit /No Rollback)
- Hence, It is abrupt shutdown, So its require ICR in next startup.

STARTUP FORCE :

- Startup force is a combination of shutdown (abort + startup).

Oracle Database - Diagnostic files

Alert Log:

- **Location:** Typically named alert_<SID>.log and stored in the diagnostic destination.
- **Purpose:** Contains important information about database startup, shutdown, errors, and warnings. DBAs often review the alert log to monitor the health of the database.

Trace Files:

- **Location:** Stored in the diagnostic destination or in user-specified locations.
- **Purpose:** Generated when the database encounters errors or when trace is explicitly enabled. Trace files provide detailed information about the execution of SQL statements, errors, and performance-related information.

Diagnostic Destination:

- **Location:** Configured using the DIAGNOSTIC_DEST parameter.
- **Purpose:** Specifies the top-level directory where the ADR is created. The database automatically organizes and manages diagnostic files in this destination.

Oracle Database - Diagnostic files

ADR Home:

•**Location:** The root directory of the Automatic Diagnostic Repository.
•**Purpose:** A centralized location for storing all diagnostic information. It includes subdirectories for alert logs, trace files, incident files, and other diagnostic artifacts.

Core Dump Files:
•**Location:** Stored in the ADR.
•**Purpose:** Created in the event of a process crash or a severe error. Core dump files contain a snapshot of the process's memory, which can be used for debugging and analysis.

Trace and Dump Directories:
•**Location:** User-specified directories for trace files and dump files.
•**Purpose:** DBAs can configure the database to store trace files and dumps in specific directories for easy management and analysis.

DOYENSYS
VALUE INNOVATION

Database creation

Oracle Database creation

Database manual creation steps:

Pre-Requisites:-

1) Create the required directory structure.

mkdir –p /dboracle/app/oracle/product/19c/testdb – dbhome location
mkdir –p /dboracle/app/oracle/diag – diag location
mkdir –p /u01/oradata/testdb – datafile location
mkdir –p /u01/recovery – db create file dest

2) Install the oracle software version.

Oracle Database creation

Database manual creation steps:

1) Set up the bash profile with the below.

```
export $ORACLE_BASE=/dboracle/app/oracle
export $ORACLE_HOME=$ORACLE_BASE/product/19c/testdb
export $PATH=$ORACLE_HOME/bin:$PATH
export $ORACLE_SID=TESTDB
```

2) Create pfile with required parameters.

```
cd $ORACLE_HOME/dbs
vi inittestdb.ora
```

```
db_block_size=8192
db_name='TESTDB'
open_cursors=300
processes=150
shared_pool_size=150m
sga_target=400m
undo_tablespace='UNDOTBS1'
control_files='/u01/oradata/control01.ctl'
db_create_file_dest='/u01/recovery'
diagnostic_dest='/dboracle/app/oracle/diag'
compatible='19.0.0.0'
```

Oracle Database creation

3) Connect to the database and start the instance.

sqlplus “/ as sysdba”

startup nomount pfile=‘$ORACLE_HOME/dbs/inittestdb.ora’

4) Create a database using the script.

vi db_create.sql

```
CREATE DATABASE
USER sys IDENTIFIED BY oracle
USER system IDENTIFIED BY oracle
LOGFILE GROUP 1 ('/u01/oradata/TEST1/redo01.log') SIZE 100M,
    GROUP 2 ('/u01/oradata/TEST1/redo02.log') SIZE 100M,
    GROUP 3 ('/u01/oradata/TEST1/redo03.log') SIZE 100M
CHARACTER SET AL32UTF8
NATIONAL CHARACTER SET AL16UTF16
EXTENT MANAGEMENT LOCAL
DATAFILE '/u01/oradata/TEST1/system01.dbf' SIZE 500M AUTOEXTEND ON NEXT 100M MAXSIZE UNLIMITED
SYSAUX DATAFILE '/u01/oradata/TEST1/sysaux01.dbf' SIZE 500M AUTOEXTEND ON NEXT 100M MAXSIZE UNLIMITED
DEFAULT TABLESPACE USERS DATAFILE '/u01/oradata/TEST1/users01.dbf' SIZE 500M AUTOEXTEND ON NEXT 100M MAXSIZE UNLIMITED
DEFAULT TEMPORARY TABLESPACE TEMP TEMPFILE '/u01/oradata/TEST1/temp01.dbf' SIZE 500M
UNDO TABLESPACE UNDO DATAFILE '/u01/oradata/TEST1/undo01.dbf' SIZE 500M;
```

Oracle Database creation

Sqlplus “/as sysdba”
@db_create.sql

5) Build Data Dictionary Views.
Once the database is create run the below scripts to build the data dictionary views.

Sqlplus “/as sysdba”
@$ORACLE_HOME/rdbms/admin/catalog.sql
Shut immediate;
Startup upgrade;
@$ORACLE_HOME/rdbms/admin/catproc.sql
Shut immediate;
Starup;
@$ORACLE_HOME/rdbms/admin/pupbld.sql

Oracle Database creation along with software installation using GUI

1. Hardware Requirements

```
The first thing we need to verify the hardware requirements for an Oracle 19c Release 3

— Check Physical RAM.
# grep MemTotal /proc/meminfo
We need at least 8192 MB of physical RAM. <----

— Check Swap Space.
# grep SwapTotal /proc/meminfo/*
RAM up to 1024MB then swap = 2 times the size of RAM
RAM between 2049MB and 8192MB then swap = equal to the size of RAM
RAM more than 8192MB then swap size = 0.75 times the size of RAM

We need at least 8192 MB of swap <----


-- Check space available in /tmp
# df -h /tmp/*
You need to have at least 2048 MB of space in the /tmp directory. <---

-- Check space for Oracle Software and pre-configured database.
# df -h

Space requirement for Oracle 19c Software:
Enterprise Edition 10G  <---- Minimum

[oracle@rac1 19.0.0]$ du -sh dbhome_1
9.9G    dbhome_1
[oracle@rac1 19.0.0]$

-- To determine whether the system architecture can run the software, enter the following command:

# grep "model name" /proc/cpuinfo

This command displays the processor type. Verify that the processor architecture matches the Oracle software release that
you want to install. If you do not see the expected output, then you cannot install the software on this system.
```

Oracle Database creation along with software installation using GUI

2. Verify OS version

```
[oracle@rac1 ~]$ cat /etc/redhat-release
Red Hat Enterprise Linux Server release 7.5
[oracle@rac1 ~]$
```

3. Download Software

```
Download the Oracle software from OTN or MY ORACLE SUPPORT (MOS).

https://www.oracle.com/database/technologies/oracle19c-linux-downloads.html
```

Oracle Database creation along with software installation using GUI

4. Unzip Software

```
NOTE: You can't edit oracle home location while installation using OUI. It will pickup automatically ORACLE HOME location,
where you have unzipped database binaries. Hence directly unzip in ORACLE HOME location and then start ./runInstaller

After unzip, it will NOT keep all files in single directory like 10g,11g and 12c.

[oracle@rac1 dbhome_1]$ pwd
/u01/app/oracle/product/19.0.0/dbhome_1
[oracle@rac1 dbhome_1]$ ls -ltr
-rwxrwxr-x. 1 oracle oinstall 3059705302 Jan 24 20:25 LINUX.X64_193000_db_home.zip
[oracle@rac1 dbhome_1]$

[oracle@rac1 dbhome_1]$ unzip LINUX.X64_193000_db_home.zip

[oracle@rac1 ~]$ cd /u01/app/oracle/product/19.0.0/dbhome_1/
[oracle@rac1 dbhome_1]$ ls -ltr
total 2988120
-rw-r--r--.  1 oracle oinstall        852 Aug 18  2015 env.ora
-rw-r--r--.  1 oracle oinstall       2927 Oct 15  2016 schagent.conf
-rwxr-x---.  1 oracle oinstall       1783 Mar  9  2017 runInstaller
drwxr-x---. 14 oracle oinstall       4096 Apr 12  2019 OPatch
drwxr-x---.  7 oracle oinstall         69 Apr 17  2019 xdk
drwxr-xr-x.  3 oracle oinstall         19 Apr 17  2019 wwg
drwxr-xr-x.  4 oracle oinstall         31 Apr 17  2019 usm
drwxr-xr-x.  5 oracle oinstall         45 Apr 17  2019 suptools
drwxr-xr-x.  6 oracle oinstall         54 Apr 17  2019 srvm
drwxr-xr-x.  3 oracle oinstall         17 Apr 17  2019 sqlj
drwxr-xr-x.  4 oracle oinstall         41 Apr 17  2019 sqldeveloper
drwxr-xr-x.  3 oracle oinstall         18 Apr 17  2019 slax
-rw-r-----.  1 oracle oinstall         10 Apr 17  2019 root.sh.old.1
drwxr-xr-x.  3 oracle oinstall         21 Apr 17  2019 relnotes
drwxr-xr-x.  4 oracle oinstall         29 Apr 17  2019 racg
drwxr-xr-x.  5 oracle oinstall         52 Apr 17  2019 R
drwxr-xr-x.  5 oracle oinstall         39 Apr 17  2019 perl
drwxr-xr-x.  4 oracle oinstall         33 Apr 17  2019 owm
drwxr-xr-x.  3 oracle oinstall         19 Apr 17  2019 oss
drwxr-xr-x.  6 oracle oinstall         52 Apr 17  2019 ord
drwxr-xr-x.  4 oracle oinstall         34 Apr 17  2019 oracore
drwxr-xr-x.  7 oracle oinstall         65 Apr 17  2019 opmn
```

Oracle Database creation along with software installation using GUI

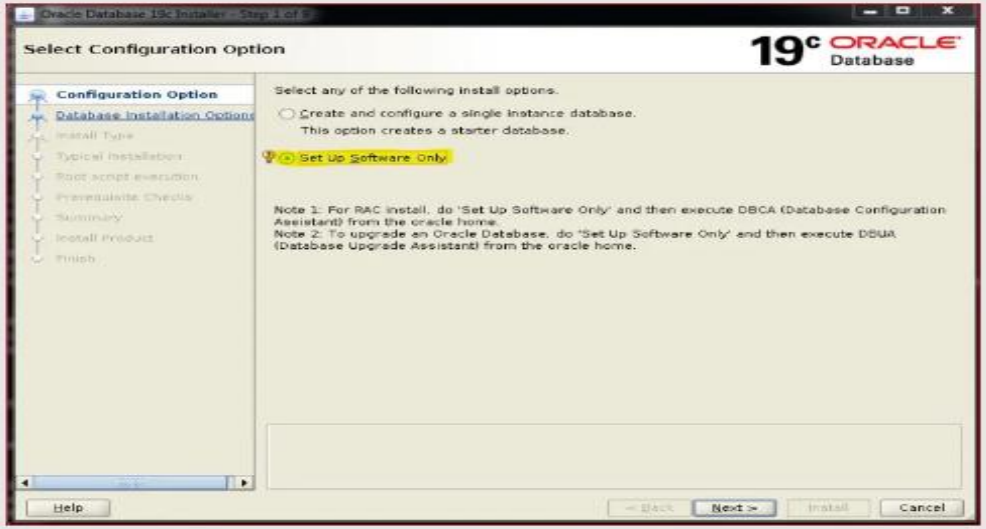
5. Oracle Installation Prerequisites

```
[root@rac1 ~]# yum install -y oracle-database-preinstall-19c
Loaded plugins: langpacks, ulninfo
ol7_UEKR4                                                | 2.5 kB  00:00:00
ol7_latest                                               | 2.7 kB  00:00:00
(1/4): ol7_UEKR4/x86_64/updateinfo                       |  87 kB  00:00:00
(2/4): ol7_UEKR4/x86_64/primary_db                       | 5.6 MB  00:00:02
(3/4): ol7_latest/x86_64/primary_db                      |  26 MB  00:00:04
(4/4): ol7_latest/x86_64/updateinfo                      | 2.6 MB  00:00:04
Resolving Dependencies
--> Running transaction check
---> Package oracle-database-preinstall-19c.x86_64 0:1.0-1.el7 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

================================================================================================================================
 Package                                  Arch                              Version
Repository                              Size
================================================================================================================================
Installing:
 oracle-database-preinstall-19c           x86_64                            1.0-1.el7
ol7_latest                              18 k

Transaction Summary
================================================================================================================================
Install  1 Package

Total download size: 18 k
Installed size: 55 k
Downloading packages:
oracle-database-preinstall-19c-1.0-1.el7.x86_64.rpm
|  18 kB  00:00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : oracle-database-preinstall-19c-1.0-1.el7.x86_64
1/1
  Verifying  : oracle-database-preinstall-19c-1.0-1.el7.x86_64
1/1

Installed:
  oracle-database-preinstall-19c.x86_64 0:1.0-1.el7

Complete!
[root@rac1 ~]#
```

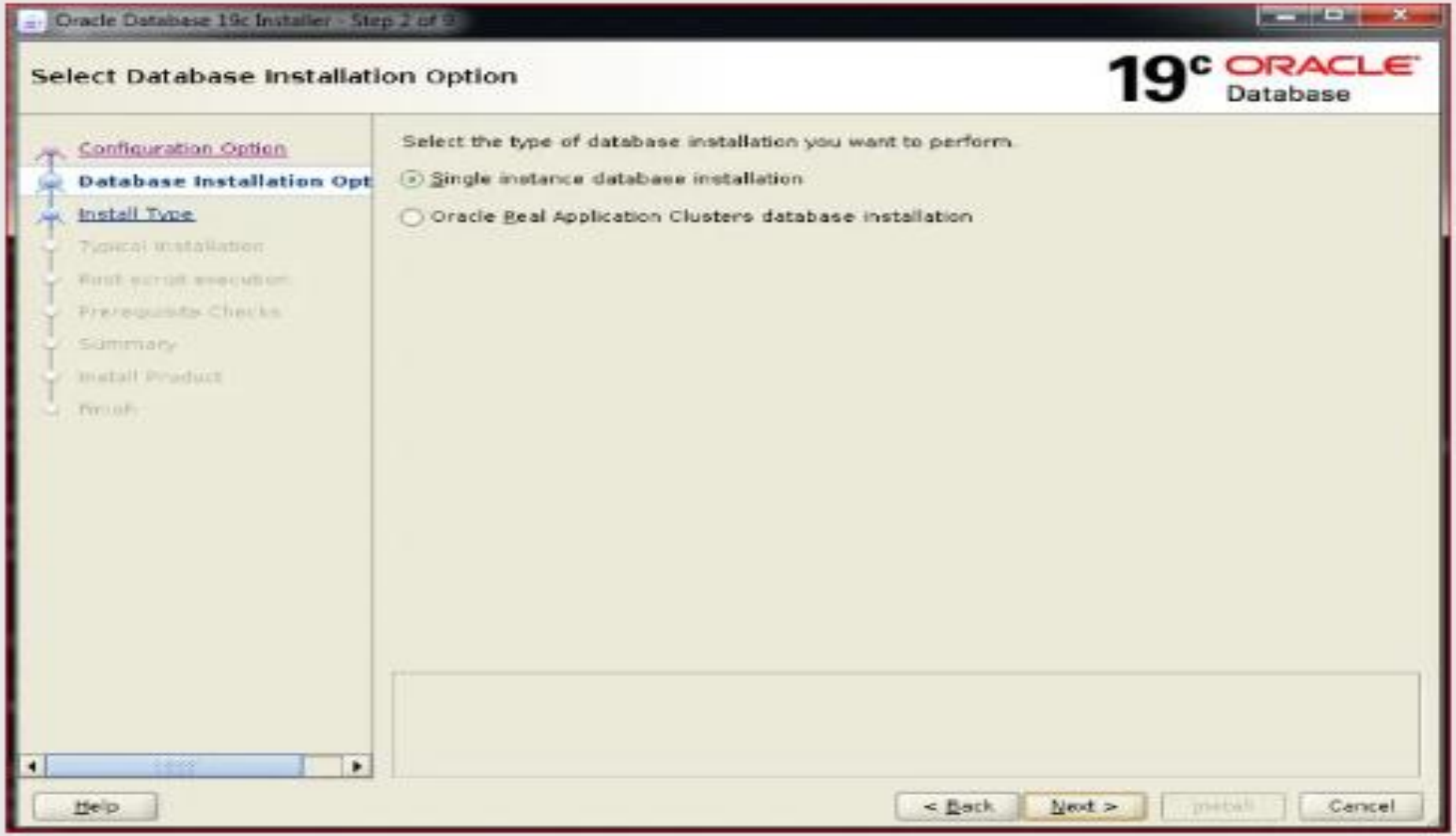
Oracle Database creation along with software installation using GUI

7. Invoke ./runInstaller

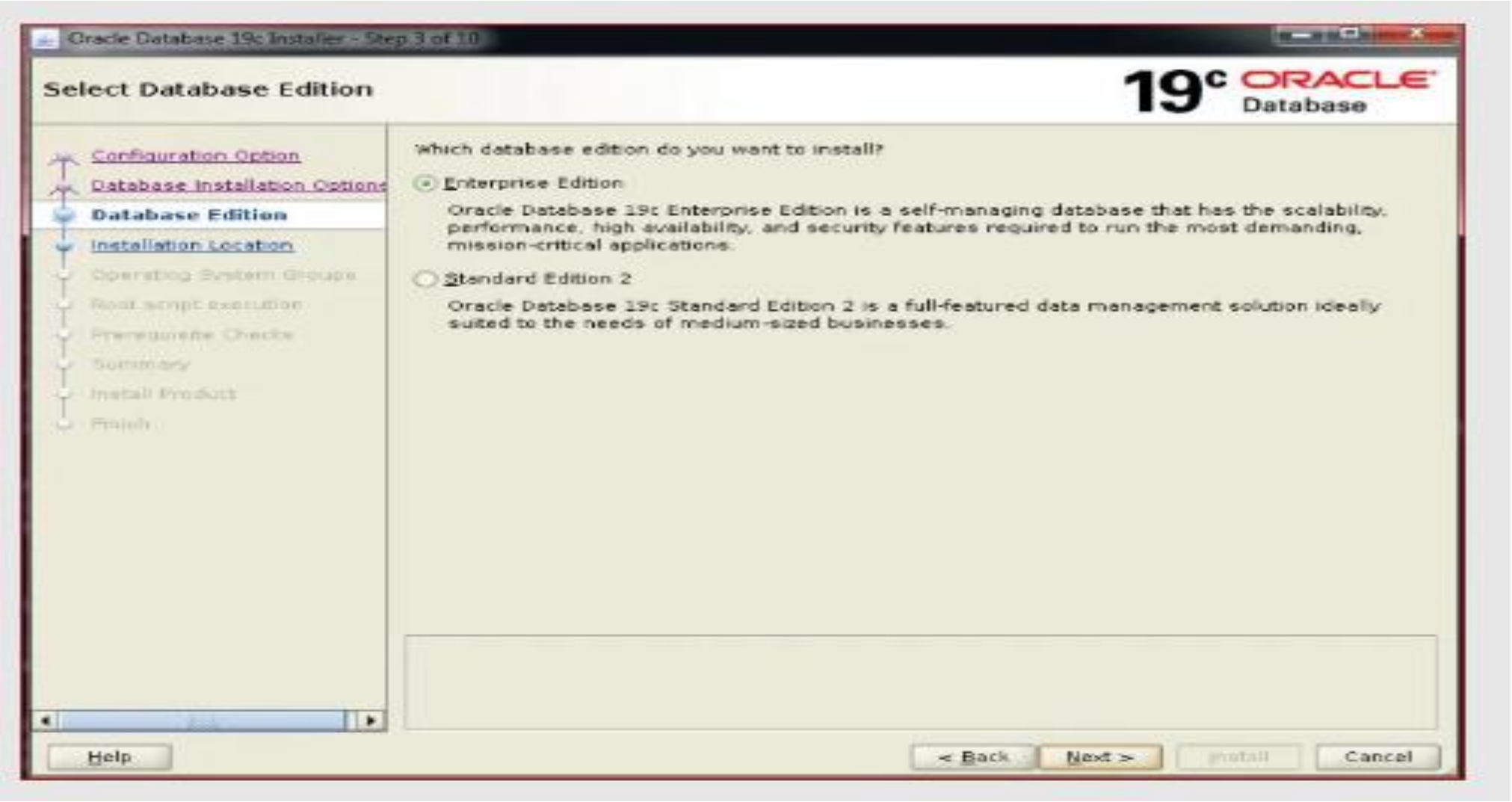
Start the Oracle Universal Installer (OUI) by issuing the following command.



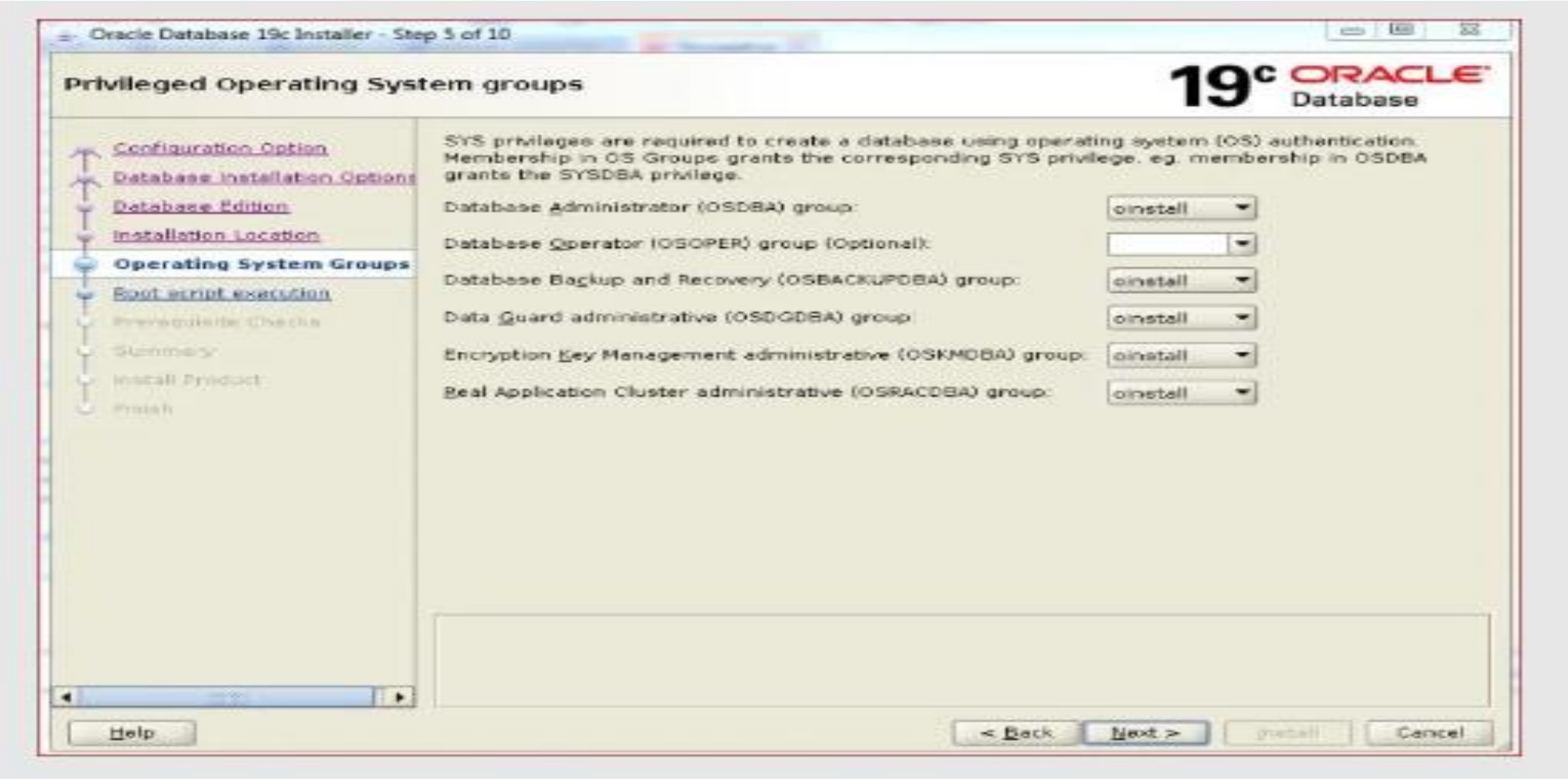
Oracle Database creation along with software installation using GUI



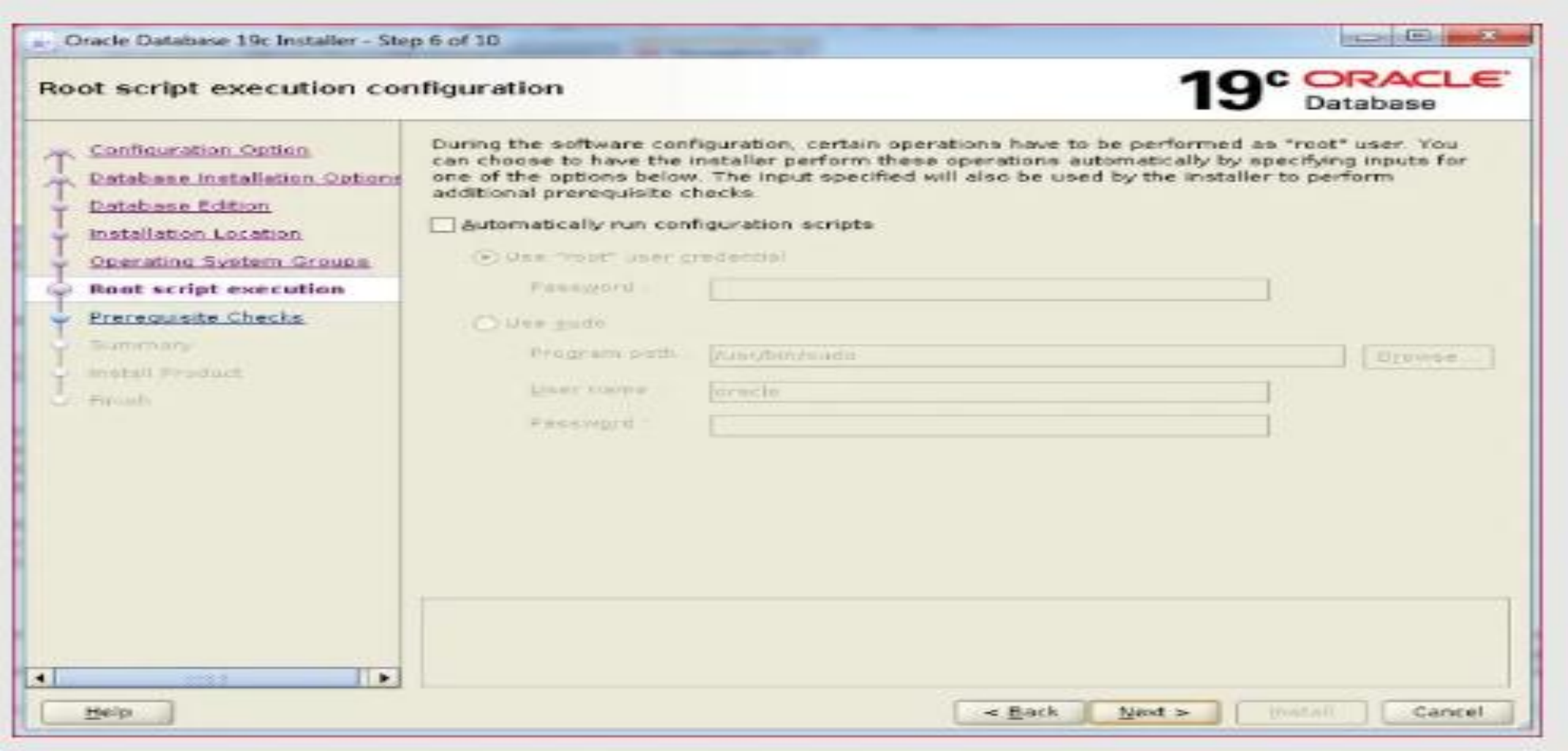
Oracle Database creation along with software installation using GUI



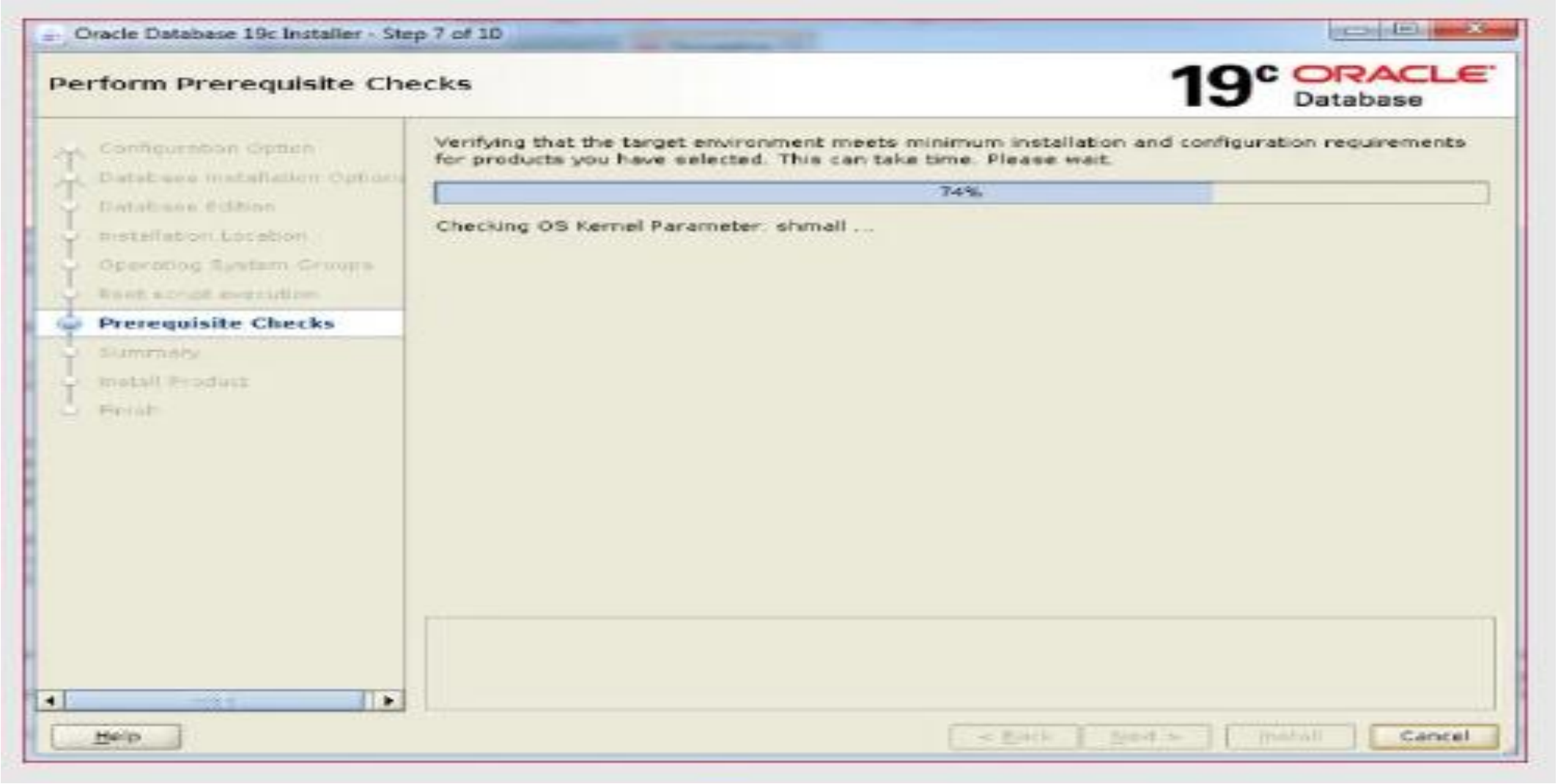
Oracle Database creation along with software installation using GUI



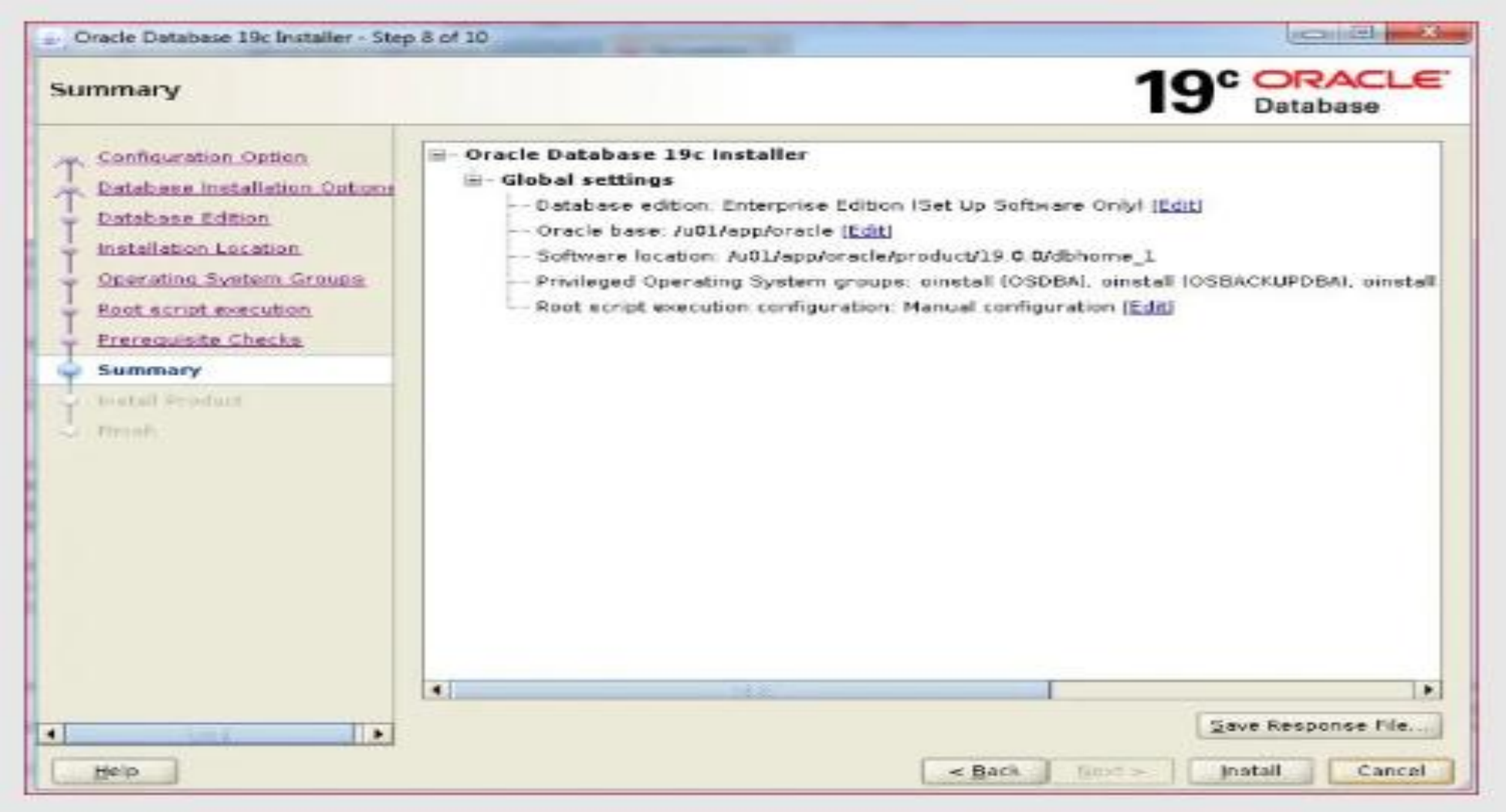
Oracle Database creation along with software installation using GUI



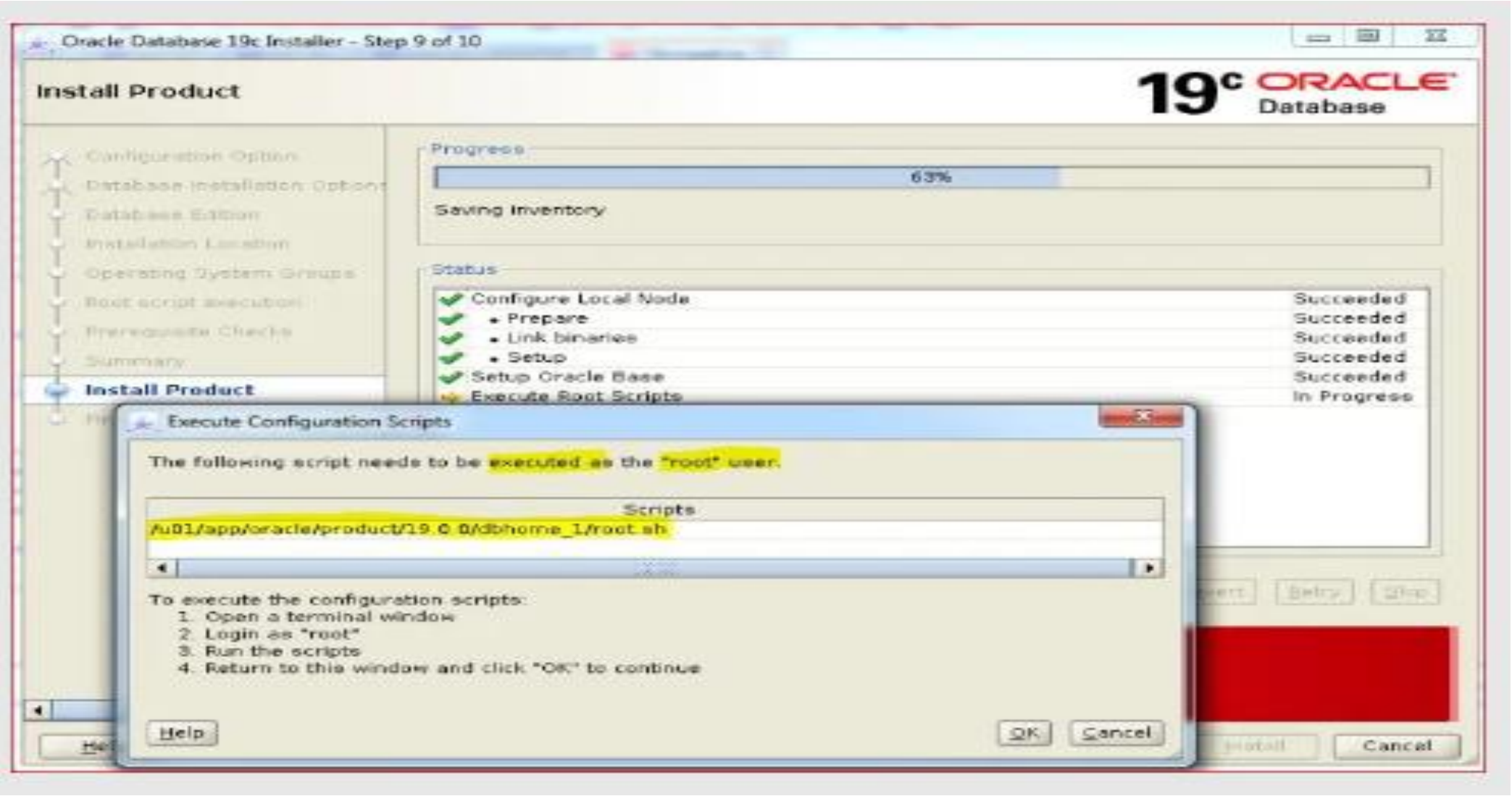
Oracle Database creation along with software installation using GUI



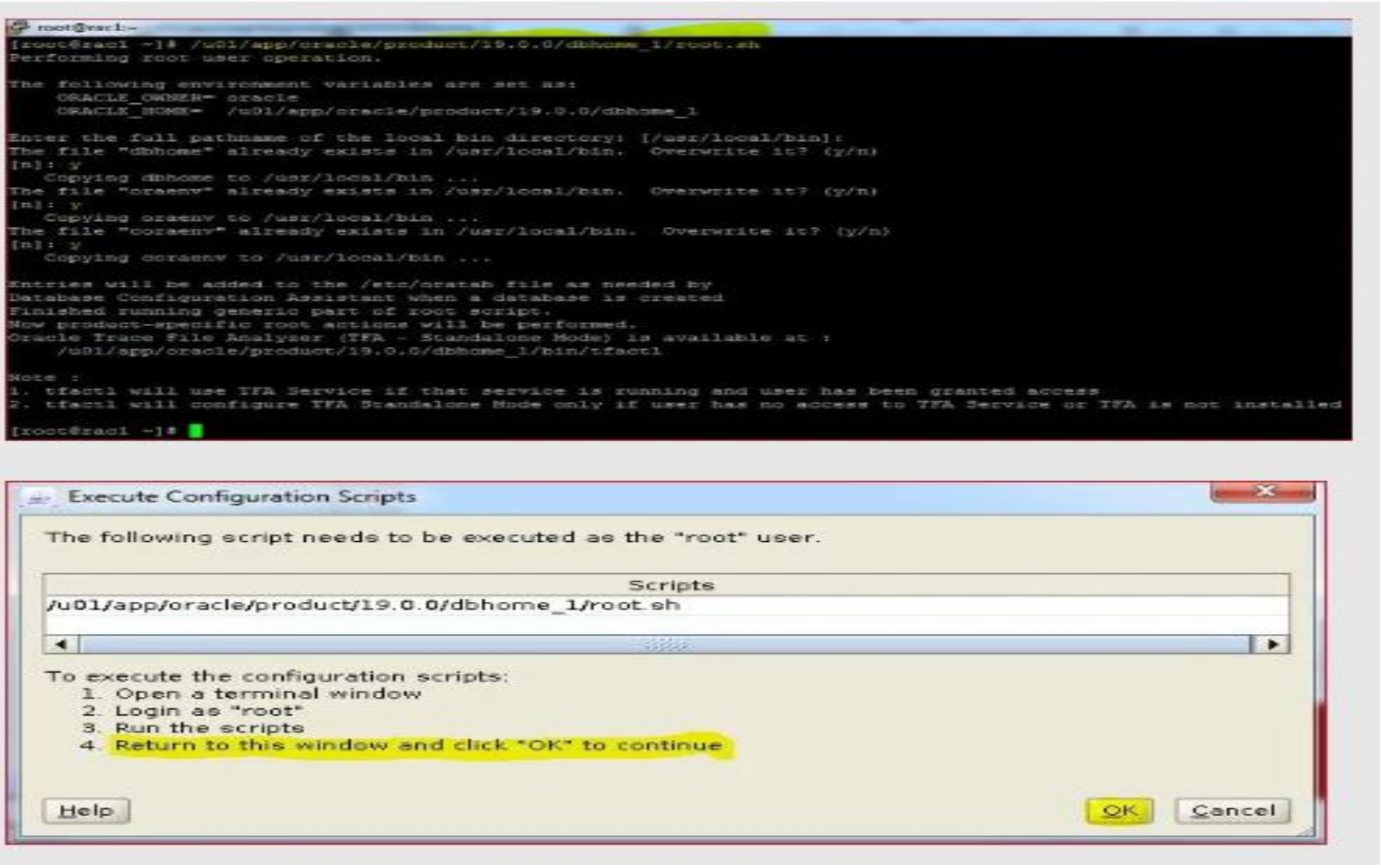
Oracle Database creation along with software installation using GUI



Oracle Database creation along with software installation using GUI



Oracle Database creation along with software installation using GUI



Oracle Database creation along with software installation using GUI