Practice

Installing Oracle Database Software in a Linux Platform

Practice Target

In this practice you will install Oracle database 19c software into the `srv1`. You will create a response file and then use it to install the software.

Practice Overview

In high level, in this practice, you will perform the following tasks:

- Check on Oracle Database 19c software requirements
- Prepare the vm for Oracle database software installation
- Install Oracle database software in srv1 in silent mode

Practice Assumption

The practice assumes that the vm `srv1` (that you created in the previous practice) is up and running.

Note

This practice demonstrates installing Oracle database software without Oracle Restart configuration. Installing Oracle database with Oracle Restart will be demonstrated in a different practice.

Why 19c and not 21c?

At the time of this writing, the most recent Oracle database release is 21c. However, for production systems, it is recommended to install the most recent **long-term supported release**, which is 19c at present. That is why 19c is selected in the course practices.

Checking on Oracle Database 19c Software Requirements

In the following steps, you will checkout the requirements for installing Oracle database 19c software in `srv1`.

1. Open Putty then connect to `srv1` as `root`

2. Run the following command to retrieve the amount of memory installed in `srv1`

   According to Oracle database installation documentation, Oracle 19c can be installed on at least 1-GB RAM machine. From my experience, a machine with less than 4 GB memory will *suffer* from a running Oracle 19c database with the default components installed in it.

   ```
   grep MemTotal /proc/meminfo
   ```

3. Retrieve the value of the swap space in `srv1`.

   In our environment, we have nearly 16 GB swap space. As the machine RAM is 6 GB, this swap size is more than enough.

   ```
   grep SwapTotal /proc/meminfo
   ```

4. Determine the amount of space available in the `/tmp` directory.

   We should have at least 1 GB free space in `/tmp` directory.

   ```
   df -h /tmp
   ```

5. Determine the amount of free RAM and disk swap space on the system:

   In our case, the swap should be at least the same size as the RMA.

   ```
   free
   ```

6. Determine if the system architecture can run the software:

   In our environment, we have a x86-64 bit system. This is something you need to pay attention to when downloading Oracle database software and patches. The platform is Linux x86-64, not Linux x86.

   ```
   uname -m
   ```

7. Verify that shared memory is mounted properly with sufficient size.

   ```
   df -h /dev/shm
   ```

As recommended by the installation documentation, in the following steps, you will disable the Transparent HugePages.

8. Check if the Transparent HugePages is enabled:

   The status is marked by square brackets.

   ```
   cat /sys/kernel/mm/transparent_hugepage/enabled
   ```

9. In `/etc/default/grub`, set the parameter `GRUB_CMDLINE_LINUX` as follows:

```
vi /etc/default/grub

GRUB_CMDLINE_LINUX="crashkernel=auto rhgb quiet transparent_hugepage=never"
```

10. Run the following command:

```
grub2-mkconfig -o /boot/grub2/grub.cfg
```

11. Restart the machine and connect to the machine again as `root`:

```
reboot
```

12. After `srv1` is rebooted, open Putty and connect to it again.

Ahmed Baraka Oracle Database Administrator

Preparing for Oracle Database Software Installation

In the following steps, you will perform the preparation steps for installing Oracle database 19c software in `srv1`.

13. Obtain the most current Linux security errata and bug fixes and apply it.

This command will download hundreds of package updates from Oracle Linux yum server repository and apply them. It took me nearly fifteen minutes to finish.

```
yum update -y
```

14. Restart `srv1`

```
reboot
```

15. Login to `srv1` as `root` then run the following command to automatically install and update the required OS packages for Oracle database 19c software.

In a real life scenario, if the machine is not connected to the Internet, we must manually download and install the required packages.

```
yum install oracle-database-preinstall-19c
```

16. Verify that the Kernel parameters are automatically updated by the preceding command.

```
cat /etc/sysctl.d/99-oracle-database-preinstall-19c-sysctl.conf
```

17. Verify that the resource limits are automatically configure for `oracle` user.

```
cat /etc/security/limits.d/oracle-database-preinstall-19c.conf
```

18. Verify that operation system user which represents the software owner and the OSDBA group are already there.

Traditionally, oracle `user` is used as a software owner for Oracle database software. `dba` group is used as the OSDBA group.

If in a system, oracle user is not there, we must create it.

```
id oracle
```

19. Change the current user to `oracle`

```
su - oracle
```

20. Open the `.bash_profile` file with the vi editor

```
cp /home/oracle/.bash_profile /home/oracle/.bash_profile.old
vi /home/oracle/.bash_profile
```

21. Replace its code with the following.

```
# .bash_profile
if [ -f ~/.bashrc ]; then
. ~/.bashrc
fi
ORACLE_BASE=/u01/app/oracle; export ORACLE_BASE
ORACLE_SID=oradb; export ORACLE_SID
ORACLE_HOME=$ORACLE_BASE/product/19.0.0/db_1; export ORACLE_HOME
NLS_DATE_FORMAT="DD-MON-YYYY HH24:MI:SS"; export NLS_DATE_FORMAT
PATH=$PATH:$HOME/.local/bin:$HOME/bin
PATH=${PATH}:/usr/bin:/bin:/usr/local/bin
PATH=.:${PATH}:$ORACLE_HOME/bin
export PATH
LD_LIBRARY_PATH=$ORACLE_HOME/lib
LD_LIBRARY_PATH=${LD_LIBRARY_PATH}:$ORACLE_HOME/oracm/lib
LD_LIBRARY_PATH=${LD_LIBRARY_PATH}:/lib:/usr/lib:/usr/local/lib
export LD_LIBRARY_PATH
CLASSPATH=$ORACLE_HOME/JRE
CLASSPATH=${CLASSPATH}:$ORACLE_HOME/jlib
CLASSPATH=${CLASSPATH}:$ORACLE_HOME/rdbms/jlib
CLASSPATH=${CLASSPATH}:$ORACLE_HOME/network/jlib
export CLASSPATH
export TEMP=/tmp
export TMPDIR=/tmp
export EDITOR=vi
umask 022
```

22. Add oracle user to the `oper` group

```
usermod oracle -a -G oper
```

23. Exit from the current `oracle` session so that the current user becomes the `root`

```
exit
```

Installing Oracle Database Software in `srv1`

In the following steps, you will use the Universal Installer to create a response file. You will then use the generated response file to install Oracle database software in `srv1`.

24. Download Oracle database 19c software from this link or this link. It is a 3-GB compressed file named as `LINUX.X64_193000_db_home.zip` and containing Oracle database 19c (19.3) software installation files for Linux x86-64.

25. In the hosting PC, copy the downloaded file to the staging directory.

26. As `root`, run the following code to create the directories required by Oracle software.

```
mkdir -p /u01/app/oracle/product/19.0.0/db_1
mkdir -p /u01/app/oraInventory
chown -R oracle:oinstall /u01/app/oracle
chown -R oracle:oinstall /u01/app/oraInventory
```

27. Change the current user to `oracle`

```
su - oracle
```

28. Extract the installation file into Oracle home.

Observe that we are extracting the installation file directly into Oracle home directory and not into a staging directory.

```
cd /media/sf_staging/
unzip LINUX.X64_193000_db_home.zip -d $ORACLE_HOME >/dev/null
```

29. In the VirtualBox window of `srv1`, login as `oracle`

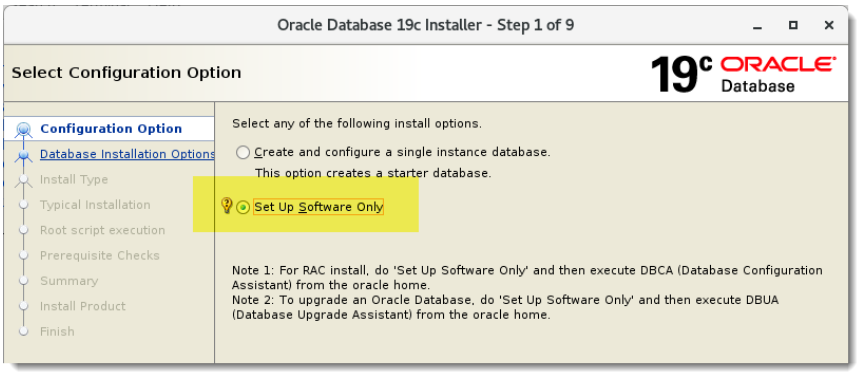
30. Open a terminal window and change the current directory to `$ORACLE_HOME`.

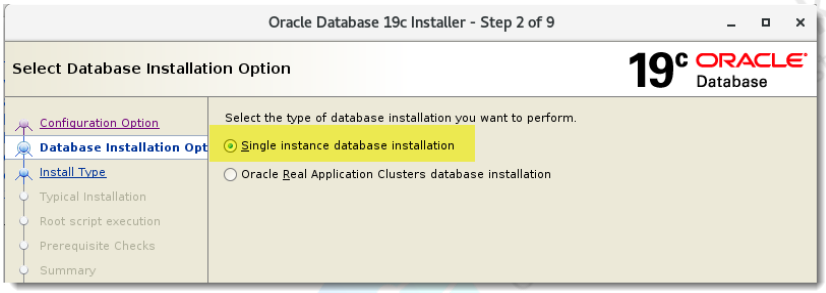
```
cd $ORACLE_HOME
```

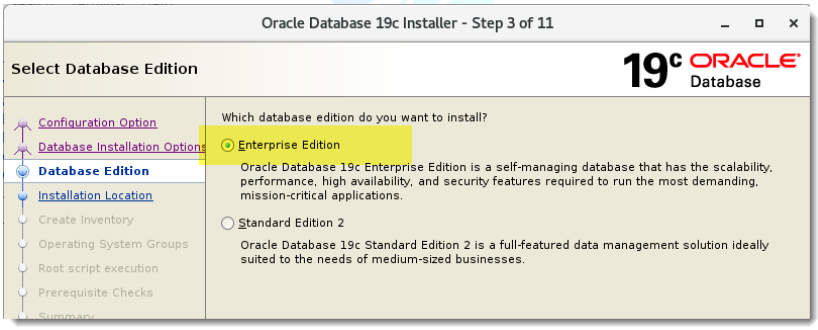
31. Run the Universal Installer.

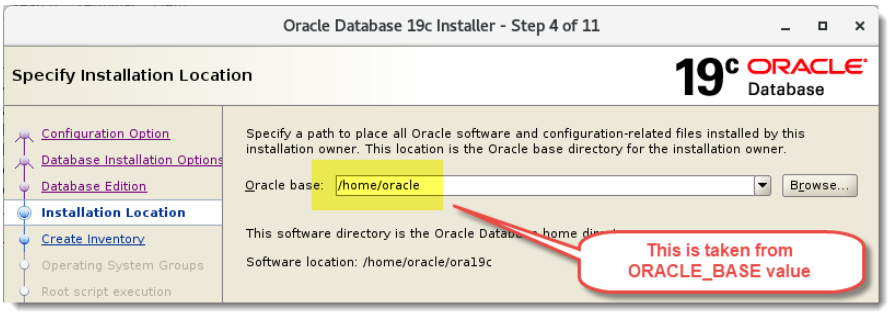
```
./runInstaller
```

32. Respond to the Installer windows are follows:

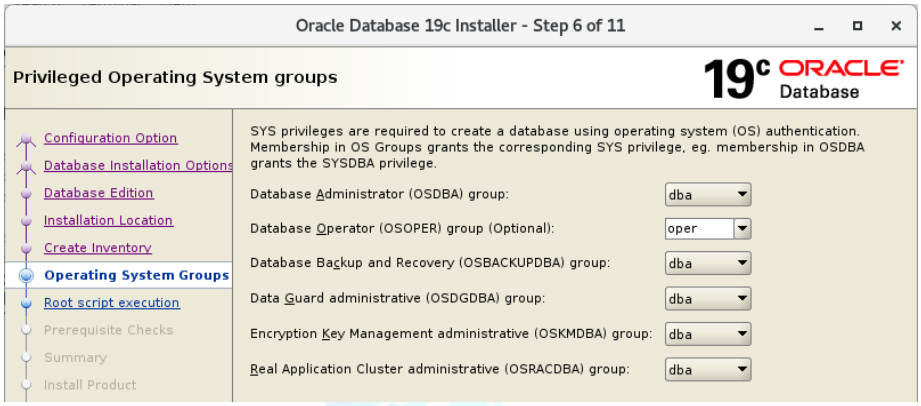


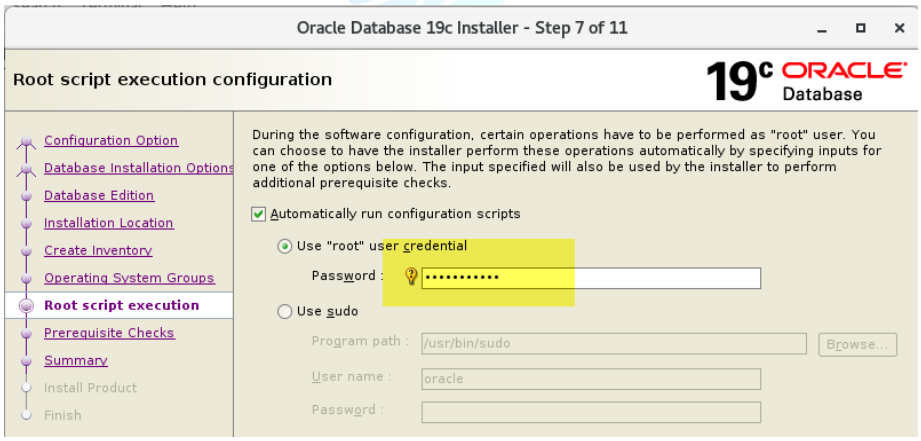






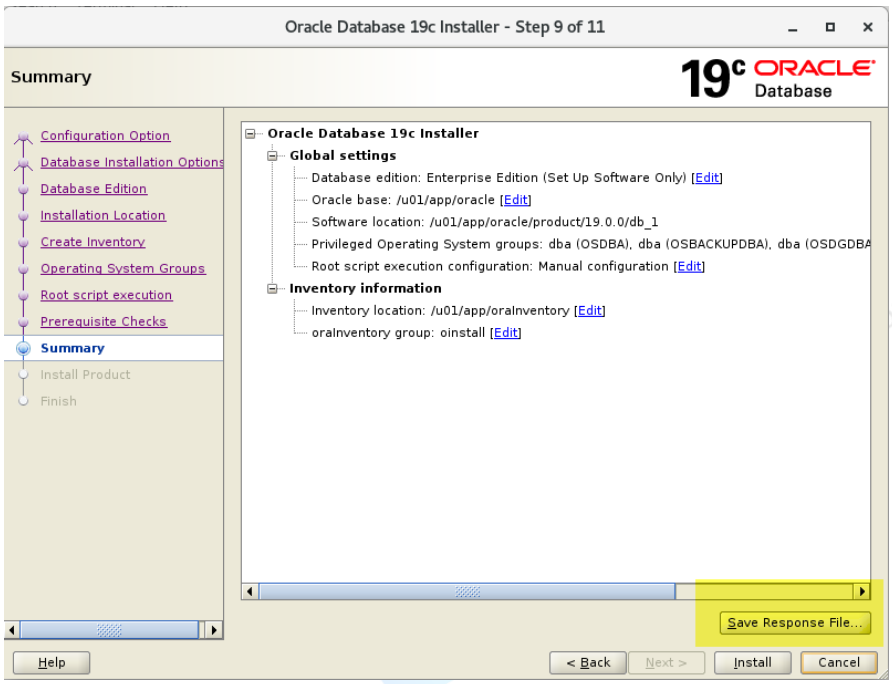
Oracle Database 19c Installer - Step 5 of 11
Create Inventory
19c ORACLE Database
Configuration Option
Database Installation Options
Database Edition
Installation Location
Create Inventory
Operating System Groups
Root script execution
Prerequisite Checks
Summary
You are starting your first installation on this host. Specify a directory for installation metadata files (for example, install log files). This directory is called the "inventory directory". The installer automatically sets up subdirectories for each product to contain inventory data. The subdirectory for each product typically requires 150 kilobytes of disk space.
Inventory Directory: /u01/app/oraInventory
Browse...
Specify an operating system group whose members have write permission to the inventory directory (oraInventory).
oraInventory Group Name: oinstall

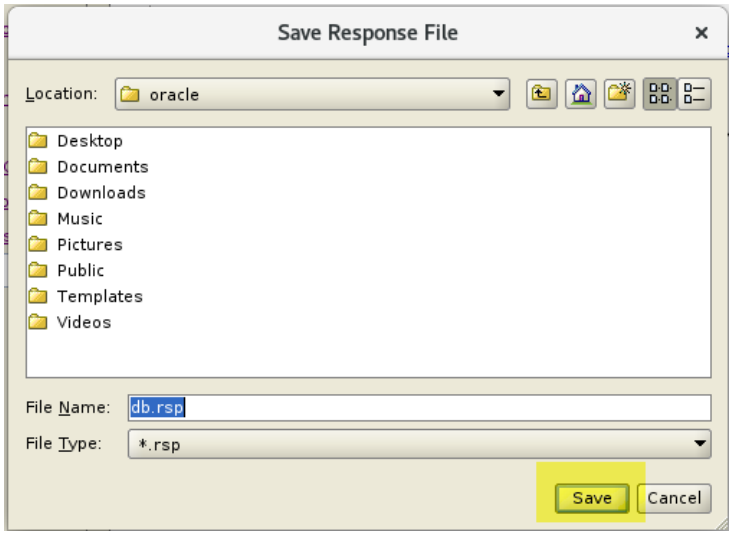

Oracle Database 19c Installer - Step 6 of 11
Privileged Operating System groups
19c ORACLE Database
Configuration Option
Database Installation Options
Database Edition
Installation Location
Create Inventory
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
SYS privileges are required to create a database using operating system (OS) authentication. Membership in OS Groups grants the corresponding SYS privilege, eg. membership in OSDBA grants the SYSDBA privilege.
Database Administrator (OSDBA) group: dba
Database Operator (OSOPER) group (Optional): oper
Database Backup and Recovery (OSBACKUPDBA) group: dba
Data Guard administrative (OSDGDBA) group: dba
Encryption Key Management administrative (OSKMDBA) group: dba
Real Application Cluster administrative (OSRACDBA) group: dba


Oracle Database 19c Installer - Step 7 of 11
Root script execution configuration
19c ORACLE Database
Configuration Option
Database Installation Options
Database Edition
Installation Location
Create Inventory
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
During the software configuration, certain operations have to be performed as "root" user. You can choose to have the installer perform these operations automatically by specifying inputs for one of the options below. The input specified will also be used by the installer to perform additional prerequisite checks.
Automatically run configuration scripts
Use "root" user credential
Password :
Use sudo
Program path : /usr/bin/sudo
Browse...
User name : oracle
Password :

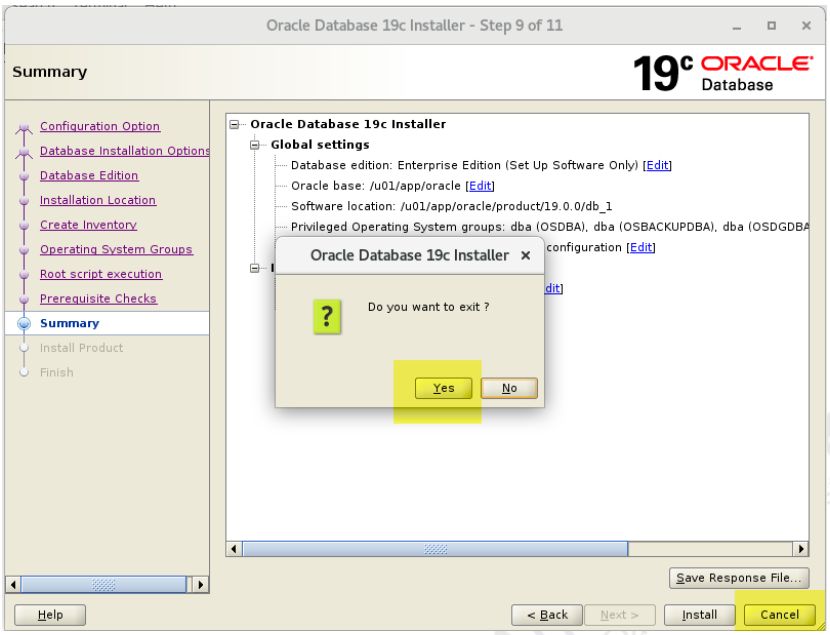
In the following window, click on **Save Response File**.

In a real life scenario, if you are installing Oracle database software in only the single current machine, you just proceed with clicking on "Install" button. But in this practice, we will use the Response File to install Oracle database software in silent mode.





Click on Cancel button:



33. In Putty session, make sure the current user is `oracle`

34. Review the created response file.

```
cat /home/oracle/db.rsp
```

35. Change the response file permission to 600.

In some installation scenarios, the response file may contain passwords. That is why we set its permission to 600.

```
chmod 600 /home/oracle/db.rsp
```

36. Start the installer in silent mode using the created response file.

When we generated the response file, the Installer performed the Prerequisite Checks on the system. Therefore, in our case, there is no need to use the `-executePrereqs` option with the installation script on `srv1`.

If we are installing Oracle database software in a different machine, we should run the installation script with this option first to make the Installer execute the Prerequisite Checks. After the all the checks passed, we run the Installer without this option to start the installation.

```
$ORACLE_HOME/runInstaller -silent -responseFile /home/oracle/db.rsp
```

37. If the installation succeeds, it should display the following message.

```
Successfully Setup Software
```

38. As a basic verification on the installation, verify that the SQL*Plus runs from Oracle home.

```
which sqlplus
```

39. Check the contents of the /etc/oraInst.loc

```
cat /etc/oraInst.loc
```

40. Check the contents of the Inventory file.

```
cat /u01/app/oraInventory/ContentsXML/inventory.xml
```

41. As a cleanup, move or delete the installation zip file from the staging directory.

Note:

In a real life scenario, it is highly recommended to apply the latest Release Updates (RU) on the freshly installed Oracle database software. You will learn about applying patches on Oracle database software later in the course.

Summary

Using response file, we can run the installer in silent mode to install Oracle database software in the machine from the command line and without using a GUI interface.

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