Oracle Database Software Installation

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Objectives

In this lecture, you will learn how to perform the following:

- Prepare the systems for Oracle database software installation
- Perform database software installation in Linux and Windows platforms
- Describe Oracle Inventory Directory

Oracle Database Software Sources

- Download the recent versions (19c and 21c) from Oracle website:
  https://www.oracle.com/database/technologies/
- For earlier releases:
  - Visit https://edelivery.oracle.com
  - Refer to Oracle Support Document: **"How to Request Software Media when it is Unavailable on the Oracle Software Delivery Cloud Site (Doc ID 1071023.1)"**
- Common supported platforms:
  - Linux x86
  - HP-UX Itanium
  - IBM AIX
  - MS Windows
  - Oracle Solaris on x86-64
  - Oracle Solaris on SPARC

Oracle Database Installation Reference

- Oracle installation guide for specific platforms can be obtained from the following documentation link:

  https://docs.oracle.com/en/database/oracle/oracle-database/index.html

Oracle Database Software Installation Methods for Linux

- **Image-based**
  - DBA downloads the database software and runs the setup wizard
  - DBA has more control on the options
- **RPM-based**
  - DBA downloads the database software rpm and installs it
  - Quick installation with less options
  - Available from 18c onwards

Oracle Database Installation Procedure

1. Make sure the server machine meets the requirements
2. Prepare the installation target machine
3. Download the required software
   - Download Oracle database software
   - In some configurations: download the Grid Infrastructure software
4. (optional) Download the lates available Release Update (RU), Release Update Revision (RUR), or Patchset from Oracle Support
5. Install Oracle Database software (and Grid if needed)
6. (optional) Apply the patches
7. Create the database

Oracle Database Release/Version

- For production systems, if possible, always use the most recent **Long Term Release** (19c).
- Do not use the latest **Innovation Release** (21c) for production systems, unless specifically required by the system or for testing purposes

Oracle Database Installation Requirements (Linux)

Item	Required Values
RAM	2 GB for Oracle Database installation 8 GB for Grid Infrastructure installations.
Required OS service	OpenSSH installed and running
Specific Kernels	Refer to the table 1-2 in the documentation
Free disk space in the /tmp	At least 1 GB
Swap space allocation relative to RAM	(DB) If RAM is between 1 and 2 GB: swap should be at least 1 GB If RAM is between 2 and 16 GB: swap should be the same size as the RAM >16 GB: 16 GB (Oracle Restart): If RAM is between 8 and 16 GB: swap should be the same >16 GB: 16 GB

Preparing the Database Server Machine

- Install any required missing libraries
- Perform some configurations
- Create software OS users and groups

Installing the Required Libraries

- The easiest way to install the required libraries:

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

- Do not use the command in an engineered system
- For list of the required packages, refer to the section "**Operating System Requirements for x86-64 Linux Platforms**" in the installation documentation.

Configuring Kernel Parameters for Linux

- Automictically set by the following command:

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

- It creates the following file:

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

Manually Configuring Kernel Parameters for Linux

```
# cat /etc/sysctl.d/97-oracle-database-sysctl.conf
fs.aio-max-nr = 1048576
fs.file-max = 6815744
kernel.shmall = 2097152
kernel.shmmax = 4294967295
kernel.shmmni = 4096
kernel.sem = 250 32000 100 128
net.ipv4.ip_local_port_range = 9000 65500
net.core.rmem_default = 262144
net.core.rmem_max = 4194304
net.core.wmem_default = 262144
net.core.wmem_max = 1048576

# /sbin/sysctl --system
```

Operating System Resource Limits Requirements

- The required resource limits are automatically set by the preinstallation RPMs in /etc/security/limits.d/oracle-database-preinstall-19c.conf

Table 5-1 Installation Owner Resource Limit Recommended Ranges

Resource Shell Limit	Resource	Soft Limit	Hard Limit
Open file descriptors	nofile	at least 1024	at least 65536
Number of processes available to a single user	nproc	at least 2047	at least 16384
Size of the stack segment of the process	stack	at least 10240 KB	at least 10240 KB, and at most 32768 KB
Maximum locked memory limit	memlock	at least 90 percent of the current RAM when HugePages memory is enabled and at least 3145728 KB (3 GB) when HugePages memory is disabled	at least 90 percent of the current RAM when HugePages memory is enabled and at least 3145728 KB (3 GB) when HugePages memory is disabled

Disabling Transparent HugePages

1. Check if the Transparent HugePages is enabled:

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

2. Add the transparent_hugepage parameter to **GRUB_CMDLINE_LINUX** in **/etc/default/grub**. For example:

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

3. Run the following command and restart the machine:

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

Configuring Users, Groups and Environment Variables

1. Create the **OSDBA** group (by standard it is **dba**):

```
/usr/sbin/groupadd -g 54322 dba
```

2. Create Oracle database software owner user:

```
useradd -u 54321 -g oinstall –G dba oracle
```

- If **oinstall** group is not there, create it.
- It is recommended to create **oper** group

Configuring Oracle Software Owner Environments

1. Verify that the default shell for **`oracle`** is Bash shell:

```
echo $SHELL
```

2. Add the following to **`.bash_profile`** of **`oracle`:**

```
ORACLE_SID=ORADB; export ORACLE_SID
ORACLE_BASE=/u01/app/oracle; export ORACLE_BASE
ORACLE_HOME=$ORACLE_BASE/product/19.0.0/db_1; export ORACLE_HOME
PATH=.:${PATH}:$ORACLE_HOME/bin
PATH=${PATH}:/usr/bin:/bin:/usr/local/bin
export PATH
umask 022
```

The Important Environment Variables

Variable	Description
ORACLE_BASE	the root directory of the Oracle Database directory tree Example: **/u01/app/oracle**
ORACLE_HOME	the directory where Oracle database software will be installed Example: **/u01/app/oracle/product/19.0.0/db_1**
ORACLE_SID	Oracle database instance name

Running the Universal Installer Modes

Installation Mode	Description
Interactive	A GUI mode where the user interact with the Installer using mouse and keyboard Requires a GUI Desktop
Silent	The installation starts with no interaction required from the user. A response file is provided to provide information for the installer. Useful in the following scenarios: • Installing Oracle database software on an operating system with no X Windows system • Unattended installations • Easy installations on multiple machines The installer is run using **`-silent`** option
Response File	When some of the required information is provided by the response file and the response file is provided to the installer but **`-silent`** option is omitted

About RPM-Based Oracle Database Installation

- An easy way to install Oracle database software
  - performs preinstallation checks
  - extracts the database software
  - reassigns ownership of the software to the preconfigured user and groups
  - maintains the Oracle inventory
  - executes all root operations required to configure Oracle Database software
- An RPM-based installation performs a software-only Oracle Database installation and creates an Oracle home
- A database can be created using the **`/etc/init.d/oracledb_ORCLCDB-19c`** service configuration script

Installing Oracle Database Software Using the RPM Package

1. Install the required libraries
2. Download the rpm file and copy it to a staging directory
3. Install the database software

```
yum -y localinstall oracle-database-ee-19c-1.0-1.x86_64.rpm
```

Oracle Support Website

- Oracle Support Website:

  https://support.oracle.com

- An Oracle support account is vital for DBA:
  - Obtain Release Updates, Release Update Revisions, Patches, Patchsets
  - Review knowledge base
  - Submit Service Requests (SR) to Oracle Support on licensed products

Installing Oracle Database Software for Windows

- An Oracle Installation user:
  - A local account or a domain account
  - A member of the local Administrators group
- (optional but recommended) An Oracle Home user :
  - Can be a Windows Built-in Account (LocalSystem for Server and LocalService for Client), Virtual Account, or a regular (not an administrator) Windows account
  - Services run as Oracle Home user
- Some services are created by the installer

Oracle Inventory Directory

- Oracle Inventory is a list of Oracle software products installed in the system
- In Windows, it is located in the following directory:

  C:\Program Files\Oracle\Inventory\ContentsXML
- In Windows, Oracle Home Users are members of **`ORA_INSTALL`** group
- In Linux, it is determined in the file **`/etc/oraInst.loc`**

```
inventory_loc=/u01/app/oraInventory
inst_group=oinstall
```

Uninstalling Oracle Database Software

1. Stop all the services running from Oracle database software home
2. Run the following script:

```
$ORACLE_HOME/deinstall/deinstall
```

Summary

In this lecture, you should have learnt how to perform the following:

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- Perform database software installation in Linux and Windows platforms
- Describe Oracle Inventory Directory