

Oracle Database 19c (19.27)

on SUSE Linux Enterprise Server 15 SP7

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Introduction

This document is not a replacement for official Oracle install document, but to help you understand minor difference you may encounter while installing Oracle Database 19c on SUSE Linux Enterprise Server 15 SP7. This document covers x86_64 version but installation steps are same for other platforms. We will use latest versions of Oracle Database Enterprise version 19c.

Oracle Database Software

Oracle Database Enterprise Edition 19c is available for public download at:
<https://www.oracle.com/technetwork/database/enterprise-edition/downloads/index.html>

SUSE Linux Software

Download SUSE Linux Enterprise Server 15 SP7 here, you can use 60 Day's free trial:
<https://www.suse.com/products/server/download/>

SUSE Linux Installation

Install SUSE Linux Enterprise Server 15 SP7 with “**Enhanced Base System, Software Management, X Window System, Oracle Server Base**” pattern. Please note that SLES15 SP7 comes with SLE-15-SP7-Online-x86_64-GM-Media1.iso and SLE-15-SP7-Full-x86_64-GM-Media1.iso. Use Online version if you are connected to internet & ready to register your server with SUSE Customer Center (scc.suse.com).

You can follow the official Oracle Installation manual for selective SLES OS required rpms, however **Oracle Server Base** pattern from SUSE will fulfil minimum setup required for Oracle Database Installation.

```
oracle@sles15sp7:~> uname -a
Linux sles15sp7 6.4.0-150700.53.3-default #1 SMP PREEMPT_DYNAMIC Tue Jun  3 11:45:29 UTC 2
025 (facf447) x86_64 x86_64 x86_64 GNU/Linux
oracle@sles15sp7:~> id
uid=468(oracle) gid=468(oinstall) groups=468(oinstall),467(dba)
oracle@sles15sp7:~> env |grep ORA
ORACLE_SID=orcl
ORACLE_BASE=/opt/oracle
ORACLE_HOME=/opt/oracle/19c
oracle@sles15sp7:~>
```

Installing Oracle Database 19c (19.3)

Installing Oracle Database 19c on SLES15 SP7 is straightforward, please follow:

1. Download Oracle SW (LINUX.X64_193000_db_home.zip)

- a. unzip in **\$ORACLE_HOME** directory.
- b. cd **\$ORACLE_HOME**
- c. ./runInstaller or ./runInstaller -applyRU patch_directory

Note: There is a change in Oracle Database 19c Installation process. Now runInstaller is a script, please check Oracle Official document for explanation.

2. Watch for following minor error/warning messages (**Fix before starting Installer**):

1. Make sure server is assigned static IP address.
2. Make sure you have enabled oracle user & logged-in as user “**oracle**”.
3. Install (or verify) any missing packages i.e.
zypper in libcap1 libcap1-32bit libcap-ng-utils libcap-ng0-32bit libXtst6-32bit nfs-kernel-server

Note: libcap1 & libcap1-32bit are part of **SLES 15 Legacy Module**. Refer <https://documentation.suse.com/sles/15-SP2/html/SLES-all/cha-register-sle.html> on how to enable Legacy Module.

4. **DBCA Error:** ORA-27104: system-defined limits for shared memory was misconfigured

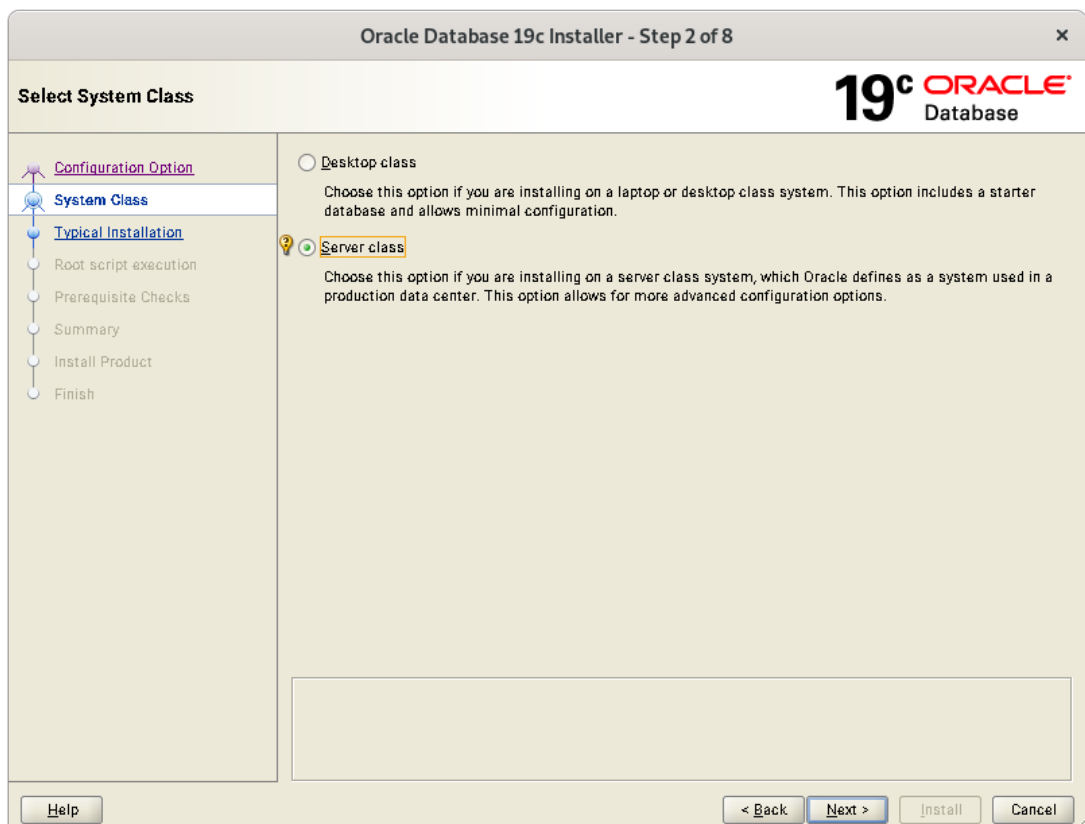
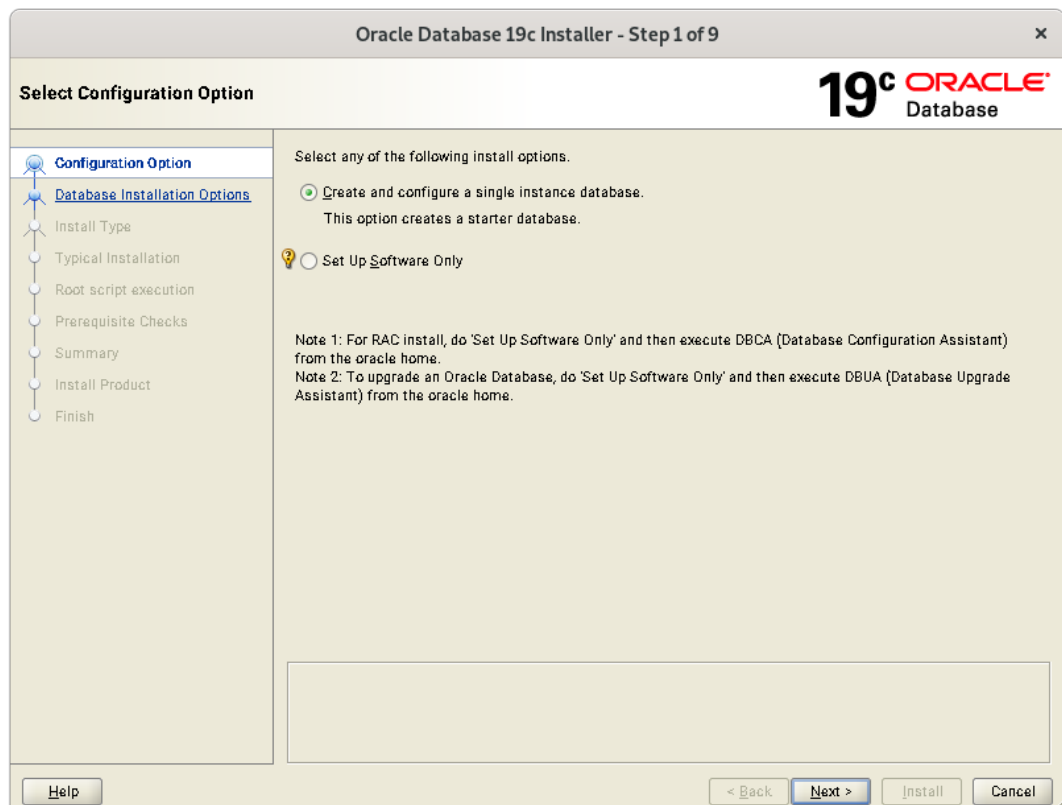
Fix: Increase kernel.shmmax & kernel.shmall based on your Server RAM in **/etc/sysconfig/oracle** & run “**systemctl restart oracle-setup**”.

Please refer Oracle Metalink Note [ID 567506.1] - Maximum SHMMAX values for Linux x86 and x86-64

Example values for x86_64 Server with 32GB RAM:

shmmax=16833714176, shmall=3287834

3. Login as user oracle and Start Oracle Universal Installer (OUI):
\$ORACLE_HOME/runInstaller



Oracle Database 19c Installer - Step 4 of 18

19c ORACLE Database

Specify Installation Location

Configuration Option

System Class

Database Edition

Installation Location

Create Inventory

Configuration Type

Database Identifiers

Configuration Options

Database Storage

Management Options

Recovery Options

Schema Passwords

Operating System Groups

Root script execution

Prerequisite Checks

Summary

Install Product

Finish

Specify a path to place all Oracle software and configuration-related files installed by this installation owner. This location is the Oracle base directory for the installation owner.

Oracle base:

This software directory is the Oracle Database home directory.

Software location: /opt/oracle/19c

Help

< Back

Next >

Install

Cancel

Oracle Database 19c Installer - Step 5 of 18

19c ORACLE Database

Create Inventory

Configuration Option

System Class

Database Edition

Installation Location

Create Inventory

Configuration Type

Database Identifiers

Configuration Options

Database Storage

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Prerequisite Checks

Summary

Install Product

Finish

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:

Specify an operating system group whose members have write permission to the inventory directory (orainventory).

orainventory Group Name:

Help

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Install

Cancel

Oracle Database 19c Installer - Step 6 of 18

Select Configuration Type

19c ORACLE Database

Select the type of database that you want to create.

☒ General Purpose / Transaction Processing
A starter database designed for general purpose use, or for transaction-heavy applications.

☐ Data Warehousing
A starter database optimized for data warehousing applications.

Configuration Type

Configuration Options

Database Storage

Management Options

Recovery Options

Schema Passwords

Operating System Groups

Root script execution

Prerequisite Checks

Summary

Install Product

Finish

Help

< Back Next > Install Cancel

Oracle Database 19c Installer - Step 7 of 18

Specify Database Identifiers

19c ORACLE Database

Provide the identifier information required to access the database uniquely. An Oracle database is uniquely identified by a Global database name, typically of the form "name.domain". A database is referenced by at least one Oracle instance which is uniquely identified from any other instance on this computer by an Oracle system identifier (SID).

Global database name: orcl

Oracle system identifier (SID): orcl

☒ Create as Container database
Creates a database container for consolidating multiple databases into a single database and enables database virtualization.

Pluggable database name: orclpdb

Database Identifiers

Configuration Options

Database Storage

Management Options

Recovery Options

Schema Passwords

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Summary

Install Product

Finish

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Oracle Database 19c Installer - Step 8 of 18

Specify Configuration Options

19c ORACLE Database

Configuration Option
System Class
Database Edition
Installation Location
Create Inventory
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
Schema Passwords
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Root script execution
Prerequisite Checks
Summary
Install Product
Finish

Memory Character sets Sample schemas

Enabling Automatic Memory Management allows the database to distribute memory automatically between the system global area (SGA) and the program global area (PGA), based on user-specified overall database memory target size. If automatic memory management is not enabled, then the SGA and PGA must be sized manually.

☐ Enable Automatic Memory Management

Allocate memory: 256 12821 32052 12,821 40 %

SGA target: 9615 MB
PGA aggregate target: 3206 MB
Target database memory: 12821 MB

Help < Back Next > Install Cancel

Oracle Database 19c Installer - Step 9 of 18

Specify Database Storage Options

19c ORACLE Database

Configuration Option
System Class
Database Edition
Installation Location
Create Inventory
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
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Install Product
Finish

☒ File system

Use a file system for database storage. For optimal database organization and performance, Oracle recommends that you install data files and the Oracle database software on different disks.

Specify database file location: /opt/oracle/oradata Browse...

☐ Oracle Automatic Storage Management

Oracle Automatic Storage Management (Oracle ASM) simplifies database storage administration, and places database files for optimal I/O performance. Select this option if you intend to use Oracle ASM.

Help < Back Next > Install Cancel

Oracle Database 19c Installer - Step 10 of 18

Specify Management Options

19c ORACLE Database

Oracle Database 12c is managed by Oracle Database Express by default. You can use Oracle Enterprise Manager 12c Cloud Control to manage each Oracle Database 19c centrally. Specify the details of the Cloud Control configuration to manage your database.

☐ Register with Enterprise Manager (EM) Cloud Control

DMS Host:

DMS Port:

EM Admin User Name:

EM Admin Password:

Help < Back Next > Install Cancel

Oracle Database 19c Installer - Step 11 of 18

Specify Recovery Options

19c ORACLE Database

Enable or disable recovery for your database. If you choose to enable recovery, then the location specified will be used as recovery area storage.

☒ Enable Recovery

☒ File system

Recovery area location: Browse...

☐ Oracle Automatic Storage Management

Help < Back Next > Install Cancel

Oracle Database 19c Installer - Step 12 of 18

Specify Schema Passwords

19c ORACLE Database

The starter database contains pre-loaded schemas, most of which have passwords that are expired and locked at the end of installation. After installation is complete, you must unlock and set new passwords for those accounts you want to use. Schemas used for database management and postinstallation functions are left unlocked, and passwords for these accounts will not expire. Specify the passwords for these accounts.

☐ Use different passwords for these accounts

	Password	Confirm password
<u>S</u> YS		
S <u>Y</u> STEM		
P <u>D</u> BADMIN		

☒ Use the same password for all accounts

Password: Confirm password:

Oracle Database 19c Installer - Step 13 of 18

Privileged Operating System groups

19c ORACLE Database

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:

Database Operator (OSOPER) group (Optional):

Database Backup and Recovery (OSBACKUPDBA) group:

Data Guard administrative (OSDGDBA) group:

Encryption Key Management administrative (OSKMDBA) group:

Real Application Cluster administrative (OSRACDBA) group:

Oracle Database 19c Installer - Step 14 of 18

Root script execution configuration

19^c ORACLE Database

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 :

User name :

Passwrd :

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Oracle Database 19c Installer - Step 15 of 18

Perform Prerequisite Checks

19^c ORACLE Database

Verification Result

Some of the minimum requirements for installation are not completed. Review and fix the issues listed in the following table, and recheck the system.

☐ Ignore All

Checks	Status	Fixable
[OS Kernel Parameters]		
OS Kernel Parameter: shmall	Warning	Yes

Fixup Script

Some of the prerequisites have failed on the following nodes. Installer has generated a fixup script that needs to be run as a privileged user (root) on the listed nodes.

Script: /tmp/InstallActions2021-06-10_05-48-54AM/CVU_19.0.0.0_oracle/runfixup.sh

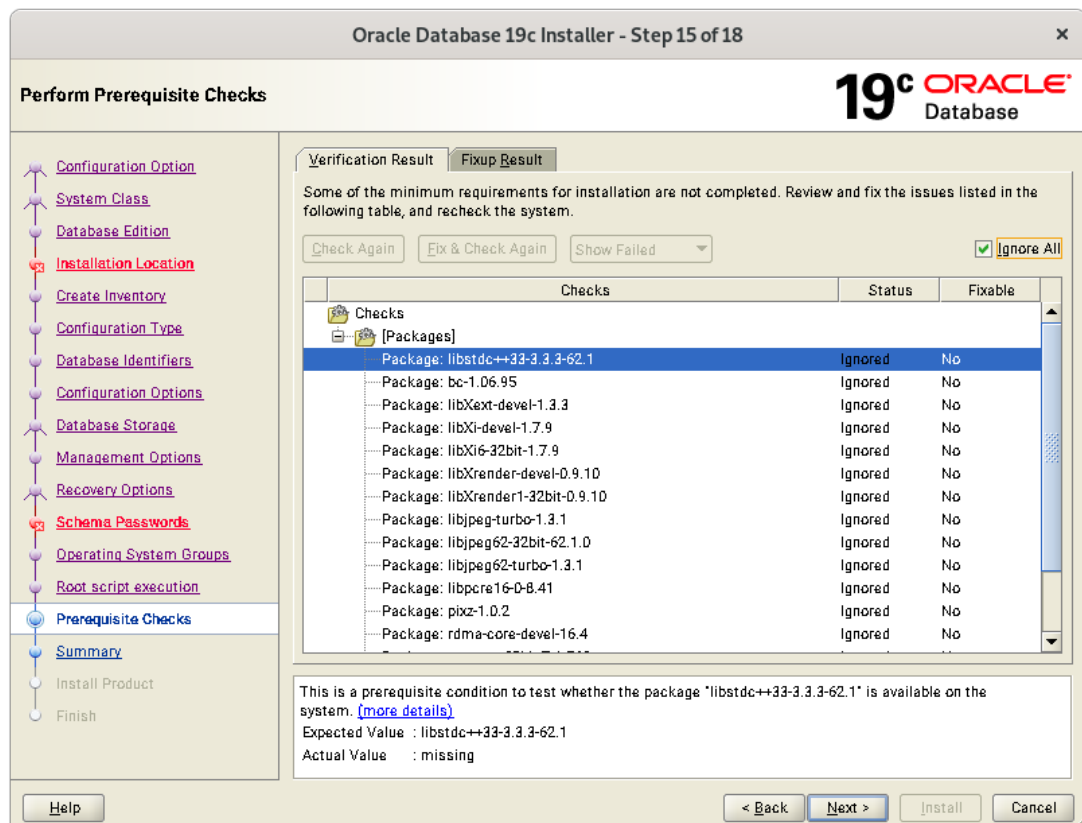
Nodes: sles15-sp3

This is a pre-...
Expected Value
Actual Value

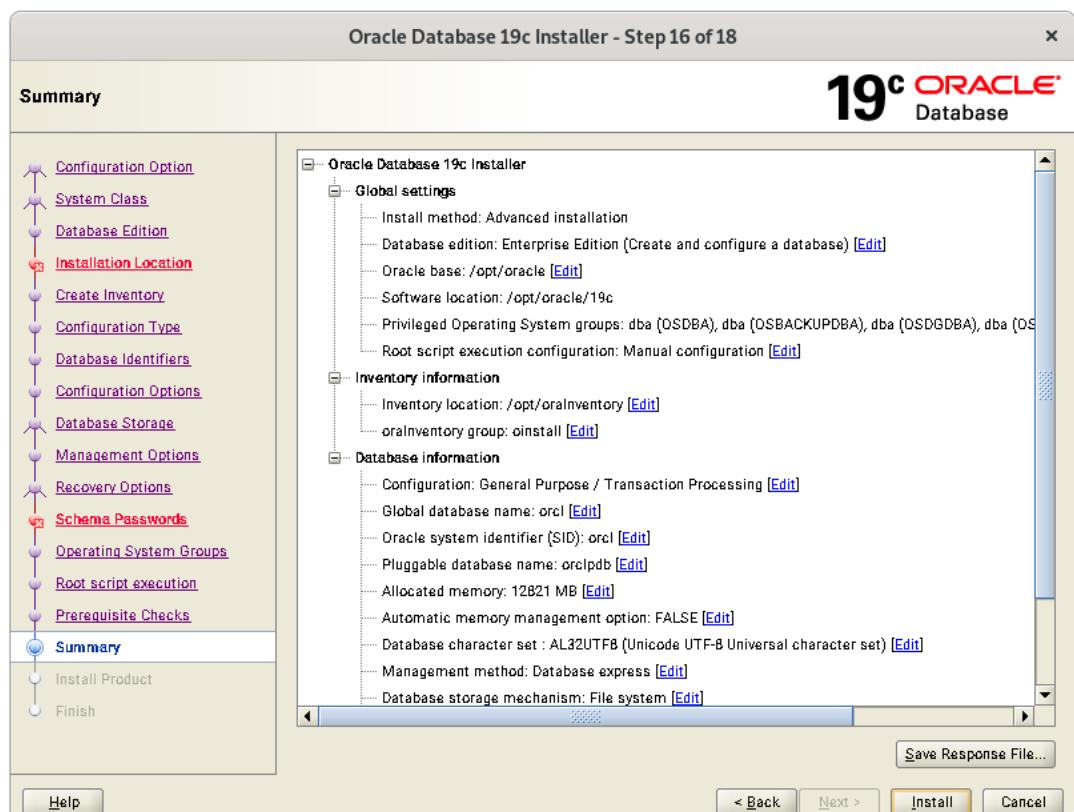
To execute the fixup script:

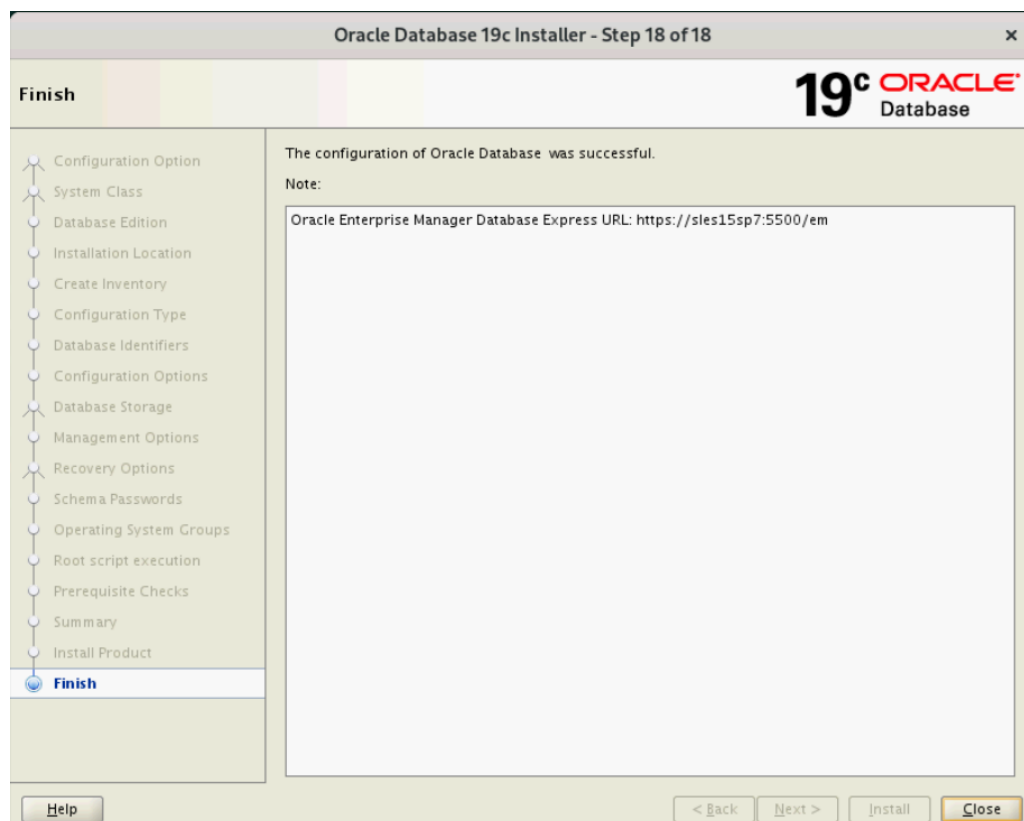
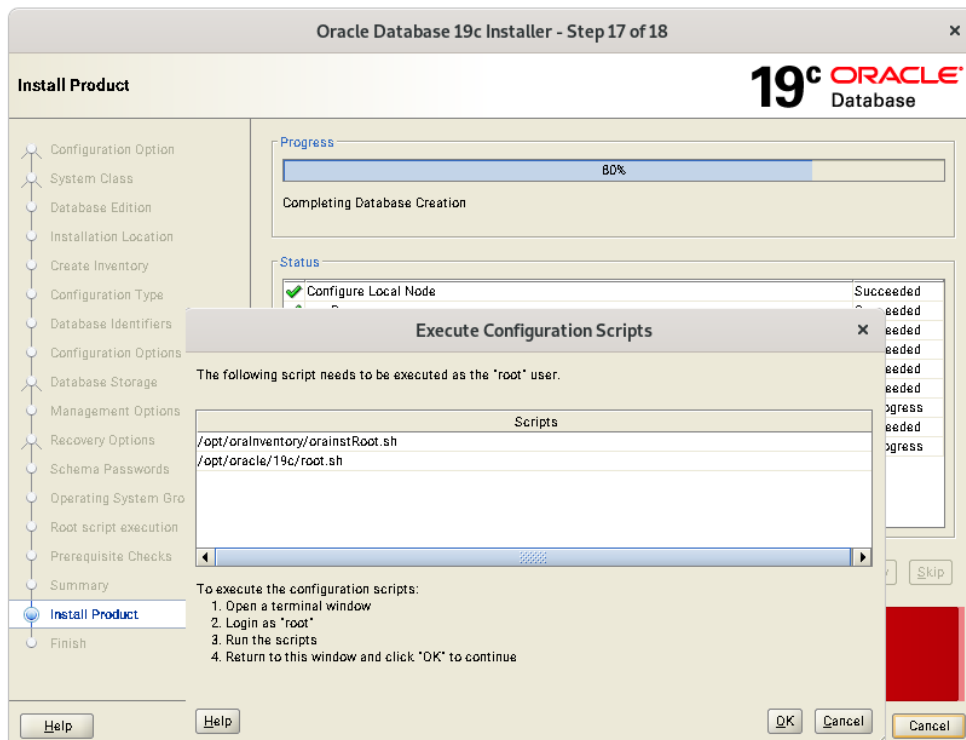
1. Open a terminal window
2. Login as "root"
3. Run the script
4. Return to this window and click "OK" to continue

OK Cancel



- Verify these packages are installed, then select “Ignore All”

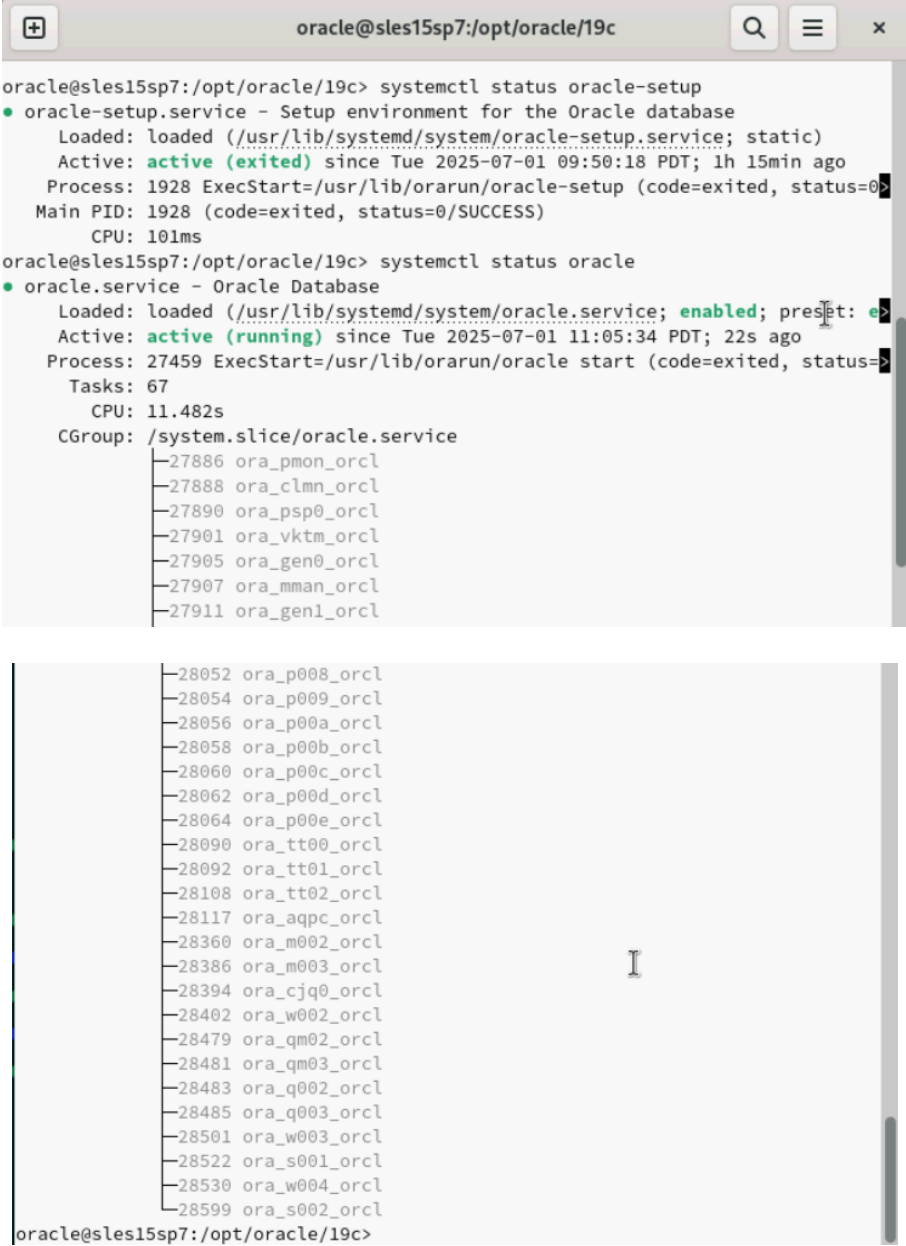




SUSE SLES 15 SP7 setup (After successful Oracle DB Install)

Please do following changes for successful Oracle Database start after reboot:

1. Edit “orcl:/opt/oracle/19c:Y” in /etc/oratab
2. Set START_ORACLE_DB & START_ORACLE_DB_LISTENER to “yes” in /etc/sysconfig/oracle setup file.
3. Check status using **systemctl** commands:

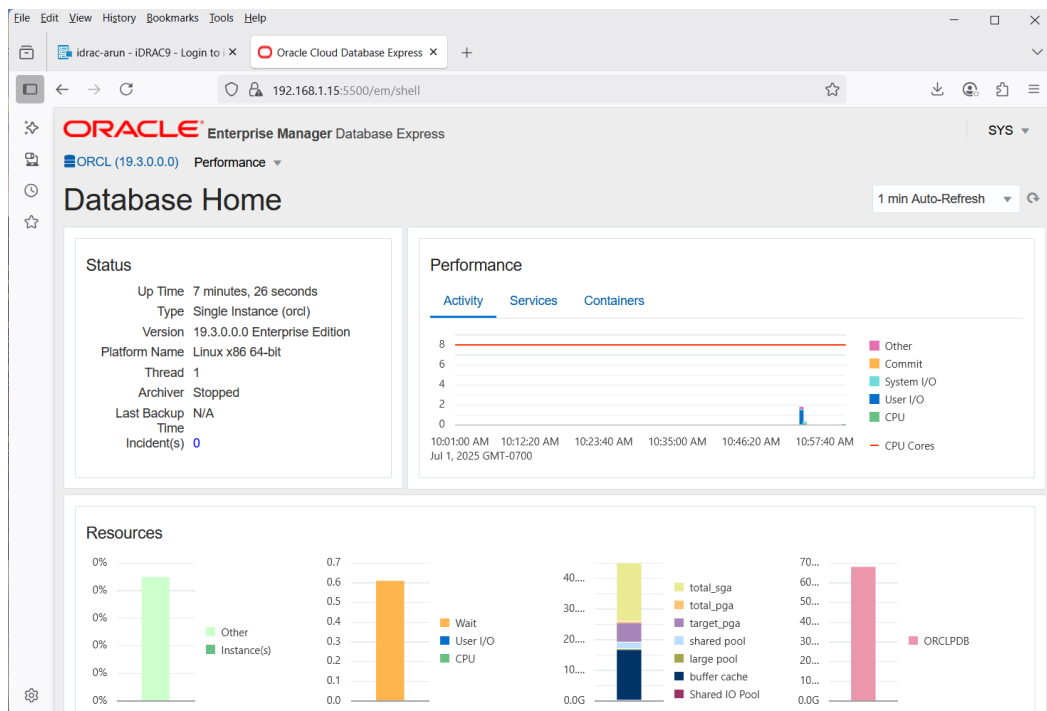


```

oracle@sles15sp7:/opt/oracle/19c> systemctl status oracle-setup
● oracle-setup.service - Setup environment for the Oracle database
   Loaded: loaded (/usr/lib/systemd/system/oracle-setup.service; static)
   Active: active (exited) since Tue 2025-07-01 09:50:18 PDT; 1h 15min ago
   Process: 1928 ExecStart=/usr/lib/orarun/oracle-setup (code=exited, status=0>
   Main PID: 1928 (code=exited, status=0/SUCCESS)
      CPU: 101ms

oracle@sles15sp7:/opt/oracle/19c> systemctl status oracle
● oracle.service - Oracle Database
   Loaded: loaded (/usr/lib/systemd/system/oracle.service; enabled; pres&
   Active: active (running) since Tue 2025-07-01 11:05:34 PDT; 22s ago
   Process: 27459 ExecStart=/usr/lib/orarun/oracle start (code=exited, status=
      Tasks: 67
         CPU: 11.482s
    CGroup: /system.slice/oracle.service
            └─27886 ora_pmon_orcl
              └─27888 ora_clmn_orcl
                └─27890 ora_psp0_orcl
                  └─27901 ora_vktm_orcl
                    └─27905 ora_gen0_orcl
                      └─27907 ora_mman_orcl
                        └─27911 ora_gen1_orcl
                          └─28052 ora_p008_orcl
                            └─28054 ora_p009_orcl
                              └─28056 ora_p00a_orcl
                                └─28058 ora_p00b_orcl
                                  └─28060 ora_p00c_orcl
                                    └─28062 ora_p00d_orcl
                                      └─28064 ora_p00e_orcl
                                        └─28090 ora_tt00_orcl
                                          └─28092 ora_tt01_orcl
                                            └─28108 ora_tt02_orcl
                                              └─28117 ora_aqpc_orcl
                                                └─28360 ora_m002_orcl
                                                  └─28386 ora_m003_orcl
                                                    └─28394 ora_cjq0_orcl
                                                      └─28402 ora_w002_orcl
                                                        └─28479 ora_qm02_orcl
                                                          └─28481 ora_qm03_orcl
                                                            └─28483 ora_q002_orcl
                                                              └─28485 ora_q003_orcl
                                                                └─28501 ora_w003_orcl
                                                                  └─28522 ora_s001_orcl
                                                                    └─28530 ora_w004_orcl
                                                                      └─28599 ora_s002_orcl

oracle@sles15sp7:/opt/oracle/19c>
  
```



Update Oracle Database to current version

SLES 15 SP7 is certified with Oracle Database 19.4.x (or above). Above instructions covers 19.3 (available for public download). Download and install latest Oracle update i.e. Oracle DB Release Update 19.27.0.0 (April, 2025) - p37642901_190000_Linux-x86-64.zip.

```
oracle@c1c1:~/pathc_19.27/37642901> ../../19c/OPatch/patch apply
Oracle Interim Patch Installer version 12.2.0.1.46
Copyright (c) 2025, Oracle Corporation. All rights reserved.

Oracle Home      : /home/oracle/19c
Central Inventory : /home/oraInventory
   from           : /home/oracle/19c/oraInst.loc
OPatch version    : 12.2.0.1.46
OUI version       : 12.2.0.7.0
Log file location : /home/oracle/19c/cfgtoollogs/patch/patch2025-07-02_12-55-2
2PM_1.log

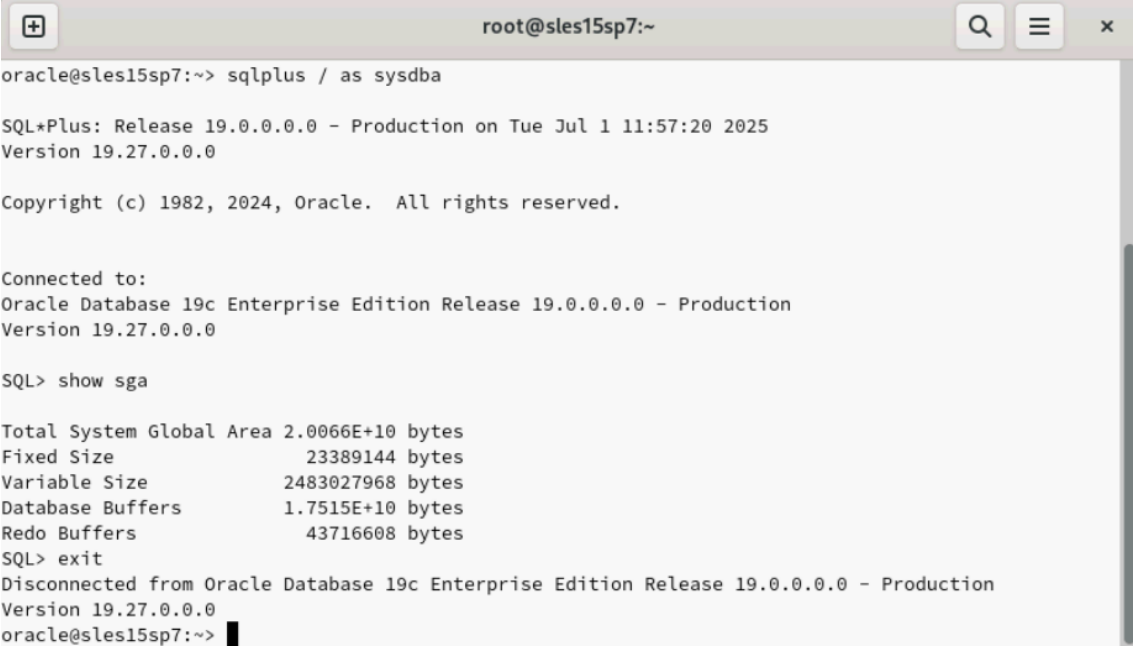
Verifying environment and performing prerequisite checks...
OPatch continues with these patches: 37642901

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 sy
stem.
(Oracle Home = '/home/oracle/19c')

Is the local system ready for patching? [y|n]
y
User Responded with: Y
Backing up files...

Patching component oracle.jdk, 1.8.0.201.0...
Patch 37642901 successfully applied.
Sub-set patch [35943157] has become inactive due to the application of a super-set patch [37642901].
Please refer to Doc ID 2161861.1 for any possible further required actions.
Log file location: /home/oracle/19c/cfgtoollogs/patch/patch2025-07-02_12-55-22PM_1.log
```

A terminal window titled 'root@sles15sp7:~' with search, menu, and close icons in the title bar. The terminal shows a user 'oracle@sles15sp7' running 'sqlplus / as sysdba'. The output shows SQL*Plus version 19.0.0.0.0, release date Tue Jul 1 11:57:20 2025, and copyright information. It then shows the user is connected to an Oracle Database 19c Enterprise Edition. The user enters 'show sga' and the output shows memory statistics: Total System Global Area 2.0066E+10 bytes, Fixed Size 23389144 bytes, Variable Size 2483027968 bytes, Database Buffers 1.7515E+10 bytes, and Redo Buffers 43716608 bytes. Finally, the user enters 'exit' and the terminal shows the user is disconnected from the database.

```
root@sles15sp7:~  
oracle@sles15sp7:~> sqlplus / as sysdba  
  
SQL*Plus: Release 19.0.0.0.0 - Production on Tue Jul 1 11:57:20 2025  
Version 19.27.0.0.0  
  
Copyright (c) 1982, 2024, Oracle. All rights reserved.  
  
Connected to:  
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production  
Version 19.27.0.0.0  
  
SQL> show sga  
  
Total System Global Area 2.0066E+10 bytes  
Fixed Size                23389144 bytes  
Variable Size             2483027968 bytes  
Database Buffers          1.7515E+10 bytes  
Redo Buffers               43716608 bytes  
SQL> exit  
Disconnected from Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production  
Version 19.27.0.0.0  
oracle@sles15sp7:~>
```

In production environment, please apply latest SUSE and Oracle Patches.

Thanks for selecting **SUSE Linux Enterprise Server** as your Linux platform of choice!