

Oracle RAC 19c(19.27.0.0.0) on SUSE Linux Enterprise Server 15 (SP7) for x86-64

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Table of Contents

<i>Introduction.....</i>	<i>3</i>
<i>Hardware and Software Requirements.....</i>	<i>3</i>
<i>Hardware Requirements.....</i>	<i>3</i>
<i>Software Requirements.....</i>	<i>3</i>
<i>Cluster(4-node) Information.....</i>	<i>4</i>
<i>Prerequisites.....</i>	<i>5</i>
<i>Install SUSE Linux Enterprise Server 15 SP7 on each cluster node.....</i>	<i>5</i>
<i>DownLoad Oracle software.....</i>	<i>7</i>
<i>Oracle RAC Installation.....</i>	<i>8</i>
<i>Installing Oracle Grid Infrastructure.....</i>	<i>8</i>
<i>Installing Oracle Database.....</i>	<i>38</i>
<i>Troubleshooting</i>	<i>67</i>
<i>Additional Comments</i>	<i>70</i>

Introduction

This document provides details on installing Oracle Grid/Database 19c on SUSE Linux Enterprise Server 15 SP7. It covers x86_64 version but installation steps are same for other supported platforms. (x86, ia64, System z, etc.).

Official Oracle product documentation is available at: <http://docs.oracle.com/en/>

System Requirements and Specifications

Hardware Requirements

Requirement	Minimum
RAM	32 GB
Swap space	Approx. twice the size of RAM
Disk space in /tmp	8 GB
Disk space for software files	8 GB
Disk space for database files	8 GB

Software Requirements

SUSE

- *SUSE Linux Enterprise Server 15 SP7 GM (x86_64)*
(<https://www.suse.com/products/server/download>)

Oracle

- *Oracle Grid Infrastructure 19c (19.3) (x86_64)*
- *Oracle Database 19c (19.3) (x86_64)*
(<https://www.oracle.com/database/technologies/oracle19c-linux-downloads.html>)
- *Patch 37641958: GI RELEASE UPDATE 19.27.0.0.0*
- *Patch 6880880: OPatch utility 12.2.0.1.46 for DB 19.0*
(<https://support.oracle.com>)

Cluster(4-node) Information

Dell PowerEdge R750 Server (2 x CPU Intel Xeon Gold 5318Y 2.1G, 24C/48T, 11.2GT/s, 36M Cache, Turbo, HT (165W)), DDR4-2933 128GB of memory

Local 2 x SSD (1TB, NVMe)

2 x NIC Intel Ethernet Converged Network Adapter X710-DA2 (10GbE SFP+, Dual Port) (two bonded as active/passive) + Static IP Address

Shared SAN Partition: 100G(ASM disk group for OCR and voting disk), 600G(ASM disk group for DB data)

OS: SUSE Linux Enterprise Server 15 SP7 (x86_64)

Kernel version: 6.4.0-150700.51-default

Network configuration:

Public IP:

10.200.176.11 c3n1.oraclelab.bej.suse.com c3n1

10.200.176.12 c3n2.oraclelab.bej.suse.com c3n2

10.200.176.13 c3n3.oraclelab.bej.suse.com c3n3

10.200.176.14 c3n4.oraclelab.bej.suse.com c3n4

Private IP:

192.168.3.1 c3n1-priv c3n1-priv

192.168.3.2 c3n2-priv c3n2-priv

192.168.3.3 c3n3-priv c3n3-priv

192.168.3.4 c3n4-priv c3n4-priv

Virtual IP:

10.200.176.15 c3n1-vip.oraclelab.bej.suse.com c3n1-vip

10.200.176.16 c3n2-vip.oraclelab.bej.suse.com c3n2-vip

10.200.176.17 c3n3-vip.oraclelab.bej.suse.com c3n3-vip

10.200.176.18 c3n4-vip.oraclelab.bej.suse.com c3n4-vip

SCAN

c3-scan.oraclelab.bej.suse.com - (10.200.176.30, 10.200.176.31, 10.200.176.32)

Prerequisites

1. Installing SUSE Linux Enterprise Server 15 SP7 on each cluster node

1-1. Install SUSE Linux Enterprise Server 15 SP7 with “Enhanced Base System, Software Management, X Window System, Oracle Server Base” pattern. You can follow official Oracle Grid/Database Installation manual for selective SLES OS required rpms, however “Oracle Server Base” pattern from SUSE will fulfil minimum setup required for Oracle RAC Installation.

Figure 1-1 Software Installed as shown below

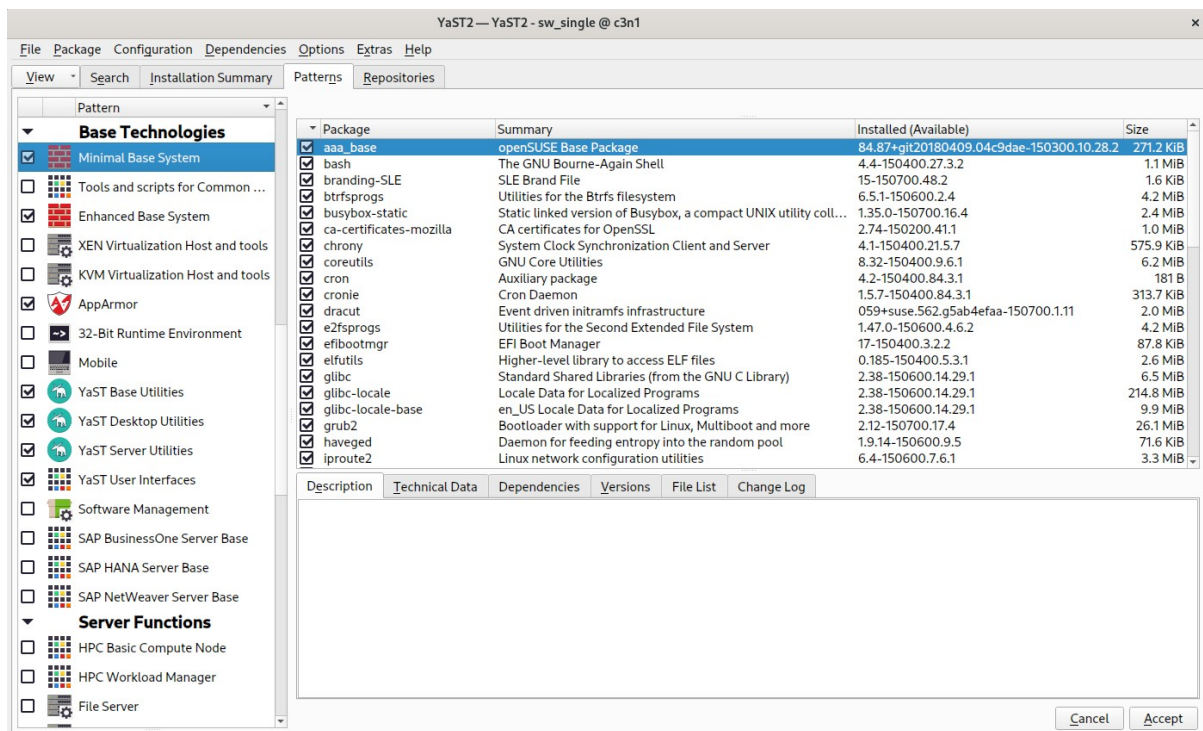
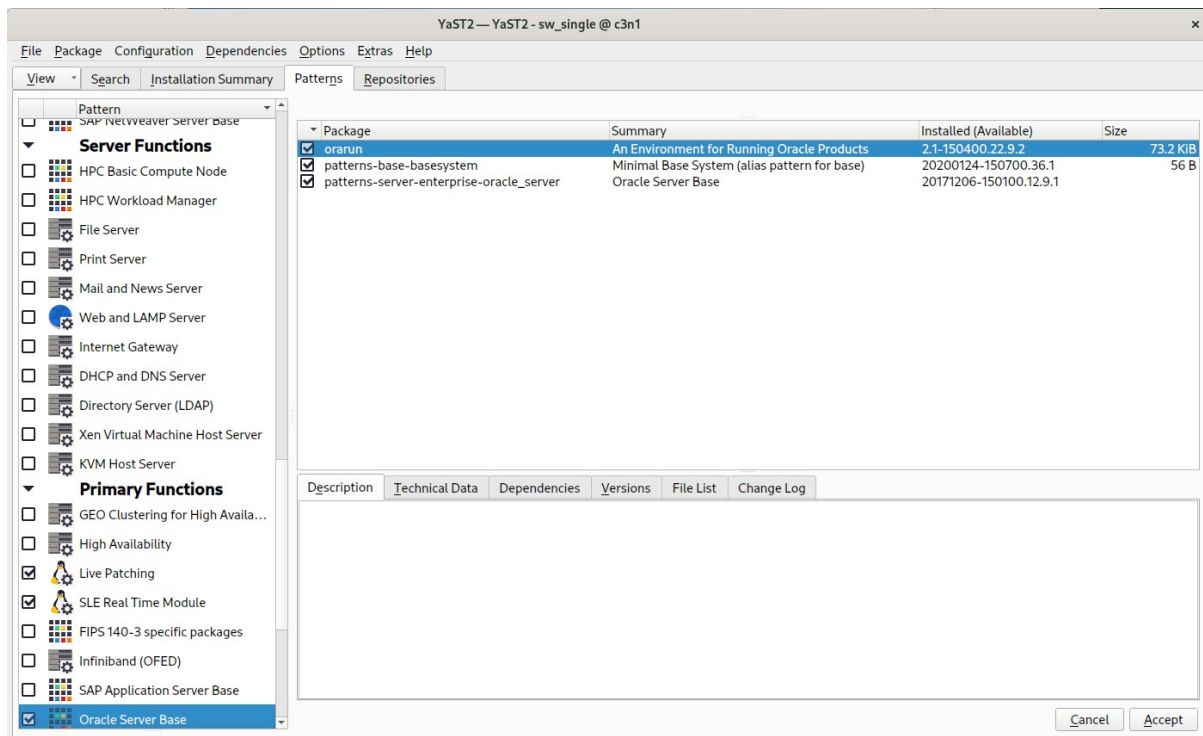


Figure 1-2 Software Installed as shown below**Figure 1-3 OS release information and kernel version**

```
oracle@c3n1:~> more /etc/os-release
NAME="SLES"
VERSION="15-SP7"
VERSION_ID="15.7"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP7"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp7"
DOCUMENTATION_URL="https://documentation.suse.com/"
oracle@c3n1:~> uname -a
Linux c3n1 6.4.0-150700.51-default #1 SMP PREEMPT_DYNAMIC Wed Apr 30 21:35:43 UTC 2025 (6930611/lp) x86_64 x86_64 x86_64 GNU/Linux
oracle@c3n1:~>
```

2. Download Oracle software

2-1. Login to the SLES 15 SP7 64-bit OS as a non-admin user.

Download Oracle Database 19c Grid Infrastructure (19.3) for Linux x86-64 from:
<https://www.oracle.com/database/technologies/oracle19c-linux-downloads.html>.

Download GI RELEASE UPDATE 19.27.0.0.0(Patch 37641958) and OPatch utility 12.2.0.1.46(Patch 6880880) from:
<https://support.oracle.com>.



Oracle RAC Installation

1. Installing Oracle Grid Infrastructure.

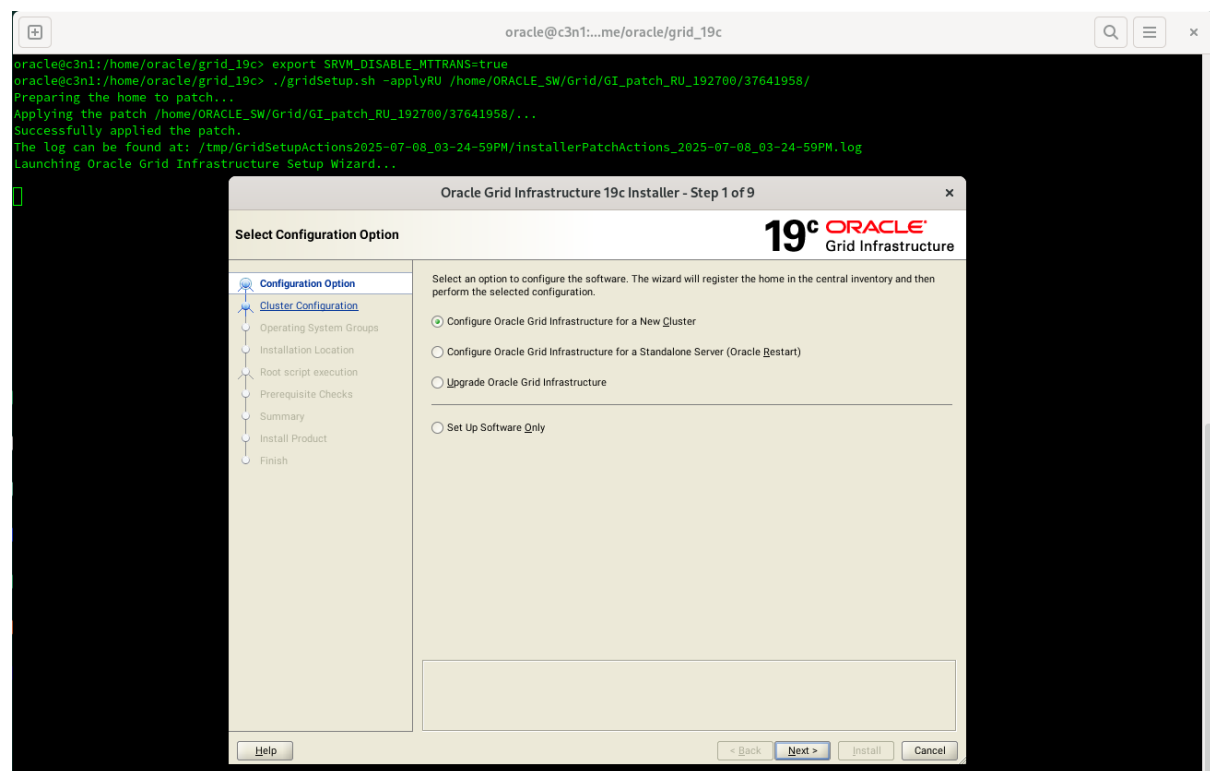
1-1. Extract LINUX.X64_193000_grid_home.zip, p37641958_190000_Linux-x86-64.zip, and p6880880_190000_Linux-x86-64.zip (*OPatch utility 12.2.0.1.46 for DB 19.0*). Replace the OPatch directory located in the Grid 19.3 ShipHome with OPatch version 12.2.0.1.46.

Export SRVM_DISABLE_MTTRANS=true;

Then run Oracle Grid installer './gridSetup.sh' from Grid ShipHome, and through the Grid Installer(gridSetup.sh) to apply the patch 37641958(GI RELEASE UPDATE 19.27.0.0.0).

Install Flow:

1). Select Configuration Option.



Choose option **"Configure Oracle Grid Infrastructure for a New Cluster"**, then click **Next** to continue.

2). Select Cluster Configuration.

Oracle Grid Infrastructure 19c Installer - Step 2 of 9

Select Cluster Configuration

19c ORACLE Grid Infrastructure

Choose the required cluster configuration.

- ☒ Configure an Oracle Standalone Cluster
- ☐ Configure an Oracle Domain Services Cluster
- ☐ Configure an Oracle Member Cluster for Oracle Databases
- ☐ Configure an Oracle Member Cluster for Applications

Oracle Extended clusters are special purpose clusters that constitute nodes which span across multiple sites. Specify a minimum of 3 site names and a maximum of 5 (e.g., siteA, siteB, siteC).

☐ Configure as an Oracle Extended cluster

Site names:

Help < Back Next > Install Cancel

Choose option **"Configure an Oracle Standalone Cluster"**, then click **Next** to continue.

3). Grid Plug and Play Information.

Oracle Grid Infrastructure 19c Installer - Step 3 of 17

Grid Plug and Play Information

19c ORACLE Grid Infrastructure

Single Client Access Name (SCAN) allows clients to use one name in connection strings to connect to the cluster as a whole. Client connect requests to the SCAN name can be handled by any cluster node.

☒ Create Local SCAN

Cluster Name: cluster3

SCAN Name: c3-scan.orac1ab.bej.suse.com

SCAN Port: 1521

☐ Use Shared SCAN

SCAN Client Data:

☐ Configure GNS

☐ Configure nodes Virtual IPs as assigned by the Dynamic Networks

☒ Create a new GNS

GNS VIP Address:

GNS Sub Domain:

☐ Use Shared GNS

GNS Client Data:

Enter the names of the cluster and scan in the **Cluster Name** and **SCAN Name** fields, which are unique across the entire subnet, and then click **Next** to continue.

(More details for GNS configuration please see Oracle official document.)

4). The 'Cluster Node Information' screen appears.

Oracle Grid Infrastructure 19c Installer - Step 4 of 17

Cluster Node Information

Provide the list of nodes to be managed by Oracle Grid Infrastructure with their Public Hostname and Virtual Hostname.

Public Hostname	Virtual Hostname
c3n1.oraclelab.bej.suse.com	c3n1-vip.oraclelab.bej.suse.com
c3n2.oraclelab.bej.suse.com	c3n2-vip.oraclelab.bej.suse.com
c3n3.oraclelab.bej.suse.com	c3n3-vip.oraclelab.bej.suse.com
c3n4.oraclelab.bej.suse.com	c3n4-vip.oraclelab.bej.suse.com

SSH connectivity... Use Cluster Configuration File... Add... Edit... Remove

< Back Next > Install Cancel

In the Public Hostname column of the table of cluster nodes, you should see your local node. Click **Add** to add another node to the cluster. Enter the second node's public name (node2), and virtual IP name (node2-vip), then click OK. Make sure all nodes are selected, then click the SSH Connectivity button at the bottom of the window. After a short period, another message window appears indicating that passwordless SSH connectivity has been established between the cluster nodes. Click **OK** to continue. When returned to the Cluster Node Information window, click **Next** to continue.

5). Specify Network Interface Usage.

Oracle Grid Infrastructure 19c Installer - Step 5 of 17

Specify Network Interface Usage

19c ORACLE® Grid Infrastructure

Private interfaces are used by Oracle Grid Infrastructure for internode traffic.

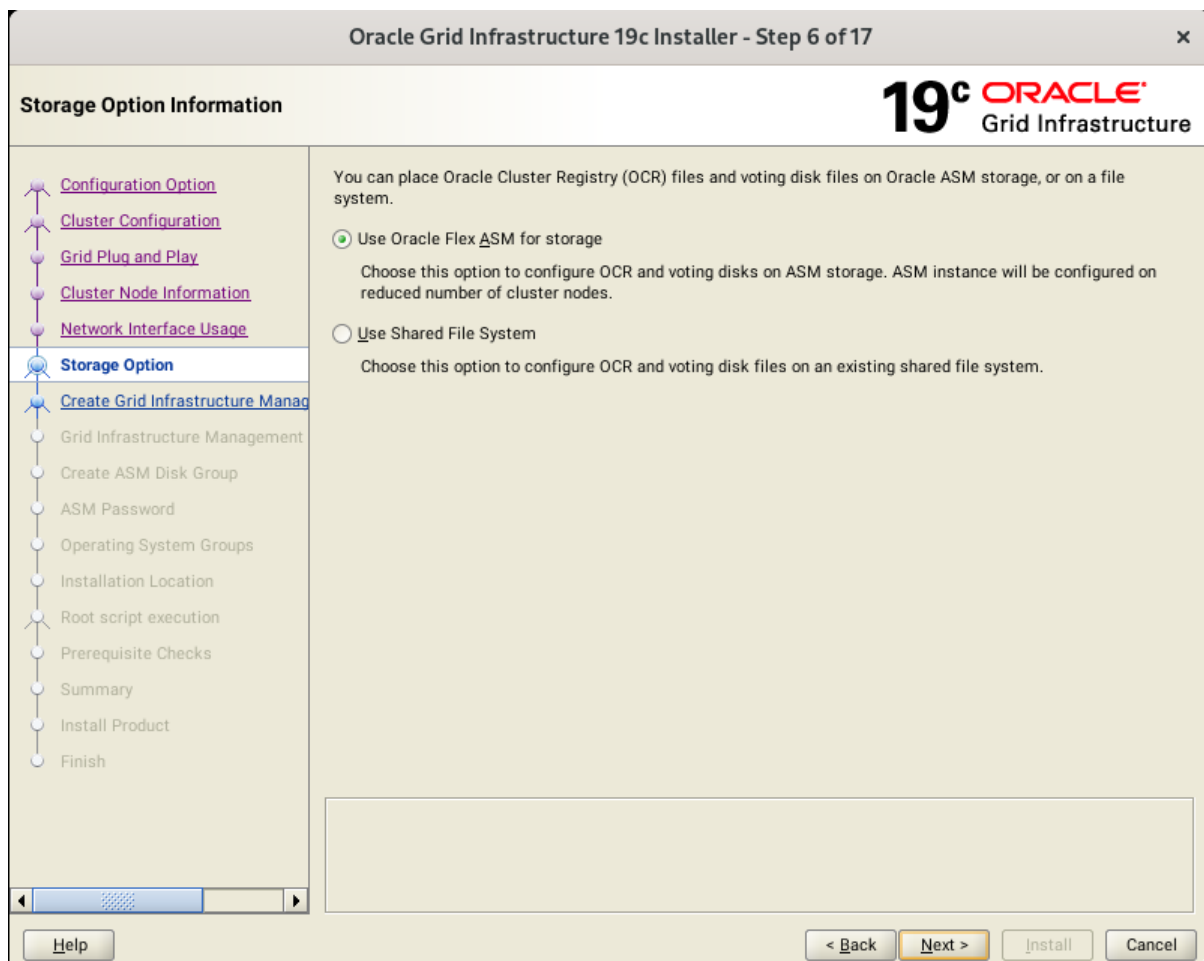
Interface Name	Subnet	Use for
bond0	10.200.176.0	Public
bond1	192.168.3.0	ASM & Private
prg2wg	10.144.181.1	Do Not Use

Navigation: Configuration Option, Cluster Configuration, Grid Plug and Play, Cluster Node Information, **Network Interface Usage**, Storage Option, Create Grid Infrastructure Management, Grid Infrastructure Management, Create ASM Disk Group, ASM Password, Operating System Groups, Installation Location, Root script execution, Prerequisite Checks, Summary, Install Product, Finish

Buttons: Help, < Back, Next >, Install, Cancel

Verify that each interface has the correct interface type associated with it. If you have network interfaces that should not be used by Oracle Clusterware, then set the network interface type to **Do Not Use**. For example, if you have only two network interfaces, then set the public interface to have a Use For value of **Public** and set the private network interface to have a Use For value of **ASM & Private**, then click **Next** to continue.

6). Storage Option Information.



Choose option **"Use Oracle Flex ASM for storage"**, then click **Next** to continue.

7). Grid Infrastructure Management Repository Option.

Oracle Grid Infrastructure 19c Installer - Step 7 of 17

Create Grid Infrastructure Management Repository Option

19c ORACLE
Grid Infrastructure

The Grid Infrastructure Management Repository is an essential component for complete operation of the Autonomous Health Framework, that offers enhanced real time diagnostics and performance management, and Rapid Homes Provisioning for patching. The components that depend on the repository in whole or in part are Cluster Health Advisor, Cluster Health Monitor, QoS Management, Rapid Homes Provisioning and Cluster Activity Log. It is best practice to install this option and failure to do so could compromise timely resolution of issues as well as available functionality for patching.

Configure Grid Infrastructure Management Repository

☐ Yes

☒ No

< Back Next > Install Cancel

Choose whether you want to store the Grid Infrastructure Management Repository in a separate Oracle ASM disk group, then click **Next** to continue.

8). Create ASM Disk Group.

Oracle Grid Infrastructure 19c Installer - Step 8 of 16

Create ASM Disk Group

OCR and Voting disk data will be stored in the following ASM Disk group. Select disks and characteristics of this Disk group.

Disk group name:

Redundancy: ☐ Flex ☐ High ☒ Normal ☐ External

Allocation Unit Size: MB

Select Disks Show Candidate/Provisioned Disks ▾

	Disk Path	Size (in MB)	Status	Failure Group
<input checked="" type="checkbox"/>	/dev/asm/disk1	30720	Candidate	
<input checked="" type="checkbox"/>	/dev/asm/disk2	30720	Candidate	
<input checked="" type="checkbox"/>	/dev/asm/disk3	30720	Candidate	
<input type="checkbox"/>	/dev/asm/disk4	112640	Candidate	
<input type="checkbox"/>	/dev/asm/disk5	112640	Candidate	
<input type="checkbox"/>	/dev/asm/disk6	112640	Candidate	
<input type="checkbox"/>	/dev/asm/disk7	112640	Candidate	

Disk Discovery Path: /dev/asm/*

☐ Configure Oracle ASM Filter Driver

Select this option to configure ASM Filter Driver (AFD) to simplify configuration and management of disk devices by Oracle ASM.

Depending on your needs to create ASM Disk Group, then click **Next** to continue.

9). Specify ASM Password.

Oracle Grid Infrastructure 19c Installer - Step 9 of 16

Specify ASM Password

19c ORACLE®
Grid Infrastructure

The new Oracle Automatic Storage Management (Oracle ASM) instance requires its own SYS user with SYSASM privileges for administration. Oracle recommends that you create a less privileged ASMSNMP user with SYSDBA privileges to monitor the ASM instance.

Specify the password for these user accounts.

☐ Use different passwords for these accounts

	Password	Confirm Password
SYS	<input type="password"/>	<input type="password"/>
ASMSNMP	<input type="password"/>	<input type="password"/>

☒ Use same passwords for these accounts

Specify Password: Confirm Password:

Help < Back Next > Install Cancel

Choose the same password for the Oracle ASM SYS and ASMSNMP account, or specify different passwords for each account, then click **Next** to continue.

10). Failure Isolation Support.

Oracle Grid Infrastructure 19c Installer - Step 10 of 18

Failure Isolation Support

19^c ORACLE[®] Grid Infrastructure

Choose one of the following Failure Isolation Support options.

☐ Use Intelligent Platform Management Interface (IPMI)

To ensure successful installation with IPMI enabled, ensure your IPMI drivers are properly installed and enabled.

User Name :

Password :

☒ Do not use Intelligent Platform Management Interface (IPMI)

< Back Next > Install Cancel

Select the option "**Do not use Intelligent Platform Management Interface (IPMI)**", then click **Next** to continue.

11). Specify Management Options.

Oracle Grid Infrastructure 19c Installer - Step 11 of 18

Specify Management Options

19c ORACLE
Grid Infrastructure

You can configure to have this instance of Oracle Grid Infrastructure and Oracle Automatic Storage Management to be managed by Enterprise Manager Cloud Control. Specify the details of the Cloud Control configuration to perform the registration.

☐ Register with Enterprise Manager (EM) Cloud Control

OMS host:

OMS port:

EM Admin User Name:

EM Admin Password:

[Configuration Option](#)
[Cluster Configuration](#)
[Grid Plug and Play](#)
[Cluster Node Information](#)
[Network Interface Usage](#)
[Storage Option](#)
[Create Grid Infrastructure Manag](#)
[Create ASM Disk Group](#)
[ASM Password](#)
[Failure Isolation](#)
Management Options
[Operating System Groups](#)
Installation Location
Root script execution
Prerequisite Checks
Summary
Install Product
Finish

Help < Back Next > Install Cancel

Selected/Deselected the option "Register with EM...", then click **Next** to continue.

12). Privileged Operating System Groups.

Oracle Grid Infrastructure 19c Installer - Step 12 of 18

Privileged Operating System Groups

19c ORACLE Grid Infrastructure

Select the name of the operating system group, that you want to use for operating system authentication to Oracle Automatic Storage Management.

Oracle ASM Administrator (OSASM) Group

Oracle ASM DBA (OSDBA for ASM) Group

Oracle ASM Operator (OSOPER for ASM) Group (Optional)

[Configuration Option](#)
[Cluster Configuration](#)
[Grid Plug and Play](#)
[Cluster Node Information](#)
[Network Interface Usage](#)
[Storage Option](#)
[Create Grid Infrastructure Manag](#)
[Create ASM Disk Group](#)
[ASM Password](#)
[Failure Isolation](#)
[Management Options](#)
[Operating System Groups](#)
[Installation Location](#)
Root script execution
Prerequisite Checks
Summary
Install Product
Finish

Help < Back Next > Install Cancel

Accept the default operating system group names for Oracle ASM administration, then click **Next** to continue.

13). Specify Installation Location.

Oracle Grid Infrastructure 19c Installer - Step 13 of 18

Specify Installation Location

19c ORACLE Grid Infrastructure

Specify the Oracle base. The Oracle base directory for the Oracle Grid Infrastructure installation is the location where diagnostic and administrative logs, and other logs associated with Oracle ASM and Oracle Clusterware are stored. This location would also contain files pertaining to the configuration of Oracle Clusterware.

Oracle base:

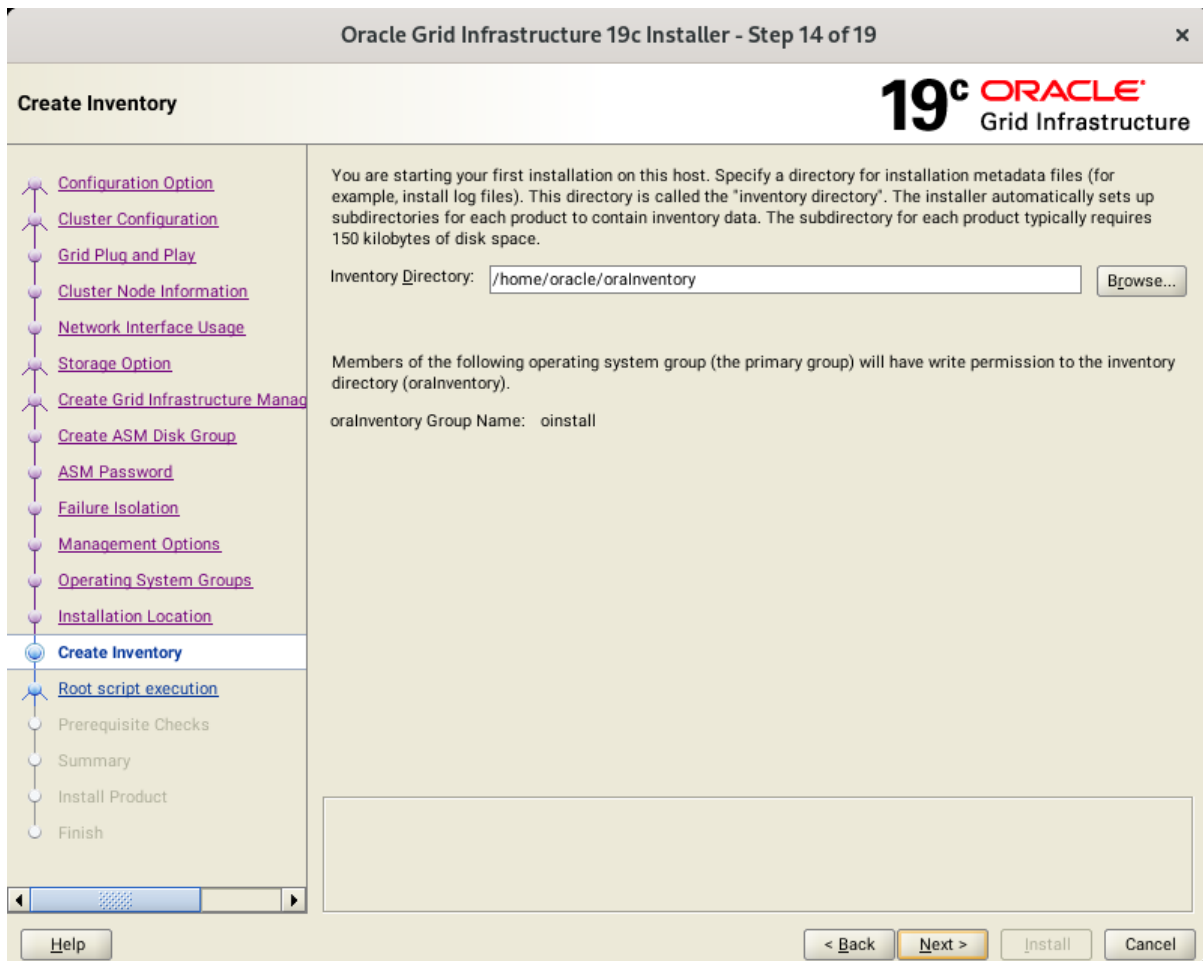
This software directory is the Oracle Grid Infrastructure home directory.

Software location: /home/oracle/grid_19c

< Back Next > Install Cancel

Specify the directory to use for the Oracle base for the Oracle Grid Infrastructure installation, then click **Next** to continue. The Oracle base directory must be different from the Oracle home directory.

14). Create Inventory



Oracle Grid Infrastructure 19c Installer - Step 14 of 19

Create Inventory

19c ORACLE
Grid Infrastructure

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:

Members of the following operating system group (the primary group) will have write permission to the inventory directory (orainventory).

oraInventory Group Name: oinstall

Specify a directory for installation metadata files, and then click **Next** to continue.

15). Root script execution configuration.

Oracle Grid Infrastructure 19c Installer - Step 15 of 19

Root script execution configuration

19c ORACLE
Grid Infrastructure

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

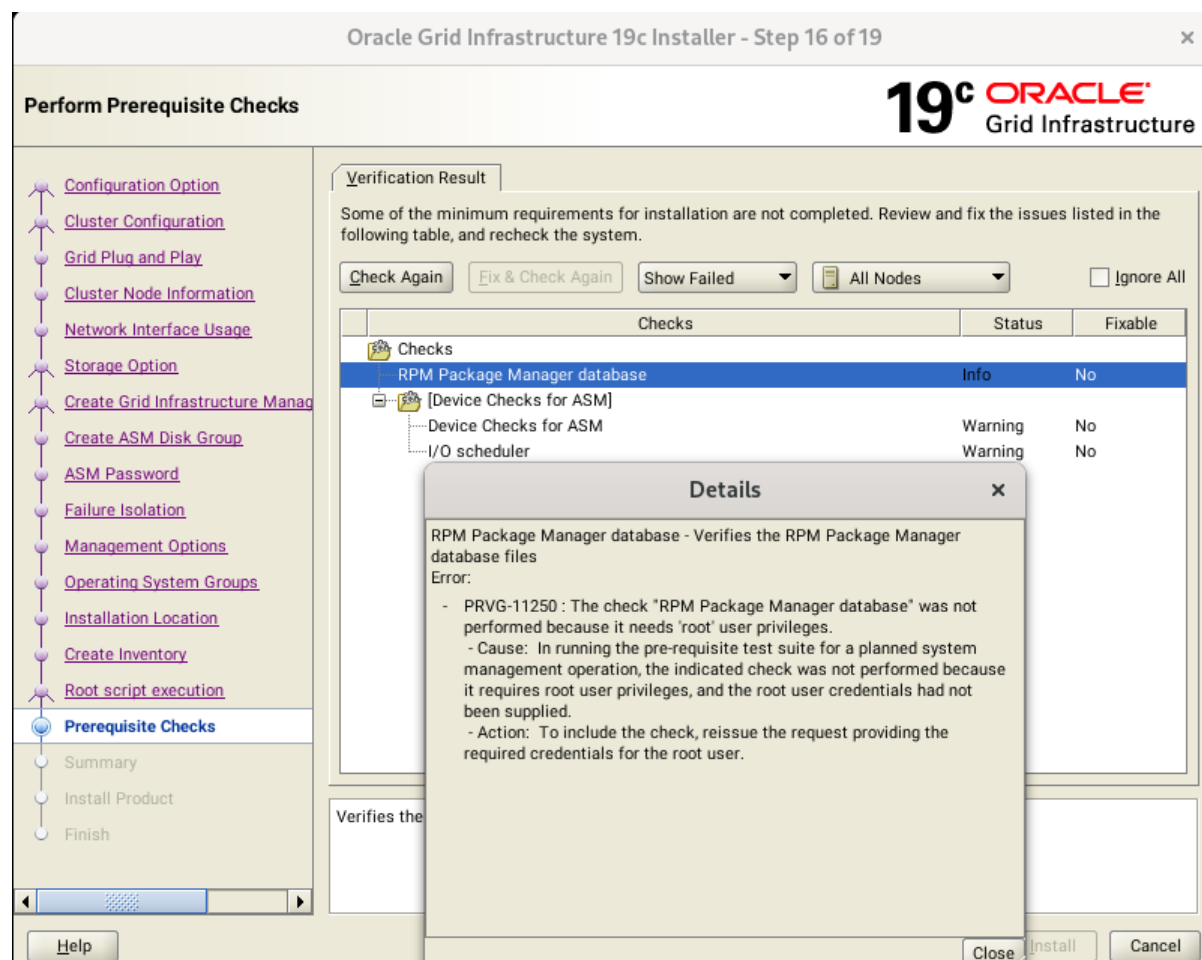
Program path :

User name :

Password :

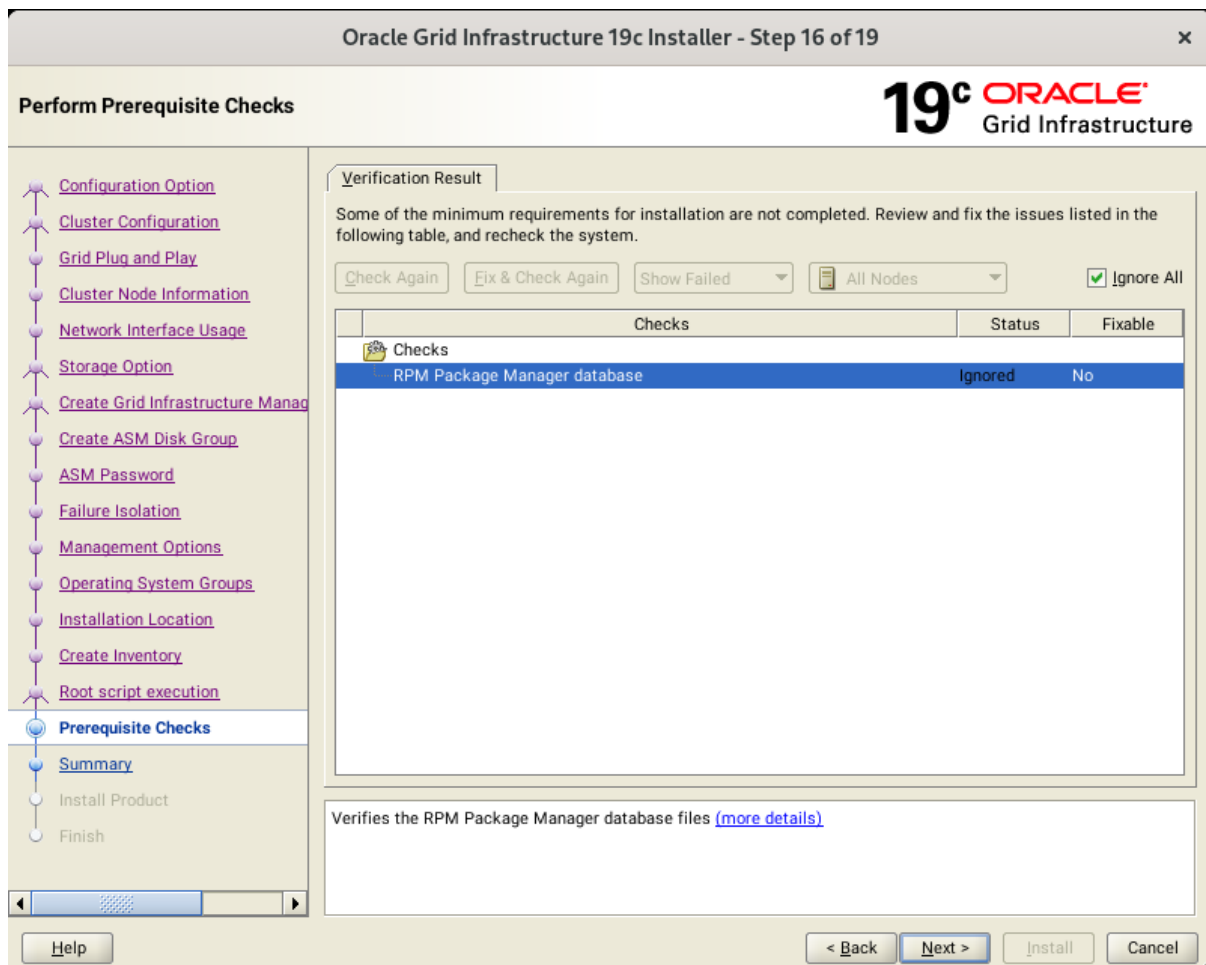
If select the option **Automatically run configuration scripts**, enter the credentials for the root user or a sudo account. Alternatively, run the scripts manually as the root user at the installation process when prompted by the installer. Click **Next** to continue.

16). Perform Prerequisite Checks.



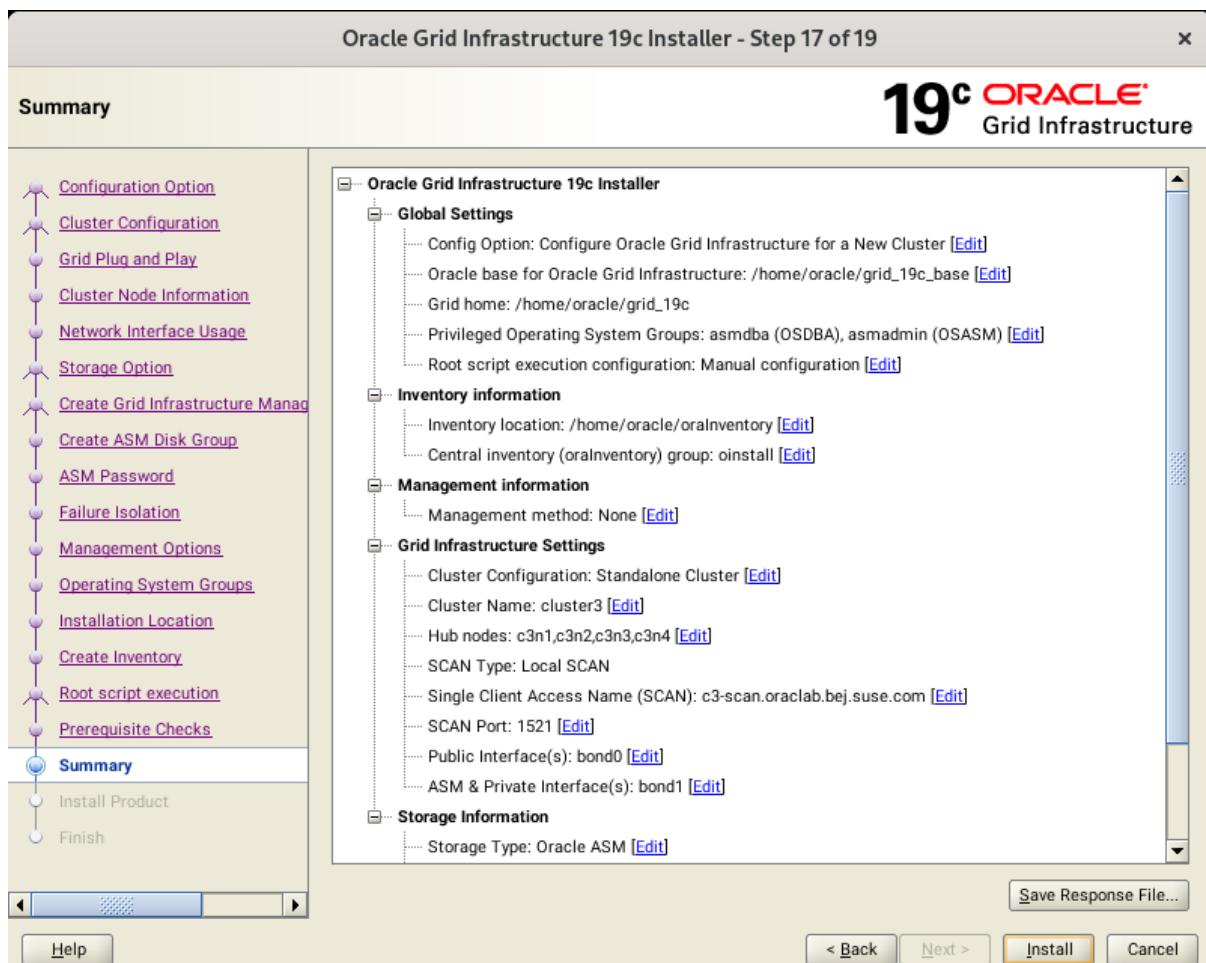
Resolve all the errors and warnings on all nodes in the cluster & run **"Fix & Check Again"**. If the **"Fix & check again"** button is not available, try to fix manually.

Once verified, select option **"Ignore All"**, then click **Next** to continue.



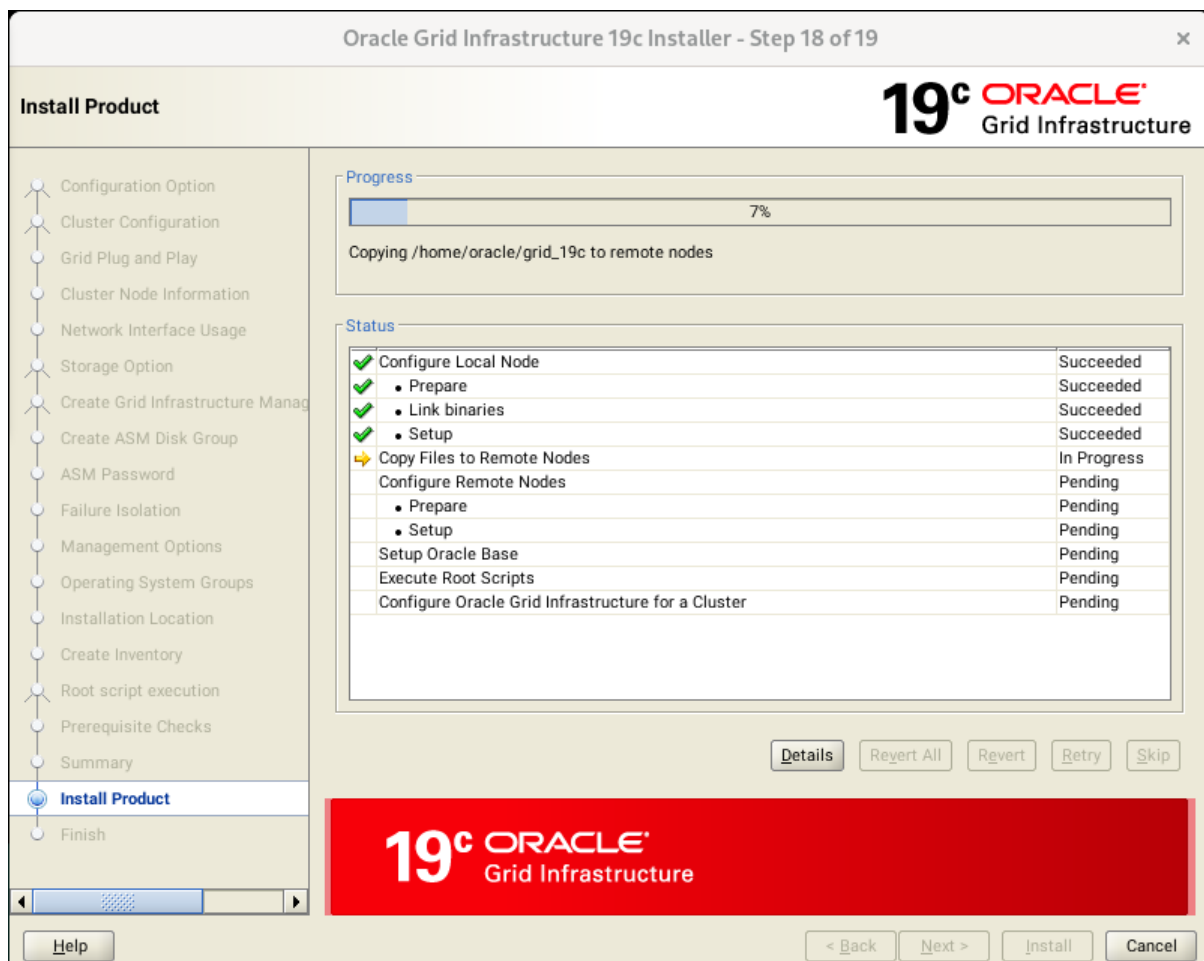
(Note: Regarding the issue: "PRVG-11250 : The check 'RPM Package Manager database' was not performed because it requires 'root' user privileges." Please refer to the instructions in the Troubleshooting section.)

17). Summary.

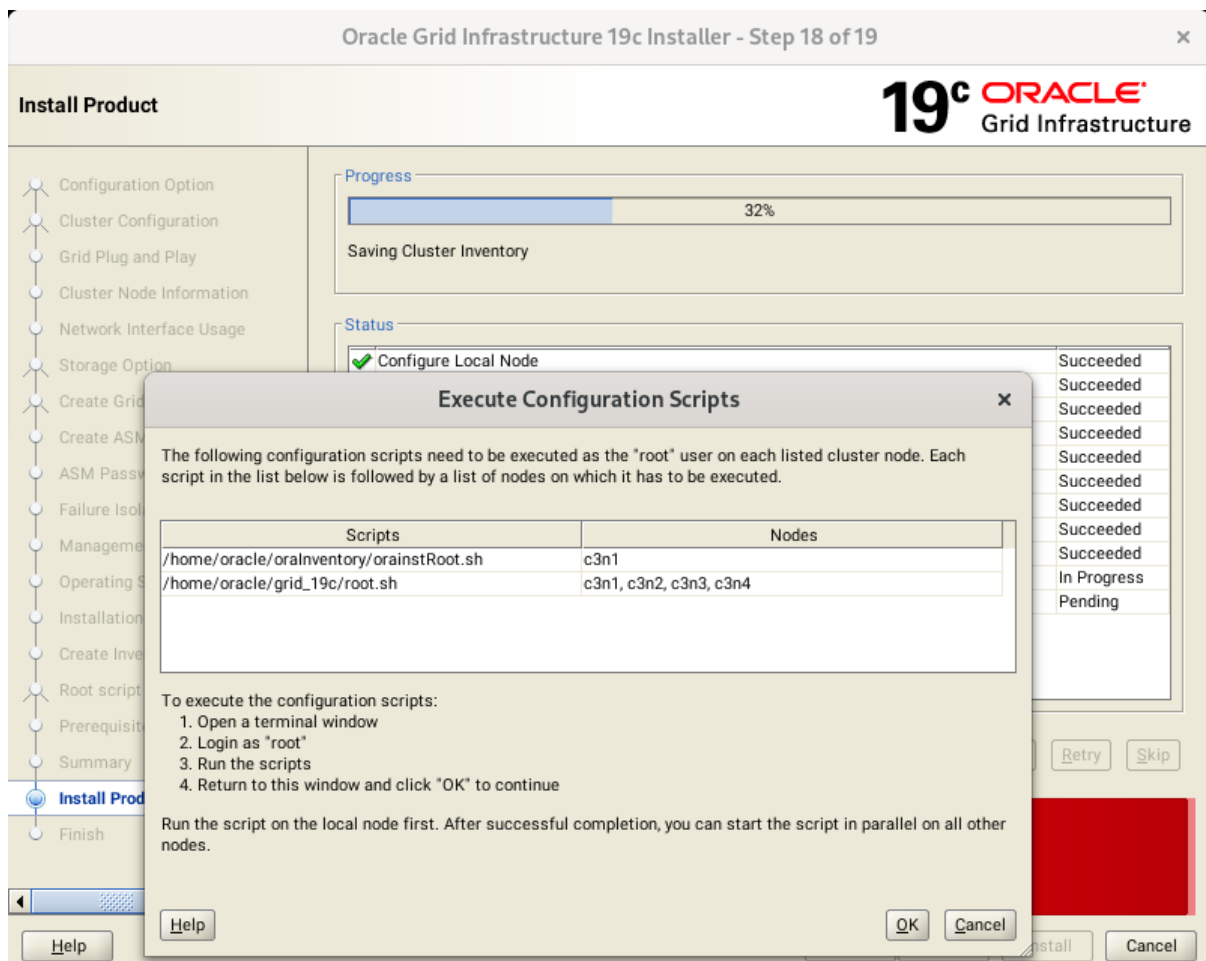


Installation Summary as shown above, click **Install** to continue.

18). Install Product.



Installer prompted you to run the orainstRoot.sh and root.sh scripts.



```
c3n1:~ # /home/oracle/oraInventory/orainstRoot.sh
Changing permissions of /home/oracle/oraInventory.
Adding read,write permissions for group.
Removing read,write,execute permissions for world.

Changing groupname of /home/oracle/oraInventory to oinstall.
The execution of the script is complete.
c3n1:~ #
```

```

c3n1:~ # /home/oracle/grid_19c/root.sh
Performing root user operation.

The following environment variables are set as:
  ORACLE_OWNER= oracle
  ORACLE_HOME= /home/oracle/grid_19c

Enter the full pathname of the local bin directory: [/usr/local/bin]:
The contents of "dbhome" have not changed. No need to overwrite.
The contents of "oraenv" have not changed. No need to overwrite.
The contents of "coraenv" have not changed. No need to overwrite.

Creating /etc/oratab file...
Entries will be added to the /etc/oratab file as needed by
Database Configuration Assistant when a database is created
Finished running generic part of root script.
Now product-specific root actions will be performed.
Relinking oracle with rac on option
Using configuration parameter file: /home/oracle/grid_19c/crs/install/crsconfig_params
The log of current session can be found at:
  /home/oracle/grid_19c_base/crsdata/c3n1/crsconfig/rootcrs_c3n1_2025-07-08_04-19-44PM.log
2025/07/08 16:19:56 CLSRSC-594: Executing installation step 1 of 19: 'ValidateEnv'.
2025/07/08 16:19:56 CLSRSC-594: Executing installation step 2 of 19: 'CheckFirstNode'.
2025/07/08 16:19:58 CLSRSC-594: Executing installation step 3 of 19: 'GenSiteGUIDs'.
2025/07/08 16:20:00 CLSRSC-594: Executing installation step 4 of 19: 'SetupOSD'.
2025/07/08 16:20:00 CLSRSC-594: Executing installation step 5 of 19: 'CheckCRSConfig'.
2025/07/08 16:20:01 CLSRSC-594: Executing installation step 6 of 19: 'SetupLocalGPNP'.
2025/07/08 16:20:14 CLSRSC-594: Executing installation step 7 of 19: 'CreateRootCert'.
2025/07/08 16:20:25 CLSRSC-594: Executing installation step 8 of 19: 'ConfigOLR'.
2025/07/08 16:20:49 CLSRSC-594: Executing installation step 9 of 19: 'ConfigCHMOS'.
2025/07/08 16:20:49 CLSRSC-594: Executing installation step 10 of 19: 'CreateOHASD'.
2025/07/08 16:20:57 CLSRSC-594: Executing installation step 11 of 19: 'ConfigOHASD'.
2025/07/08 16:20:57 CLSRSC-330: Adding Clusterware entries to file 'oracle-ohasd.service'
2025/07/08 16:21:27 CLSRSC-594: Executing installation step 12 of 19: 'SetupTFA'.
2025/07/08 16:21:27 CLSRSC-594: Executing installation step 13 of 19: 'InstallAFD'.
2025/07/08 16:21:27 CLSRSC-594: Executing installation step 14 of 19: 'InstallACFS'.
2025/07/08 16:21:35 CLSRSC-594: Executing installation step 15 of 19: 'InstallKA'.
2025/07/08 16:21:43 CLSRSC-594: Executing installation step 16 of 19: 'InitConfig'.
2025/07/08 16:22:40 CLSRSC-4002: Successfully installed Oracle Trace File Analyzer (TFA) Collector.

ASM has been created and started successfully.

[DBT-30001] Disk groups created successfully. Check /home/oracle/grid_19c_base/cfgtoollogs/asmca/asmca-250708PM042212.log for details.

2025/07/08 16:22:53 CLSRSC-482: Running command: '/home/oracle/grid_19c/bin/ocrconfig -upgrade oracle oinstall'
CRS-4256: Updating the profile
Successful addition of voting disk c064a79d48194faabf364bbcbdeb34529.
Successful addition of voting disk 75da131511084f8dbf06458aab313add.
Successful addition of voting disk 909799017de94fecbffa0bc8440f310.
Successfully replaced voting disk group with +SUSEDATA1.
CRS-4256: Updating the profile
CRS-4266: Voting file(s) successfully replaced
## STATE File Universal Id File Name Disk group
--  -----
1. ONLINE c064a79d48194faabf364bbcbdeb34529 (/dev/asm/disk1) [SUSEDATA1]
2. ONLINE 75da131511084f8dbf06458aab313add (/dev/asm/disk2) [SUSEDATA1]
3. ONLINE 909799017de94fecbffa0bc8440f310 (/dev/asm/disk3) [SUSEDATA1]
Located 3 voting disk(s).
2025/07/08 16:23:59 CLSRSC-594: Executing installation step 17 of 19: 'StartCluster'.
2025/07/08 16:25:01 CLSRSC-343: Successfully started Oracle Clusterware stack
2025/07/08 16:25:01 CLSRSC-594: Executing installation step 18 of 19: 'ConfigNode'.
2025/07/08 16:26:03 CLSRSC-594: Executing installation step 19 of 19: 'PostConfig'.
2025/07/08 16:26:24 CLSRSC-325: Configure Oracle Grid Infrastructure for a Cluster ... succeeded
c3n1:~ # █

```

```
c3n2:~ # /home/oracle/grid_19c/root.sh
Performing root user operation.
```

The following environment variables are set as:

```
ORACLE_OWNER= oracle
ORACLE_HOME= /home/oracle/grid_19c
```

Enter the full pathname of the local bin directory: [/usr/local/bin]:

The contents of "dbhome" have not changed. No need to overwrite.

The contents of "oraenv" have not changed. No need to overwrite.

The contents of "coraenv" have not changed. No need to overwrite.

Creating /etc/oratab file...

Entries will be added to the /etc/oratab file as needed by

Database Configuration Assistant when a database is created

Finished running generic part of root script.

Now product-specific root actions will be performed.

Relinking oracle with rac_on option

Using configuration parameter file: /home/oracle/grid_19c/crs/install/crsconfig_params

The log of current session can be found at:

/home/oracle/grid_19c_base/crsdata/c3n2/crsconfig/rootcrs_c3n2_2025-07-08_04-27-04PM.log

2025/07/08 16:27:07 CLSRSC-594: Executing installation step 1 of 19: 'ValidateEnv'.

2025/07/08 16:27:08 CLSRSC-594: Executing installation step 2 of 19: 'CheckFirstNode'.

2025/07/08 16:27:09 CLSRSC-594: Executing installation step 3 of 19: 'GenSiteGUIDs'.

2025/07/08 16:27:09 CLSRSC-594: Executing installation step 4 of 19: 'SetupOSD'.

2025/07/08 16:27:10 CLSRSC-594: Executing installation step 5 of 19: 'CheckCRSConfig'.

2025/07/08 16:27:10 CLSRSC-594: Executing installation step 6 of 19: 'SetupLocalGPNP'.

2025/07/08 16:27:12 CLSRSC-594: Executing installation step 7 of 19: 'CreateRootCert'.

2025/07/08 16:27:12 CLSRSC-594: Executing installation step 8 of 19: 'ConfigOLR'.

2025/07/08 16:27:28 CLSRSC-594: Executing installation step 9 of 19: 'ConfigCHMOS'.

2025/07/08 16:27:28 CLSRSC-594: Executing installation step 10 of 19: 'CreateOHASD'.

2025/07/08 16:27:30 CLSRSC-594: Executing installation step 11 of 19: 'ConfigOHASD'.

2025/07/08 16:27:30 CLSRSC-330: Adding Clusterware entries to file 'oracle-ohasd.service'

2025/07/08 16:27:53 CLSRSC-594: Executing installation step 12 of 19: 'SetupTFA'.

2025/07/08 16:27:53 CLSRSC-594: Executing installation step 13 of 19: 'InstallAFD'.

2025/07/08 16:27:53 CLSRSC-594: Executing installation step 14 of 19: 'InstallACFS'.

2025/07/08 16:27:55 CLSRSC-594: Executing installation step 15 of 19: 'InstallKA'.

2025/07/08 16:27:57 CLSRSC-594: Executing installation step 16 of 19: 'InitConfig'.

2025/07/08 16:28:05 CLSRSC-594: Executing installation step 17 of 19: 'StartCluster'.

2025/07/08 16:28:44 CLSRSC-343: Successfully started Oracle Clusterware stack

2025/07/08 16:28:44 CLSRSC-594: Executing installation step 18 of 19: 'ConfigNode'.

2025/07/08 16:28:54 CLSRSC-594: Executing installation step 19 of 19: 'PostConfig'.

2025/07/08 16:28:59 CLSRSC-325: Configure Oracle Grid Infrastructure for a Cluster ... succeeded

```
c3n2:~ # 2025/07/08 16:29:02 CLSRSC-4002: Successfully installed Oracle Trace File Analyzer (TFA) Collector.
```

```
c3n3:~ # /home/oracle/grid_19c/root.sh
Performing root user operation.
```

The following environment variables are set as:

```
ORACLE_OWNER= oracle
ORACLE_HOME= /home/oracle/grid_19c
```

Enter the full pathname of the local bin directory: [/usr/local/bin]:
The contents of "dbhome" have not changed. No need to overwrite.
The contents of "oraenv" have not changed. No need to overwrite.
The contents of "coraenv" have not changed. No need to overwrite.

Creating /etc/oratab file...

Entries will be added to the /etc/oratab file as needed by
Database Configuration Assistant when a database is created
Finished running generic part of root script.

Now product-specific root actions will be performed.

Relinking oracle with rac_on option

Using configuration parameter file: /home/oracle/grid_19c/crs/install/crsconfig_params

The log of current session can be found at:

```
/home/oracle/grid_19c_base/crsdata/c3n3/crsconfig/rootcrs_c3n3_2025-07-08_04-30-50PM.log
2025/07/08 16:30:54 CLSRSC-594: Executing installation step 1 of 19: 'ValidateEnv'.
2025/07/08 16:30:55 CLSRSC-594: Executing installation step 2 of 19: 'CheckFirstNode'.
2025/07/08 16:30:56 CLSRSC-594: Executing installation step 3 of 19: 'GenSiteGUIDs'.
2025/07/08 16:30:56 CLSRSC-594: Executing installation step 4 of 19: 'SetupOSD'.
2025/07/08 16:30:57 CLSRSC-594: Executing installation step 5 of 19: 'CheckCRSConfig'.
2025/07/08 16:30:57 CLSRSC-594: Executing installation step 6 of 19: 'SetupLocalGPNP'.
2025/07/08 16:30:59 CLSRSC-594: Executing installation step 7 of 19: 'CreateRootCert'.
2025/07/08 16:30:59 CLSRSC-594: Executing installation step 8 of 19: 'ConfigOLR'.
2025/07/08 16:31:15 CLSRSC-594: Executing installation step 9 of 19: 'ConfigCHMOS'.
2025/07/08 16:31:15 CLSRSC-594: Executing installation step 10 of 19: 'CreateOHASD'.
2025/07/08 16:31:17 CLSRSC-594: Executing installation step 11 of 19: 'ConfigOHASD'.
2025/07/08 16:31:17 CLSRSC-330: Adding Clusterware entries to file 'oracle-ohasd.service'
2025/07/08 16:31:40 CLSRSC-594: Executing installation step 12 of 19: 'SetupTFA'.
2025/07/08 16:31:40 CLSRSC-594: Executing installation step 13 of 19: 'InstallAFD'.
2025/07/08 16:31:40 CLSRSC-594: Executing installation step 14 of 19: 'InstallACFS'.
2025/07/08 16:31:42 CLSRSC-594: Executing installation step 15 of 19: 'InstallKA'.
2025/07/08 16:31:44 CLSRSC-594: Executing installation step 16 of 19: 'InitConfig'.
2025/07/08 16:31:52 CLSRSC-594: Executing installation step 17 of 19: 'StartCluster'.
2025/07/08 16:32:37 CLSRSC-343: Successfully started Oracle Clusterware stack
2025/07/08 16:32:37 CLSRSC-594: Executing installation step 18 of 19: 'ConfigNode'.
2025/07/08 16:32:47 CLSRSC-594: Executing installation step 19 of 19: 'PostConfig'.
2025/07/08 16:32:49 CLSRSC-4002: Successfully installed Oracle Trace File Analyzer (TFA) Collector.
2025/07/08 16:32:53 CLSRSC-325: Configure Oracle Grid Infrastructure for a Cluster ... succeeded
```

```
c3n3:~ # █
```

```
c3n4:~ # /home/oracle/grid_19c/root.sh
Performing root user operation.
```

The following environment variables are set as:

```
ORACLE_OWNER= oracle
ORACLE_HOME= /home/oracle/grid_19c
```

```
Enter the full pathname of the local bin directory: [/usr/local/bin]:
The contents of "dbhome" have not changed. No need to overwrite.
The contents of "oraenv" have not changed. No need to overwrite.
The contents of "coraenv" have not changed. No need to overwrite.
```

Creating /etc/oratab file...

Entries will be added to the /etc/oratab file as needed by
Database Configuration Assistant when a database is created
Finished running generic part of root script.

Now product-specific root actions will be performed.

Relinking oracle with rac_on option

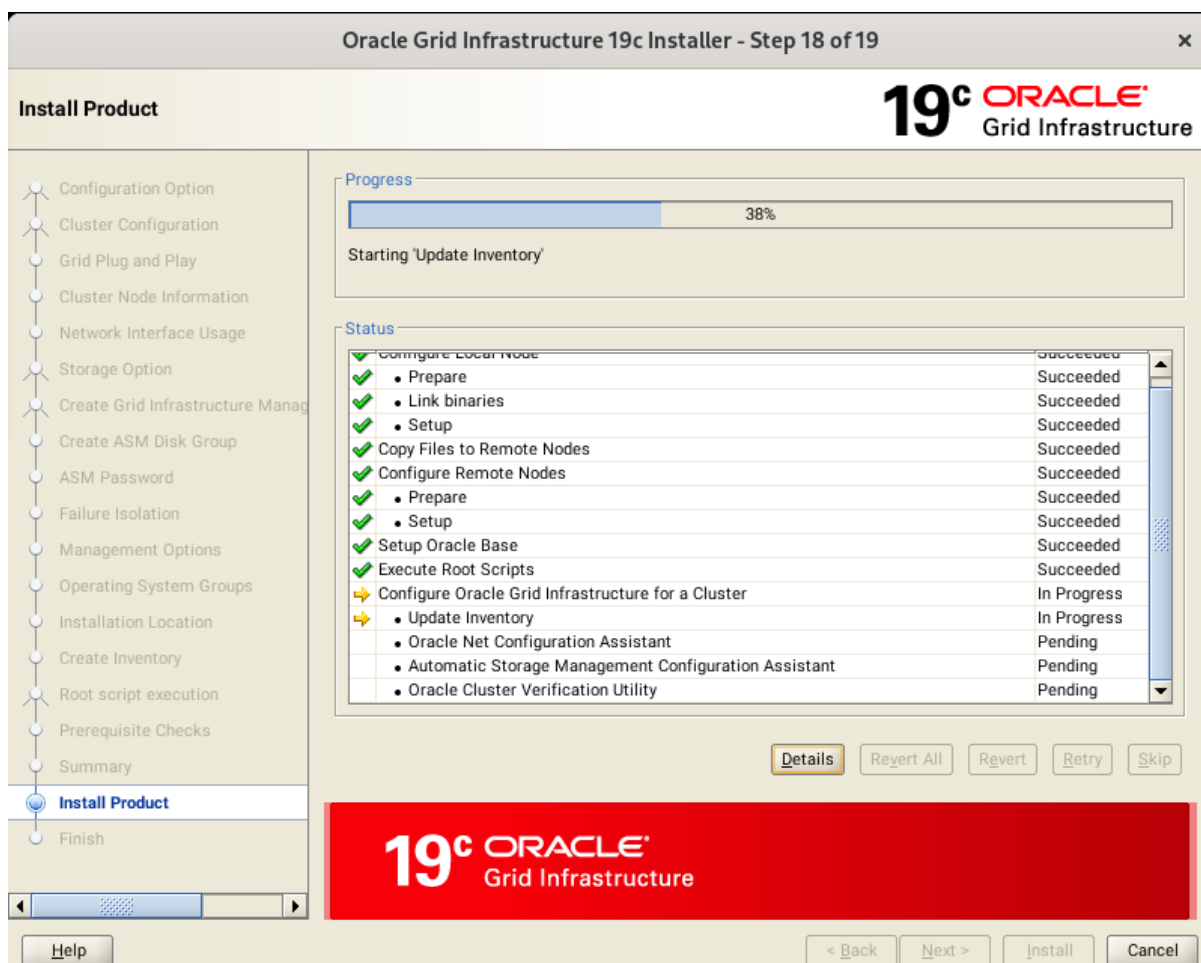
Using configuration parameter file: /home/oracle/grid_19c/crs/install/crsconfig_params

The log of current session can be found at:

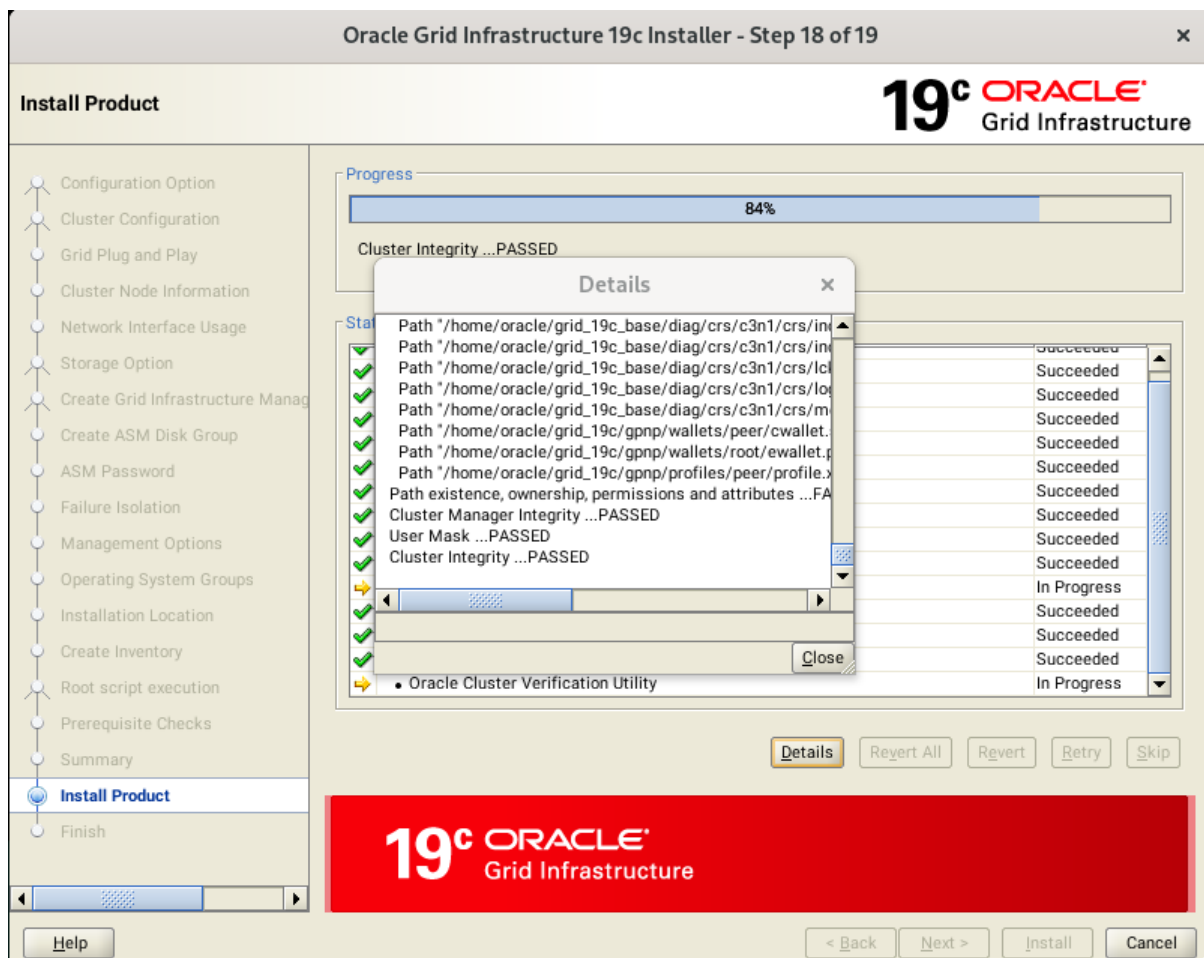
```
/home/oracle/grid_19c_base/crsdata/c3n4/crsconfig/rootcrs_c3n4_2025-07-08_04-33-26PM.log
2025/07/08 16:33:30 CLSRSC-594: Executing installation step 1 of 19: 'ValidateEnv'.
2025/07/08 16:33:30 CLSRSC-594: Executing installation step 2 of 19: 'CheckFirstNode'.
2025/07/08 16:33:31 CLSRSC-594: Executing installation step 3 of 19: 'GenSiteGUIDs'.
2025/07/08 16:33:32 CLSRSC-594: Executing installation step 4 of 19: 'SetupOSD'.
2025/07/08 16:33:32 CLSRSC-594: Executing installation step 5 of 19: 'CheckCRSConfig'.
2025/07/08 16:33:33 CLSRSC-594: Executing installation step 6 of 19: 'SetupLocalGPNP'.
2025/07/08 16:33:34 CLSRSC-594: Executing installation step 7 of 19: 'CreateRootCert'.
2025/07/08 16:33:34 CLSRSC-594: Executing installation step 8 of 19: 'ConfigOLR'.
2025/07/08 16:33:52 CLSRSC-594: Executing installation step 9 of 19: 'ConfigCHMOS'.
2025/07/08 16:33:52 CLSRSC-594: Executing installation step 10 of 19: 'CreateOHASD'.
2025/07/08 16:33:53 CLSRSC-594: Executing installation step 11 of 19: 'ConfigOHASD'.
2025/07/08 16:33:54 CLSRSC-330: Adding Clusterware entries to file 'oracle-ohasd.service'
2025/07/08 16:34:17 CLSRSC-594: Executing installation step 12 of 19: 'SetupTFA'.
2025/07/08 16:34:17 CLSRSC-594: Executing installation step 13 of 19: 'InstallAFD'.
2025/07/08 16:34:17 CLSRSC-594: Executing installation step 14 of 19: 'InstallACFS'.
2025/07/08 16:34:19 CLSRSC-594: Executing installation step 15 of 19: 'InstallKA'.
2025/07/08 16:34:20 CLSRSC-594: Executing installation step 16 of 19: 'InitConfig'.
2025/07/08 16:34:29 CLSRSC-594: Executing installation step 17 of 19: 'StartCluster'.
2025/07/08 16:35:14 CLSRSC-343: Successfully started Oracle Clusterware stack
2025/07/08 16:35:15 CLSRSC-594: Executing installation step 18 of 19: 'ConfigNode'.
2025/07/08 16:35:25 CLSRSC-594: Executing installation step 19 of 19: 'PostConfig'.
2025/07/08 16:35:26 CLSRSC-4002: Successfully installed Oracle Trace File Analyzer (TFA) Collector.
2025/07/08 16:35:30 CLSRSC-325: Configure Oracle Grid Infrastructure for a Cluster ... succeeded
```

```
c3n4:~ # █
```

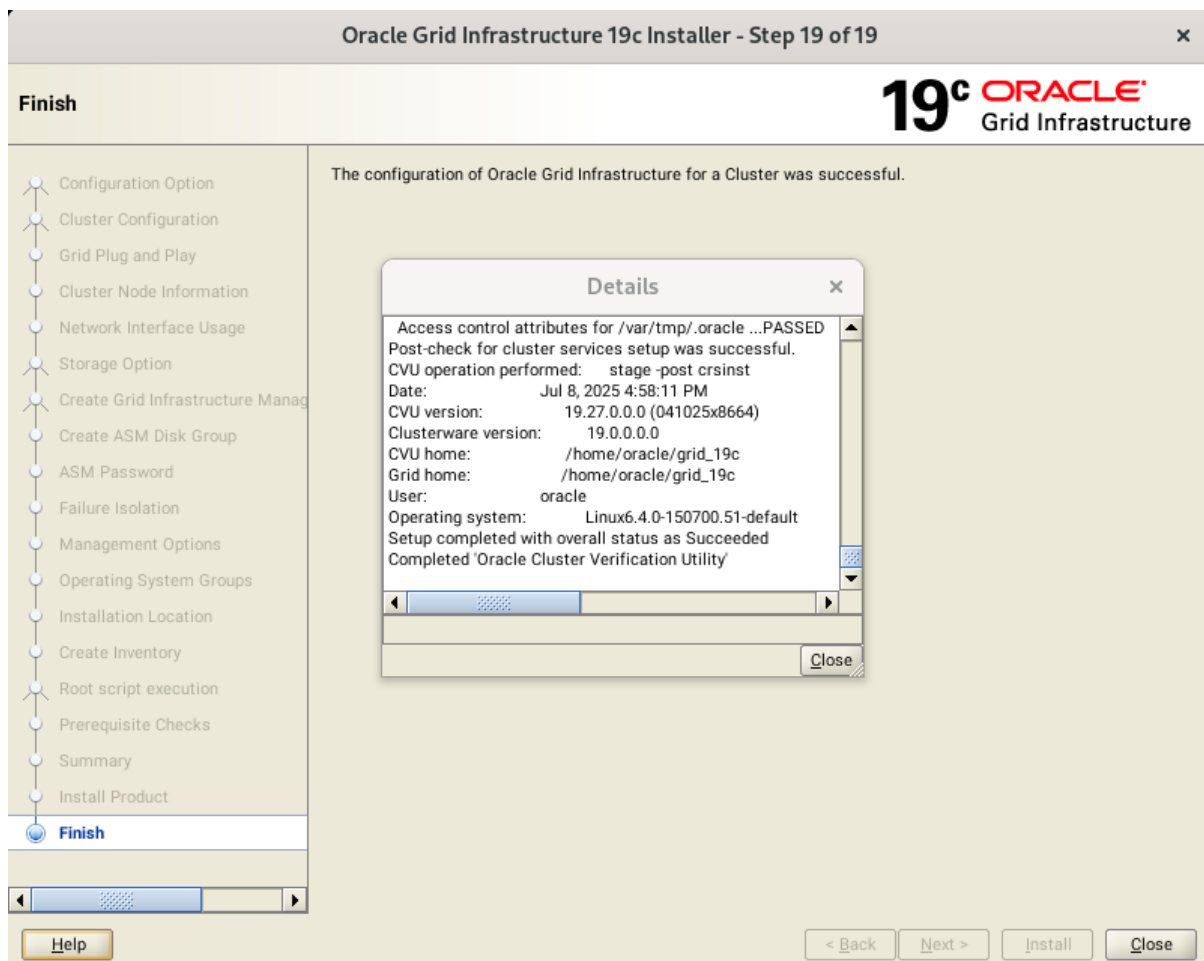
After successfully executing the above script on each node, click **OK** to continue.



Continue monitoring the installation until the Finish window appears.



19). Finish.



Click **Close** to complete the installation process and exit the installer.

1-2. Oracle Database 19c(19.27.0.0.0) Grid Infrastructure Post-Install Checks.

1). Check Oracle Clusterware health and resources.

```

oracle@c3n1:~> /home/oracle/grid_19c/bin/crsctl query crs releaseversion
Oracle High Availability Services release version on the local node is [19.0.0.0.0]
oracle@c3n1:~> /home/oracle/grid_19c/bin/crsctl query crs releasepatch
Oracle Clusterware release patch level is [2119256259] and the complete list of patches [36758186 37642901 37643161 37654975 37762426 ] have been applied on the local node. The release patch string is [19.27.0.0.0].
oracle@c3n1:~> /home/oracle/grid_19c/bin/crsctl check cluster -all
*****
c3n1:
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
*****
c3n2:
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
*****
c3n3:
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
*****
c3n4:
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
*****
oracle@c3n1:~> /home/oracle/grid_19c/bin/srvctl status nodeapps
VIP 10.200.176.15 is enabled
VIP 10.200.176.15 is running on node: c3n1
VIP 10.200.176.16 is enabled
VIP 10.200.176.16 is running on node: c3n2
VIP 10.200.176.17 is enabled
VIP 10.200.176.17 is running on node: c3n3
VIP 10.200.176.18 is enabled
VIP 10.200.176.18 is running on node: c3n4
Network is enabled
Network is running on node: c3n1
Network is running on node: c3n2
Network is running on node: c3n3
Network is running on node: c3n4
ONS is enabled
ONS daemon is running on node: c3n1
ONS daemon is running on node: c3n2
ONS daemon is running on node: c3n3
ONS daemon is running on node: c3n4
oracle@c3n1:~> |

```

2). Check status of designated resources.

```

oracle@c3n1:~> /home/oracle/grid_19c/bin/crsctl stat res -t
-----
Name                Target    State        Server          State details
-----
Local Resources
-----
ora.LISTENER.lsnr
    ONLINE          ONLINE      c3n1            STABLE
    ONLINE          ONLINE      c3n2            STABLE
    ONLINE          ONLINE      c3n3            STABLE
    ONLINE          ONLINE      c3n4            STABLE
ora.chad
    ONLINE          ONLINE      c3n1            STABLE
    ONLINE          ONLINE      c3n2            STABLE
    ONLINE          ONLINE      c3n3            STABLE
    ONLINE          ONLINE      c3n4            STABLE
ora.net1.network
    ONLINE          ONLINE      c3n1            STABLE
    ONLINE          ONLINE      c3n2            STABLE
    ONLINE          ONLINE      c3n3            STABLE
    ONLINE          ONLINE      c3n4            STABLE
ora.ons
    ONLINE          ONLINE      c3n1            STABLE
    ONLINE          ONLINE      c3n2            STABLE
    ONLINE          ONLINE      c3n3            STABLE
    ONLINE          ONLINE      c3n4            STABLE
-----

```

```

Cluster Resources
-----
ora.ASMNET1LSNR_ASM.lsnr(ora.asmgroup)
  1      ONLINE  ONLINE      c3n1      STABLE
  2      ONLINE  ONLINE      c3n2      STABLE
  3      ONLINE  ONLINE      c3n3      STABLE
ora.LISTENER_SCAN1.lsnr
  1      ONLINE  ONLINE      c3n2      STABLE
ora.LISTENER_SCAN2.lsnr
  1      ONLINE  ONLINE      c3n3      STABLE
ora.LISTENER_SCAN3.lsnr
  1      ONLINE  ONLINE      c3n1      STABLE
ora.SUSEDATA1.dg(ora.asmgroup)
  1      ONLINE  ONLINE      c3n1      STABLE
  2      ONLINE  ONLINE      c3n2      STABLE
  3      ONLINE  ONLINE      c3n3      STABLE
ora.asm(ora.asmgroup)
  1      ONLINE  ONLINE      c3n1      Started,STABLE
  2      ONLINE  ONLINE      c3n2      Started,STABLE
  3      ONLINE  ONLINE      c3n3      Started,STABLE
ora.asmnet1.asmnetwork(ora.asmgroup)
  1      ONLINE  ONLINE      c3n1      STABLE
  2      ONLINE  ONLINE      c3n2      STABLE
  3      ONLINE  ONLINE      c3n3      STABLE
ora.c3n1.vip
  1      ONLINE  ONLINE      c3n1      STABLE
ora.c3n2.vip
  1      ONLINE  ONLINE      c3n2      STABLE
ora.c3n3.vip
  1      ONLINE  ONLINE      c3n3      STABLE
ora.c3n4.vip
  1      ONLINE  ONLINE      c3n4      STABLE
ora.cvu
  1      ONLINE  ONLINE      c3n1      STABLE
ora.qosmserver
  1      ONLINE  ONLINE      c3n1      STABLE
ora.scan1.vip
  1      ONLINE  ONLINE      c3n2      STABLE
ora.scan2.vip
  1      ONLINE  ONLINE      c3n3      STABLE
ora.scan3.vip
  1      ONLINE  ONLINE      c3n1      STABLE
-----
oracle@c3n1:~> █

```



3). Check OCR and Voting disk files.

```
oracle@c3n1:~> /home/oracle/grid_19c/bin/ocrcheck
Status of Oracle Cluster Registry is as follows :
   Version                     :            4
   Total space (kbytes)        :       901284
   Used space (kbytes)         :        84320
   Available space (kbytes)    :       816964
   ID                          :    256734651
   Device/File Name            : +SUSEDATA1
                                Device/File integrity check succeeded

                                Device/File not configured

                                Device/File not configured

                                Device/File not configured

                                Device/File not configured

                                Device/File not configured

                                Device/File not configured

Cluster registry integrity check succeeded

Logical corruption check bypassed due to non-privileged user

oracle@c3n1:~> /home/oracle/grid_19c/bin/crsctl query css votedisk
##  STATE      File Universal Id                        File Name Disk group
--  -
 1.  ONLINE    c064a79d48194faabf364bbcdeb34529 (/dev/asm/disk1) [SUSEDATA1]
 2.  ONLINE    75da131511084f8dbf06458aab313add (/dev/asm/disk2) [SUSEDATA1]
 3.  ONLINE    909799017de94fecbffa0bc8440f310 (/dev/asm/disk3) [SUSEDATA1]
Located 3 voting disk(s).
oracle@c3n1:~> █
```

2. Installing Oracle Database.

2-1. Login to the SLES 15 SP7 64-bit OS as a non-admin user. Download Oracle Database 19c (19.3) for Linux x86-64 from:

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

2-2. Extract LINUX.X64_193000_db_home.zip and replace the OPatch directory located in the Database 19.3 ShipHome with OPatch version 12.2.0.1.46.

Also, export SRVM_DISABLE_MTTRANS=true.

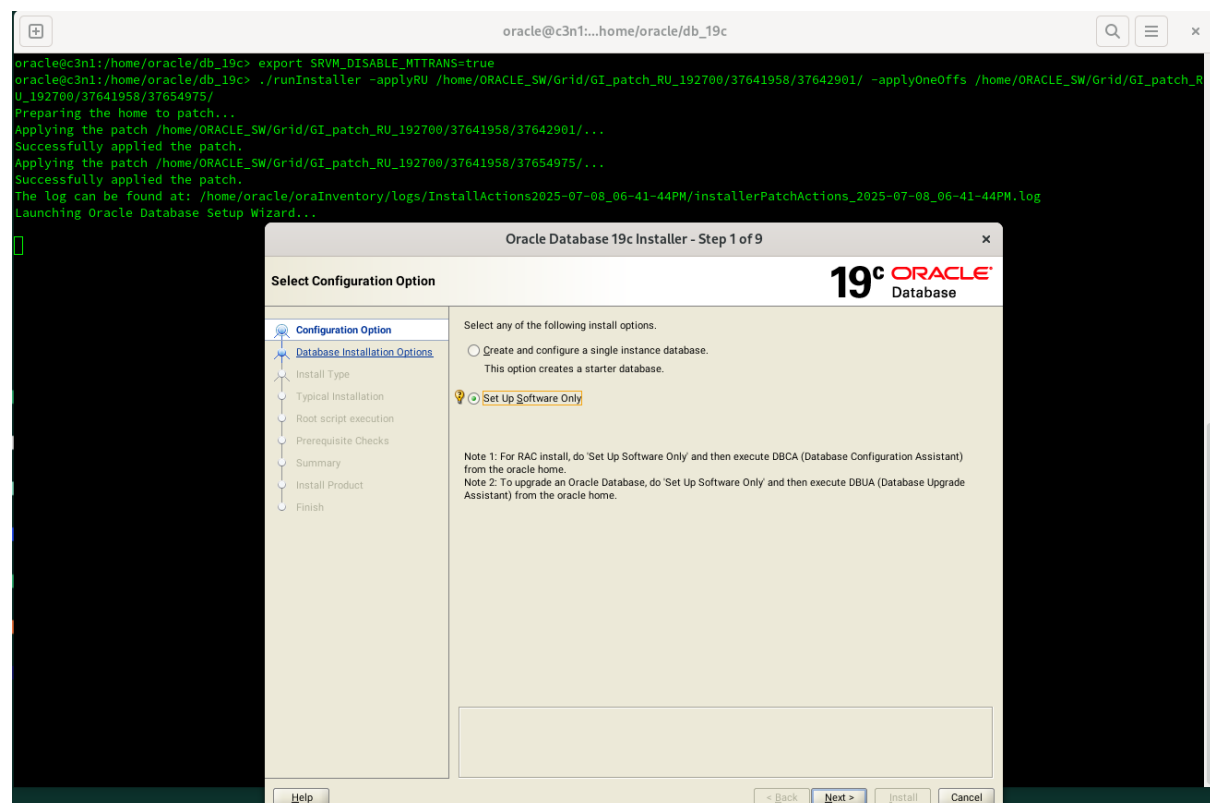
Then, run Oracle DB installer(runInstaller) from Database ShipHome with the parameters to apply the required patches:

```
-applyRU /home/ORACLE_SW/Grid/GI_patch_RU_192700/37641958/37642901/
-applyOneOffs /home/ORACLE_SW/Grid/GI_patch_RU_192700/37641958/37654975/
```

These parameters will apply the recommended 19.27.0.0.0 release updates (RUs) and one-off patches to the database.

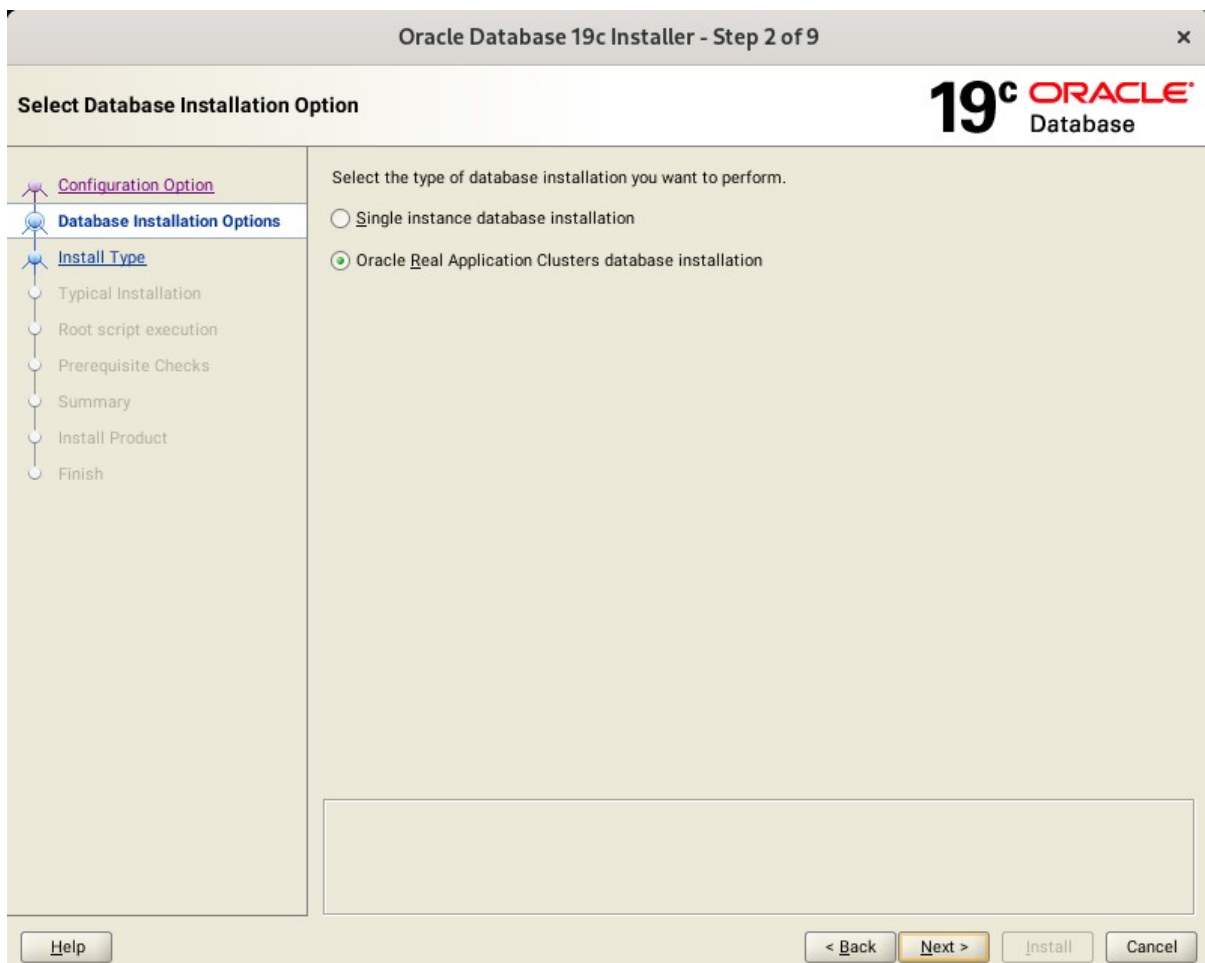
Install Flow:

1). Select Configuration Option.



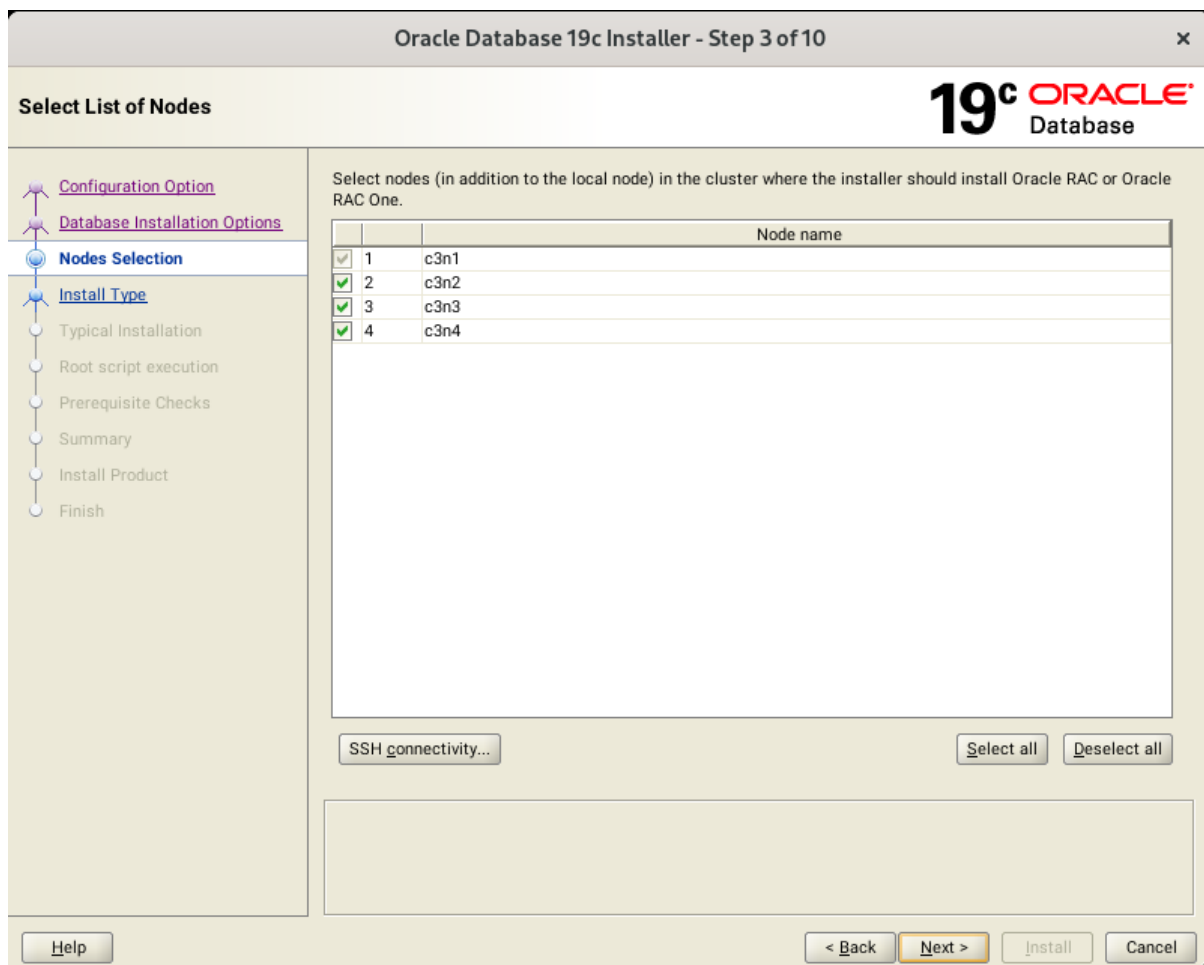
Select option "Set Up Software Only", then click **Next** to continue.

2). Select Database Installation Option.



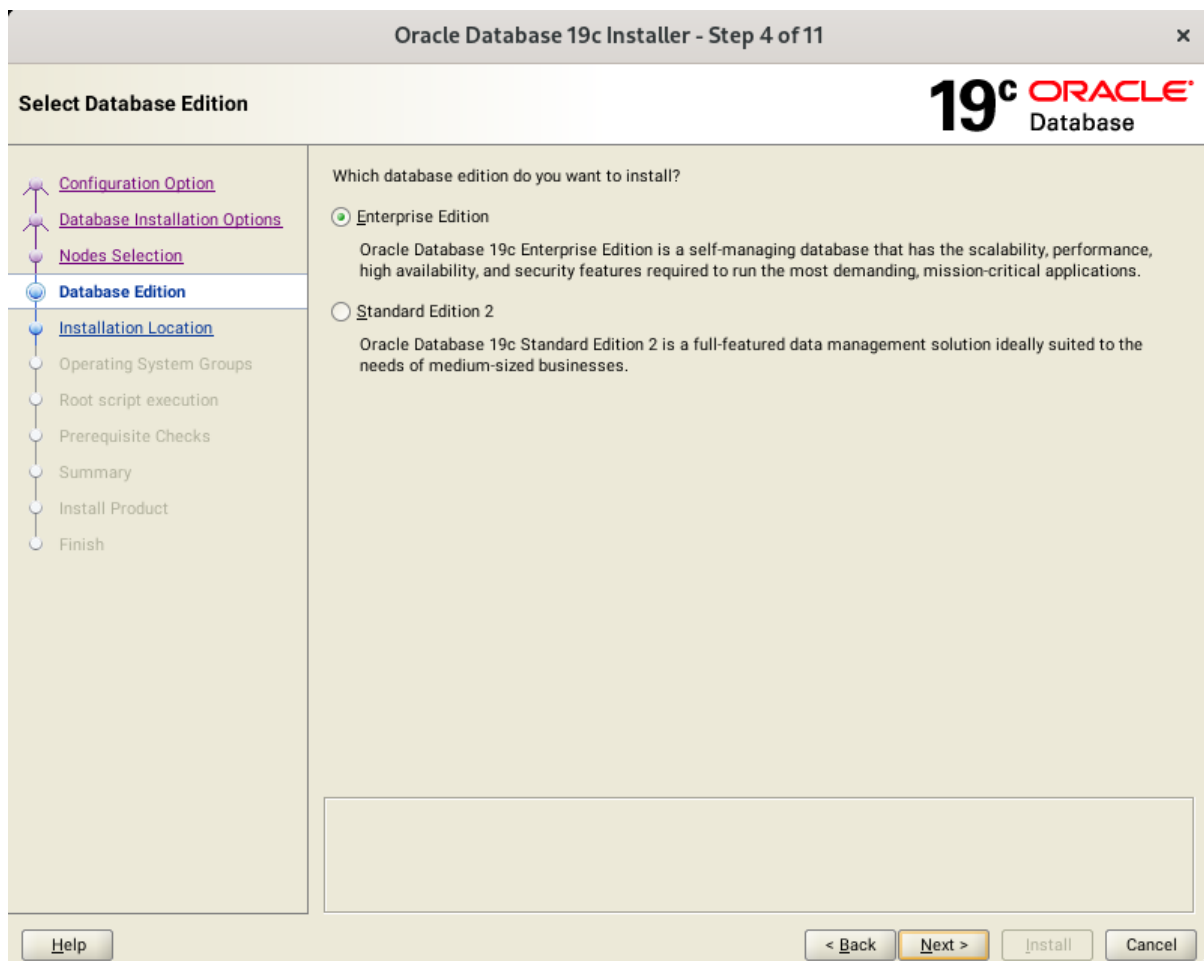
Choose option **"Oracle Real Application Clusters database installation"**, then click **Next** to continue.

3). Select List of Nodes.



Select all nodes in the cluster, then click **Next** to continue.

4). Select Database Edition.



Choose option **"Enterprise Edition"**, then click **Next** to continue.

5). Specify Installation Location.

Oracle Database 19c Installer - Step 5 of 11

Specify Installation Location

19^c ORACLE[®] Database

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 /home/oracle/grid_19c_base

This software directory is the Oracle Database home directory.

Software location: /home/oracle/db_19c

Fill in **Oracle base** as shown above, then click **Next** to continue.

6). Privileged Operating System groups.

Oracle Database 19c Installer - Step 6 of 11

Privileged Operating System groups

19^c 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:

Navigation links in sidebar:

- Configuration Option
- Database Installation Options
- Nodes Selection
- Database Edition
- Installation Location
- Operating System Groups**
- Root script execution
- Prerequisite Checks
- Summary
- Install Product
- Finish

Buttons: Help, < Back, Next >, Install, Cancel

Selected by default, then click **Next** to continue.

7). Root script execution configuration.

The screenshot shows the 'Oracle Database 19c Installer - Step 7 of 11' window. The title bar includes the Oracle logo and 'Database'. The main heading is 'Root script execution configuration'. On the left is a navigation pane with links: Configuration Option, Database Installation Options, Nodes Selection, Database Edition, Installation Location, Operating System Groups, Root script execution (highlighted), Prerequisite Checks, Summary, Install Product, and Finish. The main area contains a text block explaining that certain operations require root privileges and offers two options: 'Automatically run configuration scripts' (unchecked) or 'Use root user credential' (selected). The 'Use root user credential' option has fields for Password, Program path (set to /usr/bin/sudo), User name (set to oracle), and Password. A 'Browse...' button is next to the Program path field. At the bottom are buttons for Help, < Back, Next > (highlighted), Install, and Cancel.

Oracle Database 19c Installer - Step 7 of 11

Root script execution configuration

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

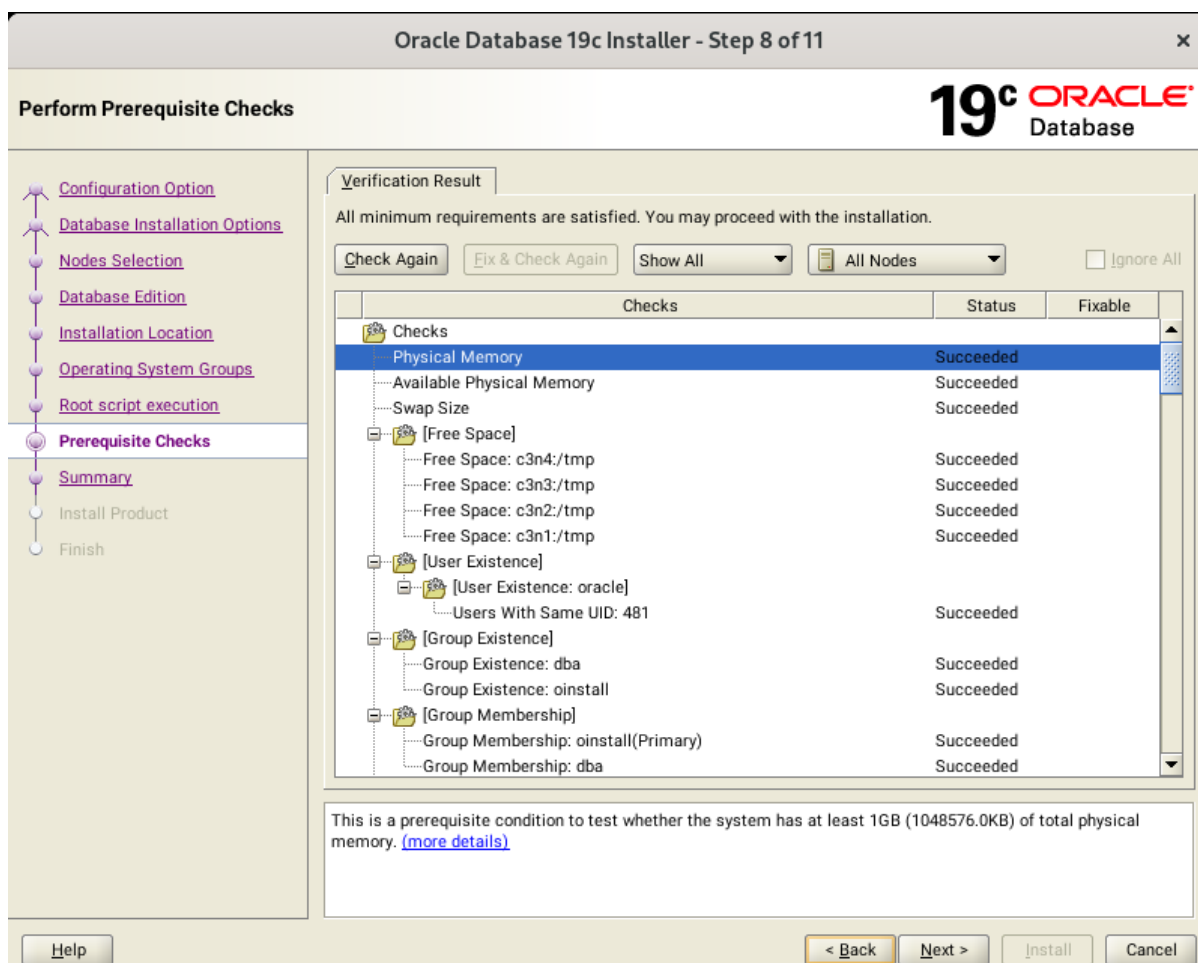
Program path :

User name :

Password :

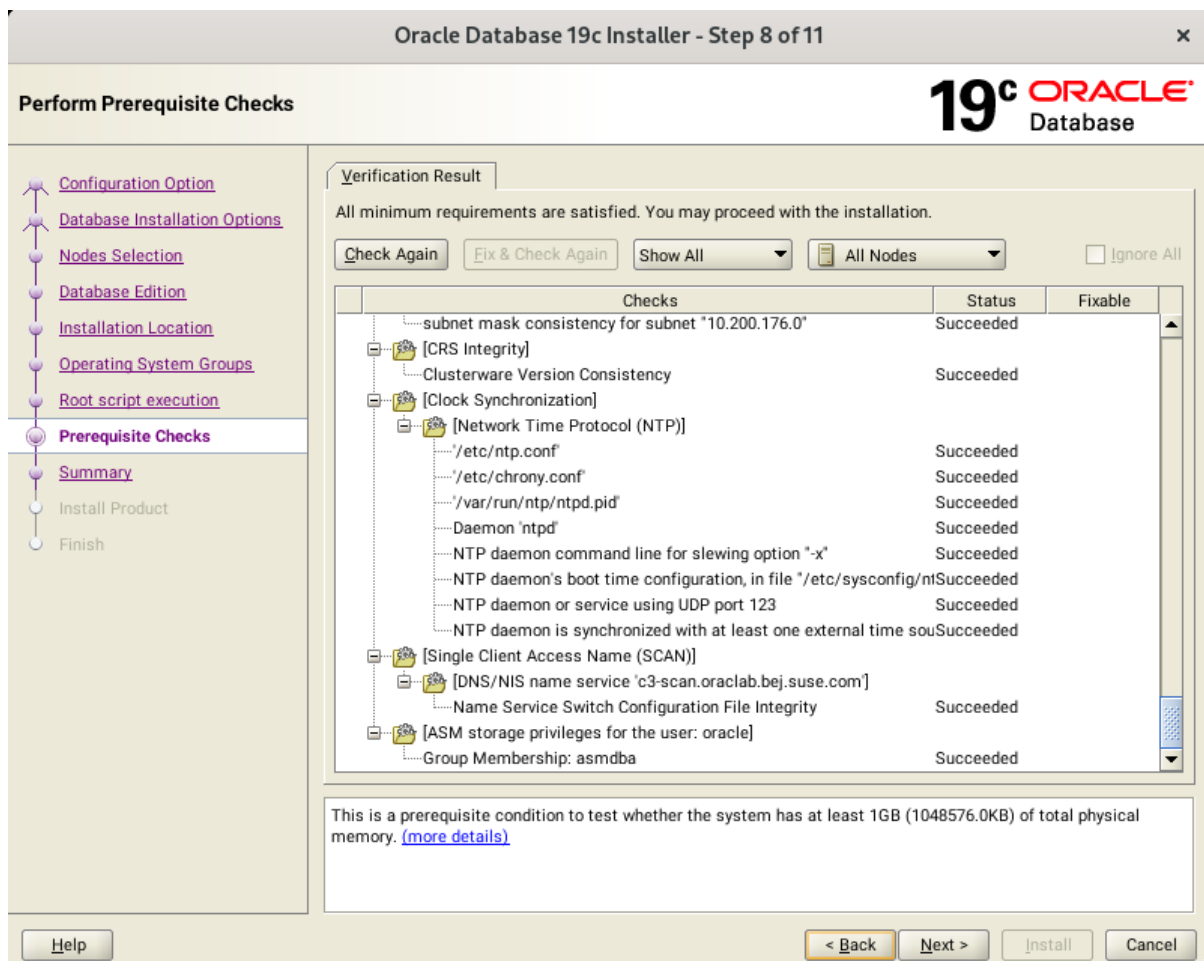
If select the option **Automatically run configuration scripts**, enter the credentials for the root user or a sudo account. Alternatively, run the scripts manually as the root user at the installation process when prompted by the installer. Click **Next** to continue.

8). Perform Prerequisite Checks.

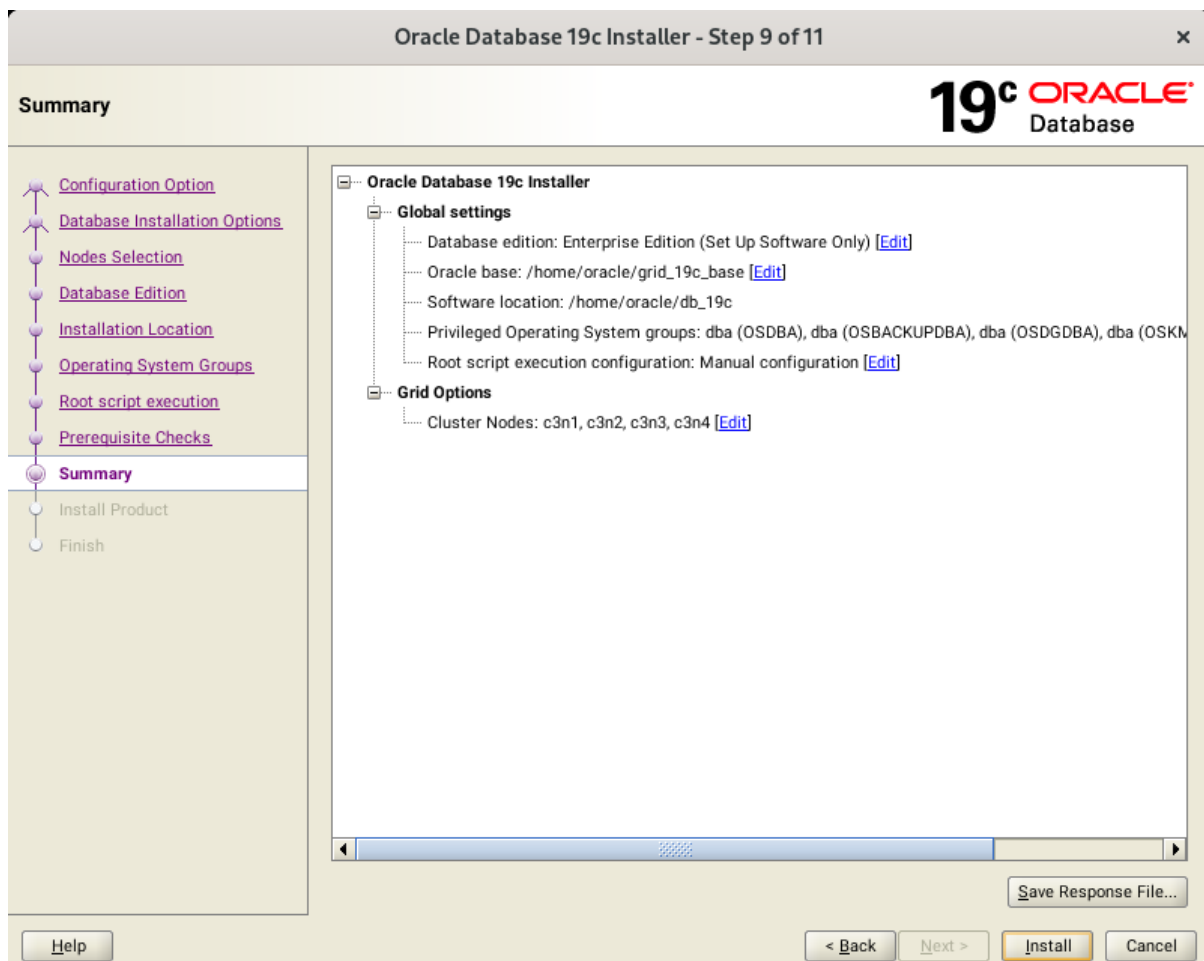


Perform Pre-Check as shown above. Resolve all the errors and warnings on all nodes in the cluster & run **Fix & Check Again**. If the **Fix & check again** button is not available, try to fix manually.

click **Next** to continue.

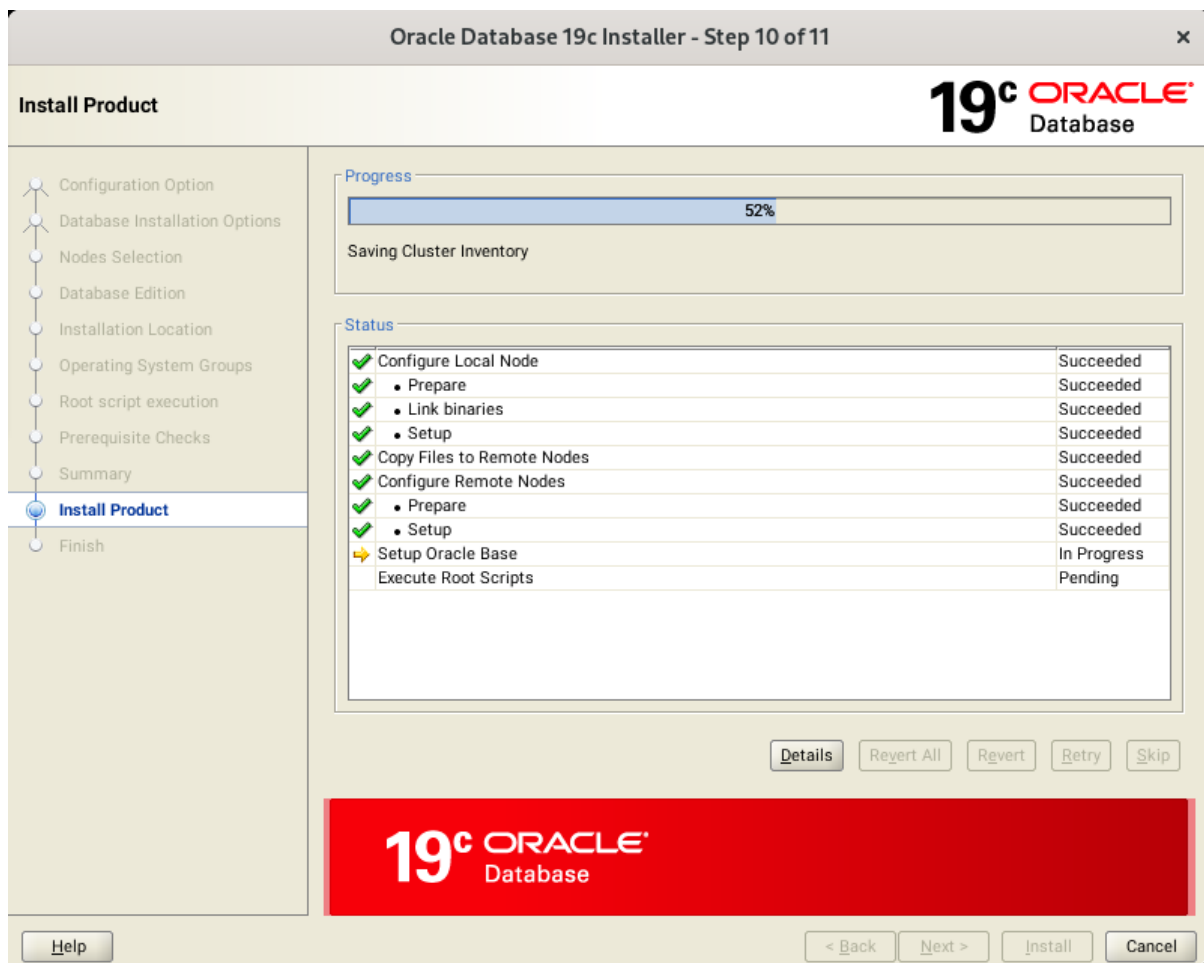


9). Summary.

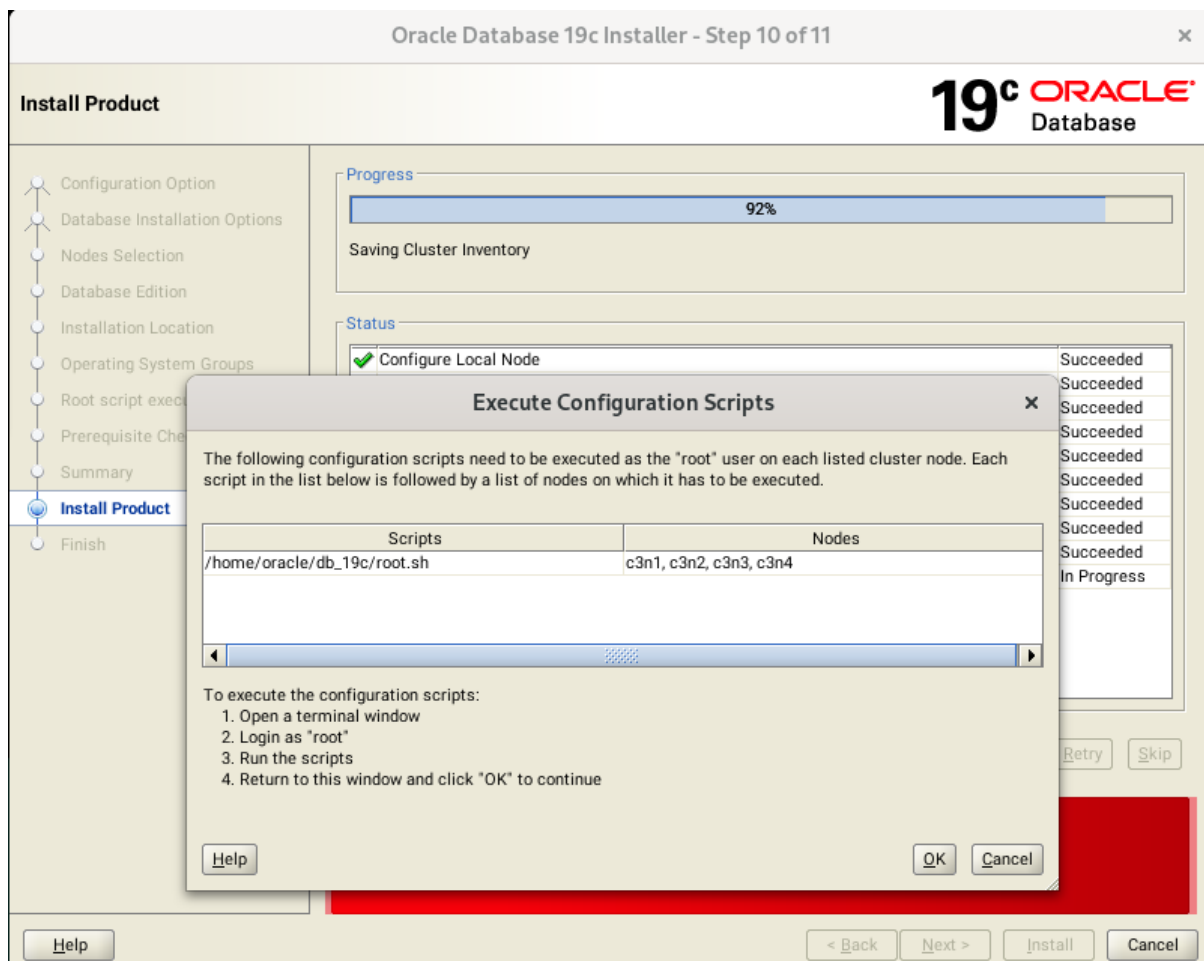


Installation Summary as shown above, click **Install** to continue.

10). Install Product.

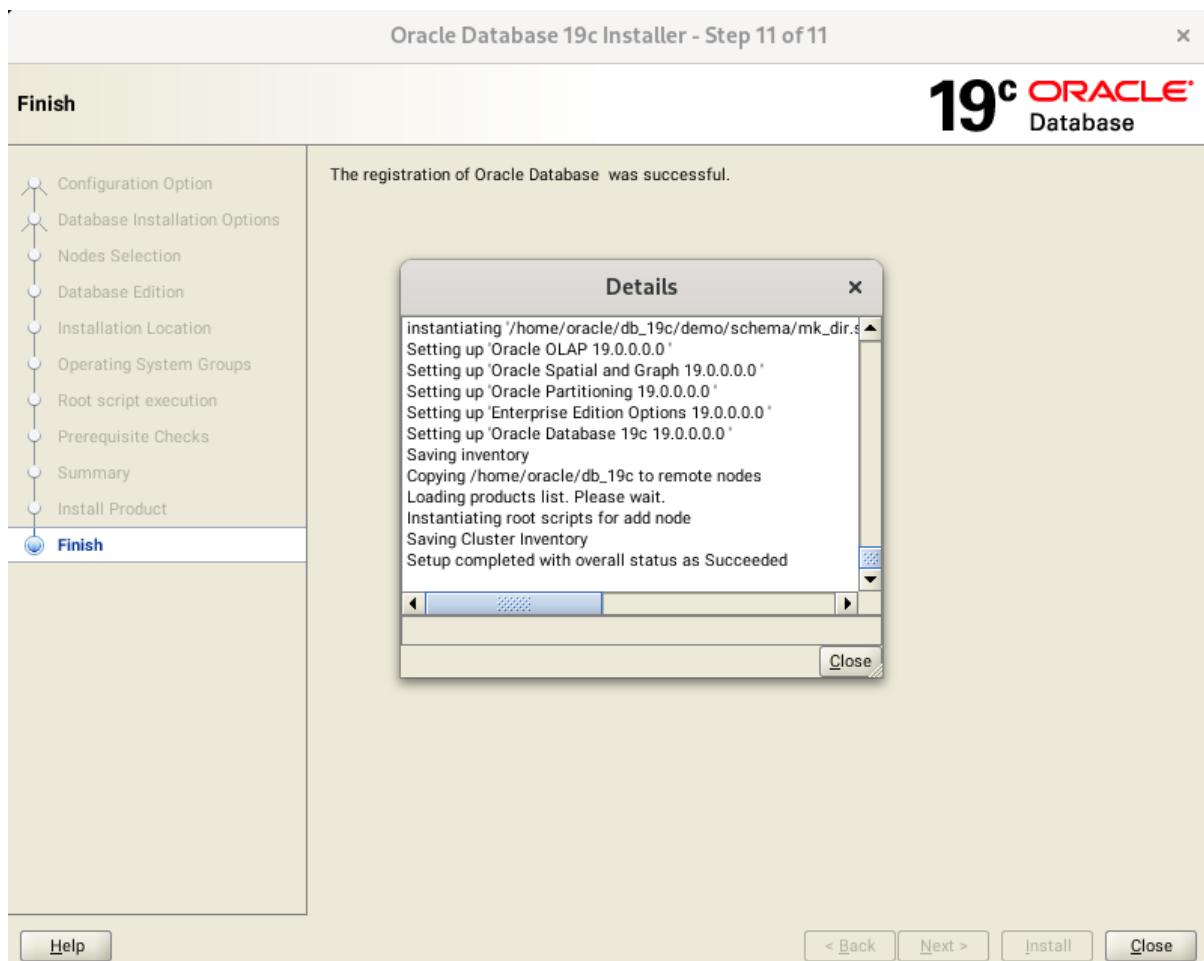


Installer prompted you to run the root.sh scripts.



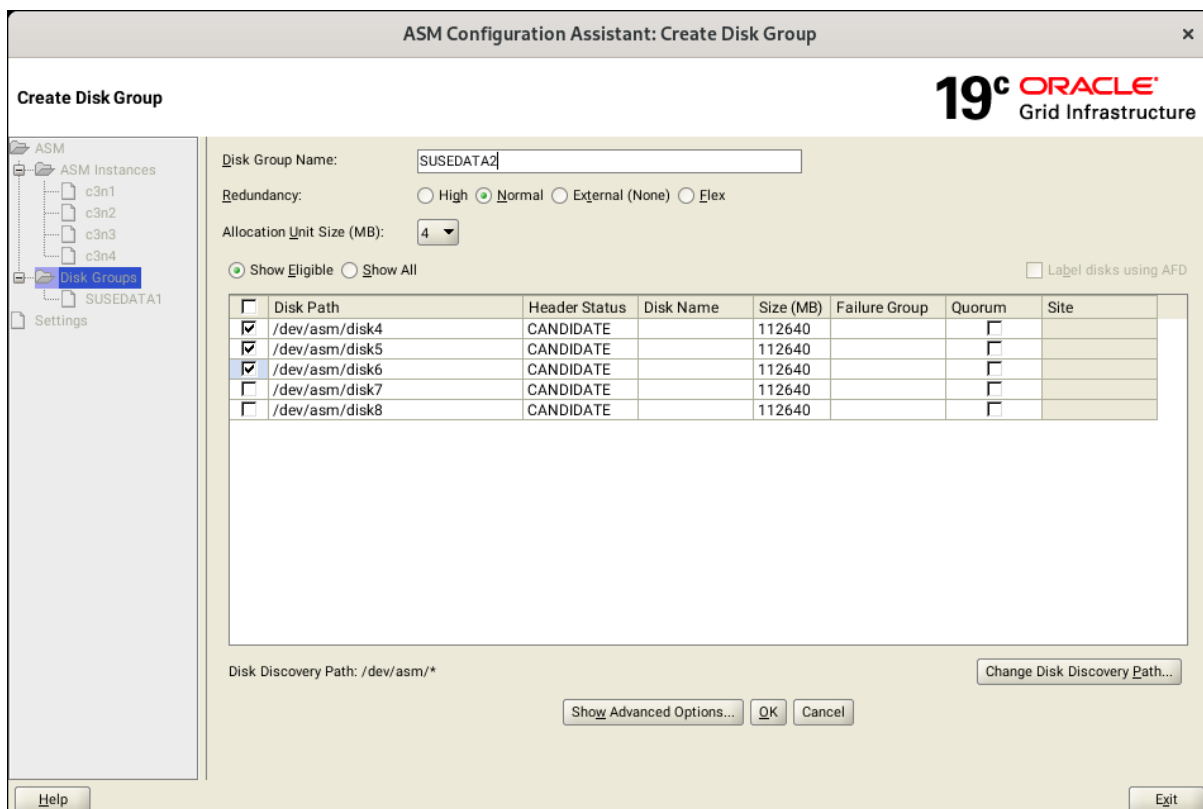
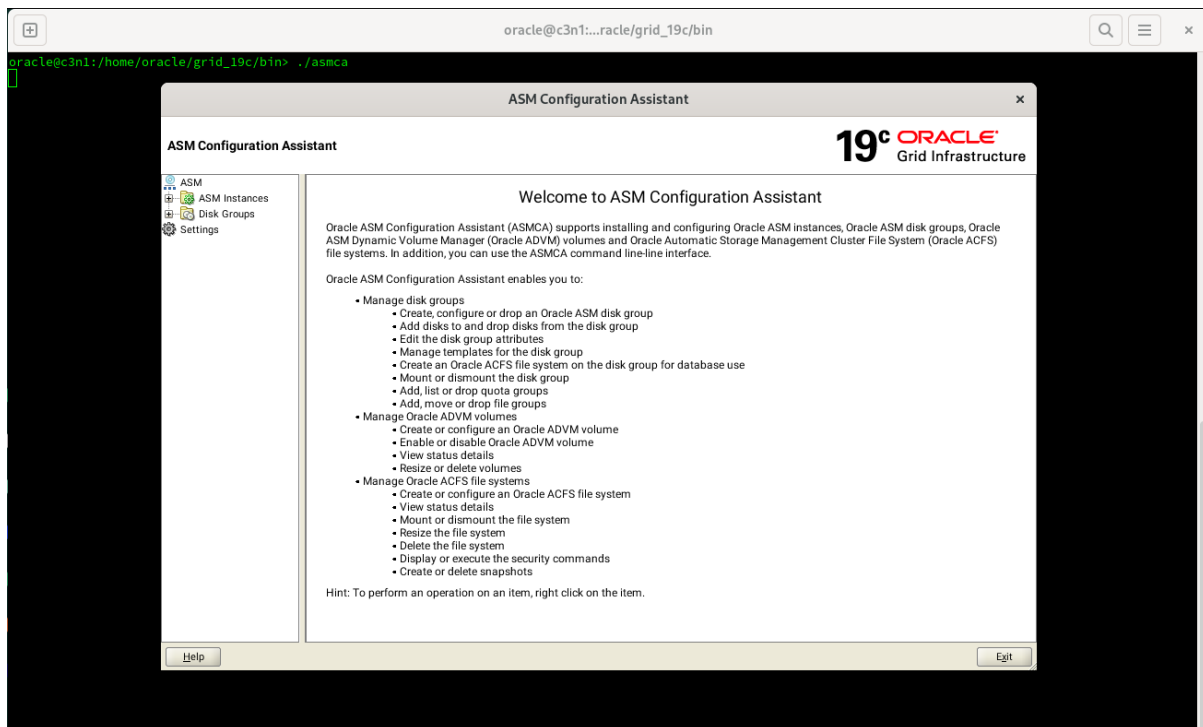
After successfully executing the above script on each node, click **OK** to continue. Monitoring the installation until the Finish window appears.

11). Finish



The installation of Oracle Database is finished, click **Close** to dismiss the screen.

2-3. Using ASM Configuration Assistant to create ASM Disk Group for Database files.



ASM Configuration Assistant: Disk Groups

Disk Groups

19^c ORACLE[®]
Grid Infrastructure

Disk Group Name	Size (GB)	Free (GB)	Usable (GB)	Redundancy	State
SUSEDATA2	330.00	329.34	109.67	NORMAL	MOUNTED(3 of 4)
SUSEDATA1	90.00	88.91	29.45	NORMAL	MOUNTED(3 of 4)

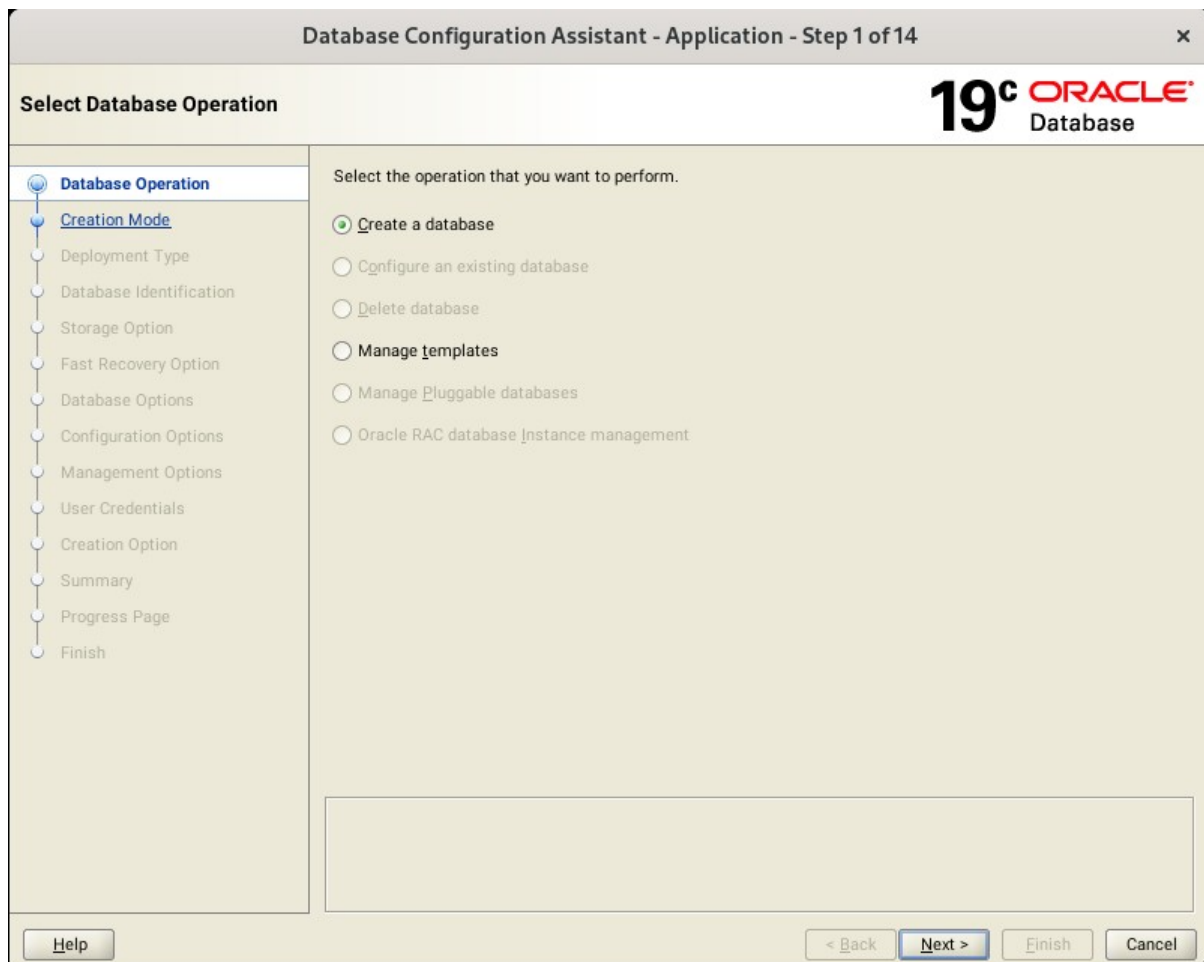
Note: Use right click to see more options.

Create...Mount AllDismount AllRefresh

HelpExit

2-4. Using DBCA to create Oracle RAC DataBase.

1). Select Database Operation.



Select option "**Create a database**", then click **Next** to continue.

2). Select Database Creation Mode.

Database Configuration Assistant - Create a database - Step 2 of 14

Select Database Creation Mode

19c ORACLE Database

Database Operation

Creation Mode

Deployment Type

Database Identification

Storage Option

Fast Recovery Option

Database Options

Configuration Options

Management Options

User Credentials

Creation Option

Summary

Progress Page

Finish

☒ **Typical configuration**

Global database name: sles

Storage type: Automatic Storage Management (ASM)

Database files location: +SUSEDATA2/{DB_UNIQUE_NAME} Browse...

Fast Recovery Area (FRA): +SUSEDATA1 Browse...

Database character set: AL32UTF8 - Unicode UTF-8 Universal character set

Administrative password:

Confirm password:

☒ **Create as Container database**

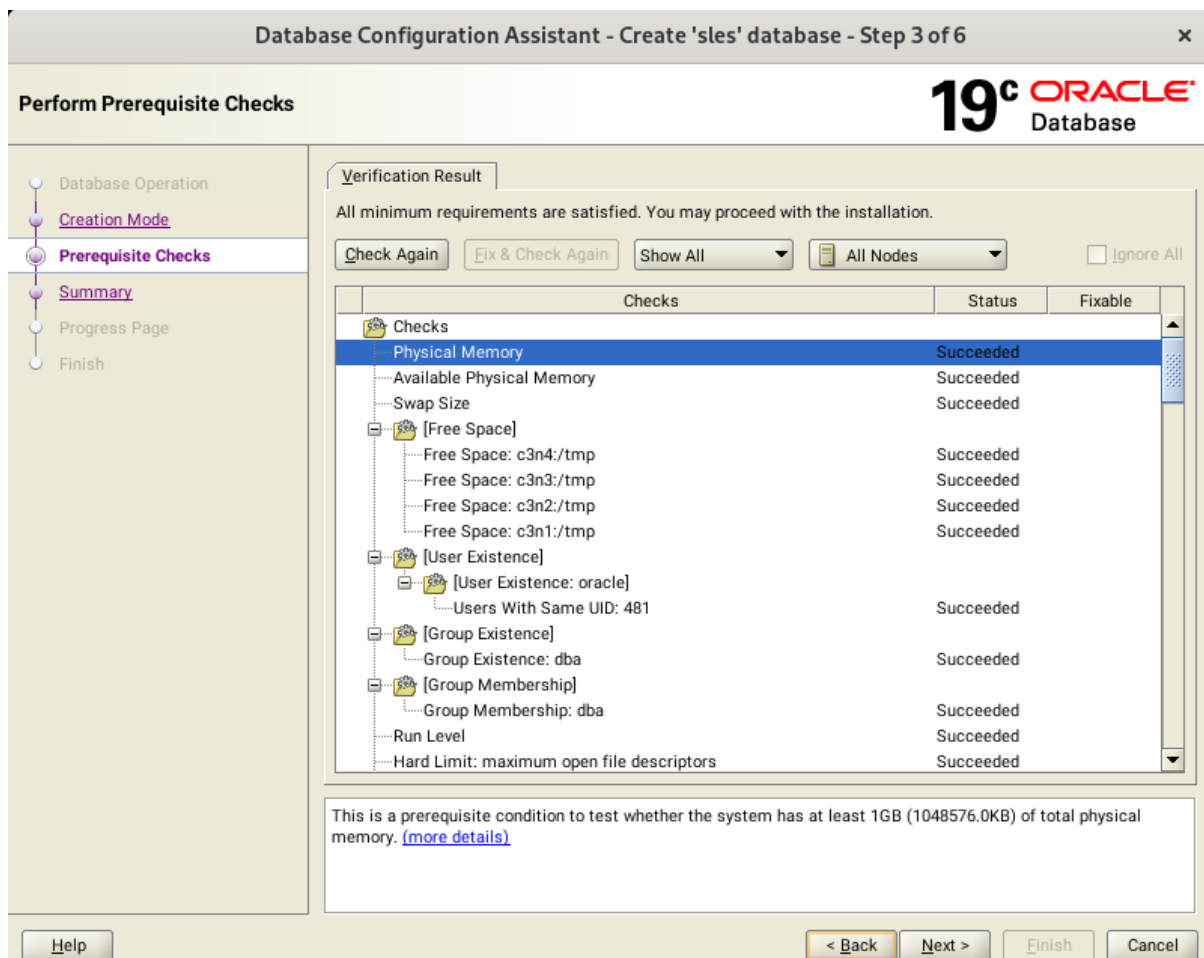
Pluggable database name: sles_pdb

☐ **Advanced configuration**

Help < Back Next > Finish Cancel

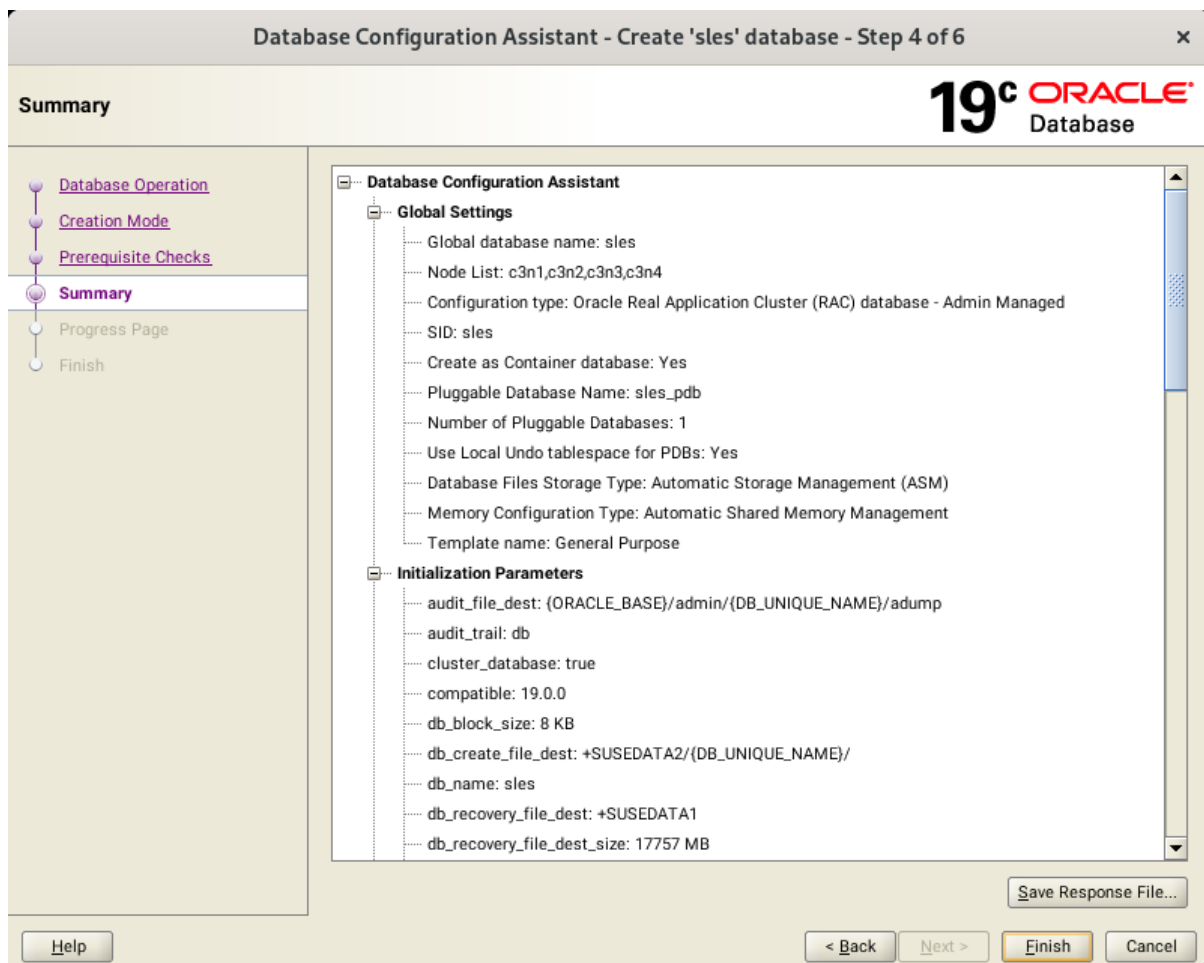
Select option "**Typical configuration**" and fill in administrator password. Then, click **Next** to continue.

3). Perform Prerequisite Checks.



Perform Pre-Check as shown above. Click **Next** to continue.

4). Summary.



Database Configuration Summary as shown above, review the information, then click **Finish** to continue.

5). Progress Page.

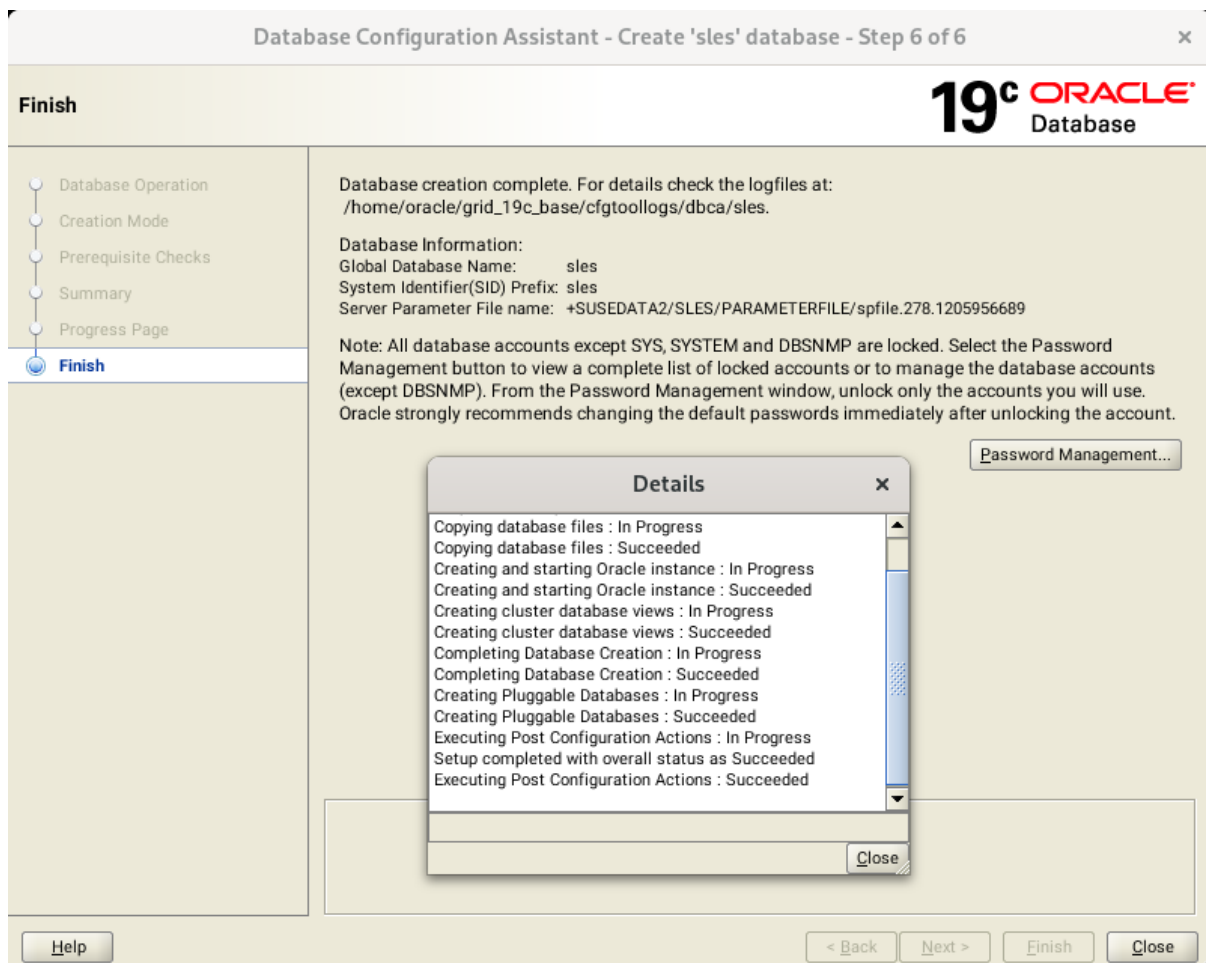
The screenshot shows the 'Database Configuration Assistant - Create 'sles' database - Step 5 of 6' window. The 'Progress Page' is active, showing a progress bar at 57% and the status 'Completing Database Creation : In Progress'. The left sidebar lists the steps: Database Operation, Creation Mode, Prerequisite Checks, Summary, Progress Page (selected), and Finish. The main area displays the 'Status' of various tasks:

Task	Status
DB Creation	In Progress
• Prepare for db operation	Succeeded
• Copying database files	Succeeded
• Creating and starting Oracle instance	Succeeded
• Creating cluster database views	Succeeded
• Completing Database Creation	In Progress
• Creating Pluggable Databases	Pending
• Executing Post Configuration Actions	Pending

Below the status table, there are buttons for 'Details', 'Revert All', 'Revert', 'Retry', and 'Skip'. The DBCA Log Location is shown as `/home/oracle/grid_19c_base/cfgtoollogs/dbca/sles/trace.log_2025-07-08_07-29-29PM`. The Database Alert Log Location is shown as `/home/oracle/grid_19c_base/diag/rdbms/sles/sles1/trace/alert_sles1.log`. At the bottom, there are buttons for 'Help', '< Back', 'Next >', 'Finish', and 'Cancel'.

Database creating progress as shown above, waiting until the creation is complete.

6). Finish.



Database creation complete, some details as shown above. Click **Close** to dismiss the screen.

2-5. Oracle Database 19c(19.27.0.0.0) Post-Install Checks.

Checking database status and configuration.

```
oracle@c3n1:~> export ORACLE_HOME=/home/oracle/db_19c/
oracle@c3n1:~> /home/oracle/db_19c/bin/srvctl status database -d sles -a
Instance sles1 is running on node c3n1
Instance sles1 is connected to ASM instance +ASM1
Instance sles2 is running on node c3n2
Instance sles2 is connected to ASM instance +ASM2
Instance sles3 is running on node c3n3
Instance sles3 is connected to ASM instance +ASM3
Instance sles4 is running on node c3n4
Instance sles4 is connected to ASM instance +ASM3
oracle@c3n1:~> /home/oracle/db_19c/bin/srvctl config database -d sles -a
Database unique name: sles
Database name: sles
Oracle home: /home/oracle/db_19c
Oracle user: oracle
Spfile: +SUSEDATA2/SLES/PARAMETERFILE/spfile.278.1205956689
Password file: +SUSEDATA2/SLES/PASSWORD/pwdsles.256.1205955491
Domain:
Start options: open
Stop options: immediate
Database role: PRIMARY
Management policy: AUTOMATIC
Server pools:
Disk Groups: SUSEDATA1,SUSEDATA2
Mount point paths:
Services:
Type: RAC
Start concurrency:
Stop concurrency:
Database is enabled
Database is individually enabled on nodes:
Database is individually disabled on nodes:
OSDBA group: dba
OSOPER group:
Database instances: sles1,sles2,sles3,sles4
Configured nodes: c3n1,c3n2,c3n3,c3n4
CSS critical: no
CPU count: 0
Memory target: 0
Maximum memory: 0
Default network number for database services:
Database is administrator managed
oracle@c3n1:~> █
```

2-6. Oracle RAC 19c(19.27.0.0.0) Post-Install Checks.

Checking Oracle RAC status and resources.

```
oracle@c3n1:~> /home/oracle/grid_19c/bin/crsctl check cluster -all
*****
c3n1:
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
*****
c3n2:
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
*****
c3n3:
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
*****
c3n4:
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
*****
oracle@c3n1:~> /home/oracle/grid_19c/bin/srvctl status nodeapps
VIP 10.200.176.15 is enabled
VIP 10.200.176.15 is running on node: c3n1
VIP 10.200.176.16 is enabled
VIP 10.200.176.16 is running on node: c3n2
VIP 10.200.176.17 is enabled
VIP 10.200.176.17 is running on node: c3n3
VIP 10.200.176.18 is enabled
VIP 10.200.176.18 is running on node: c3n4
Network is enabled
Network is running on node: c3n1
Network is running on node: c3n2
Network is running on node: c3n3
Network is running on node: c3n4
ONS is enabled
ONS daemon is running on node: c3n1
ONS daemon is running on node: c3n2
ONS daemon is running on node: c3n3
ONS daemon is running on node: c3n4
oracle@c3n1:~> █
```

```
oracle@c3n1:~> /home/oracle/grid_19c/bin/crsctl stat res -t
```

Name	Target	State	Server	State details
Local Resources				
ora.LISTENER.lsnr				
	ONLINE	ONLINE	c3n1	STABLE
	ONLINE	ONLINE	c3n2	STABLE
	ONLINE	ONLINE	c3n3	STABLE
	ONLINE	ONLINE	c3n4	STABLE
ora.chad				
	ONLINE	ONLINE	c3n1	STABLE
	ONLINE	ONLINE	c3n2	STABLE
	ONLINE	ONLINE	c3n3	STABLE
	ONLINE	ONLINE	c3n4	STABLE
ora.net1.network				
	ONLINE	ONLINE	c3n1	STABLE
	ONLINE	ONLINE	c3n2	STABLE
	ONLINE	ONLINE	c3n3	STABLE
	ONLINE	ONLINE	c3n4	STABLE
ora.ons				
	ONLINE	ONLINE	c3n1	STABLE
	ONLINE	ONLINE	c3n2	STABLE
	ONLINE	ONLINE	c3n3	STABLE
	ONLINE	ONLINE	c3n4	STABLE

```

Cluster Resources
-----
ora.ASMNET1LSNR_ASM.lsnr(ora.asmgroup)
  1      ONLINE  ONLINE      c3n1      STABLE
  2      ONLINE  ONLINE      c3n2      STABLE
  3      ONLINE  ONLINE      c3n3      STABLE
ora.LISTENER_SCAN1.lsnr
  1      ONLINE  ONLINE      c3n2      STABLE
ora.LISTENER_SCAN2.lsnr
  1      ONLINE  ONLINE      c3n3      STABLE
ora.LISTENER_SCAN3.lsnr
  1      ONLINE  ONLINE      c3n1      STABLE
ora.SUSEDATA1.dg(ora.asmgroup)
  1      ONLINE  ONLINE      c3n1      STABLE
  2      ONLINE  ONLINE      c3n2      STABLE
  3      ONLINE  ONLINE      c3n3      STABLE
ora.SUSEDATA2.dg(ora.asmgroup)
  1      ONLINE  ONLINE      c3n1      STABLE
  2      ONLINE  ONLINE      c3n2      STABLE
  3      ONLINE  ONLINE      c3n3      STABLE
ora.asm(ora.asmgroup)
  1      ONLINE  ONLINE      c3n1      Started,STABLE
  2      ONLINE  ONLINE      c3n2      Started,STABLE
  3      ONLINE  ONLINE      c3n3      Started,STABLE
ora.asmnet1.asmnetwork(ora.asmgroup)
  1      ONLINE  ONLINE      c3n1      STABLE
  2      ONLINE  ONLINE      c3n2      STABLE
  3      ONLINE  ONLINE      c3n3      STABLE
ora.c3n1.vip
  1      ONLINE  ONLINE      c3n1      STABLE
ora.c3n2.vip
  1      ONLINE  ONLINE      c3n2      STABLE
ora.c3n3.vip
  1      ONLINE  ONLINE      c3n3      STABLE
ora.c3n4.vip
  1      ONLINE  ONLINE      c3n4      STABLE
ora.cvu
  1      ONLINE  ONLINE      c3n1      STABLE
ora.qosmserver
  1      ONLINE  ONLINE      c3n1      STABLE
ora.scan1.vip
  1      ONLINE  ONLINE      c3n2      STABLE
ora.scan2.vip
  1      ONLINE  ONLINE      c3n3      STABLE
ora.scan3.vip
  1      ONLINE  ONLINE      c3n1      STABLE
ora.sles.db
  1      ONLINE  ONLINE      c3n1      Open,HOME=/home/oracle/db_19c,STABLE
  2      ONLINE  ONLINE      c3n2      Open,HOME=/home/oracle/db_19c,STABLE
  3      ONLINE  ONLINE      c3n3      Open,HOME=/home/oracle/db_19c,STABLE
  4      ONLINE  ONLINE      c3n4      Open,HOME=/home/oracle/db_19c,STABLE
-----

```

2-7. View patch information on each node.

On c3n1:

```
oracle@c3n1:/home/oracle/grid_19c/OPatch> ./opatch lspatches
37762426;TOMCAT RELEASE UPDATE 19.0.0.0.0 (37762426)
37654975;OCW RELEASE UPDATE 19.27.0.0.0 (37654975)
37643161;ACFS RELEASE UPDATE 19.27.0.0.0 (37643161)
37642901;Database Release Update : 19.27.0.0.250415 (37642901)
36758186;DBWLM RELEASE UPDATE 19.0.0.0.0 (36758186)

OPatch succeeded.
oracle@c3n1:/home/oracle/grid_19c/OPatch> cd /home/oracle/db_19c/OPatch
oracle@c3n1:/home/oracle/db_19c/OPatch> ./opatch lspatches
37654975;OCW RELEASE UPDATE 19.27.0.0.0 (37654975)
37642901;Database Release Update : 19.27.0.0.250415 (37642901)

OPatch succeeded.
oracle@c3n1:/home/oracle/db_19c/OPatch> █
```

On c3n2:

```
oracle@c3n2:/home/oracle/grid_19c/OPatch> ./opatch lspatches
37762426;TOMCAT RELEASE UPDATE 19.0.0.0.0 (37762426)
37654975;OCW RELEASE UPDATE 19.27.0.0.0 (37654975)
37643161;ACFS RELEASE UPDATE 19.27.0.0.0 (37643161)
37642901;Database Release Update : 19.27.0.0.250415 (37642901)
36758186;DBWLM RELEASE UPDATE 19.0.0.0.0 (36758186)

OPatch succeeded.
oracle@c3n2:/home/oracle/grid_19c/OPatch> cd /home/oracle/db_19c/OPatch
oracle@c3n2:/home/oracle/db_19c/OPatch> ./opatch lspatches
37654975;OCW RELEASE UPDATE 19.27.0.0.0 (37654975)
37642901;Database Release Update : 19.27.0.0.250415 (37642901)

OPatch succeeded.
oracle@c3n2:/home/oracle/db_19c/OPatch> █
```

On c3n3:

```
oracle@c3n3:/home/oracle/grid_19c/OPatch> ./opatch lspatches
37762426;TOMCAT RELEASE UPDATE 19.0.0.0.0 (37762426)
37654975;OCW RELEASE UPDATE 19.27.0.0.0 (37654975)
37643161;ACFS RELEASE UPDATE 19.27.0.0.0 (37643161)
37642901;Database Release Update : 19.27.0.0.250415 (37642901)
36758186;DBWLM RELEASE UPDATE 19.0.0.0.0 (36758186)

OPatch succeeded.
oracle@c3n3:/home/oracle/grid_19c/OPatch> cd /home/oracle/db_19c/OPatch
oracle@c3n3:/home/oracle/db_19c/OPatch> ./opatch lspatches
37654975;OCW RELEASE UPDATE 19.27.0.0.0 (37654975)
37642901;Database Release Update : 19.27.0.0.250415 (37642901)

OPatch succeeded.
oracle@c3n3:/home/oracle/db_19c/OPatch> █
```



On c3n4:

```
oracle@c3n4:/home/oracle/grid_19c/OPatch> ./opatch lspatches
37762426;TOMCAT RELEASE UPDATE 19.0.0.0.0 (37762426)
37654975;OCW RELEASE UPDATE 19.27.0.0.0 (37654975)
37643161;ACFS RELEASE UPDATE 19.27.0.0.0 (37643161)
37642901;Database Release Update : 19.27.0.0.250415 (37642901)
36758186;DBWLM RELEASE UPDATE 19.0.0.0.0 (36758186)

OPatch succeeded.
oracle@c3n4:/home/oracle/grid_19c/OPatch> cd /home/oracle/db_19c/OPatch
oracle@c3n4:/home/oracle/db_19c/OPatch> ./opatch lspatches
37654975;OCW RELEASE UPDATE 19.27.0.0.0 (37654975)
37642901;Database Release Update : 19.27.0.0.250415 (37642901)

OPatch succeeded.
oracle@c3n4:/home/oracle/db_19c/OPatch> █
```

2-8. Checking database status.

1). Log in with sqlplus.

```

oracle@cn1:~> export ORACLE_HOME=/home/oracle/db_19c/
oracle@cn1:~> export ORACLE_SID=sles
oracle@cn1:~> /home/oracle/db_19c/bin/sqlplus /nolog

SQL*Plus: Release 19.0.0.0.0 - Production on Tue Jul 8 20:21:01 2025
Version 19.27.0.0.0

Copyright (c) 1982, 2024, Oracle. All rights reserved.

SQL> conn sys/██████████@cn1:1521/sles as sysdba
Connected.
SQL> show sga

Total System Global Area 4.0265E+10 bytes
Fixed Size 37601016 bytes
Variable Size 6710886400 bytes
Database Buffers 3.3420E+10 bytes
Redo Buffers 96616448 bytes
SQL> show pdbs

  CON_ID CON_NAME                                OPEN MODE RESTRICTED
-----
      2 PDB$SEED                                READ ONLY NO
      3 SLES_PDB                                READ WRITE NO
SQL> select banner_full from v$version;

BANNER_FULL
-----
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.27.0.0.0

SQL> exec DBMS_XDB_CONFIG.SETHTTPSPORT(5500);

PL/SQL procedure successfully completed.

SQL> select DBMS_XDB_CONFIG.GETHTTPSPORT from dual;

GETHTTPSPORT
-----
          5500

SQL> exit
Disconnected from Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.27.0.0.0
oracle@cn1:~> █

```

2). Access to Oracle Enterprise Manager.

Sign In To Oracle Enterprise Manager

https://c3n1:5500/em/login?reason=need_login&returnUrl=/em/shell

**ORACLE ENTERPRISE MANAGER
DATABASE EXPRESS**

Username

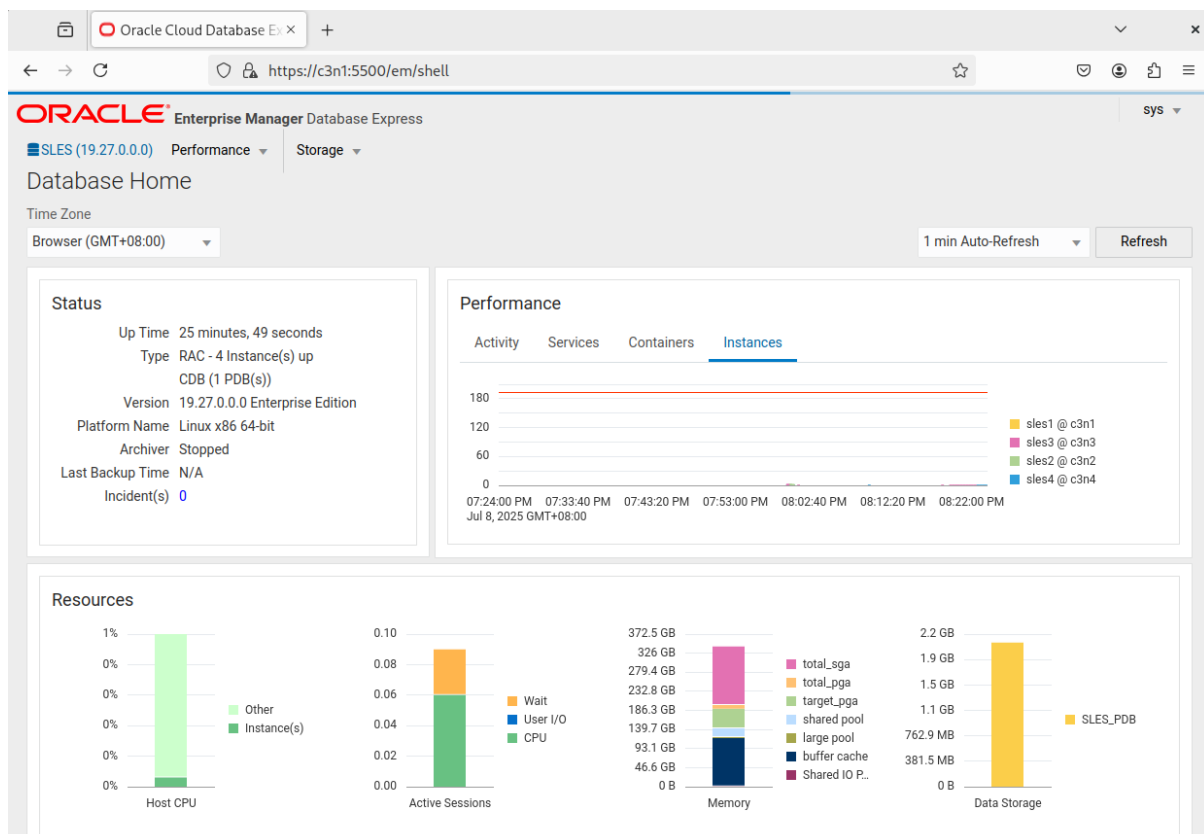
Password

Container Name

Log in

ORACLE

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Troubleshooting

- *GI&DB 19c(19.3) - GI/DB RunInstaller Fails with [INS-44000]&[INS-06006] Passwordless SSH connectivity not set up between the following node(s): [node1, node2...].*

Workaround: Apply GI RELEASE UPDATE 19.27.0.0.0(Patch 37641958).

```
#./gridSetup.sh -applyRU /home/ORACLE_SW/Grid/GI_patch_RU_192700/37641958/
# ./runInstaller
  -applyRU /home/ORACLE_SW/Grid/GI_patch_RU_192700/37641958/37642901/
  -applyOneOffs /home/ORACLE_SW/Grid/GI_patch_RU_192700/37641958/37654975/
```

- *GI&DB 19c(19.27.0.0.0) - [INS-10113] Installer encountered errors while copying...*

Workaround: export SRVM_DISABLE_MTTTRANS=true, then run “./gridSetup.sh” or “./runInstaller”

- *GI 19c root.sh failed with error:
“/home/oracle/grid_19c/crs/utl/init.ohasd.sles: line 440: /bin/chrt: No such file or directory”.*

Workaround: ln -s /usr/bin/chrt /bin/chrt

- *GI 19c root.sh failed with CLSRSC-317: FAILED TO REGISTER ORACLE OHASD SERVICE IN SLES15.(or If using ASMLib)*

Workaround: Install "insserv-compat" on the server. The package insserv-compat adds compatibility with System V init scripts to system.

- *GI 19c Installation/relink fails with:"Error in invoking target 'libasmclntsh19.ohso libasmperl19.ohso client_sharedlib' of makefile ins_rdbms.mk"*

Workaround: Install 'compat-libpthread-nonshared' package.

- Running 'runcluvfy.sh' tool with the parameter "-method root", the following error is encountered:

PRCZ-2006: "Unable To Establish SSH Connection To Node" Algorithm negotiation fail

```

oracle@c3n1:/home/oracle/grid_19c> ./runcluvfy.sh stage -pre crsinst -n c3n1,c3n2,c3n3,c3n4 -r 19 -orainv oinstall -osdba oinstall -verbose -method root
Enter "ROOT" password:

c3n4: PRCZ-2006 : Unable to establish SSH connection to node "c3n4" to execute command "/usr/bin/id"
Algorithm negotiation fail

c3n3: PRCZ-2006 : Unable to establish SSH connection to node "c3n3" to execute command "/usr/bin/id"
Algorithm negotiation fail

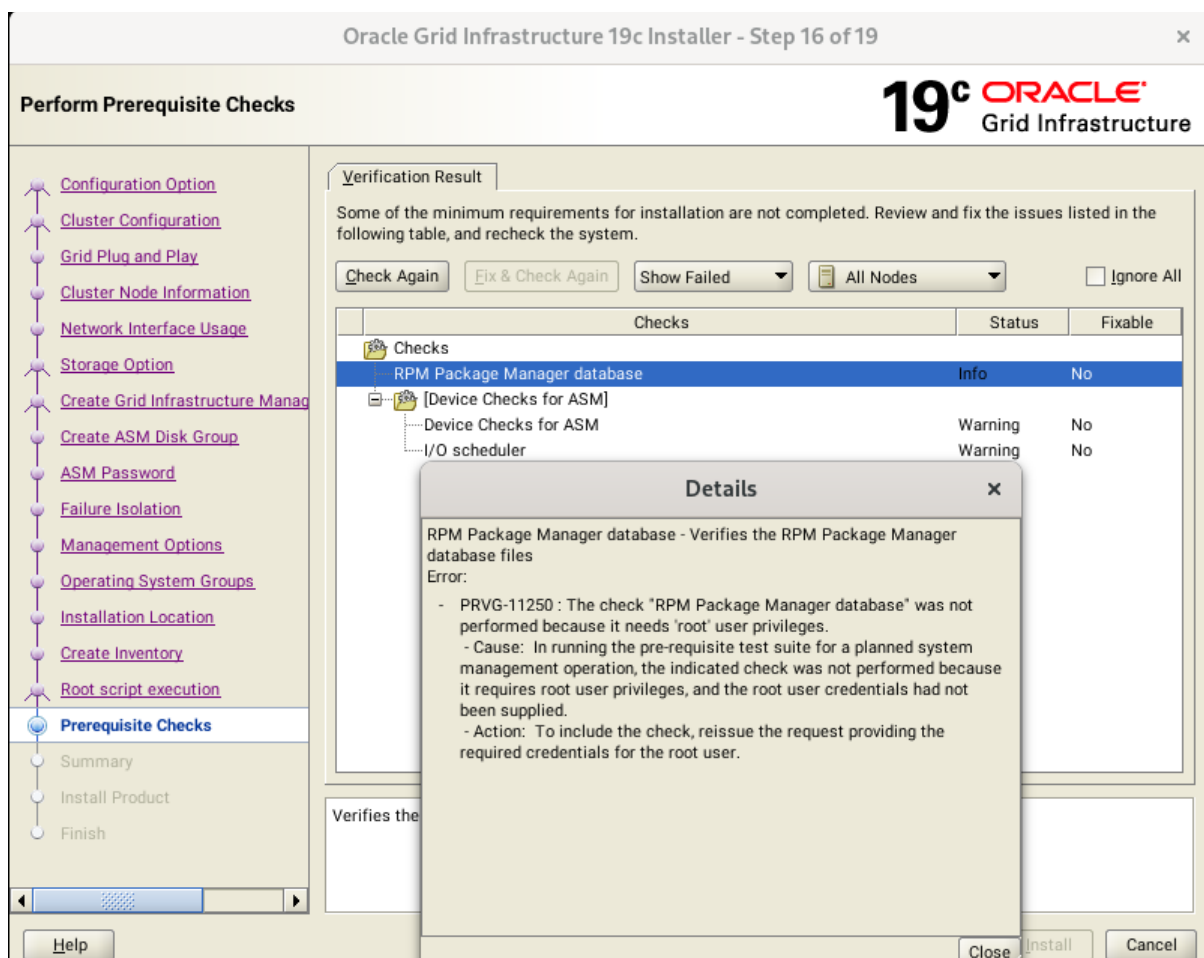
c3n2: PRCZ-2006 : Unable to establish SSH connection to node "c3n2" to execute command "/usr/bin/id"
Algorithm negotiation fail

Pre-check for cluster services setup was unsuccessful on all the nodes.

CVU operation performed:      stage -pre crsinst
Date:                        Jul 8, 2025 3:15:28 PM
CVU version:                 19.27.0.0.0 (041025x8664)
CVU home:                   /home/oracle/grid_19c
User:                       oracle
Operating system:            Linux6.4.0-150700.51-default
oracle@c3n1:/home/oracle/grid_19c>

```

This will subsequently result the error: "PRVG-11250: The check 'RPM Package Manager database' was not performed because it requires 'root' user privileges."



SSH password-less login has been successfully configured between each of the nodes.

```
oracle@c3n1:~> ssh oracle@c3n1 hostname;ssh oracle@c3n2 hostname;ssh oracle@c3n3 hostname;ssh oracle@c3n4 hostname
c3n1
c3n2
c3n3
c3n4
oracle@c3n1:~> su root
Password:
c3n1:/opt/oracle # ssh root@c3n1 hostname;ssh root@c3n2 hostname;ssh root@c3n3 hostname;ssh root@c3n4 hostname
c3n1
c3n2
c3n3
c3n4
c3n1:/opt/oracle #
```

Additionally, referring to the document Doc ID 2870317.1 on “support.oracle.com”, new RSA keys in “PEM” format were created for both the root and oracle users using the following command:

“ssh-keygen -t rsa -m pem -P "" -N "" -f ~/.ssh/id_rsa -q”.

However, the issue still persists.

Workaround: Wait for the update of the 'cluvfy' tool;

Fortunately, this issue does not prevent the installation of Oracle RAC 19c (19.27.0.0.0) Grid and database software.

Additional Comments

This document provides a brief instruction to install Oracle RAC Database 19c on SLES 15 SP7. You can extend this topology to make it highly available and secure so it is suitable for a production system.

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

