

Oracle Grid Infrastructure 19c (19.11) on SUSE Linux Enterprise Server 15 SP3

How-to Install Guide

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Introduction

This document is not a replacement for official Oracle Grid Infrastructure install document, but to help you understand minor difference you may encounter while installing Oracle Grid Infrastructure 19c on SUSE Linux Enterprise Server 15 SP3. This document covers x86_64 version but installation steps are same for other supported platforms.

Oracle Grid Infrastructure Software

Oracle Database 19c Grid Infrastructure software is available for public download at: <https://www.oracle.com/database/technologies/oracle19c-linux-downloads.html>

SUSE Linux Enterprise Software

Download SUSE Linux Enterprise Server 15 SP3 here: <https://www.suse.com/products/server/download/>

SUSE Linux Installation

Install SUSE Linux Enterprise Server 15 SP3 with “**Enhanced Base System, Software Management, X Window System, Oracle Server Base**” pattern. Please note that SLES15 SP2 comes with SLE-15-SP3-Online-x86_64-GM-Media1.iso and SLE-15-SP3-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 official Oracle Grid Installation manual for selective SLES OS required rpms, however **Oracle Server Base** pattern from SUSE will fulfil minimum setup required for Oracle Grid Installation.

```
oracle@c2n1:~> uname -a
Linux c2n1 5.3.18-57-default #1 SMP Wed Apr 28 10:54:41 UTC 2021 (ba3c2e9) x86_64 x86_64
x86_64 GNU/Linux
oracle@c2n1:~> id
uid=483(oracle) gid=484(oinstall) groups=484(oinstall),101(asmadmin),102(asmdba),483(dba)
oracle@c2n1:~> env |grep ORA
ORACLE_SID=orcl
ORACLE_BASE=/home/oracle
ORACLE_HOME=/opt/oracle/19c
oracle@c2n1:~> cat /etc/os-release
NAME="SLES"
VERSION="15-SP3"
VERSION_ID="15.3"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP3"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp3"
DOCUMENTATION_URL="https://documentation.suse.com/"
oracle@c2n1:~>
```

Cluster setup for Grid Infrastructure

Installing Oracle Grid Infrastructure requires multiple nodes, connected with Shared Storage setup, etc. Oracle provides runcluvfy tool to verify your Cluster setup is ready for install. Please refer official Oracle Install Guide for help: <https://docs.oracle.com/en/database/oracle/database/19/cwlin/grid-infrastructure-installation-and-upgrade-guide-linux.pdf>

1. Download & unzip Oracle Grid SW (LINUX.X64_193000_grid_home.zip). Following is command to verify 4-nodes cluster setup:

- a. unzip in /home/grid directory.
- b. `./runcluvfy.sh stage -pre crsinst -n c2n1,c2n2,c2n3,c2n4 -r 19 -verbose`

Verifying Physical Memory ...

Node Name	Available	Required	Status
c2n4	62.7639GB (6.5812708E7KB)	8GB (8388608.0KB)	passed

```

c2n3      62.7695GB (6.5818608E7KB) 8GB (8388608.0KB)    passed
c2n2      62.7632GB (6.5811956E7KB) 8GB (8388608.0KB)    passed
c2n1      62.6316GB (6.5673964E7KB) 8GB (8388608.0KB)    passed
Verifying Physical Memory ...PASSED
Verifying Available Physical Memory ...
....
CVU operation performed:  stage -pre crsinst
Date:                    Jun 17, 2021 2:58:59 PM
CVU home:                /home/grid/
User:                   oracle

```

- c. **Resolve** any issues you encounter, before proceeding.
1. Please note SLES15 SP3 comes with openssh-8.4p1. openssh 8.x is known to fail ssh test during Grid Install 19.3 (base). In order to fix this blocker issue, you require latest Oracle Grid patch (Patch 32545008 - GI Release Update 19.11.0.0.210420) at install time (`./gridSetup.sh -applyRU patch_directory_location`)
 2. Verify & Install any other missing rpms: `compat-libpthread-nonshared, libXext-devel, libXi-devel, libXrender-devel, pixz, libaio1-32bit gcc-c++-32bit`

Installing Oracle Grid Infrastructure 19c (19.3)

Login to mode one of cluster as oracle user and Start Oracle Grid Installer.Sometimes “`$unset ORACLE_HOME ORACLE_BASE`” helps avoid linking errors.

`$ORACLE_HOME/gridSetup -applyRU /patch/32545008`

```

oracle@c2n1:/home/grid> ./gridSetup.sh -applyRU /home/patch_19.11/32545008/
Preparing the home to patch..
Applying the patch /home/patch_19.11/32545008/...
Successfully applied the patch.
The log can be found at: /tmp/GridSetupActions2021-06-18_00-10-14AM/installerPatchActi
ons_2021-06-18_00-10-14AM.log
Launching Oracle Grid Infrastructure Setup Wizard...

The response file for this session can be found at:
/home/grid/install/response/grid_2021-06-18_00-10-14AM.rsp

You can find the log of this install session at:
/tmp/GridSetupActions2021-06-18_00-10-14AM/gridSetupActions2021-06-18_00-10-14AM.log
Moved the install session logs to:
/home/oraInventory/logs/GridSetupActions2021-06-18_00-10-14AM
oracle@c2n1:/home/grid>

```

Oracle Grid Infrastructure 19c Installer - Step 1 of 9

Select Configuration Option

19^c ORACLE[®]
Grid Infrastructure

Select an option to configure the software. The wizard will register the home in the central inventory and then perform the selected configuration.

- Configure Oracle Grid Infrastructure for a New Cluster
- Configure Oracle Grid Infrastructure for a Standalone Server (Oracle Restart)
- Uppgrade Oracle Grid Infrastructure
- Set Up Software Only

Help < Back Next > Install Cancel

Oracle Grid Infrastructure 19c Installer - Step 2 of 9

Select Cluster Configuration

19^c 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

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:

SCAN Name:

SCAN Port:

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:

Oracle Grid Infrastructure 19c Installer - Step 4 of 17

Cluster Node Information

19c ORACLE Grid Infrastructure

Provide the Hostname

Add Cluster Node Information

Add a single node

Specify the name for the public host name. If you want to configure virtual host name manually, then you will be prompted for the virtual IP address.

Public Hostname:

Virtual Hostname:

Add a range of nodes

Specify the node range expression for the required nodes. You can use the following patterns to build the expression: Constant strings such as "myhostname", single character ranges such as "[a-z]" and multi-character sequences such as "[abcd].".

Public Hostname Expression:

Virtual Hostname Suffix:

Nodes to be generated:

Oracle Grid Infrastructure 19c Installer - Step 4 of 17

Cluster Node Information

19^c ORACLE Grid Infrastructure

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

Public Hostname	Virtual Hostname
c2n1.olab.prv.suse.com	c2n1-vip.olab.prv.suse.com
c2n2.olab.prv.suse.com	c2n2-vip.olab.prv.suse.com
c2n3.olab.prv.suse.com	c2n3-vip.olab.prv.suse.com
c2n4.olab.prv.suse.com	c2n4-vip.olab.prv.suse.com

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

Oracle Grid Infrastructure 19c Installer

Information icon: Passwordless SSH connectivity between the selected nodes already established.

Test Setup

Help

Oracle Grid Infrastructure 19c Installer - Step 5 of 17

Specify Network Interface Usage

19^c ORACLE Grid Infrastructure

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

Interface Name	Subnet	Use for
bond1	10.156.215.0	Public
bond0	10.1.1.0	ASM & Private

Help

< Back Next > Install Cancel

Oracle Grid Infrastructure 19c Installer - Step 6 of 17

Storage Option Information

19^c ORACLE[®] Grid Infrastructure

- 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

You can place Oracle Cluster Registry (OCR) files and voting disk files on Oracle ASM storage, or on a file system.

Use Oracle Flex ASM for storage
Choose this option to configure OCR and voting disks on ASM storage. ASM instance will be configured on reduced number of cluster nodes.

Use Shared File System
Choose this option to configure OCR and voting disk files on an existing shared file system.

Help < Back Next > Install Cancel

Oracle Grid Infrastructure 19c Installer - Step 8 of 16

Create Grid Infrastructure Management Repository Option

19^c ORACLE[®] Grid Infrastructure

- 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

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

Help < Back Next > Install Cancel

Oracle Grid Infrastructure 19c Installer - Step 8 of 16

Create ASM Disk Group


- [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](#)
- [Operating System Groups](#)
- [Installation Location](#)
- [Root script execution](#)
- [Prerequisite Checks](#)
- [Summary](#)
- [Install Product](#)
- [Finish](#)

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 ▾


<input type="checkbox"/>	Disk Path	Size (in MB)	Status	Failure Group
<input type="checkbox"/>	/dev/sdd1	266240	Candidate	
<input type="checkbox"/>	/dev/sdd2	266240	Candidate	
<input checked="" type="checkbox"/>	/dev/sdf1	7629	Candidate	
<input checked="" type="checkbox"/>	/dev/sdf2	7629	Candidate	
<input checked="" type="checkbox"/>	/dev/sdf3	7629	Candidate	

Disk Discovery Path: /dev/sd*

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.

Oracle Grid Infrastructure 19c Installer - Step 9 of 16

Specify ASM 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**
- [Operating System Groups](#)
- [Installation Location](#)
- [Root script execution](#)
- [Prerequisite Checks](#)
- [Summary](#)
- [Install Product](#)
- [Finish](#)

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

SYS Password

ASMSNMP Password

Confirm Password

Confirm Password

Use same passwords for these accounts

Specify Password: Confirm Password:

Messages:

⚠ Specify Password:[INS-30011] The password entered does not conform to the Oracle recommended standards.

Oracle Grid Infrastructure 19c Installer - Step 10 of 18

Failure Isolation Support

19c 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)

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

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

DMS host:

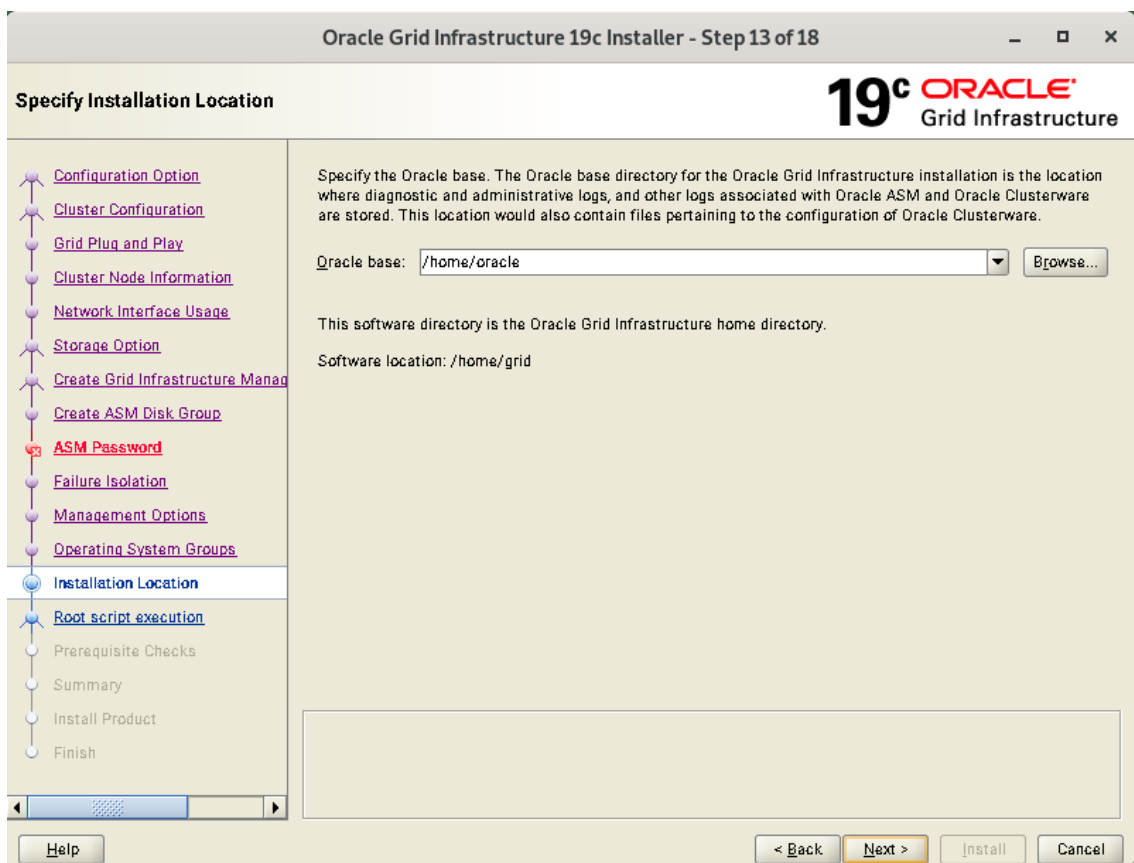
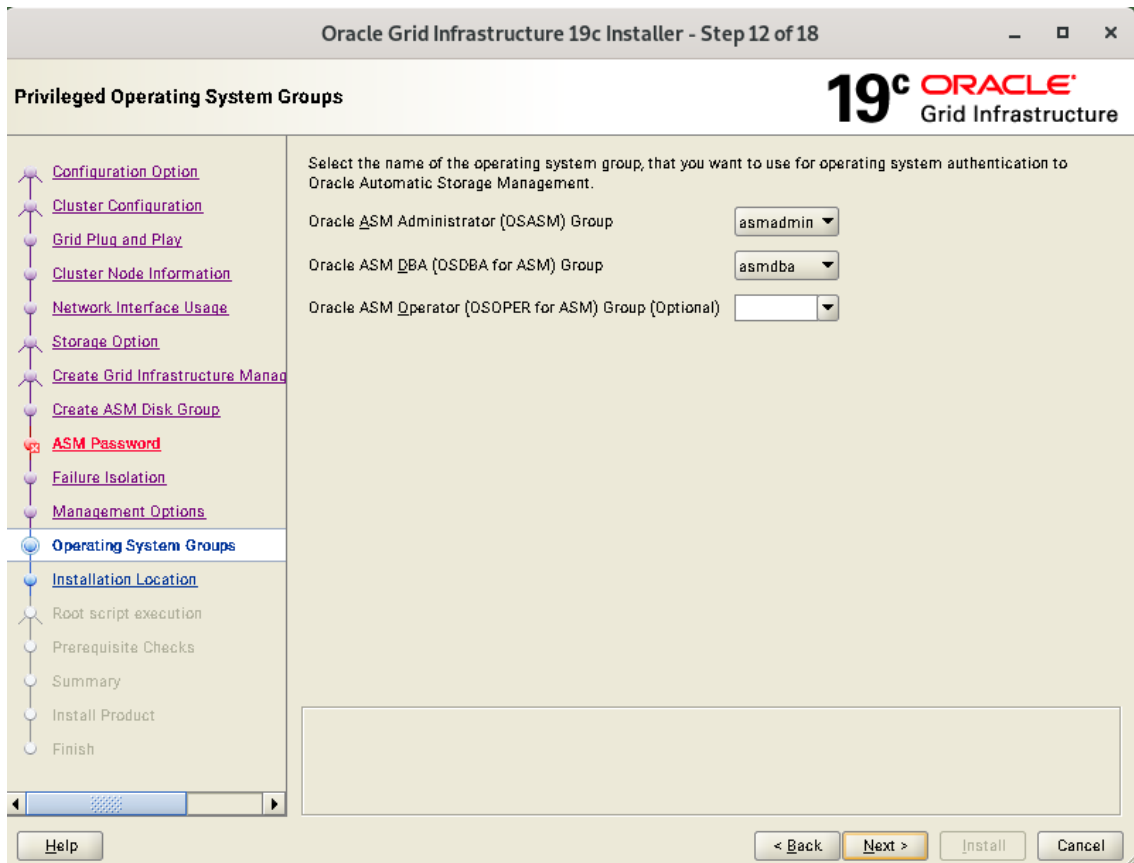
DMS port:

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



Note: Sometimes when Oracle RU patch applied, it leaves files in remote servers locations. Remove leftovers files from remote servers as it may cause problem.
 i.e. “rm -r .opatchauto_storage/ .patch_storage/”

Oracle Grid Infrastructure 19c Installer - Step 14 of 19

Create Inventory

19^c 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

Oracle Grid Infrastructure 19c Installer - Step 15 of 19

Root script execution configuration

19^c 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

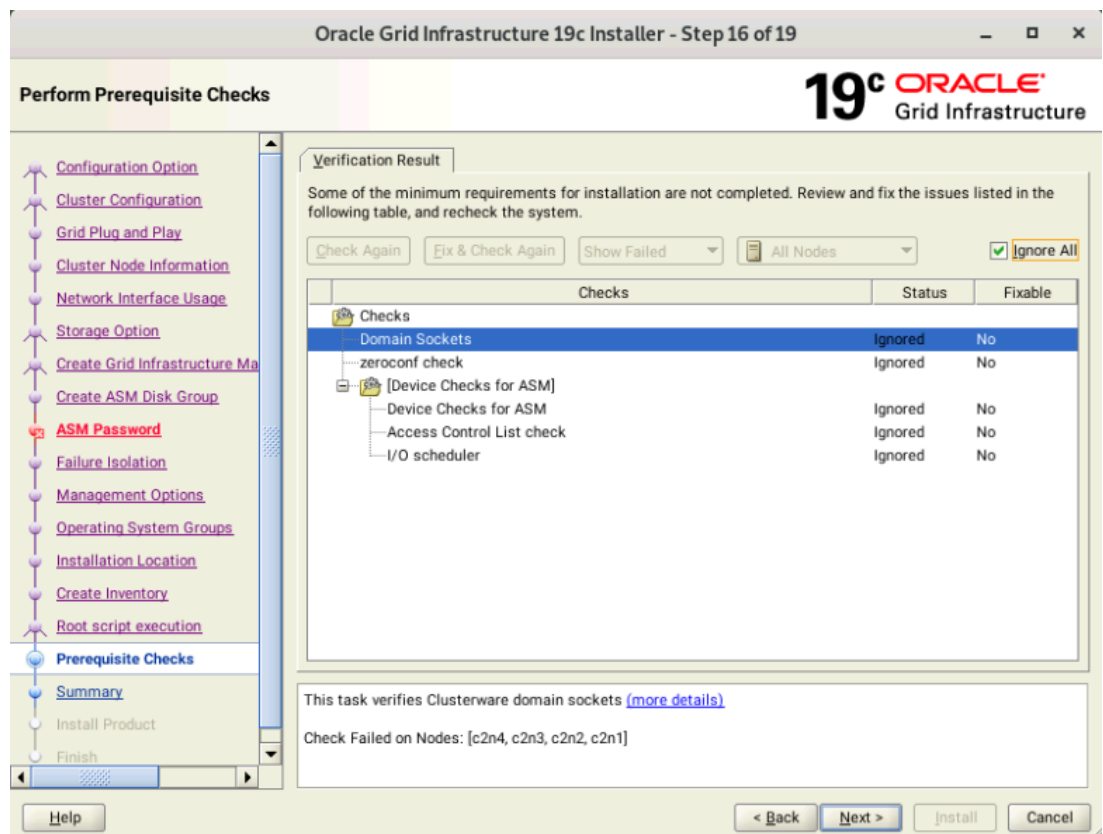
Password:

Use sudo

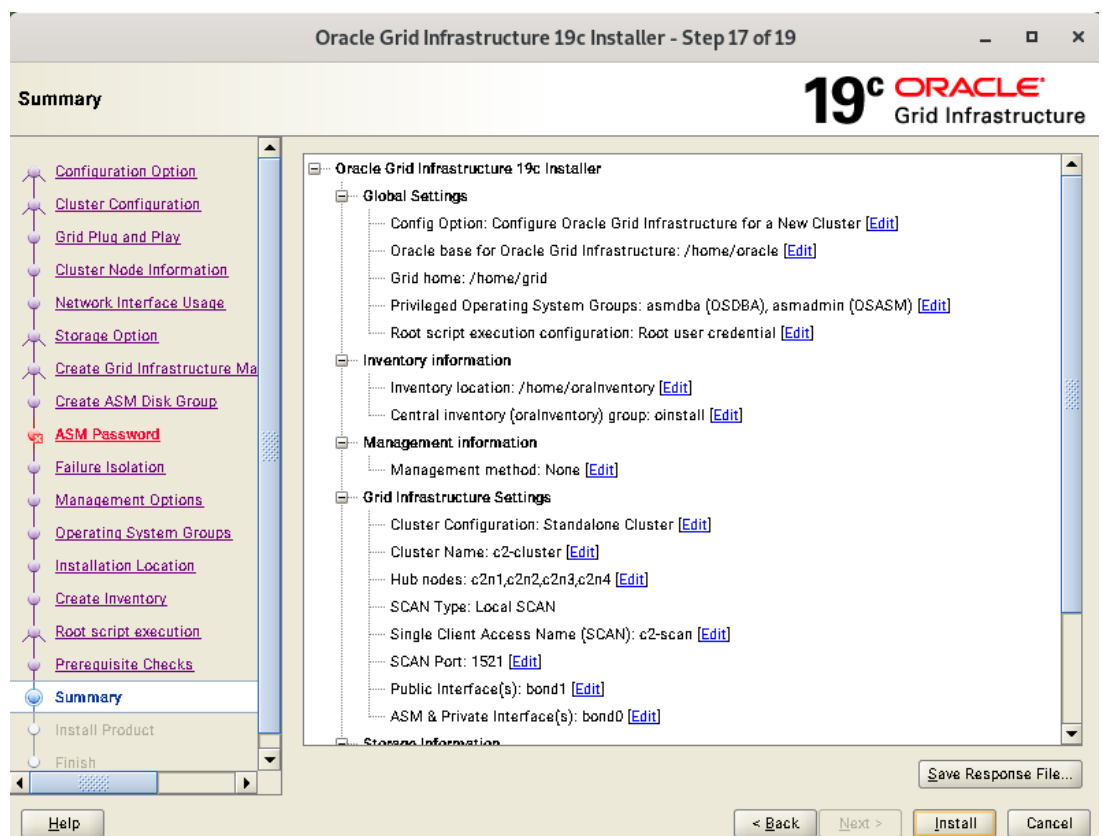
Program path:

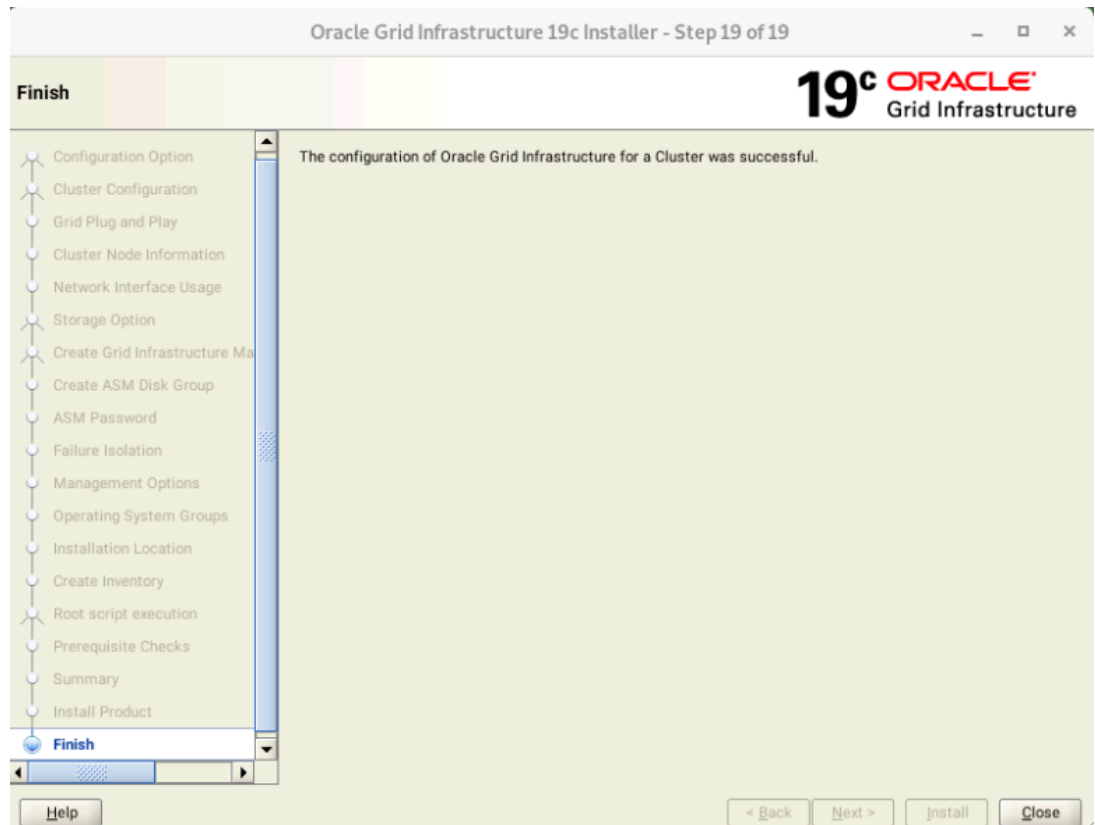
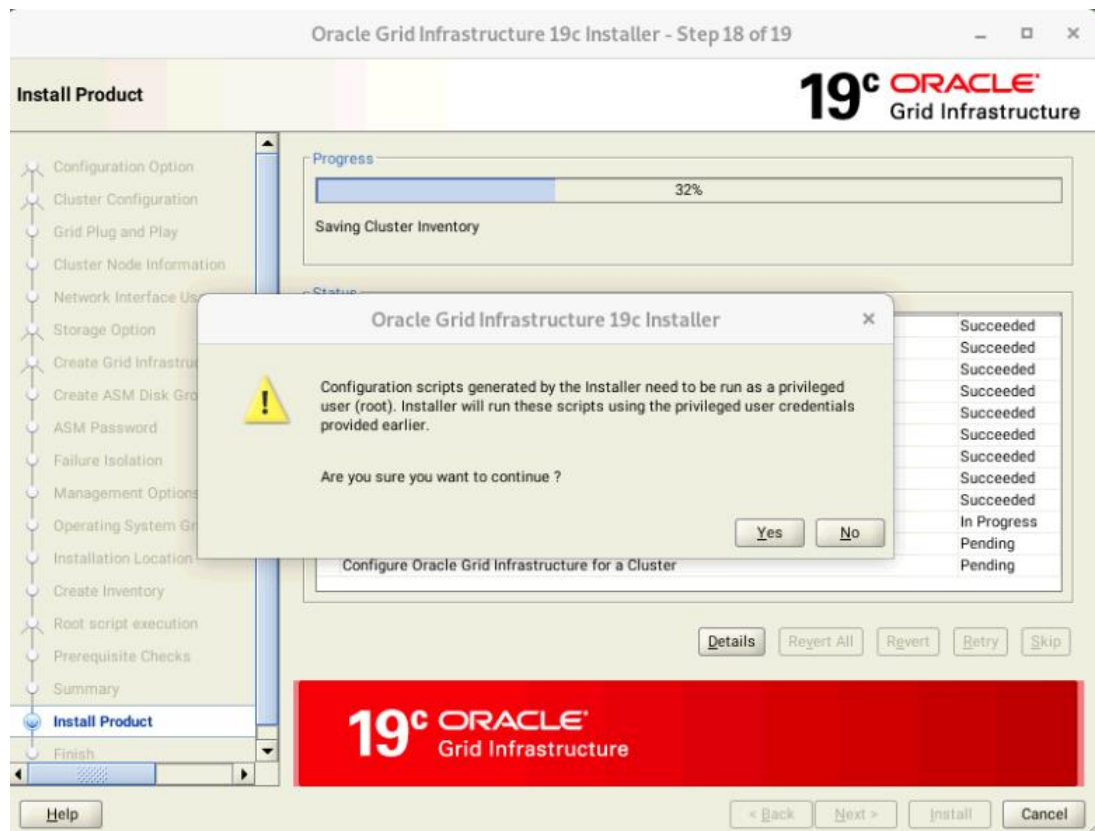
User name:

Password:



Note: Resolve all the warnings on all nodes in the cluster & run “Fix & Check Again”. Once verified, select **Ignore All** & proceed with installation.





Oracle Grid Installation - Status Check

You can use Oracle Grid commands to check cluster status.

```

c2n1.olab.prv.suse.com - PuTTY
oracle@c2n1:/home/grid/bin> ./crsctl check cluster -all
*****
c2n1:
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
*****
c2n2:
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
*****
c2n3:
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
*****
c2n4:
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
*****
oracle@c2n1:/home/grid/bin> ./srvctl status nodeapps
VIP 10.156.215.35 is enabled
VIP 10.156.215.35 is running on node: c2n1
VIP 10.156.215.36 is enabled
VIP 10.156.215.36 is running on node: c2n2
VIP 10.156.215.37 is enabled
VIP 10.156.215.37 is running on node: c2n3
VIP 10.156.215.38 is enabled
VIP 10.156.215.38 is running on node: c2n4
Network is enabled
Network is running on node: c2n1
Network is running on node: c2n2
Network is running on node: c2n3
Network is running on node: c2n4
ONS is enabled
ONS daemon is running on node: c2n1
ONS daemon is running on node: c2n2
ONS daemon is running on node: c2n3
ONS daemon is running on node: c2n4
oracle@c2n1:/home/grid/bin>

```

Oracle Cluster Database

SLES 15 SP3 is certified with Oracle Database 19.4.x (or above). Download and install latest Oracle patch update i.e. Oracle DB Release Update 19.11.0.0 (April 2021) - p32545013_190000_Linux-x86-64.zip.

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

