

Installing, Tuning, and Deploying Oracle Database on SUSE® Linux Enterprise Server 12

Technical Introduction

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Agenda

- Introduction
- SUSE Components
- Oracle Components
- Installation
 - Grid Infrastructure
 - Database
- Tuning
- Q&A

SUSE & Oracle

Technology Partner



- Strong Partnership

- 800+ certified Oracle Apps in SUSE ISV Catalog
- Relationship since first Oracle version 8.0.5 on SUSE® 6.0
- Testing, supporting partners/customers on technical issues
- Bugs, customer problem escalation, future features, etc.
- Combined testing efforts - service packs and Oracle patches

- Oracle products are certified to run on SUSE® Linux Enterprise Server

- Supported platforms : Linux x86-64 and IBM System z



SUSE Components

Software

Select Oracle Server Base (orarun)

Click a headline to make changes.

Software

- Product: SUSE Linux Enterprise Server 12
- Patterns:
 - + Help and Support Documentation
 - + Base System
 - + AppArmor
 - + 32-Bit Runtime Environment
 - + Minimal System (Appliances)
 - + GNOME Desktop Environment
 - + X Window System
 - + Oracle Server Base
- Size of Packages to Install: 2.5 GiB

Booting

- Boot Loader Type: GRUB2
- Status Location: /dev/sda3 ("/")
- Change Location:
 - Do not install bootcode into MBR (install)
 - Install bootcode into "/" partition (do not install)
- Order of Hard Disks: /dev/sda, /dev/sdb

Firewall and SSH

- Firewall will be disabled (enable)
- SSH service will be enabled (disable)

Kdump

- Kdump status: enabled
- Value of crashkernel option: 226M-:113M
- Dump format: lzo
- Target of dumps: file:///var/crash
- Number of dumps: 5

Default systemd target

- Graphical mode



Oracle Server Base (orarun)

What it provides?

Helps to meet Oracle Database Installation prerequisites:

- Creates user
 - oracle
- Creates groups
 - dba, oinstall
- Install required packages
- Sets required SUSE Linux Enterprise kernel parameters
- Sets Oracle environment variables
 - ORACLE_SID
 - ORACLE_BASE
 - ORACLE_HOME



Oracle Server Base (orarun)

Adopting new directory location

Steps to change default /opt/oracle to /home/oracle:

- Creates new directory : `$mkdir /home/oracle`
- Set proper owner & groups
 - `$chown oracle /home/oracle`
 - `$chgrp oinstall /home/oracle`
- Set `ORACLE_BASE=/home/oracle` in `/etc/sysconfig/oracle`
- Change `ORACLE_BASE` in `/etc/profile.d/oracle.s[sh]`
 - `ORACLE_BASE=/home/oracle`

Oracle Database Storage

File System

Storage/File System

- XFS
- Oracle ASM
 - ASMLib
 - ASM Cluster File System
- NFS/NAS
- OCFS2
 - Part of SLE12 HAE

Note: “raw” storage is not supported

SUSE Linux Install

File System Selection

Role

- Operating System
- Data and ISV Applications
- Swap
- Raw Volume (unformatted)

Formatting Options

- Format partition

File System

XFS

Options...

- Do not format partition

File system ID:

0x83 Linux

Encrypt Device

Mounting Options

- Mount partition

Mount Point

/home

Fstab Options...

- Do not mount partition

Oracle Components

Oracle Database

Support/Certification Matrix

Name (Version)	SLES10 (SP4)	SLES11 (SP3)	SLES12
10gR2 (10.2.0.5)			
11gR2 (11.2.0.4)			Validated
12cR1 (12.1.0.2)			Validated

Oracle Database Software

Download & Unzip Locally

- Oracle Database 11gR2
 - p13390677_112040_Linux-x86-64_1of7.zip
 - p13390677_112040_Linux-x86-64_2of7.zip
- Oracle Database 12cR1
 - linuxamd64_12102_database_1of2.zip
 - linuxamd64_12102_database_2of2.zip

Change “`CV_ASSUME_DISTID=SUSE11`” in `database/stage/cvu/cv/admin/cvu_config`

Oracle Grid Infrastructure Software

Download & Unzip Locally

Includes Oracle Clusterware & Oracle ASM

- Oracle Grid Infrastructure 11gR2
 - p13390677_112040_Linux-x86-64_3of7.zip
- Oracle Grid Infrastructure 12cR1
 - linuxamd64_12102_grid_1of2.zip
 - linuxamd64_12102_grid_2of2.zip

Change “CV_ASSUME_DISTID=SUSE11” in grid/stage/cvu/cv/admin/cvu_config



Installation Oracle Grid Infrastructure

Oracle Grid Infrastructure

Prepare

- Oracle recommends creating separate user/groups for Grid Infrastructure & Database
 - Create user grid
 - Create asmdba, asmadmin groups
- Create raw disk partitions to be used by Oracle ASM
- Set owner/group of ASM disks
 - Use udev rules for boot persistence
- Check & Install libcap1 packages
 - To avoid clscfg.bin error at install time

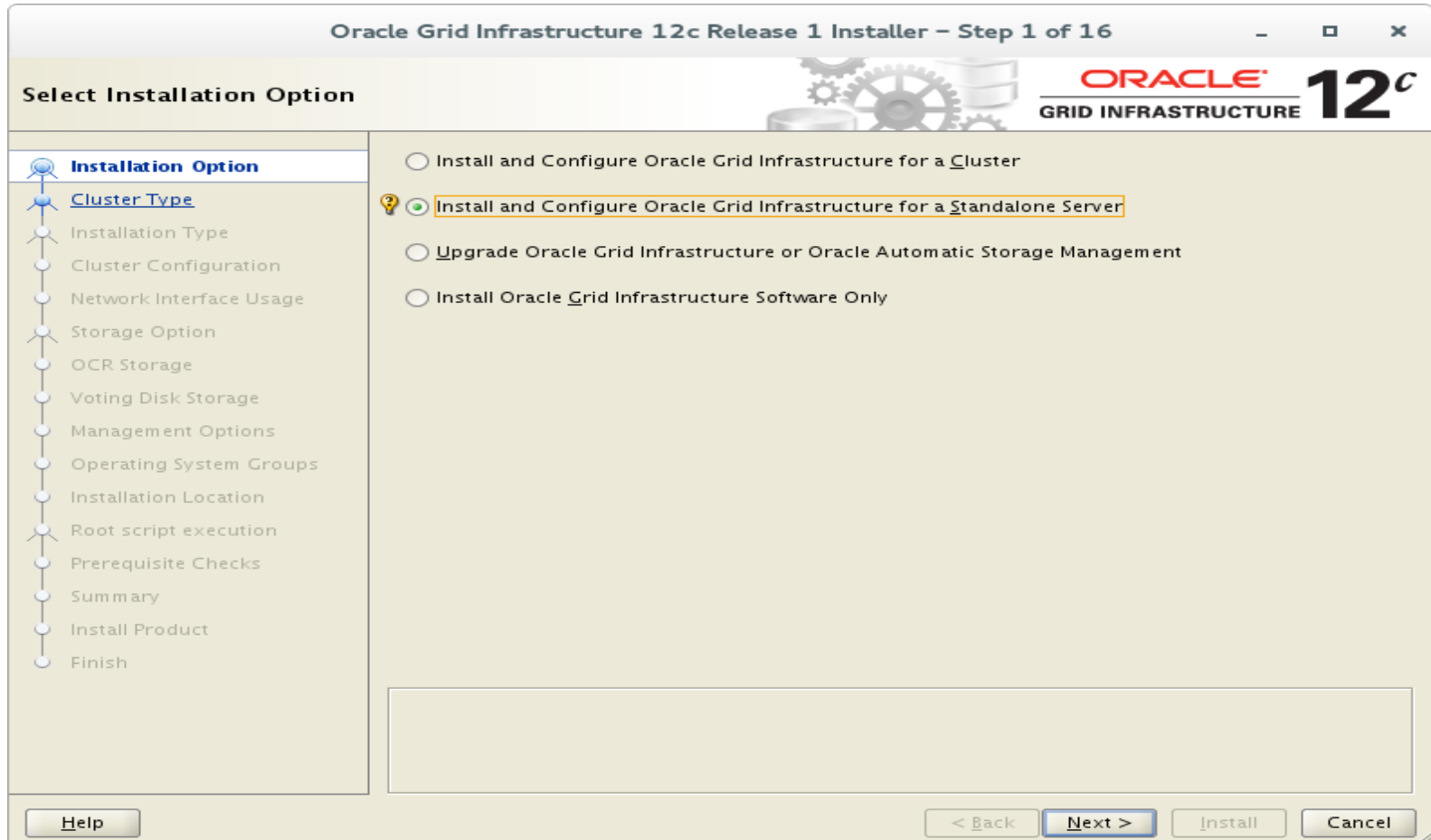
Installation

Oracle Grid Infrastructure

```
oracle@sles12:/home/SW/12102
File Edit View Search Terminal Help
total 4962992
drwxr-xr-x 4 oracle oinstall      194 Nov 14 13:16 .
drwxr-xr-x 4 oracle oinstall       59 Oct 21 22:24 ..
drwxr-xr-x 7 oracle oinstall      117 Jul  7 07:39 database
drwxr-xr-x 7 oracle oinstall      137 Jul  7 07:43 grid
-rw-r--r-- 1 oracle oinstall 1673544724 Nov 14 13:15 linuxamd64_12102_database_lof2.zip
-rw-r--r-- 1 oracle oinstall 1014530602 Nov 14 13:15 linuxamd64_12102_database_2of2.zip
-rw-r--r-- 1 oracle oinstall 1747043545 Nov 14 13:16 linuxamd64_12102_grid_lof2.zip
-rw-r--r-- 1 oracle oinstall  646972897 Nov 14 13:16 linuxamd64_12102_grid_2of2.zip
oracle@sles12:/home/SW/12102> id
uid=492(oracle) gid=491(oinstall) groups=491(oinstall),490(dba)
oracle@sles12:/home/SW/12102> env |grep ORA
ORACLE_SID=orcl
ORACLE_BASE=/home/oracle
ORACLE_HOME=/home/oracle/product/12cR1/grid
oracle@sles12:/home/SW/12102> ls -al /dev/sdb*
brw-rw---- 1 root   disk      8, 16 Nov 14 13:12 /dev/sdb
brw-rw---- 1 oracle oinstall  8, 17 Nov 14 13:12 /dev/sdb1
brw-rw---- 1 oracle oinstall  8, 18 Nov 14 13:12 /dev/sdb2
oracle@sles12:/home/SW/12102> grep SUSE11 grid/stage/cvu/cv/admin/cvu_config
CV_ASSUME_DISTID=SUSE11
oracle@sles12:/home/SW/12102> grep SUSE11 database/stage/cvu/cv/admin/cvu_config
CV_ASSUME_DISTID=SUSE11
oracle@sles12:/home/SW/12102> □
```

Installation

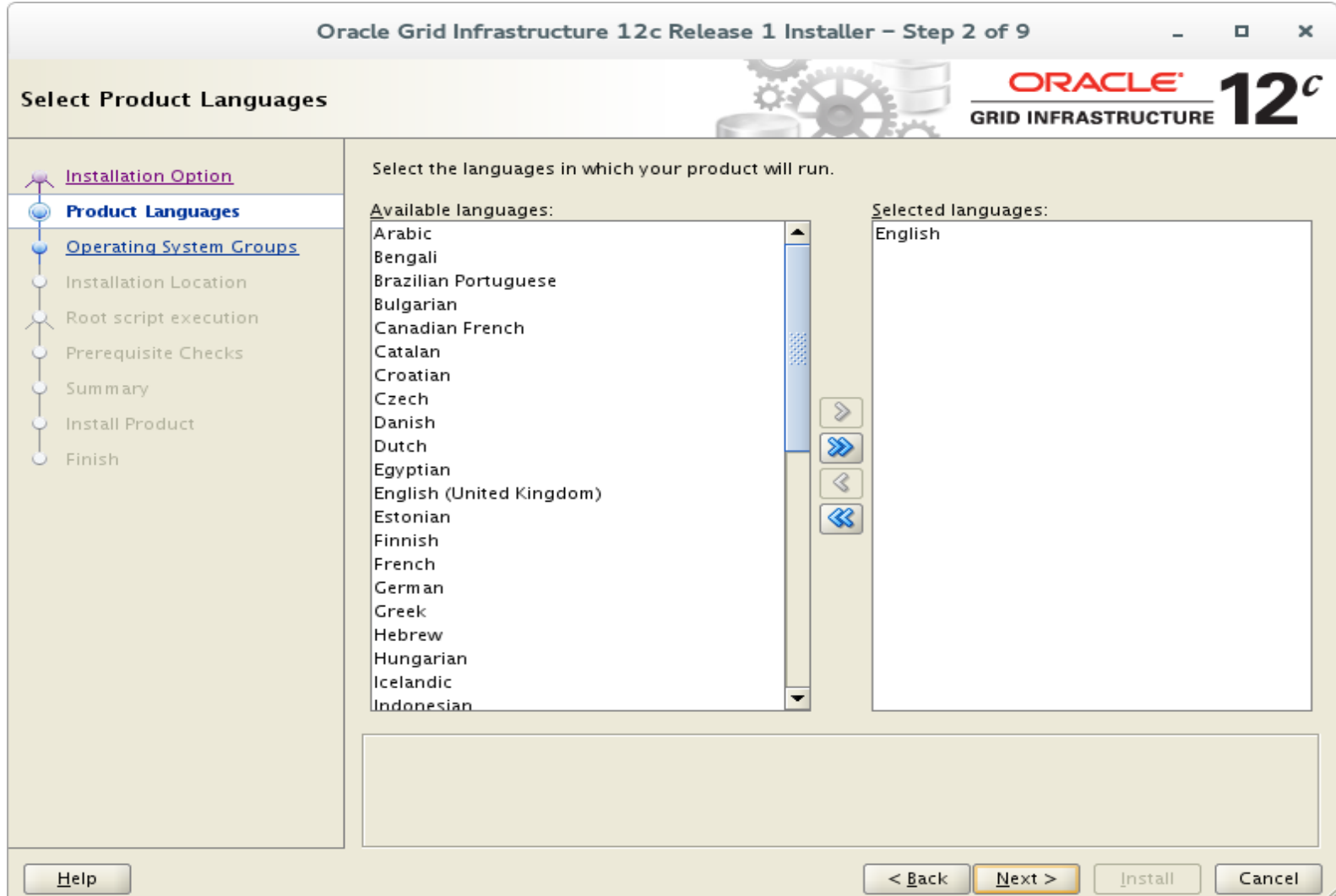
Oracle Grid Infrastructure



Start Installation: grid/runInstaller

Installation

Oracle Grid Infrastructure



Installation

Oracle Grid Infrastructure

Oracle Grid Infrastructure 12c Release 1 Installer – Step 3 of 12

Create ASM Disk Group

Select Disk Group characteristics and select disks

Disk group name: DATA

Redundancy: High Normal External

Allocation Unit Size: 2 MB

Add Disks

Candidate Disks All Disks

	Disk Path	Size (in MB)	Status
<input checked="" type="checkbox"/>	/dev/sdb1	204796	Candidate
<input type="checkbox"/>	/dev/sdb2	204798	Candidate

Change Discovery Path...

Help < Back Next > Install Cancel

Installation

Oracle Grid Infrastructure

Oracle Grid Infrastructure 12c Release 1 Installer – Step 4 of 12

Specify ASM Password

ORACLE 12c
GRID INFRASTRUCTURE

[Installation Option](#)
[Product Languages](#)
[Create ASM Disk Group](#)
ASM Password
[Management Options](#)
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

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

Use game passwords for these accounts

Specify Password: Confirm Password:

Installation

Oracle Grid Infrastructure

Oracle Grid Infrastructure 12c Release 1 Installer – Step 5 of 12

Specify Management Options

ORACLE 12c
GRID INFRASTRUCTURE

[Installation Option](#)
[Product Languages](#)
[Create ASM Disk Group](#)
[ASM Password](#)
Management Options
[Operating System Groups](#)
Installation Location
Root script execution
Prerequisite Checks
Summary
Install Product
Finish

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:

Installation

Oracle Grid Infrastructure

Oracle Grid Infrastructure 12c Release 1 Installer – Step 6 of 12

Privileged Operating System Groups

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

Oracle <u>A</u> SM Administrator (OSASM) Group	dba
Oracle ASM <u>D</u> BA (OSDBA for ASM) Group	oinstall
Oracle ASM <u>O</u> perator (OSOPER for ASM) Group (Optional)	

Installation Option

Product Languages

Create ASM Disk Group

ASM Password

Management Options

Operating System Groups

Installation Location

Root script execution

Prerequisite Checks

Summary

Install Product

Finish

Help

< Back Next > Install Cancel

Installation

Oracle Grid Infrastructure

Oracle Grid Infrastructure 12c Release 1 Installer – Step 7 of 12

Specify Installation Location

Installation Location

- Installation Option
- Product Languages
- Create ASM Disk Group
- ASM Password
- Management Options
- Operating System Groups
- Installation Location**
- Root script execution
- Prerequisite Checks
- Summary
- Install Product
- Finish

Specify a base location for storing all Oracle software and configuration-related files. This location is the Oracle base directory. Create one Oracle base for each operating system user. By default, software and configuration files are installed by version and database name in the Oracle base directory.

Oracle base: Browse...

Specify a location for storing Oracle software files separate from configuration files in the Oracle base directory. This software directory is the Oracle Grid Infrastructure home directory.

Software location: Browse...

Help < Back Next > Install Cancel

Installation

Oracle Grid Infrastructure

Oracle Grid Infrastructure 12c Release 1 Installer – Step 8 of 13

Create Inventory

[Installation Option](#)

[Product Languages](#)

[Create ASM Disk Group](#)

[ASM Password](#)

[Management Options](#)

[Operating System Groups](#)

[Installation Location](#)

Create Inventory

[Root script execution](#)


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 

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

orainventory Group Name: oinstall

Installation

Oracle Grid Infrastructure

Oracle Grid Infrastructure 12c Release 1 Installer – Step 9 of 13

Root script execution configuration

ORACLE 12c
GRID INFRASTRUCTURE

While configuring the software, 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.

Automatically run configuration scripts

Use "root" user credential

Password :

Use sudo

Program path :

User name :

Password :

Installation

Oracle Grid Infrastructure

Oracle Grid Infrastructure 12c Release 1 Installer - Step 10 of 13

Perform Prerequisite Checks

ORACLE 12c
GRID INFRASTRUCTURE

Installation Option
Product Languages
Create ASM Disk Group
ASM Password
Management Options
Operating System Groups
Installation Location
Create Inventory
Root script execution
Prerequisite Checks
Summary
Install Product
Finish

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
Checks		
OS Kernel Parameters	Succeeded	
Packages		
Package: libaio-0.3.104	Ignored	No
Package: gcc-c++-4.3 (x86_64)	Ignored	No
Package: ksh-93t	Ignored	No
Package: libstdc++33-3.3.3	Ignored	No
Package: libstdc++43-devel-4.3.3_20081022	Ignored	No
Package: libstdc++43-4.3.3_20081022	Ignored	No
Package: libgcc43-4.3.3_20081022	Ignored	No

This is a prerequisite condition to test whether the minimum required OS kernel parameters are configured on the system. ([more details](#))

Note: Verify these warnings manually & then select “Ignore”

Installation

Oracle Grid Infrastructure

Oracle Grid Infrastructure 12c Release 1 Installer – Step 11 of 13

Summary

- [Installation Option](#)
- [Product Languages](#)
- [Create ASM Disk Group](#)
- [ASM Password](#)
- [Management Options](#)
- [Operating System Groups](#)
- [Installation Location](#)
- [Create Inventory](#)
- [Root script execution](#)
- [Prerequisite Checks](#)
- Summary**
- Install Product
- Finish

Oracle Grid Infrastructure 12c Release 1 Installer

- Global Settings**
 - Disk Space: required 6.9 GB available 651.24 GB [\[Edit\]](#)
 - Install Option: Install and Configure Oracle Grid Infrastructure for a Standalone Server [\[Edit\]](#)
 - Oracle base for Oracle Grid Infrastructure: /home/oracle [\[Edit\]](#)
 - Grid home: /home/oracle/product/12cR1/grid [\[Edit\]](#)
 - Source Location: /home/SW/12102/grid/install/./stage/products.xml
 - Privileged Operating System Groups: oinstall (OSDBA), dba (OSASM) [\[Edit\]](#)
 - Root script execution configuration: Manual configuration [\[Edit\]](#)
- Inventory information**
 - Inventory location: /home/oracle/orainventory [\[Edit\]](#)
 - Central inventory (orainventory) group: oinstall [\[Edit\]](#)
- Management information**
 - Management method: None [\[Edit\]](#)
- Grid Infrastructure Settings**
 - ASM Disk Group: DATA [\[Edit\]](#)
 - Storage Redundancy: EXTERNAL [\[Edit\]](#)
 - Disks Selected: /dev/sdb1 [\[Edit\]](#)

[Save Response File...](#)

[Help](#) [< Back](#) [Next >](#) [Install](#) [Cancel](#)

Note: Save response file to use later for unattended install.

Installation

Oracle Grid Infrastructure

Oracle Grid Infrastructure 12c Release 1 Installer – Step 12 of 13

Install Product

ORACLE 12c
GRID INFRASTRUCTURE

Progress

73%

Completed 'Prepare for configuration steps'

Status

✓	Install Oracle Grid Infrastructure and Automatic Storage Management for a Stand...	Succeeded
✓	• Prepare	Succeeded
✓	• Copy files	Succeeded
✓	• Link binaries	Succeeded
✓	• Setup	Succeeded
✓	Setup Oracle Base	Succeeded
→	Update Inventory	In Progress
	Execute Root Scripts	Pending
	Install and Configure Oracle Grid Infrastructure for a Standalone Server	Pending

Details Retry Skip

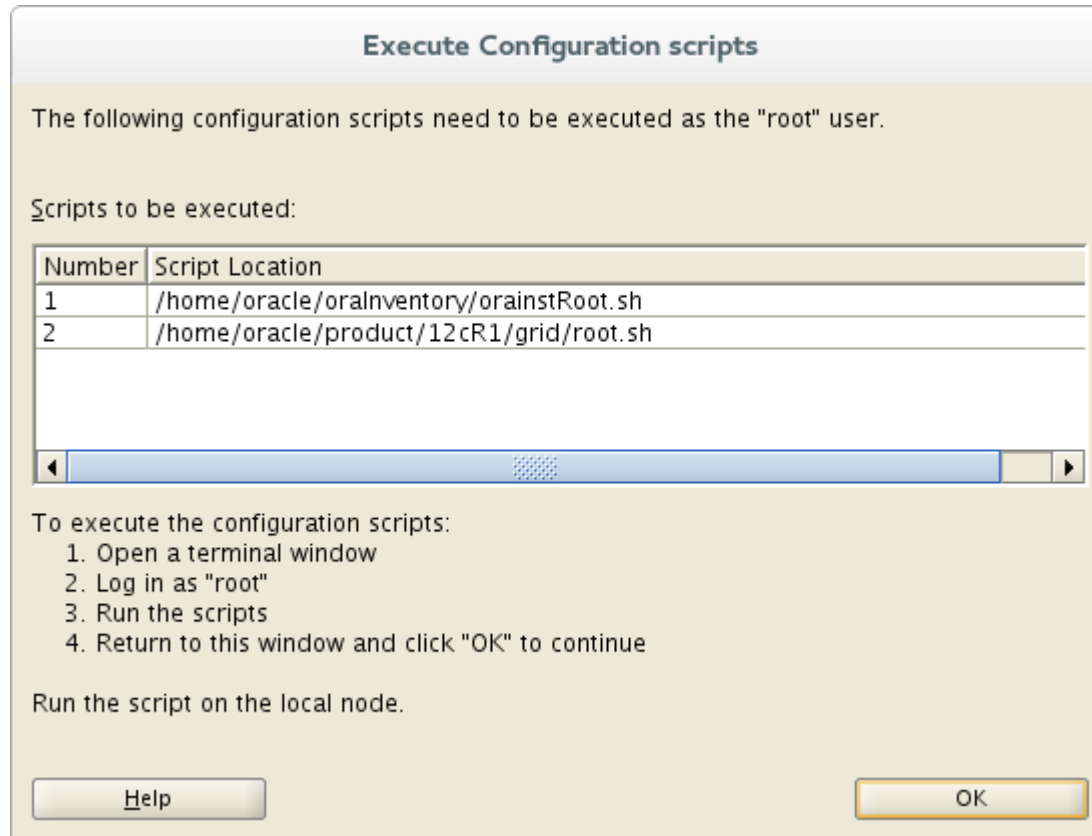
ORACLE 12c
GRID INFRASTRUCTURE

Policy Management
Critical Resources On Demand

Help < Back Next > Install Cancel

Installation

Oracle Grid Infrastructure



Installation

Oracle Grid Infrastructure

```
oracle@sles12:/opt/oracle
File Edit View Search Terminal Help
sles12:/opt/oracle # /home/oracle/product/12cR1/grid/root.sh
Performing root user operation.

The following environment variables are set as:
  ORACLE_OWNER= oracle
  ORACLE_HOME= /home/oracle/product/12cR1/grid

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.
Using configuration parameter file: /home/oracle/product/12cR1/grid/crs/install/
crsconfig_params
LOCAL ADD MODE
Creating OCR keys for user 'oracle', privgrp 'oinstall'..
Operation successful.
LOCAL ONLY MODE
Successfully accumulated necessary OCR keys.
Creating OCR keys for user 'root', privgrp 'root'..
Operation successful.
CRS-4664: Node sles12 successfully pinned.
2014/11/14 13:34:11 CLSRSC-330: Adding Clusterware entries to file 'oracle-ohasd.service'

sles12      2014/11/14 13:35:09      /home/oracle/product/12cR1/grid/cdata/sles12/backup_20141114_
133509.olr      @
CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources on 'sles12'
CRS-2673: Attempting to stop 'ora.evmd' on 'sles12'
CRS-2677: Stop of 'ora.evmd' on 'sles12' succeeded
CRS-2793: Shutdown of Oracle High Availability Services-managed resources on 'sles12' has comple
ted
CRS-4133: Oracle High Availability Services has been stopped.
CRS-4123: Oracle High Availability Services has been started.
2014/11/14 13:35:28 CLSRSC-327: Successfully configured Oracle Restart for a standalone server
```

Installation

Oracle Grid Infrastructure

Oracle Grid Infrastructure 12c Release 1 Installer – Step 12 of 13

Install Product

Progress: 92%

Starting 'Automatic Storage Management Configuration Assistant'

Status:

✓	Install Oracle Grid Infrastructure and Automatic Storage Management for a St...	Succeeded
✓	• Prepare	Succeeded
✓	• Copy files	Succeeded
✓	• Link binaries	Succeeded
✓	• Setup	Succeeded
✓	Setup Oracle Base	Succeeded
✓	Update Inventory	Succeeded
✓	Execute Root Scripts	Succeeded
➔	Install and Configure Oracle Grid Infrastructure for a Standalone Server	In Progress
✓	• Update Inventory	Succeeded
✓	• Oracle Net Configuration Assistant	Succeeded
➔	• Automatic Storage Management Configuration Assistant	In Progress
	• Oracle Cluster Verification Utility	Pending

Details Retry Skip

ORACLE 12^c GRID INFRASTRUCTURE **Grid Computing**
Consolidate on Fast, Reliable, and Scalable Low-Cost Grids

Help < Back Next > Install Cancel

Installation

Oracle Grid Infrastructure



Installation

Oracle Grid Infrastructure

```
oracle@sles12:...uct/12cR1/grid/bin
File Edit View Search Terminal Help
oracle@sles12:/home/oracle/product/12cR1/grid/bin> ps -ef |grep asm
oracle      8350          1  0 13:38 ?          00:00:00  asm_pmon_+ASM
oracle      8352          1  0 13:38 ?          00:00:00  asm_psp0_+ASM
oracle      8354          1  2 13:38 ?          00:00:04  asm_vktm_+ASM
oracle      8358          1  0 13:38 ?          00:00:00  asm_gen0_+ASM
oracle      8360          1  0 13:38 ?          00:00:00  asm_mman_+ASM
oracle      8364          1  0 13:38 ?          00:00:00  asm_diag_+ASM
oracle      8366          1  0 13:38 ?          00:00:00  asm_dia0_+ASM
oracle      8368          1  0 13:38 ?          00:00:00  asm_dbw0_+ASM
oracle      8370          1  0 13:38 ?          00:00:00  asm_lgwr_+ASM
oracle      8372          1  0 13:38 ?          00:00:00  asm_ckpt_+ASM
oracle      8374          1  0 13:38 ?          00:00:00  asm_smon_+ASM
oracle      8376          1  0 13:38 ?          00:00:00  asm_lreg_+ASM
oracle      8378          1  0 13:38 ?          00:00:00  asm_pxmn_+ASM
oracle      8380          1  0 13:38 ?          00:00:00  asm_rbal_+ASM
oracle      8382          1  0 13:38 ?          00:00:00  asm_gmon_+ASM
oracle      8384          1  0 13:38 ?          00:00:00  asm_mmon_+ASM
oracle      8386          1  0 13:38 ?          00:00:00  asm_mml_+ASM
oracle      8745          1  0 13:38 ?          00:00:00  asm_fd00_+ASM
oracle      9012      6753  0 13:41 pts/2      00:00:00  grep  --color=auto  asm
oracle@sles12:/home/oracle/product/12cR1/grid/bin> 
```

Installation Oracle Database

Installation

SUSE Linux Enterprise Server 12

```
oracle@sles12:.../12.0.1.2/database
File Edit View Search Terminal Help
oracle@sles12:/home/SW/12.0.1.2/database> cat /etc/hosts
#
# hosts          This file describes a number of hostname-to-address
#                mappings for the TCP/IP subsystem.  It is mostly
#                used at boot time, when no name servers are running.
#                On small systems, this file can be used instead of a
#                "named" name server.
# Syntax:
#
# IP-Address    Full-Qualified-Hostname  Short-Hostname
#
127.0.0.1      localhost
# special IPv6 addresses
::1           localhost ipv6-localhost ipv6-loopback
fe00::0       ipv6-localnet
ff00::0       ipv6-mcastprefix
ff02::1       ipv6-allnodes
ff02::2       ipv6-allrouters
ff02::3       ipv6-allhosts
192.168.0.10  sles12.site sles12
oracle@sles12:/home/SW/12.0.1.2/database> env |grep ORA
ORACLE_SID=orcl
ORACLE_BASE=/home/oracle
ORACLE_HOME=/home/oracle/product/12cR1/db
oracle@sles12:/home/SW/12.0.1.2/database>
```

Note: Static IP Address

Installation

Oracle Database 12c

Oracle Database 12c Release 1 Installer – Step 1 of 9

Configure Security Updates

ORACLE DATABASE 12c

Configure Security Updates

- Configure Security Updates**
- Installation Option
- Grid Installation Options
- Install Type
- Typical Installation
- Prerequisite Checks
- Summary
- Install Product
- Finish

Provide your email address to be informed of security issues, install the product and initiate configuration manager. [View details.](#)

Email:

Easier for you if you use your My Oracle Support email address/username.

I wish to receive security updates via My Oracle Support.

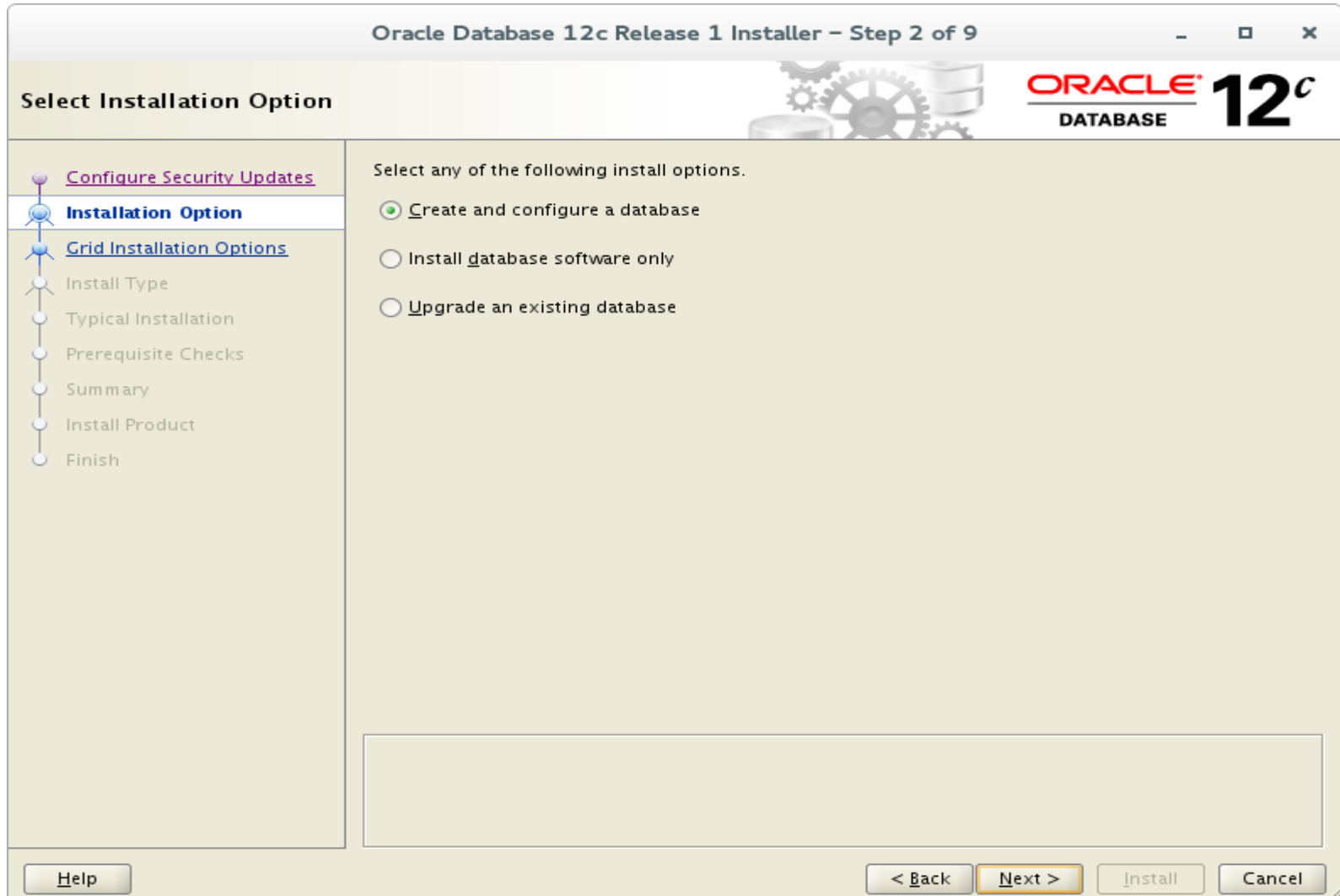
My Oracle Support Password:

Help < Back Next > Install Cancel

Start Installation: database/runInstaller

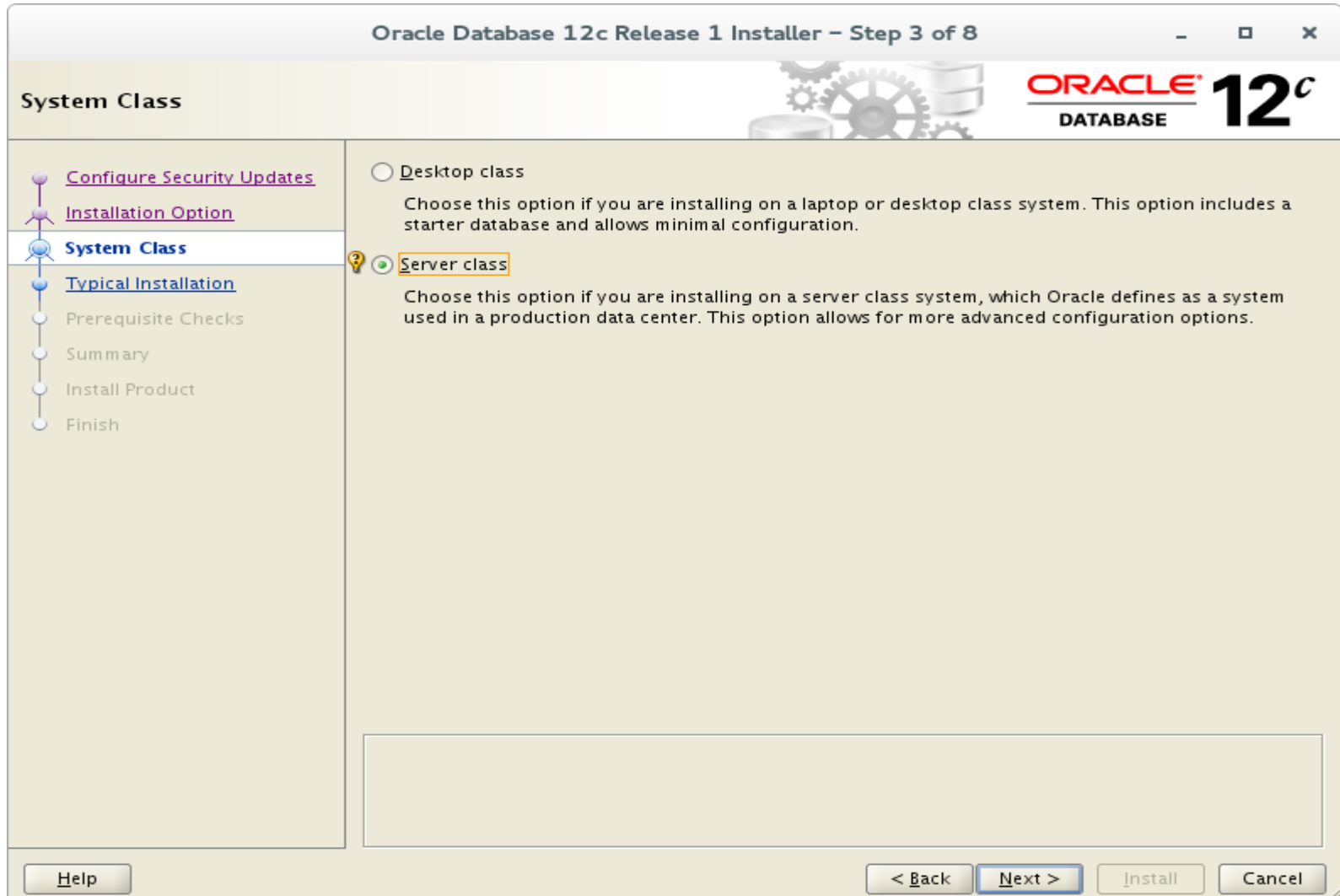
Installation

Oracle Database 12c



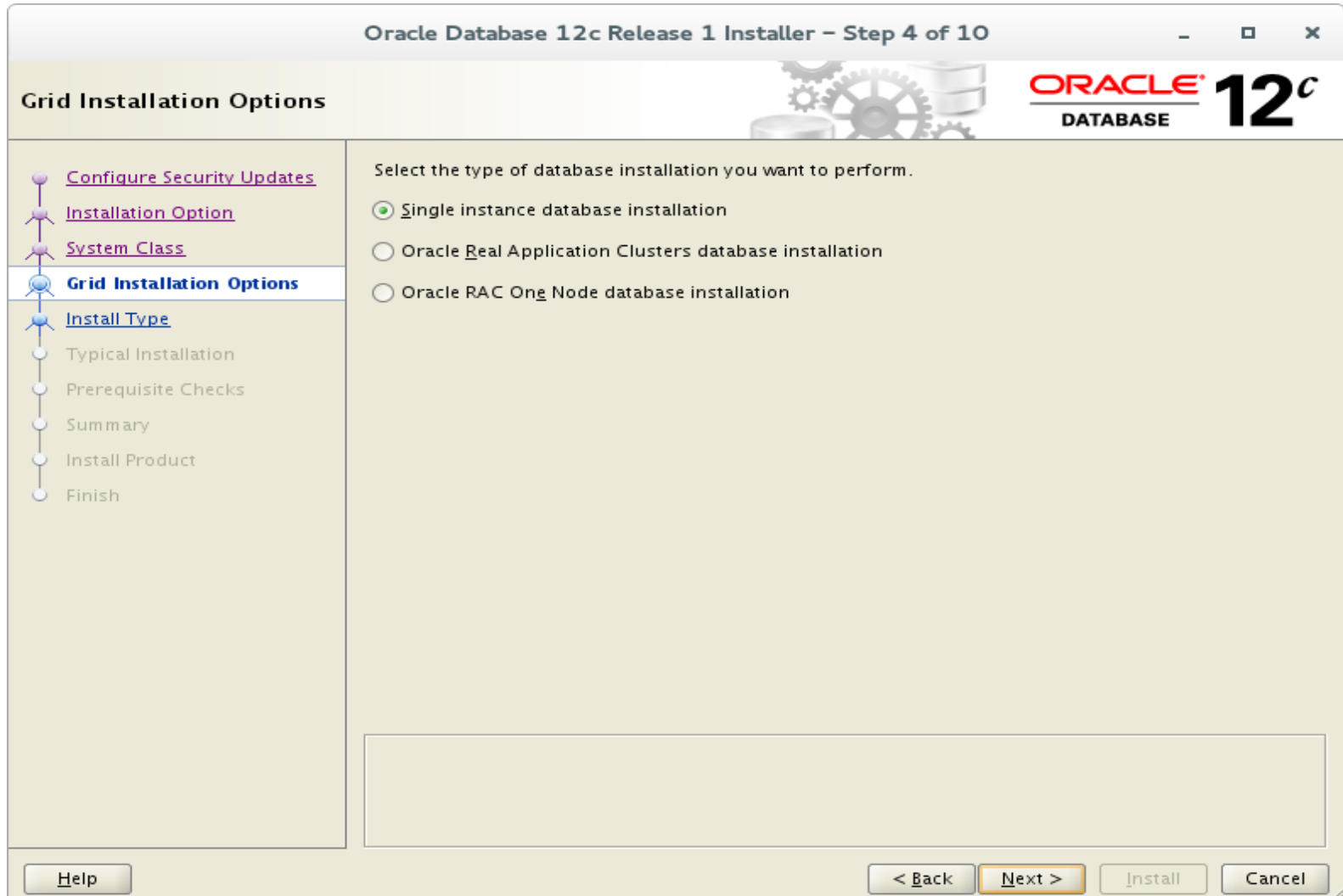
Installation

Oracle Database 12c



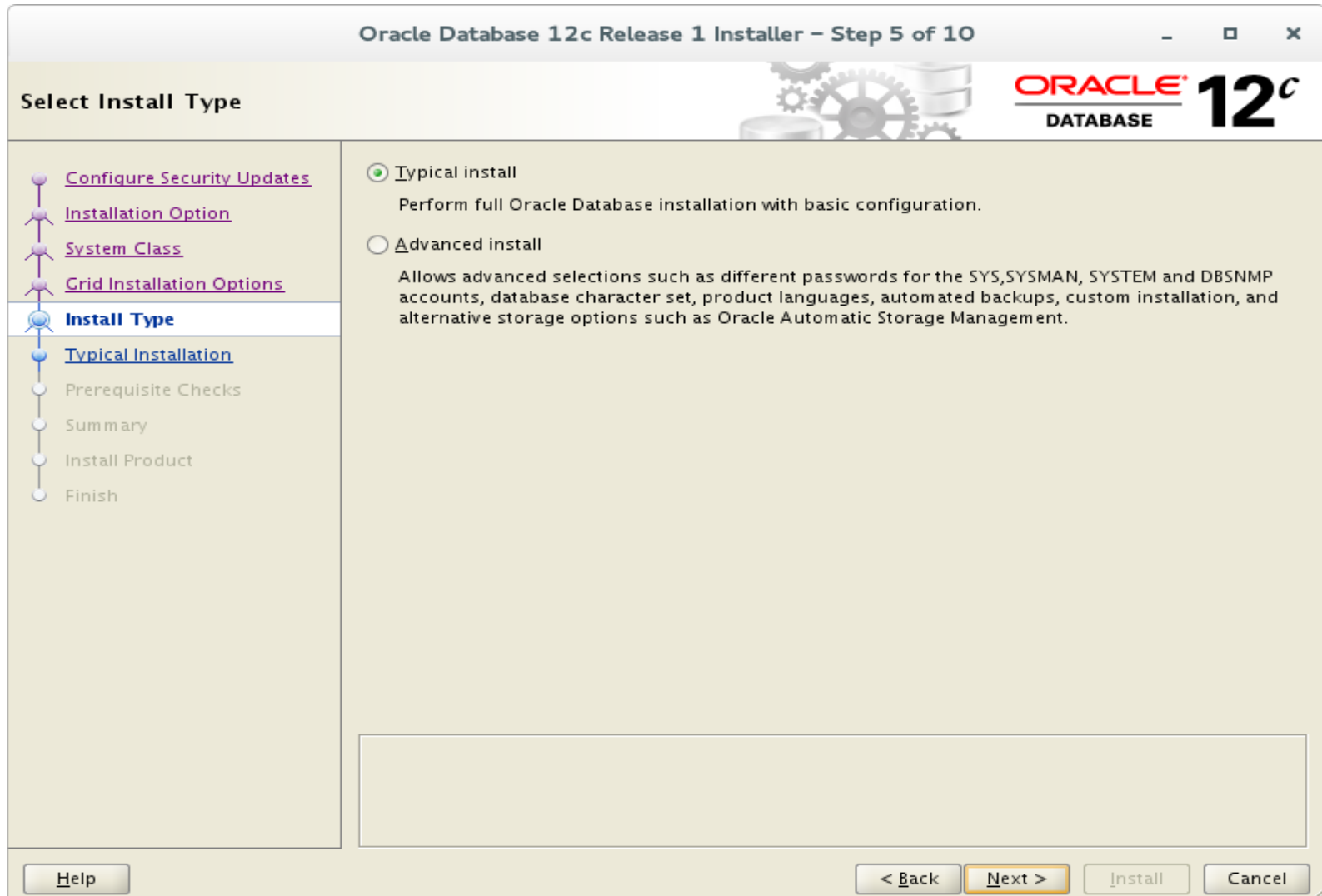
Installation

Oracle Database 12c



Installation

Oracle Database 12c



Installation

Oracle Database 12c

Oracle Database 12c Release 1 Installer – Step 6 of 10

ORACLE DATABASE 12^c

Typical Install Configuration

- [Configure Security Updates](#)
- [Installation Option](#)
- [System Class](#)
- [Grid Installation Options](#)
- [Install Type](#)
- Typical Installation**
- [Prerequisite Checks](#)
- Summary
- Install Product
- Finish

Perform full database installation with basic configuration.

Oracle base: Browse...

Software location: Browse...

Storage type:

Database file location: Browse...

Database edition:

OSDBA group:

Global database name:

Administrative password:

Confirm password:

Service name:

Create as Container database

Pluggable database name:

Installation

Oracle Database 12c

Oracle Database 12c Release 1 Installer – Step 7 of 11

Create Inventory

[Configure Security Updates](#)

[Installation Option](#)

[System Class](#)

[Grid Installation Options](#)

[Install Type](#)

[Typical Installation](#)

Create Inventory


[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:

Installation

Oracle Database 12c

Oracle Database 12c Release 1 Installer – Step 8 of 11

Perform Prerequisite Checks

ORACLE DATABASE 12c

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
Checks		
OS Kernel Parameters	Succeeded	
Packages		
Package: gcc-c++-4.3 (x86_64)	Ignored	No
Package: libaio-0.3.104	Ignored	No
Package: ksh-93t	Ignored	No
Package: libstdc++33-3.3.3	Ignored	No
Package: libstdc++43-devel-4.3.3_20081022	Ignored	No
Package: libstdc++43-4.3.3_20081022	Ignored	No
Package: libgcc43-4.3.3_20081022	Ignored	No

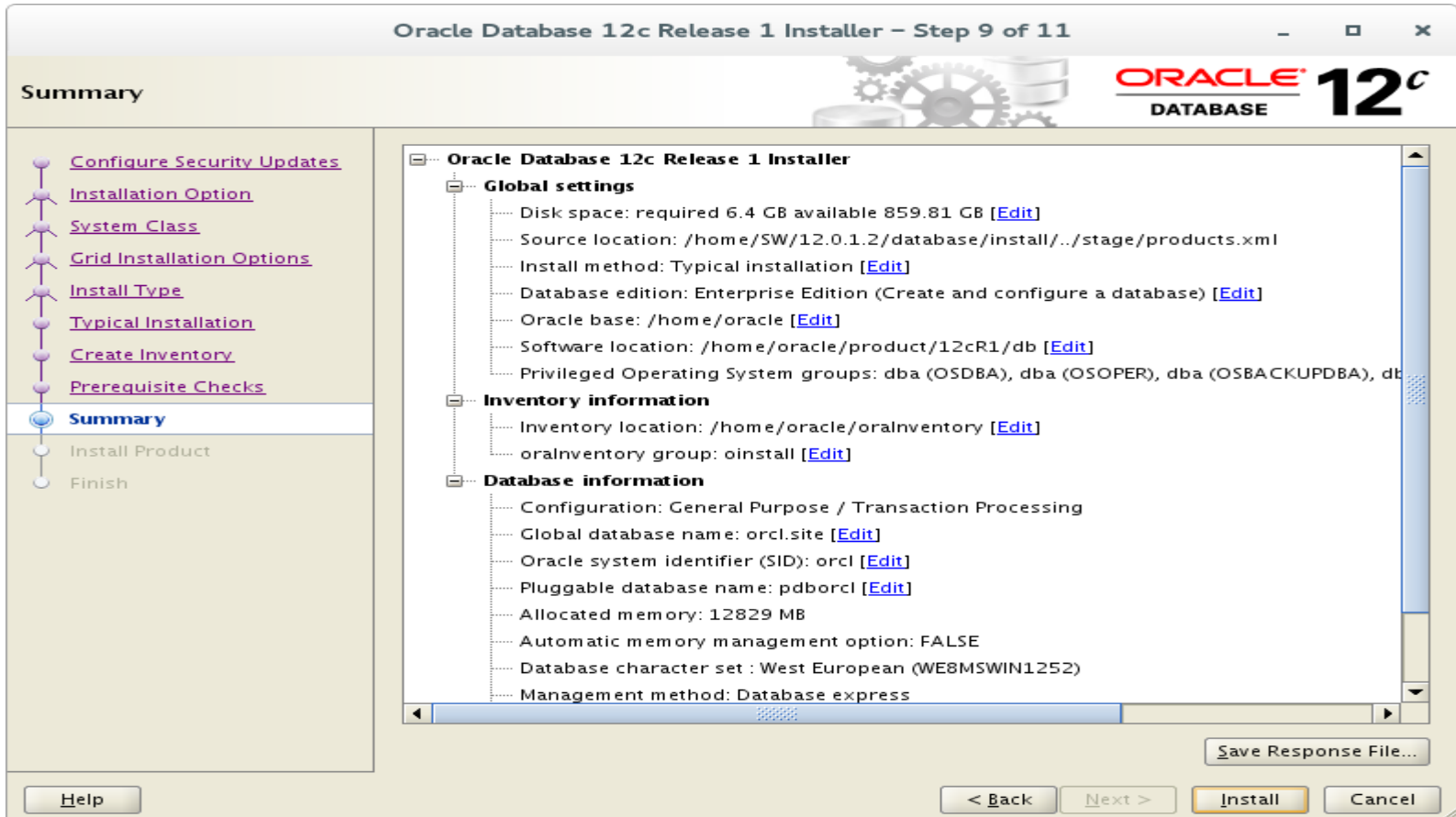
This is a prerequisite condition to test whether the minimum required OS kernel parameters are configured on the system. [more details](#)

Help < Back Next > Install Cancel

Note: Verify these warnings manually & then select “Ignore”

Installation

Oracle Database 12c



Note: Save response file to use later for unattended install.

Installation

Oracle Database 12c

Oracle Database 12c Release 1 Installer – Step 10 of 11

Install Product

ORACLE DATABASE 12^c

Progress: 61%
Saving inventory

Status:

➔ Oracle Database installation	In Progress
✓ • Prepare	Succeeded
✓ • Copy files	Succeeded
✓ • Link binaries	Succeeded
➔ • Setup	In Progress
Setup Oracle Base	Pending
Execute Root Scripts	Pending
Oracle Database configuration	Pending

Details Retry Skip

ORACLE DATABASE 12^c

Help < Back Next > Install Cancel

Installation

Oracle Database 12c

Execute Configuration scripts

The following configuration scripts need to be executed as the "root" user.

Scripts to be executed:

Number	Script Location
1	/home/oracle/orainventory/orainstRoot.sh
2	/home/oracle/product/12cR1/db/root.sh

To execute the configuration scripts:

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

[Help](#) [OK](#)

```
sles12:/opt/oracle
...
aInventory/orainstRoot.sh
/oraInventory.
oup.
ons for world.
raInventory to oinstall.
ete.
product/12cR1/db/root.sh
...
are set as:
ct/12cR1/db
bin directory: [/usr/local/bin]:
...
...
...
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.
sles12:/opt/oracle #
```

Installation

Oracle Database 12c

Oracle Database 12c Release 1 Installer – Step 10 of 11

Install Product

ORACLE DATABASE 12^c

Progress

92%

Starting 'Oracle Database Configuration Assistant'

Status

✓	Oracle Database installation	Succeeded
✓	• Prepare	Succeeded
✓	• Copy files	Succeeded
✓	• Link binaries	Succeeded
✓	• Setup	Succeeded
✓	Setup Oracle Base	Succeeded
✓	Execute Root Scripts	Succeeded
➔	Oracle Database configuration	In Progress
✓	• Oracle Net Configuration Assistant	Succeeded
➔	• Oracle Database Configuration Assistant	In Progress

Details Retry Skip

ORACLE DATABASE 12^c

Help < Back Next > Install Cancel

Installation

Oracle Database 12c

The image shows two overlapping windows from the Oracle Database Configuration Assistant (DBCA). The background window displays the progress of cloning a database named "orcl.site", which is 73% complete. A table below the progress bar lists the steps: "Copying database files", "Creating and starting Oracle instance", "Completing Database Creation", and "Creating Pluggable Databases". The first three steps are marked with green checkmarks, while the last step has a red clock icon. At the bottom of this window are buttons for "Activity Log", "Alert Log", and "Stop".

The foreground window shows the completion message: "Database creation complete. For details check the logfiles at: /home/oracle/cfgtoollogs/dbca/orcl." It provides the following database information:

- Global Database Name: orcl.site
- System Identifier(SID): orcl
- Server Parameter File name: /home/oracle/product/12cR1/db/dbs/spfileorcl.ora

The EM Database Express URL is <https://sles12.site:5500/em>. A note states: "Note: All database accounts except SYS and SYSTEM are locked. Select the Password Management button to view a complete list of locked accounts or to manage the database accounts. From the Password Management window, unlock only the accounts you will use. Oracle strongly recommends changing the default passwords immediately after unlocking the account." A "Password Management..." button is visible at the bottom right of this window, and an "OK" button is at the bottom center.

Installation

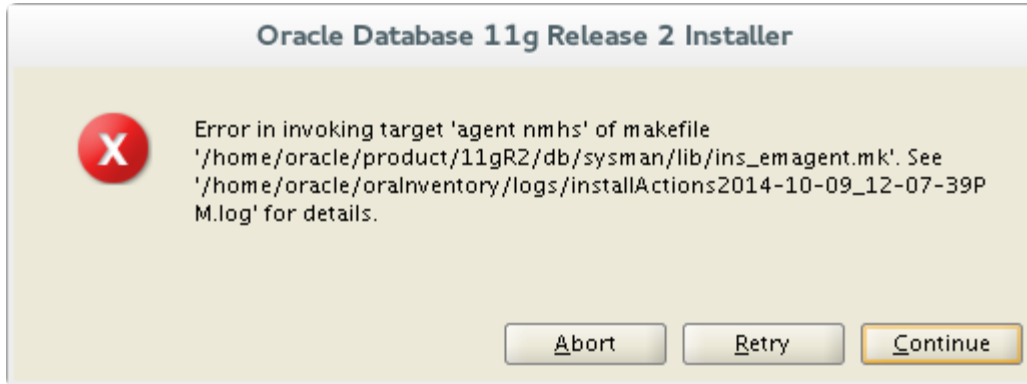
Oracle Database 12c



Note: Change Oracle Database start settings in `/etc/oratab` & `/etc/sysconfig/oracle`, so that database starts after server reboot.

Installation

Oracle Database 11gR2

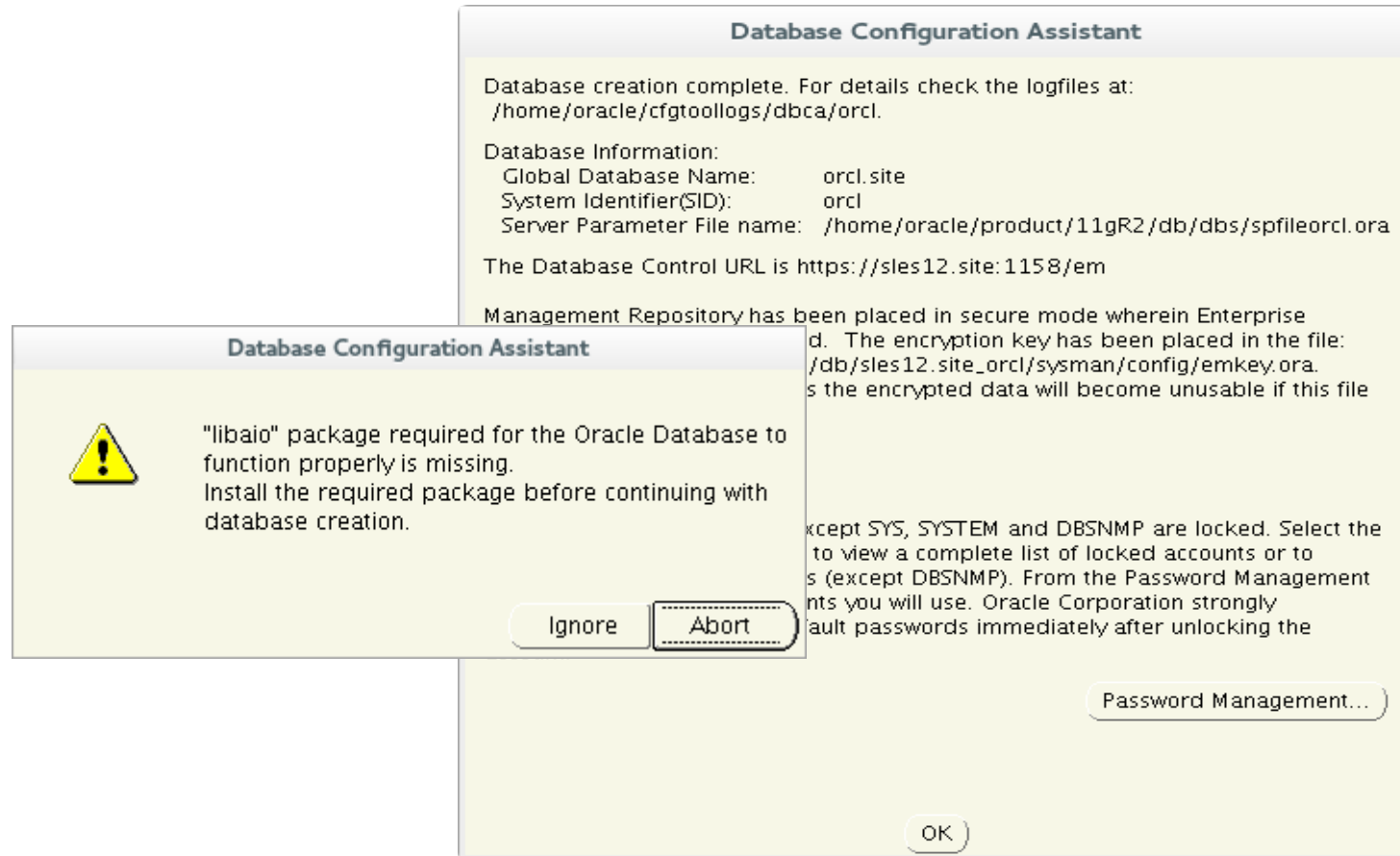


```
oracle@sles12:...11gR2/db/sysman/lib
File Edit View Search Terminal Help
oracle@sles12:~> cd /home/oracle/product/11gR2/db
oracle@sles12:/home/oracle/product/11gR2/db> cd sysman/lib/
oracle@sles12:/home/oracle/product/11gR2/db/sysman/lib> cp ins_emagent.mk ins_emagent.mk.bak
oracle@sles12:/home/oracle/product/11gR2/db/sysman/lib> vi ins_emagent.mk
oracle@sles12:/home/oracle/product/11gR2/db/sysman/lib> diff ins_emagent.mk ins_emagent.mk.bak
176c176
<      $(MK_EMAGENT_NMECTL) -lnnz11
---
>      $(MK_EMAGENT_NMECTL)
oracle@sles12:/home/oracle/product/11gR2/db/sysman/lib> □
```

Note: Fix above error & select “Retry”

Installation

Oracle Database 11gR2



Note: Ignore this error as libaio1 is new name for libaio

Tuning

Tuning

Optimize

- Storage/File System
- SUSE Linux Enterprise Server OS
 - iostat/vmstat/top
 - I/O scheduler
 - elevator=cfq/noop/deadline
 - echo cfq/noop/deadline > /sys/block/DEVICE/queue/scheduler
- Oracle Database
 - Configure & use “hugepages”
 - Distribute “redo log” files

Tuning

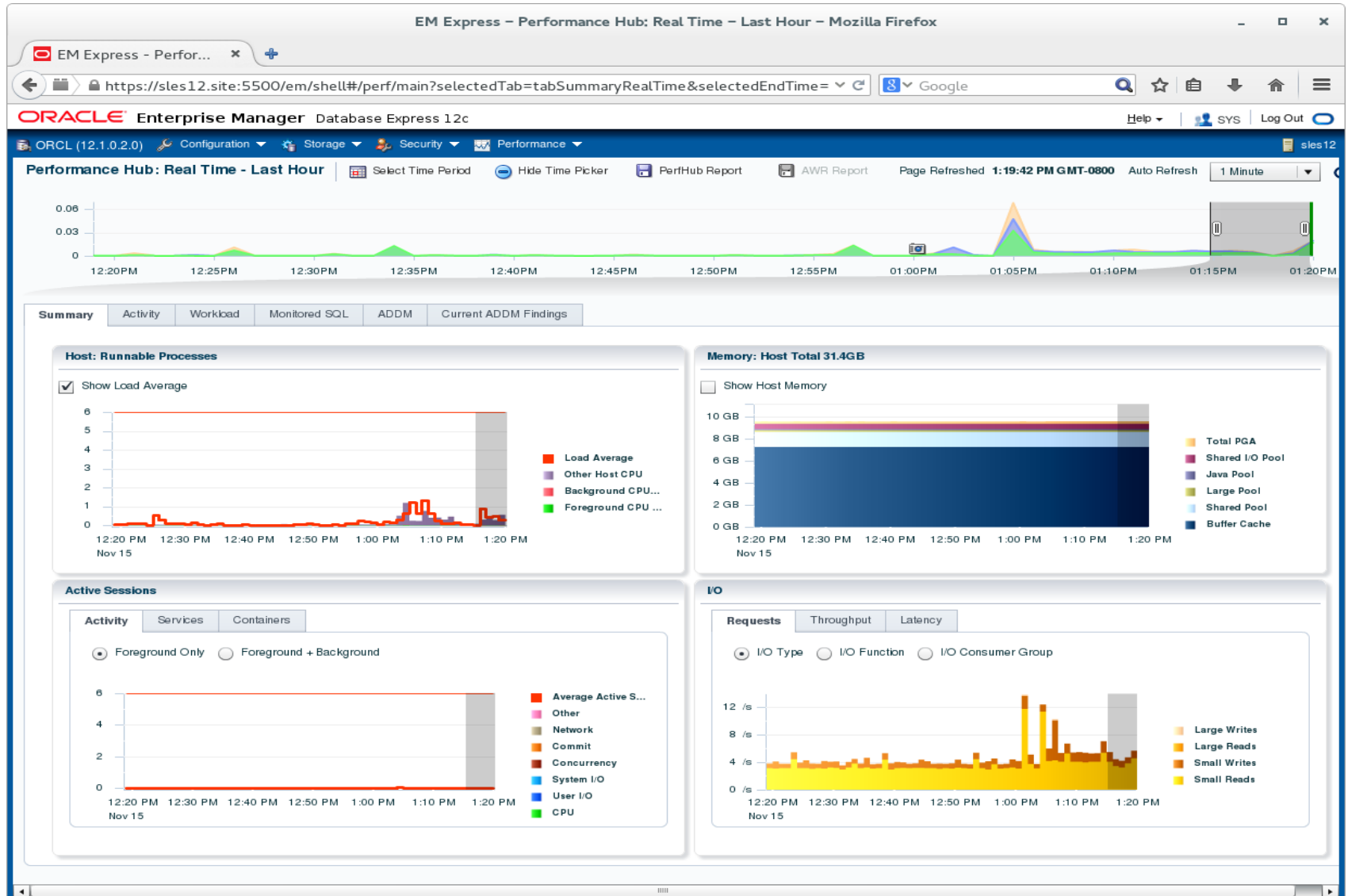
Server Report

- Oracle Enterprise Manager
 - Configure Parameters
 - Analyze Performance
- AWR (Automatic Workload Repository)
 - Create Snapshot:

```
SQL>EXEC DBMS_WORKLOAD_REPOSITORY.create_snapshot;  
- run workload/test  
SQL>EXEC DBMS_WORKLOAD_REPOSITORY.create_snapshot;
```
 - Generate html report (in current working directory):
 - SQL>@`$ORACLE_HOME/rdbms/admin/awrrpt.sql`

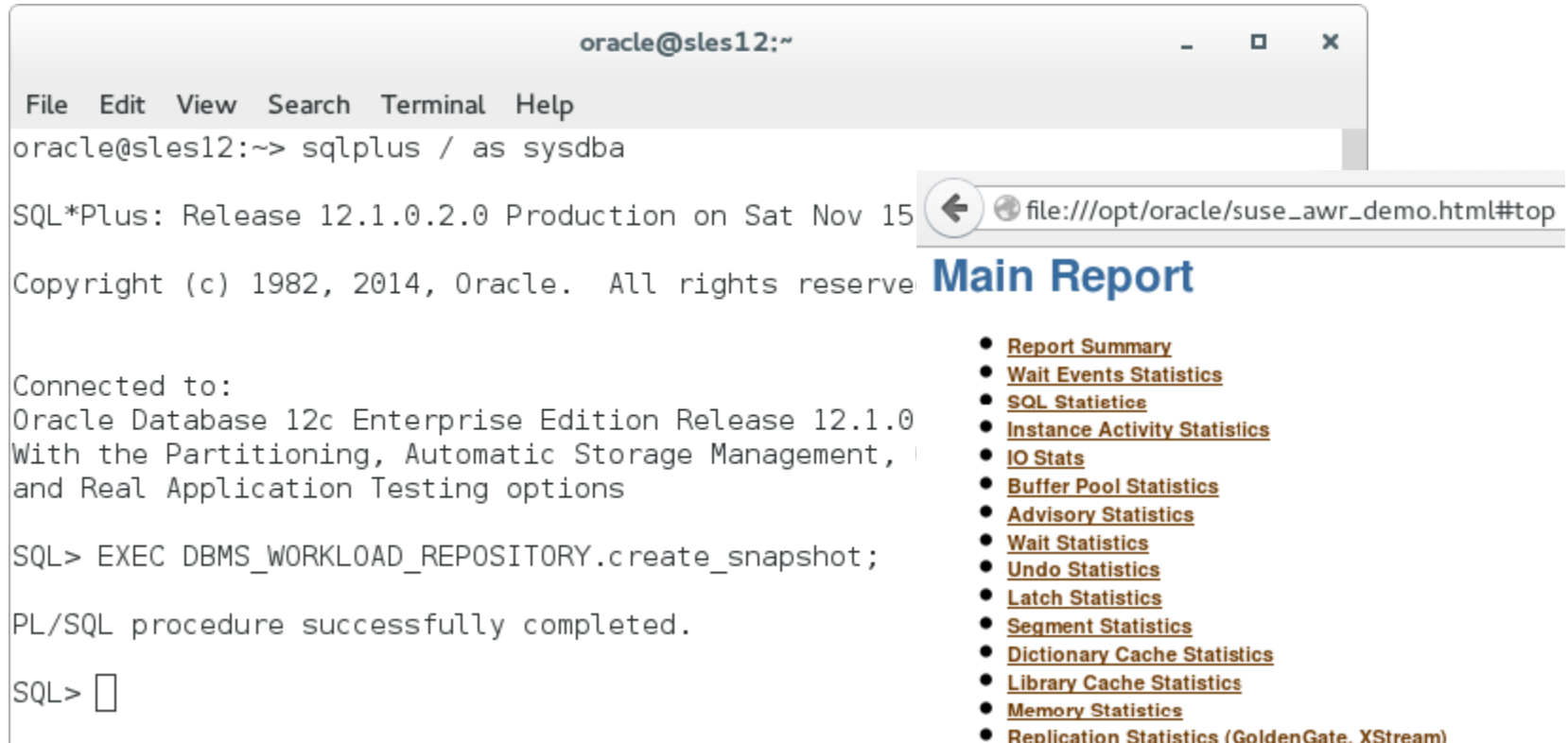
Tuning

Oracle Enterprise Manager



Tuning

AWR Snapshot



The image shows a terminal window and a browser window. The terminal window, titled 'oracle@sles12:~', shows the following commands and output:

```
File Edit View Search Terminal Help
oracle@sles12:~> sqlplus / as sysdba

SQL*Plus: Release 12.1.0.2.0 Production on Sat Nov 15
Copyright (c) 1982, 2014, Oracle. All rights reserved.

Connected to:
Oracle Database 12c Enterprise Edition Release 12.1.0
With the Partitioning, Automatic Storage Management,
and Real Application Testing options

SQL> EXEC DBMS_WORKLOAD_REPOSITORY.create_snapshot;

PL/SQL procedure successfully completed.

SQL> █
```

The browser window, titled 'file:///opt/oracle/suse_awr_demo.html#top', displays the 'Main Report' page. The page title is 'Main Report' in blue text. Below the title is a list of 18 items, each preceded by a black dot and underlined text:

- [Report Summary](#)
- [Wait Events Statistics](#)
- [SQL Statistic](#)
- [Instance Activity Statistics](#)
- [IO Stats](#)
- [Buffer Pool Statistics](#)
- [Advisory Statistics](#)
- [Wait Statistics](#)
- [Undo Statistics](#)
- [Latch Statistics](#)
- [Segment Statistics](#)
- [Dictionary Cache Statistics](#)
- [Library Cache Statistics](#)
- [Memory Statistics](#)
- [Replication Statistics \(GoldenGate, XStream\)](#)
- [Streams Statistics](#)
- [Resource Limit Statistics](#)
- [Shared Server Statistics](#)
- [init.ora Parameters](#)
- [Active Session History \(ASH\) Report](#)
- [ADDM Reports](#)

Tuning

AWR Demo Report

AWR Report for DB: ORCL, Inst: orcl, Snaps: 9-11 - Mozilla Firefox

EM Express - Perform... x AWR Report for DB: OR... x

file:///opt/oracle/suse_awr_demo.html

WORKLOAD REPOSITORY report for

DB Name	DB id	Instance	Inst num	Startup Time	Release	RAC
ORCL	1391406528	orcl	1	15-Nov-14 11:11	12.1.0.2.0	NO

Host Name	Platform	CPUs	Cores	Sockets	Memory (GB)
sles12	Linux x86 64-bit	12	6	1	31.43

	Snap Id	Snap Time	Sessions	Cursors/Session
Begin Snap:	9	15-Nov-14 13:00:29	38	.8
End Snap:	11	15-Nov-14 13:29:31	37	1.0
Elapsed:		29.03 (mins)		
DB Time:		0.47 (mins)		

Report Summary

Load Profile

	Per Second	Per Transaction	Per Exec	Per Call
DB Time(s):	0.0	0.1	0.00	0.01
DB CPU(s):	0.0	0.0	0.00	0.01
Background CPU(s):	0.0	0.0	0.00	0.00
Redo size (bytes):	12,255.7	35,581.3		
Logical read (blocks):	216.3	628.0		
Block changes:	58.8	170.6		
Physical read (blocks):	1.8	5.3		
Physical write (blocks):	0.8	2.3		
Read IO requests:	1.1	3.3		
Write IO requests:	0.4	1.1		
Read IO (MB):	0.0			
Write IO (MB):	0.0			
IM scan rows:	0.0	0.0		
Session Logical Read IM:				
User calls:	1.2	3.6		
Parses (SQL):	11.7	34.1		
Hard parses (SQL):	0.6	1.6		
SQL Work Area (MB):	0.3	1.0		
Logons:	0.3	0.8		
Executes (SQL):	37.0	107.5		
Rollbacks:	0.0	0.0		
Transactions:	0.3			

Installation & Tuning

Helpful Documents

- Oracle Database Installation (11gR2/12cR1)
 - http://ftp.suse.com/pub/partners/oracle/docs/OracleDB_on_SLES12.pdf
- SUSE Linux Enterprise System Analysis & Tuning
 - https://www.suse.com/documentation/sles-12/pdfdoc/book_sle_tuning/book_sle_tuning.pdf
- Oracle Database Performance Tuning
 - <http://docs.oracle.com/database/121/TGDBA/E49058-05.pdf>

SUSE Linux – Misc.

Oracle Software and Support

- SUSE Software
 - <http://www.suse.com/download-linux>
 - <http://www.suse.com/oracle>
- Oracle Software
 - <http://download.oracle.com>
 - <https://edelivery.oracle.com/>
- Oracle Support
 - <http://support.oracle.com> (Metalink)



ORACLE®

Questions & Answers

Thank you.





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