Oracle RAC 11.2.0.4.0 on SUSE Linux Enterprise Server 12 - x86_64



Table of Contents

Introduction	3
Hardware and Software Requirements	3
Hardware Requirements.	3
Software Requirements	3
Testing 4-node cluster information	3
Prerequisites	4
Install SUSE Linux Enterprise Server 12 on each cluster node	4
Network configuration for Oracle RAC install	4
Oracle RAC Installation	5
Installing Oracle Grid Infrastructure	5
Installing Oracle Database	30
Additional Comments	61

Introduction

This documentation provides the details for install Oracle RAC 11.2.0.4.0 on SUSE Linux Enterprise Server 12 OS. Here, x86_64 version of both Oracle Database 11gR2 Enterprise and SUSE Linux Enterprise Server is used. Similar steps applies to other platforms(x86, ia64, etc.). If you encounter any problem or have general question, please post your query to suse-oracle@listx.novell.com.

The oracle offical product documentation available at: <u>http://docs.oracle.com/en/</u>

Hardware and Software Requirements

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 12 SP1 (x86_64) (<u>http://download.suse.de/install</u>)

Oracle

• Oracle Database 11g Release 2 (11.2.0.4.0) x86_64 (http://www.oracle.com/technetwork/indexes/downloads/index.html#database)

Testing 4-node cluster information

HP DL360 Gen9 Server (Intel Xeon 2x12 core ~ 48 CPU), 64GB RAM 4 NIC per server (two bonded as active/passive) + Static IP Address Local HDD (500 GB) Three shared SAN Partition (ASM: 30GB & NFS:400 GB, Other:600GB) SUSE Linux Enterprise Server 12 SP1 (x86_64) Kernel version: 3.12.49-11-default

Prerequisites

1. Install SUSE Linux Enterprise Server 12 on each cluster node.

Follow the SUSE official document (URL:<u>https://www.suse.com/documentation/sles-12/</u>) to Install SLES 12 (x86_64) on each node in the cluster.

2. Network configuration for Oracle RAC installation as follows:

#Private:

10.1.1.1	c2n1-priv
10.1.1.2	c2n2-priv
10.1.1.3	c2n3-priv
10.1.1.4	c2n4-priv

#Public:

137.65.135.72c2n1.provo.novell.com c2n1137.65.135.73c2n2.provo.novell.com c2n2137.65.135.74c2n3.provo.novell.com c2n3137.65.135.75c2n4.provo.novell.com c2n4

Virtual

137.65.135.76	c2n1-vip	c2n1-vip.provo.novell.com
137.65.135.77	c2n2-vip	c2n2-vip.provo.novell.com
137.65.135.78	c2n3-vip	c2n3-vip.provo.novell.com
137.65.135.79	c2n4-vip	c2n4-vip.provo.novell.com

#SCAN:

c2-scan.provo.novell.com (137.65.135.87) c2-scan.provo.novell.com (137.65.135.148) c2-scan.provo.novell.com (137.65.135.149)

Oracle RAC Installation

1. Installing Oracle Grid Infrastructure.

1-1. Login to the SLES 12 64-bit OS as a non-admin user. Download the Oracle Database 11g Release 2 Grid Infrastructure (11.2.0.4.0) for Linux x86-64.

1-2. Extract grid.zip and run the installer './runInstaller' from Gird ShipHome.

Install Flow:

1). Download Software Updates.

Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 1 of 10 ×		
Download Software Update		
Download Software Updates Apply Software Updates Installation Option Installation Type Cluster Configuration Install Locations Prerequisite Checks Summary Install Product Finish	Devenload software updates for this installation. Software updates consist of recommended updates to the installer system requirement checks, PatchSet Updates (PSUs), and other recommended patches. Select one of the following options: Use My Oracle Support credentials for download My Oracle Support user name: My Oracle Support password: Proxy Settings Use pre-gownloaded software updates Location: Browse	
Help	< <u>B</u> ack <u>N</u> ext > Install Cancel	

Select one of the options, then click Next to continue.

2). Select Installation Option.

Oracle	Grid Infrastructure - Setting up Grid Infrastructure - Step 2 of 9 ×
Select Installation Option	
🔍 Download Software Updates	Select any of the following installation options
Installation Option	\odot Install and Configure Oracle Grid Infrastructure for a <u>C</u> luster
🔍 Installation Type	Configure Oracle Grid Infrastructure for a Standalone Server
🕂 Cluster Configuration	
↓ Install Locations	Upgrade Oracle Grid Infrastructure or Oracle Automatic Storage Management
Y Prerequisite Checks	$ eal \sim$ Install Oracle <u>G</u> rid Infrastructure Software Only
y Summary	
unstall Product	
U Finish	
Help	< <u>Back</u> <u>Next</u> Install Cancel

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

3). Select Installation Type.

Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 3 of 9 ×		
Select Installation Type		
 Download Software Updates Installation Option Installation Type Cluster Configuration Install Locations Prerequisite Checks Summary Install Product Finish 	 Typical Installation Perform a full grid infrastructure installation with basic configuration. Advanced Installation Allows advanced configuration options such as alternative storage choices, additional networking flexibility, integration with IPMI, and more role allocation of Oracle Automatic Storage Management system privileges. 	
Help	< <u>Back</u> _Install Cancel	

Choose option "Advanced Installation", then click Next to continue.

4). Select Product Languages.

Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 4 of 10 ×			×
Select Product Languages			g
Download Software Updates Installation Option Installation Type Product Languages Operating System Groups Installation Location Prerequisite Checks Summary Install Product Finish	Select the languages in which your proc	duct will run. Selected Languages: Arabic Bengali Brazilian Portuguese Bulgarian Canadian French Catalan Croatian Cecch Danish Outch Egyptian English French Careek Hebrew Hungarian Icelandir	
Help		< <u>B</u> ack <u>N</u> ext > Install Ca	ncel

Select all languages, then click $\ensuremath{\textit{Next}}$ to continue.

5). Grid Plug and Play Information.

Oracle	Grid Infrastruct	ure – Setting up Grid Infrast	ructure – Step	5 of 16 ×
Grid Plug and Play Informa	ation			DATABASE 118
 Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option OCR Storage Voting Disk Storage Operating System Groups Installation Location Prerequisite Checks Summary Install Product Finish 	Single Client Ac the cluster as a <u>C</u> luster Name: <u>SCAN Name:</u> SC <u>AN Port:</u> <u>Configure Cl</u> <u>GNS Sub Dor</u> GNS <u>VIP Add</u>	cess Name (SCAN) allows clients to twole. Client connect requests to the c2-cluster c2-scan.provo.novell.com 1521	use one name in c SCAN name can	onnection strings to connect to
<u>H</u> elp			< <u>B</u> ack	Next > Install Cancel

Fill in the information as seen above, then click **Next** to continue.

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

6). Cluster Node Information.

Infrastructure with their Public Hostname and and DHCP is enabled, then the Virtual Hostname Virtual Hostname In1-vip.provo.novell.com In2-vip.provo.novell.com In3-vip.provo.novell.com
Virtual Hostname ?n1-vip.provo.novell.com ?n2-vip.provo.novell.com ?n3-vip.provo.novell.com
?n1-vip.provo.novell.com ?n2-vip.provo.novell.com ?n3-vip.provo.novell.com
2nZ-vip.provo.novell.com 2n3-vip.provo.novell.com
tho-wip.provo.noven.com
n4-vin nrovo novell com
Configuration File) <u>Add</u> <u>E</u> dit, <u>R</u> emov
(

Provide the list of nodes with their public hostname and virtual hostname, then click **Next** to continue.

7). Specify Network Interface Usage.

Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 7 of 16 ×			
Specify Network Interface U	Jsage		ORACLE 118
イ Download Software Updates イ Installation Option イ Installation Type Product Languages	Identify the planned use for each Use. Private interfaces are used b If there is more than one subnet associate the interface name with	global interface shown in the box by Oracle Grid Infrastructure for in associated with an interface, then o h the additional subnets.	below as Public, Private, or Do Not ternode traffic. change the interface's attributes to
Grid Plug and Play	Interface Name	Subnet	Interface Type
Cluster Node Information	bond0	10.1.1.0	Private 💌
Network Interface Usage	DONUL	157.65.155.0	Public
🔍 Storage Option			
↓ OCR Storage			
بر Voting Disk Storage			
Operating System Groups			
ا بر Installation Location			
Prerequisite Checks			
U Summary			
U Install Product			
U Finish			
Help		< <u>B</u> ack	Next > Install Cancel

Provide interfaces are used by Oracle Grid for public and private traffic, then click **Next** to continue.

8). Storage Option Information.

Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 8 of 16 ×		
Storage Option Information		
Composition Option	You can place Oracle Cluster Registry (OCR) files and voting disk files on Oracle ASM storage, or on a file system.	
Installation Type	Oracle <u>Automatic Storage Management</u> (Oracle ASM)	
Y Product Languages	Choose this option to configure OCR and voting disk files on Oracle ASM storage.	
↓ ↓ Grid Plug and Play		
Cluster Node Information	○ <u>S</u> hared File System	
Network Interface Usage	Choose this option to configure OCR and voting disk files on an existing shared file system.	
🙊 Storage Option		
OCR Storage		
Y Voting Disk Storage		
 Operating System Groups 		
🕂 Installation Location		
Prerequisite Checks		
↓ ♀ Summary		
↓ ↓ Install Product		
U Finish		
Help	< <u>Back</u> Next > Install Cancel	

Choose option "Oracle Automatic Storage Management(Oracle ASM)", then click Next to continue.

9). Create ASM Disk Group.

Oracle	Grid Infrastructure - Setting up Grid Infrastructure - Step 🤉	9 of 16 ×
Create ASM Disk Group		DATABASE 11 ^g
Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option	Select Disk Group Characteristics and select disks Disk Group Name SUSETEST Redundancy High Normal External AU Size 1 MB Add Disks Qandidate Disks All Disks	
Create ASM Disk Group ASM Password Operating System Groups Finish Create ASM Disk Group Astronomy Create Astronomy Cre	Disk Path /dev/oradata/disk1 /dev/oradata/disk10 /dev/oradata/disk11 /dev/oradata/disk2 /dev/oradata/disk3 /dev/oradata/disk5 /dev/oradata/disk6	Size (in MB) Status 7629 Candidate 10240 Candidate 10240 Candidate 7629 Candidate 7629 Candidate 307200 Candidate 307199 Candidate Change Discovery Path
Help	< <u>B</u> ack	

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

10). Specify ASM Password.

pecify ASM Password				DATABASE 11 ^g
Complete Contract Con	The new Oracle SYSASM privileg user with SYSDB	Automatic Storage Mana Jes for administration. O A privileges to monitor	agement (Oracle ASM) instan racle recommends that you o the ASM instance.	ce requires its own SYS user with reate a less privileged ASMSNMP
Installation Type	Specify the pass	sword for these user acc	ounts.	
Product Languages	Use <u>d</u> ifferent	t passwords for these ac	counts	
Grid Plug and Play				
Cluster Node Information		Password	Confirm Passy	word
 Network Interface Usage 	s <u>x</u> s [
ر Storage Option	<u>A</u> SMSNMP			
Create ASM Disk Group				
ASM Password	O Use same pa	sswords for these accou	unts	
Operating System Groups				
Installation Location	Specify Pas:	sword:	Confirm Passy	word@
Prerequisite Checks				
Summary				
Install Product				
> Finish				
	<u>M</u> essages:			
	Specify Passw standards.	word:[INS-30011] The p	assword entered does not co	nform to the Oracle recommende

Fill in ASM Password as shown above, then click **Next** to continue.

11). Failure Isolation Support.

Oracle @	Grid Infrastructure - Setting up Grid Infrastructure - Step 11 of 17 ×
Failure Isolation Support	DATABASE 11 ^g
Cownload Software Updates	Choose one of the following Failure Isolation Support options.
Installation Option	\bigcirc Use Intelligent Platform Management Interface (IPMI)
Y Product Languages	To ensure successful installation with IPMI enabled, ensure your IPMI drivers are properly installed and enabled.
Grid Plug and Play	User Name :
Cluster Node Information	Password :
V Network Interface Usage	Do not use Intelligent Distform Management Interface (IDMI)
Create ASM Disk Group	Unit use intelligent Platform Management Interface (PM)
ASM Password	
Failure Isolation	
Operating System Groups	
Installation Location	
γ Install Product	
- Finish	
Help	< <u>Back</u> _ <u>Next></u> _InstallCancel

Choose option "Do not use IPMI", then click $\ensuremath{\textbf{Next}}$ to continue.

12). Privileged Operating System Groups.

Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 12 of 17				
Privileged Operating Syste	m Groups		ORACLE DATABASE	11 ^g
开 Download Software Updates	Select the name of the operating system group, of which th member, that you want to use for operating system authen Management.	ne user you ar ntication to Or	re running this instal racle Automatic Stora	lation is a Ige
🕂 Installation Type	Oracle <u>A</u> SM Administrator (OSASM) Group	dba 🔻	•	
Y Product Languages	Oracle ASM <u>D</u> BA (OSDBA for ASM) Group	oinstall 🔻	9	
 Grid Plug and Play 				
Cluster Node Information	Oracle ASM Operator (OSOPER for ASM) Group (Optional)		3	
 Network Interface Usage 				
K Storage Option				
🔶 Create ASM Disk Group				
ASM Password				
Failure Isolation				
Operating System Groups				
Installation Location				
 Prerequisite Checks 				
y Summary				
y Install Product				
U Finish				
<u>H</u> elp		< <u>B</u> ack <u>N</u> e	ext > Install	Cancel

Selected by default, then click $\ensuremath{\textbf{Next}}$ to continue.

13). Specify Installation Location.

Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 13 of 17 ×			
Specify Installation Location			
${ op}$ Download Software Updates ${ op}$ Installation Option	Specify the Oracle Grid Infrastructure for a Cluster Oracle base. By default, Oracle Grid Infrastructure is installed in a path indicating the Oracle Grid Infrastructure release and grid infrastructure software owner.		
↓ Installation Type ↓ Product Languages	Oracle Base: /home/grid_base		
Grid Plug and Play	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.		
 Network Interface Usage Storage Option 	Software Location? /home/grid Browse		
Create ASM Disk Group			
Failure Isolation Operating System Groups			
Installation Location Prerequisite Checks			
y Summary			
U Finish			
Пер	< <u>Back</u> _Install Cancel		

Fill in Oracle base and Software location, then click Next to continue.

14). Create Inventory.

Oracle G	Grid Infrastructure - Setting up Grid Infrastructure - Step 14 of 18 ×
Create Inventory	
 → Download Software Updates → Installation Option → Installation Type → Product Languages → Grid Plug and Play 	You are starting your first installation on this host. Specify a directory for installation 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.
Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group ASM Password Failure Isolation Operating System Groups	Members of the following operating system group (the primary group) will have write permission to the inventory directory (oralnventory). oralnventory Group Name: oinstall
Create Inventory Prerequisite Checks Summary Install Product Finish	< Back Next > Install Cancel

Specify a directory for installation metadata files if this is your first installation on this host, then click **Next** to continue.

15). Perform Prerequisite Checks.

Perform Prerequisite Checks Some of the minimum requirements for installation are not completed. Review and fix the issues listed in the following table, and recheck the system. Product Languages Finish Cituater Node Information EK & Check Again Network Interface Usage Storage Option Create ASM Disk Group Package: libstide++33-3.3.3 ASM Password Package: libstide++33-3.3.3 Package: libstide++43-4.3.3_20081022 Warning No Package: libstide++33-3.3.3 Warning No Package: libstide++43-4.3.3_20081022 Warning Warning No Package: libstide++43-4.3.3_20081022 Warning Warning No Package: libstide++33-3.3.3 Warning Package: libstide++43-4.3.3_20081022 Warning Warning No Package: libstide++43-4.3.3_20081022 Warning Warning No Package: libstide++43-4.3.3_200810	Oracle G	irid Infrastructure - Setting up Grid Infrastructure - Step 15 of 1	8	×
Pownload Software Updates Some of the minimum requirements for installation are not completed. Review and fix the issues listed in the following table, and recheck the system. Product Languages Check Again Show Failed Ignore All Crid Plug and Play Cluster Node Information Package: libiot 0.3.104 Ignore All Product Languages Package: libiot 0.3.104 Warning No Package: libiot 0.3.104 Package: libiot 0.3.104 Warning No Package: libiot 0.22 Warning N	Perform Prerequisite Check			11 ^g
Prerequisite Checks Summary Install Product Finish This is a pre-check to verify if the specified devices meet the requirements for configuration through the Oracle Universal Storage Manager Configuration Assistant. (more details) Check Failed on Medoes (a 2nd a	Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group ASM Password Storage Language	Some of the minimum requirements for installation are not completed. Reviews in the following table, and recheck the system. Check Again Eix & Check Again Show Failed All Nodes Checks Checks Packages Packages Package: libaio-0.3.104 Package: libaio-0.3.104 Package: libstdc++33-3.3.3 Package: libstdc++43-devel-4.3.3_20081022 Package: libstdc++43-4.3.3_20081022 Package: libstdc++43-4.3.3_20081022 Package: libgcc43-4.3.3_20081022 Package: libgcc43-4.3.3_2008102 Packa	Warning Warning Warning Warning Warning Warning Warning Warning Warning Warning	ues listed Ignore All Fixable No
	Operating System Groups Installation Location <u>Create Inventory</u> Prerequisite Checks Summary Install Product Finish	This is a pre-check to verify if the specified devices meet the requirements for the Oracle Universal Storage Manager Configuration Assistant. <u>(more details)</u> Check Failed on Nodes: [c2n4, c2n3, c2n2, c2n1]	configuration	through

Perform Pre-Check as shown above;

Oracle (Grid Infrastructure - Setting up Grid Infrastructure - Step 15 of 1	8	×
Perform Prerequisite Chec		ACLE A B A S E	11 ^g
 Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group ASM Password Failure Isolation Operating System Groups Installation Location <u>Create Inventory</u> Prerequisite Checks 	Some of the minimum requirements for installation are not completed. Reviews in the following table, and recheck the system. Check Again Eix & Check Again Show Failed Checks Checks Package: Ibaio-0.3.104 Package: Ibaio-0.3.104 Package: Ibistdc++33-3.3.3 Package: Ibistdc++43-devel-4.3.3_20081022 Package: Ibistdc++43-4.3.3_20081022 Package: Ibistdc++43-4.3.3_20081022 Package: Ibistdc++3-4.3.3_20081022 Package: Ibistdc+A3-4.3.3_20081022 Device Checks for ASM	Ind fix the is: Status Ignored Ignored Ignored Ignored Ignored Ignored Ignored	sues listed
 Summary Install Product Finish 	This is a prerequisite condition to test whether the package "libaio-0.3.104" is a system. <u>(more details)</u> Check Failed on Nodes: [c2n4, c2n3, c2n2, c2n1]	wailable on ti	he
Help		Install	Cancel

Select option "Ignore All", then click Next to continue.

Oracle G	irid Infrastructure - Setting up Grid Infrastructure - Step 15 of 18		×
Perform Prerequisite Check		BASE	11 ^g
Download Software Updates Installation Option Installation Type Product Languages Orid Plug and Play	Some of the minimum requirements for installation are not completed. Review an in the following table, and recheck the system. Check Again Eix & Check Again Show Failed Checks Checks Checks Checks Checks	d fix the issu	Jes listed Ignore All Fixable
Cluster Node Inform	INS-13016] You have chosen to ignore some of the prerequisites for this installation. This may impact product configuration. Are you sure you want to continue ? Yes No Details	gnored gnored gnored gnored gnored gnored	No No No No No No
Operating System Installation Location Create Inventory Prerequisite Checks Summary Install Product Finish	This is a prerequisite condition to test whether the package "libaio-0.3.104" is aw system. <u>(more details)</u> Check Failed on Nodes: [c2n4, c2n3, c2n2, c2n1]	ailable on th	e
Help	< <u>Back</u>	<u>I</u> nstall	Cancel

Ignore the information, click **Yes** to continue.

16). Summary.

Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 16 of 18 × ORACLE 118 Summary ⊡--Oracle Grid Infrastructure -Download Software Updates Global Settings Installation Option -Disk Space: required 5.5 GB available 495.65 GB Installation Type Install Option: Install and Configure Oracle Grid Infrastructure for a Cluster Product Languages Oracle base for Oracle Grid Infrastructure: /home/grid_base Grid Plug and Play -Grid home: /home/grid -Source Location: /opt/oracle/11204_SW_20160119/grid/install/../stage/products.xml **Cluster Node Information** Privileged Operating System Groups: oinstall (OSDBA), dba (OSASM) Network Interface Usage inventory information Storage Option -Inventory location: /home/oralnventory Create ASM Disk Group -Central inventory (oralnventory) group: oinstall ASM Password Grid Infrastructure Settings ---Cluster Name: c2-cluster Failure Isolation -Local Node: c2n1 Operating System Groups Remote Nodes: c2n2,c2n3,c2n4 Installation Location -Single Client Access Name (SCAN): c2-scan.provo.novell.com Create Inventory SCAN Port: 1521 ¥ Prerequisite Checks <u>S</u>ave Response File... Summary Install Product Finish < <u>B</u>ack $\underline{N}ext >$ <u>I</u>nstall Cancel <u>H</u>elp

Installation Summary as shown above, click Install to continue.

17). Install Product.

	Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 17 of 18 ×				
Install Product			LE 11 ^g		
🔍 Download Softw	Execute Configur	ation scripts			
Installation Opti	The following configuration scripts need to be ex	ecuted as the "root" user in each new			
🔶 Installation Type	cluster node. Each script in the list below is follo	wed by a list of nodes.			
・					
Grid Plug and Pl	Scripts to be executed:				
🛛 🙏 Cluster Node Inf	Number Script Location	Nodes	Succeeded		
V Network Interfac	1 /home/oralnventory/orainstRoot.sh	c2n1,c2n2,c2n3,c2n4	Succeeded		
🔍 Storage Option		(2111,(2112,(2113,(2114	Succeeded		
O Create ASM Disk			Succeeded		
			Succeeded		
A ASM Password	To execute the configuration scripts:		In Progress Pending		
Failure Isolation	1. Open a terminal window		. chung		
Operating Syste	3. Run the scripts in each cluster node				
🔶 Installation Loca	Return to this window and click "OK" to con	tinue			
Create Inventory	Run the script on the local node first. After succe	essful completion, you can run the script			
Prerequisite Che	in parallel on all the other nodes.				
ý Summary			<u>R</u> etry <u>S</u> kip		
install Product	Help	ок			
G Finish	DATABASE	//	Application Express		
	Application Development	Craet	ergi Gilo D évelogi os: ergata i Viesking Pack		
Help		< <u>Back</u> <u>N</u> ext > <u>I</u> t	nstall Cancel		

Completed 'prepare for configuration steps'. Here to stay and install **Oracle Patch 18370031** first, then execute the configuration scripts as the "root" user in each new cluster node.



After the configuration scripts completed and successed in each cluster node, then click **OK** to continue.

stall Product		
Download Software Updates	Progress	
Installation Option	81%	
Installation Tune	Starting 'Undate Inventory'	
Beedweet Levenue ene	Starting Opdate inventory	
Product Languages		
Grid Plug and Play	Status-	
Cluster Node Information	✓ Install Grid Infrastructure for a Cluster	Succeeded
Network Interface Usage	 Prepare Comufiles 	Succeeded
Storage Option	 Copy mes Link binaries 	Succeeded
Create ASM Disk Group	🛷 🔹 Setup files	Succeeded
ASM Password	 Perform remote operations Evenue Do not Societa 	Succeeded
	Configure Oracle Grid Infrastructure for a Cluster	Succeeded In Progress
Failure Isolation	 Update Inventory 	In Progress
Operating System Groups	Oracle Net Configuration Assistant	Pending
Installation Location	Automatic Storage Management Configuration Assistant Oracle Cluster Verification Utility	Pending Pending
Create Inventory		. chang
Prerequisite Checks		
Summary		Details Retry Ski
Install Product		
Help	Grid Computing	Reliable, and Scalable Low-Cost Grids
Oracle tall Product	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of	18 RACLE: 118
Oracle	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3	18 RACLE 11 8
Oracle tall Product Download Software Updates	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 2	18 РАСЬЕ : 11 <i>8</i> тавазе
Oracle tall Product Download Software Updates Installation Option	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 2 Progress 95%	18 <u>RACLE</u> 11 8 тавазе 11 8
Oracle tall Product Download Software Updates Installation Option Installation Type	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3	18 RACLE: 11 8
Oracle tall Product Download Software Updates Installation Option Installation Type Product Languages	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3	18 RACLE: 11 8
Oracle tall Product Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3	18 RACLE: 11 ^g
Oracle tall Product Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3	18 RACLE 11 ^g
Oracle tall Product Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3	18 RACLE 118 TABASE 118 Succeeded Succeeded
Oracle tall Product Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3	18 RACLE 118 TABASE 118 Succeeded Succeeded Succeeded
Oracle tall Product Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3	18 RACLE 118 TABASE 118 Succeeded Succeeded Succeeded Succeeded
Oracle Call Product Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3	18 RACLE 118 TABASE 118 Succeeded Succeeded Succeeded Succeeded Succeeded
Oracle tall Product Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group ASM Password	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3	18 RACLE 118 Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded
Oracle tall Product Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group ASM Password	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3	18 RACLE 118 Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded
Cracle tall Product Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group ASM Password Failure Isolation	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3	18 RACLE 118 Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded
Cracle Download Software Updates Installation Option Installation Type Product Languages Crid Plug and Play Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group ASM Password Failure Isolation Operating System Groups	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3	18 RACLE: 11 Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded
Cracle Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group ASM Password Failure Isolation Operating System Groups Installation Location	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3	18 RACLE: 11 Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded
Cracle Tall Product Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group ASM Password Failure Isolation Operating System Groups Installation Location	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3 Image: Construction of the set o	18 RACLE: 11 Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded In Progress Succeeded Succeeded Succeeded Succeeded In Progress
Cracle Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group ASM Password Failure Isolation Operating System Groups Installation Location Create Inventory	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3 Image: Construction of the set o	18 EXAMPLE: 11 S Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded Succeeded In Progress Succeeded
Cracle Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group ASM Password Failure Isolation Operating System Groups Installation Location Create Inventory Prerequisite Checks	Grid Infrastructure – Setting up Grid Infrastructure – Step 17 of 3 Image: Construction of the set o	18 Succeeded Succeeded Succe
Cracle Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group ASM Password Failure Isolation Operating System Groups Installation Location Create Inventory Prerequisite Checks Summary	Grid Infrastructure - Setting up Grid Infrastructure - Step 17 of 3 Image: Status Progress 95% Starting 'Oracle Cluster Verification Utility' Status Image: Install Grid Infrastructure for a Cluster Image: Ima	18 PACLE: 11 Succeeded Succeeded Suc
Cracle Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group Storage Option Greate Isolation Greate Isolation Gperating System Groups Installation Location Create Inventory Prerequisite Checks Summary Install Product	Grid Infrastructure - Setting up Grid Infrastructure - Step 17 of 3 Progress Progress Progress Progress Progress Starting 'Oracle Cluster Verification Utility' Status	18 EXAMPLE: 11 S Succeeded
Cracle Convoload Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Cluster Node Information Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group ASM Password Failure Isolation Operating System Groups Installation Location Create Inventory Prerequisite Checks Summary Install Product Finish	Grid Infrastructure - Setting up Grid Infrastructure - Step 17 of 3	18 PACLE: 11 Succeeded Succeeded Suc
Cracle Consistent of the second seco	Grid Infrastructure - Setting up Grid Infrastructure - Step 17 of 3	18 PACLE: 11 Succeeded Succeeded Suc

The installation of Oracle Grid Infrastructure for a Cluster is Finished. Click **Close** to dismiss the screen.

Oracle G	orid Infrastructure - Setting up Grid Infrastructure - Step 18 of 18	×
Finish		
 Download Software Updates Installation Option Installation Type Product Languages Grid Plug and Play Cluster Node Information Network Interface Usage Storage Option Create ASM Disk Group ASM Password Failure Isolation Operating System Groups Installation Location Create Inventory Prerequisite Checks Summary 	The installation of Oracle Grid Infrastructure for a Cluster was successful.	
y Install Product		
Help	< <u>₿</u> ack <u>N</u> ext > <u>I</u> nstall <u>C</u> lose	

1-3. Post-Install Checks.

1).Check Oracle Clusterware health.

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

2). Check Oracle Clusterware resources.

oracle@c2n1:~> /home/grid/bin/srvctl status nodeapps

VIP c2n1-vip is enabled VIP c2n1-vip is running on node: c2n1 VIP c2n2-vip is enabled VIP c2n2-vip is running on node: c2n2 VIP c2n3-vip is enabled VIP c2n3-vip is running on node: c2n3 VIP c2n4-vip is enabled VIP c2n4-vip 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 GSD is disabled GSD is not running on node: c2n1 GSD is not running on node: c2n2 GSD is not running on node: c2n3 GSD is not 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

3). Check status of designated resources.

oracle@c2n1:~> /home/grid/bin/crsctl stat res -t

NAME	TARGET STATE	SERVER	STATE_DETAILS
Local R	esources		
ora.LIS	TENER.lsnr		
	ONLINE ONLINE	c2n1	
	ONLINE ONLINE	c2n2	
	ONLINE ONLINE	c2n3	
ora SUS	ONLINE ONLINE	C2114	
018.30		c2n1	
		c^{2n^2}	
		c2n3	
	ONLINE ONLINE	c2n4	
ora asm		02111	
oralaon	ONLINE ONLINE	c2n1	Started
	ONLINE ONLINE	c2n2	Started
	ONLINE ONLINE	c2n3	Started
	ONLINE ONLINE	c2n4	Started
ora.gsd			
	OFFLINE OFFLINE	c2n1	
	OFFLINE OFFLINE	c2n2	
	OFFLINE OFFLINE	c2n3	
	OFFLINE OFFLINE	c2n4	
ora.net?	1.network		
	ONLINE ONLINE	c2n1	
	ONLINE ONLINE	c2n2	
	ONLINE ONLINE	c2n3	
	ONLINE ONLINE	c2n4	
ora.ons		o 0 p1	
	ONLINE ONLINE	0202	
		0202	
		c2n4	
Cluster	Resources		
ora.LIS	TENER SCAN1.lsnr		
1	ONLINE ONLINE	c2n2	
ora.LIS	TENER SCAN2.lsnr		
1	ONLINE ONLINE	c2n3	
ora.LIS	TENER_SCAN3.lsnr		
1	ONLINE ONLINE	c2n1	
ora.c2n	1.vip		
1	ONLINE ONLINE	c2n1	
ora.c2n	2.vip		
1	ONLINE ONLINE	c2n2	
ora.c2n	3.vip		
1	ONLINE ONLINE	c2n3	
ora.c2n	4.vip	o <i>i</i>	
1	ONLINE ONLINE	c2n4	
ora.cvu		-01	
	UNLINE UNLINE	C2N1	
ora.oc4	J		

1	ONLINE ONLINE	c2n1	
ora.sca	n1.vip		
1	ONLINE ONLINE	c2n2	
ora.sca	n2.vip		
1	ONLINE ONLINE	c2n3	
ora.sca	n3.vip		
1	ONLINE ONLINE	c2n1	

4). Check OCR and Voting disk files.

oracle@c2n1:~> /home/grid/bin/ocrcheck

Status of Oracle Cluster Registry is as follows : Version 3 1 Total space (kbytes) : 262120 Used space (kbytes) : 2892 Available space (kbytes) : 259228 : 203023517 ID : +SUSETEST Device/File Name Device/File integrity check succeeded

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@c2n1:~> /home/grid/bin/crsctl query css votedisk

STATE File Universal Id File Name Disk group

-- -----

1. ONLINE 51663f3ea0a44ff1bfd99e370bb9f5f5 (/dev/oradata/disk1) [SUSETEST]

ONLINE 744112dd771f4f04bf93e961916edacb (/dev/oradata/disk2) [SUSETEST]
 ONLINE aada3a8b1ebf4f70bfe361b1b536e243 (/dev/oradata/disk3) [SUSETEST]

Located 3 voting disk(s).

2. Installing Oracle Database.

1-1. Login to the SLES 12 64-bit OS as a non-admin user. Download the Oracle Database 11g Release 2 (11.2.0.4.0) for Linux x86-64.

1-2. Extract grid.zip and run the installer './runInstaller' from Database ShipHome.

Install Flow:

1). Configure Security Updates.

Oracle Database 11g Release 2 Installer - Installing database - Step 1 of 11 ×				
Configure Security Update	S		ORACLE 11 ^g	
Configure Security Updates	Provide your email address to be and initiate configuration manag	: informed of security issues, install the ier. <u>View details</u> .	product	
Apply Software Updates	E <u>m</u> ail:	Easier for you if you use your My Orac address/username.	cle Support email	
Grid Installation Options	I wish to receive security upd	ates via My Oracle Support.		
Install Type Typical Installation Prerequisite Checks Summary Install Product Finish	My <u>O</u> racle Support Password:			
<u>H</u> elp		< <u>B</u> ack	lext > Install Cancel	

Provide your email address to be informaed of security issues, then click **Next** to continue.

2). Download Software Updates.

Oracle D		
Download Software Update		
Configure Security Updates Download Software Updates Apply Software Updates Installation Option Crid Installation Options Install Type Typical Installation Prerequisite Checks Summary Install Product Finish	Devenload software updates for this installation. Software updates consist of recommended updates to the installer system requirement checks, PatchSet Updates (PSUs), and other recommended patches. Select one of the following options: Use My Oracle Support credentials for download My Oracle Support ger name: My Oracle Support password: Proxy Settings Use pre-gownloaded software updates Location: Skip software updates	DATABASE
Help	< <u>Back</u> _Install	 <u>Back Next > Install</u> Cancel

Select one of the options, then click **Next** to continue.

3). Select Installation Option.

Oracle Database 11g Release 2 Installer - Installing database - Step 3 of 10 ×			
Select Installation Option			
♀ Configure Security Updates	Select any of the following install options.		
🐥 Download Software Updates	Note: If you want to upgrade an existing Oracle Database 11g Release 2 instance select "Upgrade an		
lnstallation Option	existing database" option.		
Grid Installation Options	Create and configure a database		
↓ ┬ Install Type	$ eal {\rm Omega}$ $ m Omega$ Install <u>d</u> atabase software only		
Typical Installation	O Ungrade an existing database		
Prerequisite Checks			
y Summary			
 Install Product 			
- Finish			
Help	< <u>Back</u> <u>Next</u> Install Cancel		

Choose option "Install database software only.", then click Next to continue.

4). Grid Installation Options.

Oracle Database 11g Release 2 Installer - Installing database - Step 4 of 10 ×				
Grid Installation Options				
♀ Configure Security Updates	Select the type of database installation you want to perform.			
↓ ↓ Download Software Updates	○ <u>Single</u> instance database installation			
Installation Option	Oracle <u>Real Application Clusters database installation</u>			
Grid Installation Options	Oracle RAC One Node database installation			
Linstall Type	Select nodes (in addition to the local node) in the cluster where the installer should install Oracle RAC or Oracle RAC One.			
Prerequisite Checks	Node Name			
↓ Summary ↓ Install Product	 ✓ 1 c2n1 ✓ 2 c2n2 ✓ 3 c2n3 			
U Finish	✓ 4 c2n4 SSH <u>Connectivity</u> Select <u>All</u>			
Help	< <u>Back</u> <u>Next</u> <u>Install</u> <u>Cancel</u>			

Choose option "Oracle Real Application Clusters database installation", and select all nodes in the cluster, then click Next to continue.

5). Select Product Languages.

Oracle Database 11g Release 2 Installer - Installing database - Step 5 of 12 ×				
Select Product Languages		ORACLE 11 ^g		
Configure Security Updates Configure Security Up	Select the languages in which your product will run. Available Languages: Selected Langua Arabic Bengali Brazilian Portug Bulgarian Canadian Frence Catalan Croatian Czech Danish Dutch Egyptian English English English English English Finnish French	Indexe Data Base Dec		
Help	German Greek Hebrew Hungarian Icelandic	▼ ■		

Select all languages, then click $\ensuremath{\textit{Next}}$ to continue.

6). Select Database Edition.

Oracle D	atabase 11g Release 2 Installer – Installing database – Step 6 of 12 ×
Select Database Edition	
γ Configure Security Updates	Which database edition do you want to install?
↓ ↓ Download Software Updates	<u> Enterprise Edition (4.7GB)</u>
T Installation Option	Oracle Database 11g Enterprise Edition is a self-managing database that has the scalability, performance, high availability, and security features required to run the most demanding,
Grid Installation Options	mission-critical applications.
 <u>Product Languages</u> 	○ <u>S</u> tandard Edition (4.6GB)
👳 Database Edition	Oracle Database 11g Standard Edition is a full-featured data management solution ideally suited to
Installation Location	the needs of medium-sized businesses. It includes Oracle Real Application Clusters for enterprise-class availability and comes complete with its own Oracle Clusterware and storage
 Operating System Groups 	management capabilities.
Y Prerequisite Checks	
y Summary	
y Install Product	
U Finish	
	Select Op <u>t</u> ions
Help	 <u> Seck</u> <u> Next</u> <u> Install</u> Cancel

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

7). Specify Installation Location.

Oracle Database 11g Release 2 Installer - Installing database - Step 7 of 12 ×			
Specify Installation Locatio			
✓ Configure Security Updates ✓ Download Software Updates	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.		
🕂 Installation Option	Oracle Base: /home/oracle/app/		
Grid Installation Options			
 Product Languages 	Specify a location for storing Oracle database software files separate from database configuration files in the Oracle base directory. This software directory is the Oracle database home directory.		
🐥 Database Edition			
Installation Location	Software Locationy /home/oracle/app/product/11.2.0/dbhome_1		
Operating System Groups			
 Prerequisite Checks 			
ý Summary			
ý Install Product			
Ú Finish			
Help	< <u>Back</u> Next> Install Cancel		

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

8). Privileged Operating System groups.

Oracle Database 11g Release 2 Installer - Installing database - Step 8 of 12 ×			
Privileged Operating Syst			
Configure Security Updates	SYSDBA and SYSOPER privileges are required to create a database using operating system (OS) authentication. Membership in OSDBA grants the SYSDBA privilege, and membership in OSOPER grants the SYSOPER privilege, which is a subset of SYSDBA privileges. Select the name of the OSDBA group to grant the SYSDBA privilege. The user account you are using to run this install must be a member of this group.		
Grid Installation Options	Database <u>A</u> dministrator (OSDBA) Group:		
Y Product Languages	Database Operator (OSOPER) Group (Optional):		
Database Edition			
Installation Location			
Operating System Groups			
Prerequisite Checks			
Ϋ́ Summary			
ပုံ Install Product			
U Finish			
Help	<u> </u>		

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

9). Perform Prerequisite Checks.

Oracle D	atabase 11g Release 2 Installer – Installing database – Step 9 of 1	2	×
Perform Prerequisite Check		ACLE A B A S E	11 ^g
Configure Security Updates Configure Security Updates Installation Option Crid Installation Options Product Languages Database Edition Installation Location Operating System Groups Prerequisite Checks Summary Install Product Finish	Some of the minimum requirements for installation are not completed. Reviews in the following table, and recheck the system. Check Again Eix @ Check Again Show Failed All Nodes Checks Checks Package: libaio-0.3.104 Package: libaid-0.3.104 Package: libstdc++33-3.3.3 Package: libstdc++43-devel-4.3.3_20081022 Package: libstdc++43-4.3.3_20081022 Package: libgcc43-4.3.3_20081022 Package: libgcc43-4.3.3_20081022	Warning Warning Warning Warning Warning Warning Warning	Ignore All Fixable No No No No No No
	system. <u>(more details)</u> Check Failed on Nodes: [c2n4, c2n3, c2n2, c2n1]		
Help	 Back Next >	Install	Cancel

Perform Pre-Check as shown above;

Oracle Da	atabase 11g Release 2 Installer – Installing database – Step 9 of 3	12	×
Perform Prerequisite Check		ACLE	11 ^g
Configure Security Updates Download Software Updates Installation Option Grid Installation Options Product Languages Database Edition Installation Location Operating System Groups Prerequisite Checks Summary Install Product Finish	Some of the minimum requirements for installation are not completed. Review in the following table, and recheck the system. Check Again Fix & Check Again Show Failed I All Nodes Checks Checks Packages Package: libaio-0.3.104 Package: libaio-0.3.104 Package: libstdc++33-3.3.3 Package: libstdc++43-devel-4.3.3_20081022 Package: libstdc++43-4.3.3_20081022 Package: libstdc++3.3_20081022 Package: libgcc43-4.3.3_20081022 Package: libgcc43-4.3.3_20081022	Ignored Ignored Ignored Ignored Ignored Ignored	ues listed Ignore All Fixable No No No No No No
	system. <u>(more details)</u> Check Failed on Nodes: [c2n4, c2n3, c2n2, c2n1]		
<u>H</u> elp	< <u>Back</u> Next>	<u>I</u> nstall	Cancel

Select option "Ignore All", then click Next to continue.

10). Summary.

Oracle Database 11g Release 2 Installer - Installing database - Step 10 of 12 ×				
Summary				
 Configure Security Updates Download Software Updates Installation Option Grid Installation Options Product Languages Database Edition Installation Location Operating System Groups Prerequisite Checks Summary Install Product Finish 	Oracle Database 11g Release 2 Installer Global settings Disk space: required 4.7 GB available 491.05 GB Source location: /opt/oracle/11204_SW_20160119/database/install//stage/products.xml Database edition: Enterprise Edition (Install database software only) Oracle base: /home/oracle/app/ Software location: /home/oracle/app/product/11.2.0/dbhome_1 Cluster Nodes: c2n1, c2n2, c2n3, c2n4 Privileged Operating System Groups: dba (OSDBA) Save Response File			
Help	<back next=""> Install Cancel</back>			

Installation Summary as shown above, click Install to continue.

11). Install Product.



Oracle Database installation in progress.



(Note:

Linking Error - "ins_emagent.mk" - Fix & Retry

To solve this issue do following changes as user Oracle: Edit \$ORACLE_HOME/sysman/lib/ins_emagent.mk, search for the line

\$(MK_EMAGENT_NMECTL) and replace the line with **\$(MK_EMAGENT_NMECTL)** -Innz11

Then click Retry to continue.



	Oracle Database 11g Release 2 Installer - Installing database - Step 11 of 12 ×
Install Product	
()	-Decare -
Configure Secur	Execute Configuration scripts
P Download Softw	
🕂 🕂 Installation Opti	The following configuration scripts need to be executed as the "root" user in each new
$\frac{1}{2}$ Grid Installation	
Product Langua	Seriets to be executed:
💭 Database Editior	Succeeded
U Installation Loca	Number Script Location Nodes Succeeded
() Operating Sucto	1 /home/oracle/app/product/11.2.0/dbhome_1/root.sh [c2n1,c2n2,c2n3,c2n- Succeeded
Operating syste	Succeeded
Prerequisite Che	In Progress
ý Summary	
🧅 Install Product	
U Finish	To execute the configuration scripts: 1. Open a terminal window
	2. Log in as "root"
	3. Run the scripts in each cluster node
	4. Return to this window and click "OK" to continue
	Retry Skip
	DATABASE Application Development
<u>H</u> elp	< <u>B</u> ack <u>N</u> ext > <u>I</u> nstall <u>Cancel</u>

c2n1:/home # /home/oracle/app/product/11.2.0/dbhome_1/root.sh
Performing root user operation for Oracle llg
The following environment variables are set as:
 ORACLE_OWNER= oracle
 ORACLE_HOME= /home/oracle/app/product/11.2.0/dbhome_1
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.
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.
Finished product-specific root actions.

Execute root.sh as the "root" user in each cluster node, then click OK to continue.

Oracle Da	Oracle Database 11g Release 2 Installer - Installing database - Step 12 of 12 ×				
Finish		ORACLE 118			
Configure Security Updates Download Software Updates Installation Option Grid Installation Options Product Languages Database Edition Installation Location Operating System Groups Prerequisite Checks Summary Install Product Finish	The installation of Oracle Database was successful.				
Help	< <u>B</u> a	ck Next > Install Close			

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

1-3. Use ASMCA to create ASM disk group for datafile storage.

ASM Configuration Assistant: Configure ASM: Disk Groups					×		
ASM Instances Disk Groups Volumes ASM Cluster File Systems You can choose to create a new disk group or add disks to an existing disk group. To create dynamic volumes, you need disk groups with 11.2 ASM compatibility. Tip: To perform operations on a disk group, right mouse click on the row. Disk Groups					k		
	Disk Group Name	Size (GB)	Free (GB)	Lisable (GB)	Redundancy	State	\top
	SUSEDATA	300.00	299.82	299.82	EXTERN	MOUNTED(4 of 4)	-
	SUSETEST	22 35	21.20	6.88	NORMAL	MOUNTED(4 of 4)	-
	Create Mount All [Dismount All					
Help]	Exit
						l	

1-4. Using DBCA to create Oracle RAC 11.2.0.4 Database.

1). DBCA - Welcome.

	Database Configuration Assistant : Welcome	×
	 Welcome to the Database Configuration Assistant for Oracle Real Application Clusters. The Database Configuration Assistant enables you to create, configure, or delete a cluster database and manage database templates. It also enables you to add and delete instance of a cluster database. Select the database type that you would like to create or administer: Oracle Real Application Clusters (RAC) database Oracle RAC One Node database Oracle single instance database 	es
Cancel Help	S Back Next S	

Select the db type that you would like to create, then click **Next** to continue.

2). DBCA - Operations.

	Database Configuration Assistant, Step 1 of 13 : Operations	×
	Select the operation that you want to perform: Create a Database Configure Database Options Delete a Database Manage Templates Instance Management ASM configuration operations must be performed using Automatic Storage Management Configuration Assistant (ASMCA) from Oracle Grid Infrastructure home	
Cancel Help	Back Next S	

Choose option "Create a Database", then click Next to continue.

3). DBCA - Database Templates.

Database Configuration Assistant, Step 2 of 14 : Database Templates

×

	Templates new datab only when cannot be	s that include datafiles contain pre-created databases. They a base in minutes, as opposed to an hour or more. Use template necessary, such as when you need to change attributes like b altered after database creation.	allow you to create a 29 without datafiles dock size, which
	Select	Template	Includes Datafiles
	9	General Purpose or Transaction Processing	Yes
	0	Custom Database	No
They transformer	0	Data Warehouse	Yes
Pageter Standard and Barry Stand			
			Show Details
Cancel Help		S Back Next	»)

Select the type of database you want to configure, then click **Next** to continue.

4). DBCA - Database Identification.

Database	Configuration Assistant, Step 3	of 13 : Database Identification	1
	luster database configuration can b lanaged database is dynamic with i ervers for effective resource utilizat ed to specific servers. onfiguration Type: Admin- An Oracle database is uniquely ide "name.domain". Global Database Name: SUSEDB A database is referenced by an Or prefix to be used to name the clus SID Prefix: SUSEDB	e Policy-Managed or Admin-Managed. A Policy- Instances managed automatically based on pools of on. Admin-Managed database results in instances Managed C Policy-Managed Intified by a Global Database Name, typically of the form acle instance on each cluster database node. Specify a er database instances.	
Cancel Help	Select the nodes on which you wan will always be used, whether or no c2n1 c2n2 c2n3 c2n4	to create the cluster database. The local node "c2n1" it is selected. Select All Deselect All & Back Next >]

Fill in Global Database Name and SID as shown above, then click Next to continue.

5). DBCA - Management Options.

Data	base Configuration Assistant, Step 4 of 12 : Management Options	×
Data	base Configuration Assistant, Step 4 of 12 : Management Options Enterprise Manager Automatic Maintenance Tasks Configure Enterprise Manager Register with Grid Control for centralized management Management Service No Agents Found Configure Database Control for local management Enable Daily Disk Backup to Recovery Area Backup Start Time: 02 OO Configure Configure Control for Control	×
Cancel Help	Sack Next ≫	

Specify the management options for the database, then click **Next** to continue.

6). DBCA - Database Credentials.

Data	oase Configuration As	sistant, Step 5 of 12	: Database Credentials	×
F	or security reasons, you latabase. C Use Different Admini:	must specify passwords	for the following user accounts in the new	
	User Name	Password	Confirm Password	
and the second	ราร			
	SYSTEM			
	DBSNMP			
	SYSMAN			
	Use the Same Admini Password:	strative Password for All	Accounts	
	Confirm Password:	*****		
Cancel Help			🔇 Back Next >>	

Specify administrative password for DB users, then click $\ensuremath{\textbf{Next}}$ to continue.

7). DBCA – Database File Locations.

Da	atabase Configuration Assista	ant, Step 6 of 12 : Database File Locations	×
	Atabase Configuration Assist: Specify storage type and loca Storage Type: Storage Locations: C Use Database File Location C Use Common Location fo Database Files Location: Use Oracle-Managed File Database Area: Multiplex Redo Logs and If you want to specify except Oracle-Manage If you use Or	ant, Step 6 of 12 : Database File Locations ations for database files. Automatic Storage Management (ASM) ons from Template r All Database Files +SUSEDATA d Control Files) different locations for any database files, pick any of the ab yed Files and use the Storage page later to customize each fi haged Files, Oracle automatically generates the names for di e changed on the Storage page.	Browse) Browse) ove options ile location. atabase
		File Location	Variables)
Cancel Help)	🔇 Back 📃 Next 📎	

Specify database files storage information as shown above, then click Next to continue.

Data	abase Configuration Assista	ant, Step 6 of 12 : Databas	se File Locations	×
	Specify storage type and local Storage Type: Storage Locations: O Use Database File Location O Use Common Location for Database Files Location: AS Specify ASMSNMP password as except Oracle-Manag If you use Oracle-Manag If you use Oracle-Manag	ations for database files. Automatic Storage Manageme ons from Template r All Database Files M Credentials specific to ASM: ••••••• OK Cancel ed Files and use the Storage p naged Files, Oracle automatical a changed on the Storage page	ent (ASM)	Browse Browse of the above options te each file location. tes for database
Cancel Help			🔇 Back Next	>)

Specify ASMSNMP passwork specific to ASM, then click **OK** to continue.

8). DBCA - Recovery Configuration.

Datab	ase Configuration Assistant,	Step 7 of 12 : Recovery Configuration ×
	Choose the recovery options for t Specify Fast Recovery Area This is used as the default for required for automatic disk b the database files and recove and performance. Fast Recovery Area: Fast Recovery Area Size: Enable Archiving	he database: r all disk based backup and recovery operations, and is also ased backup using Enterprise Manager. Oracle recommends that ry files be located on physically different disks for data protection +SUSETEST Browse 5157 Browse 5157 Browse Edit Archive Mode Parameters File Location Variables
Cancel		<u> </u>

According to your needs to choose the recovery options for the database, then click Next to continue.

9). DBCA – Database Content.

	Sample Schemas Custom Scripts Sample Schemas illustrate the use of a layered approach to complexity, and are used by some demonstration programs. Installing this will give you the following schemas in your database: Human Resources, Order Entry, Online Catalog, Product Media, Information Exchange, Sales History. It will also create a tablespace called EXAMPLE. The tablespace will be about 130 MB. Specify whether or not to add the Sample Schemas to your database. Sample Schemas
Cancel Help	

Database Configuration Assistant, Step 8 of 12 : Database Content

×

Specify whether or not to add the schemas to your database, then click **Next** to continue.

10). DBCA - Initialization Parameters.

Datab	ase Configuration	Assistant, Step 9	of 11 : Initializa	ation Parameters	×
	Memory	Sizing	Character Sets	Connection Mode)
	 Typical Memory Size () 	5GA and PGA): 194	29 MB	_	
Trans and the second	Percentage:	30 %	250 MB		64180 MB
	🗆 Use Automa	tic Memory Manager	nent Show Me	emory Distribution)	
	C Custom Memory Mana SGA Size: PGA Size: Total Memory	gement Automa 19254 6418 for Oracle: 25672	iic Shared Memory M Bytes	Management Management Maragement]
	All Initialization Pa	rameters)			
Cancel Help				🔇 Back 🛛 Next	Einish

Choose option "Typical" and adjust parameters to meet your requirements, then click Next to continue.

11). DBCA – Database Storage.

Database Configuration Assistant, Step 10 of 11 : Database Storage			
Storage - ∰ Controlfile - Datafiles ⊕ Aredo Log Groups	Database Storage page, you can specify storage parameters for database creation This page displays a tree listing and summary view (multi-column lists) to enable you to change and view the following objects: • Control files • Tablespaces • Datafiles • Rollback Segments • Redo Log Groups From any object type folder, click Create to create a new object. To delete an object, select the specific object from within the object type folder and click Delete. Important: If you select a database template including data files, then you will not be able to add or remove data files, tablespaces, or rollback segments. Selecting this type of template enables you to change the following: • Destination of the datafiles • Control files or log groups. For more information, refer to the Oracle Database Storage Administrator's Guide.		
Create Delete	File Location Variables.	.)	
Cancel Help	🔇 Back Next >> Einish	\Box	

Check the info as shown above, then click Next to continue.

12). DBCA - Creation Options.

Da	tabase Configuration Assistant, Step 11 of 11 : Creation Options	×
	Select the database creation options: Create Database Cenerate Database Creation Scripts Destination Directory. Proves P	e)
Cancel Help	Seck Next > (;h)

Select the database creation options as shown above, then click **Next** to continue.

Da	atabase Configuration Assistant, Step 11 of 11 : Creation Options	×
	Select the database creation options: Create Database Generate Database Creation Scripts Destination Directory: Database Configuration Assistant Browse	
	■ "libaio" package required for the Oracle Database to function properly is missing. Install the required package before continuing with database creation. Ignore Abort	
Cancel Help	🔇 Back Next >) (Einish	5

A warning window as shown above, click **Ignore** to continue.

Database	e Configuration Assistant: Summary
Create database with db hame	SUSEDB".
Create	Database – Summary
Database Configurat	ion Summary
Global Database Name	e: SUSEDB
Database Configuration Type	e: Admin-Managed Cluster Database
Node List	t c2n1,c2n2,c2n3,c2n4
SID List	C SUSEDB1,SUSEDB2,SUSEDB3,SUSEDB4
Management Option Type	e: Database Control
Storage Type	e: Automatic Storage Management (ASM)
Memory Configuration Type	e: Automatic Shared Memory Management
Database Configurat	ion Details
Database Components	
Component	Selected
Oracle JVM	true
Oracle Text	true
Oracle XML DB	true
	Save as an HTML file
	OK Cancel Help

Database Configuration Summary as shown above, check the information, then click **OK** to continue.

14). DBCA - Progress Page.

Database Co	nfiguration Assistant, Step 11 of 11 : Creation Options	×
Automatic compilation for Java and PL/SQL Oatabase resident connection pool for PHP Microsoft Access migration to Application Expres	Database Configuration Assistant Copying database files Creating and starting Oracle instance Creating cluster database views Completing Database Creation Clone database creation in progress 85% Log files for the current operation are located at: /home/oracle/app/cfgtoollogs/dbca/SUSEDB Stop	Browse
Cancel Help	(🖁 Back 🛛 Next 📀	Einish

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

15). DBCA - Finish.

D	Database Configuration Assistant	IS	×
D Ideal Pl Grid C • Low ce and st • Higher	Database Configuration Assistant Database creation complete. For details check the logfiles at: /home/oracle/app/cfgtoollogs/dbca/SUSEDB. Database Information: Global Database Name: SUSEDB System Identifier(SID) Prefix: SUSEDB Server Parameter File name: +SUSEDATA/SUSEDB/spfileSUSEDB.ora The Database Control URL is https://c2n1.provo.novell.com: 1158/em Management Repository has been placed in secure mode wherein Enterprise Manager data will be encrypted. The encryption key has been placed in the file: /home/oracle/app/product/11.2.0 /dbhome_1/c2n1_SUSEDB/sysman/config/emkey.ora. Ensure this file is backed up as the encrypted data will become unusable if this file		× Browse
Best s	Note: All database accounts except SYS, SYSTEM and DBSNMP are locked. Select the Password Management button to view a complete list of locked accounts or to manage the database accounts (except DBSNMP). From the Password Management window, unlock only the accounts you will use. Oracle Corporation strongly recommends changing the default passwords immediately after unlocking the account.		
Cancel Help	(Exit)	<u>N</u> ext >) (Einish

Database creation complete, some information as shown above. Click Exit to dismiss the screen.

1-5. Post-Install Checks.

1). Verify database status and configuration.

oracle@c2n1:~> export ORACLE_HOME=/home/oracle/app/product/11.2.0/dbhome_1/ oracle@c2n1:~> /home/oracle/app/product/11.2.0/dbhome_1/bin/srvctl status database -d SUSEDB

Instance SUSEDB1 is running on node c2n1 Instance SUSEDB2 is running on node c2n2 Instance SUSEDB3 is running on node c2n3 Instance SUSEDB4 is running on node c2n4

oracle@c2n1:~> /home/oracle/app/product/11.2.0/dbhome_1/bin/srvctl config database -d SUSEDB -a

Database unique name: SUSEDB Database name: SUSEDB Oracle home: /home/oracle/app/product/11.2.0/dbhome_1 Oracle user: oracle Spfile: +SUSEDATA/SUSEDB/spfileSUSEDB.ora Domain: Start options: open Stop options: immediate Database role: PRIMARY Management policy: AUTOMATIC Server pools: SUSEDB Database instances: SUSEDB1,SUSEDB2,SUSEDB3,SUSEDB4 **Disk Groups: SUSEDATA** Mount point paths: Services: Type: RAC Database is enabled Database is administrator managed

oracle@c2n1:~> /home/grid/bin/crsctl stat res -t

NAME	TARGET STATE	SERVER	STATE_DETAILS
Local Re	sources		
ora.LIST	ENER.lsnr		
	ONLINE ONLINE	c2n1	
	ONLINE ONLINE	c2n2	
	ONLINE ONLINE	c2n3	
	ONLINE ONLINE	c2n4	
ora.SUS	EDATA.dg		
	ONLINE ONLINE	c2n1	
	ONLINE ONLINE	c2n2	
	ONLINE ONLINE	c2n3	
	ONLINE ONLINE	c2n4	
ora.SUS	ETEST.dg		
	ONLINE ONLINE	c2n1	
	ONLINE ONLINE	c2n2	
	ONLINE ONLINE	c2n3	
	ONLINE ONLINE	c2n4	
ora.asm			_
	ONLINE ONLINE	c2n1	Started
	ONLINE ONLINE	c2n2	Started
	ONLINE ONLINE	c2n3	Started

	ONLINE ONLINE	c2n4	Started
ora.gsd			
	OFFLINE OFFLINE	c2n1	
	OFFLINE OFFLINE	c2n2	
	OFFLINE OFFLINE	c2n3	
	OFFLINE OFFLINE	c2n4	
ora net1	network	•=	
oramotri		c2n1	
		c2n2	
		02112	
	ONLINE ONLINE	02113	
	UNLINE UNLINE	CZN4	
ora.ons			
	ONLINE ONLINE	c2n1	
	ONLINE ONLINE	c2n2	
	ONLINE ONLINE	c2n3	
	ONLINE ONLINE	c2n4	
Cluster F	Resources		
ora.LIST	ENER_SCAN1.lsnr		
1	ONLINE ONLINE	c2n2	
ora.LIST	ENER_SCAN2.lsnr		
1	ONLINE ONLINE	c2n3	
ora.LIST	ENER SCAN3.lsnr		
1	ONLINE ONLINE	c2n1	
ora c2n1	vin	02	
1		c2n1	
ora 0202		02111	
010.02112		-0-n-0	
1	UNLINE UNLINE	CZNZ	
ora.c2n3			
1	ONLINE ONLINE	c2n3	
ora.c2n4	.vip		
1	ONLINE ONLINE	c2n4	
ora.cvu			
1	ONLINE ONLINE	c2n1	
ora.oc4j			
1	ONLINE ONLINE	c2n1	
ora scan	1 vip		
1		c2n2	
ora scan		02112	
1		~ <u>)</u> ~2	
I		CZ113	
ora.scan		• •	
1	ONLINE ONLINE	c2n1	
ora.suse	db.db		
1	ONLINE ONLINE	c2n1	Open
2	ONLINE ONLINE	c2n2	Open
3	ONLINE ONLINE	c2n3	Open
4	ONLINE ONLINE	c2n4	Öpen
•			0000

2). Verify Oracle Enterprise Manager.

Activities 🔁 Firefox 🗸	Tue 02:20		••) () -
Oracle Ent	erprise Manager (SYS) – Cluster Data	abase: SUSEDB – Mozilla Firefox	×
Oracle Enterprise Manag			
oracte Enterprise Manag			
29 A https://c2n1.provo.novell.com:115	8/em/console/rac/racSitemap?type=ra	ac_d ∨ C Search ☆ 🖪 🖣	, ^ =
🗟 Most Visited 🗸 🛅 SUSE 🗸 🌩 Getting Star	ted 🗟 Latest Headlines 🔨 ╞ 🎦 Moz	illa Firefox 🗡	
ORACLE Enterprise Manager 11g		Setup Preferences H Cluster Da	elp Logout atabase
Cluster Database: SUSEDB		Logge	ed in As SYS
Home Performance Availability Ser	<u>ver Schema Data Movement Sc</u>	ftware and Support Topology	
	Latest Data Collected From Target Apr 19	, 2016 2:20:19 AM MDT (Refresh) View Data Automatically	(60 sec) 🗸
General	Host CPU	Active Sessions	
Shutdown Black Out	100%	168	
Status Up	75	126	
Instances $\frac{4}{4}$ (1° 4)	50 Other	84 Wait	
Availability (%) <u>100</u> (Last 24 hours)	25 SUSEDB	42 CPU	
Database Name SUSEDB Version 11.2.0.4.0	o 🛄	o لـــــــــ	
View All Properties	Load <u>1.52</u>	Maximum CPU 168	
Diagnostic Summary	Space Summary	High Availability	
Interconnect Alerts 🗸 0 ADDM Findings 0 Active Incidents 🕢 0	Database Size (GB Problem Tablespace Segment Advisor Recommendation:) <u>2.019</u> Console <u>Details</u> s <u>0</u> Last Backup n/a s <u>0</u> Flashback Database Logging <u>Disabled</u>	
Key SQL Profiles <u>4</u>	Policy Violation:	s 🗸 U	
∀ Alerts			
Category All 🗸 Critical 🎽	<u>1</u> Warnings <u>11</u>		
	No. 1	S Previous 1-10 of 12	/ <u>Next 2</u> >
Severity Target Name Target Type	Category Name Im	pact Message Alert Trig	gered ∨

Additional Comments

- Edit CV_ASUME_DISTID=SUSE11 parameter in database/stage/cvu/cv/admin/cvu_config & grid/stage/cvu/cv/admin/cvu_config
- Apply Patch 18370031 (see MOS Note 1951613.1; this patch is applicable on SLES12 also)
- Install libcap1 (libcap2 libraries are installed by default); i.e. libcap1-1.10-59.61.x86_64 & libcap1-32bit-1.10-59.61.x86_64
- ksh is replaced by mksh; e.g. mksh-50-2.13.x86_64
- *libaio has been renamed to libaio1 (i.e. libaio1-0.3.109-17.15.x86_64); ensure that libaio1 is installed*
- OUI may be invoked with -ignoreSysPreqs to temporarily workaround ongoing CVU check failures

SuSE ISV Engineering Team April 26, 2016 https://www.suse.com/