Oracle RAC 12.1.0.2.0 on SUSE Linux Enterprise Server 12 - x86_64
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Introduction

This documentation provides the details for install Oracle RAC 12.1.0.2.0 on SUSE Linux Enterprise Server 12 OS. Here, x86_64 version of both Oracle Database 12c 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 official product documentation available at: http://docs.oracle.com/en/

Hardware and Software Requirements

<table>
<thead>
<tr>
<th>Hardware Requirements</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAM</td>
<td>32 GB</td>
</tr>
<tr>
<td>Swap space</td>
<td>Approx. twice the size of RAM</td>
</tr>
<tr>
<td>Disk space in /tmp</td>
<td>8 GB</td>
</tr>
<tr>
<td>Disk space for software files</td>
<td>8 GB</td>
</tr>
<tr>
<td>Disk space for database files</td>
<td>8 GB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Software Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuSE</td>
</tr>
<tr>
<td>• SUSE Linux Enterprise Server 12 SP1 (x86_64) (<a href="http://download.suse.de/install">http://download.suse.de/install</a>)</td>
</tr>
<tr>
<td>Oracle</td>
</tr>
<tr>
<td>• Database 12c Enterprise/Standard Editions (x86_64) (<a href="http://www.oracle.com/technetwork/indexes/downloads/index.html#database">http://www.oracle.com/technetwork/indexes/downloads/index.html#database</a>)</td>
</tr>
</tbody>
</table>

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 official document (URL: https://www.suse.com/documentation/sles-12/) 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:
137.65.135.72  c2n1.provo.novell.com  c2n1
137.65.135.73  c2n2.provo.novell.com  c2n2
137.65.135.74  c2n3.provo.novell.com  c2n3
137.65.135.75  c2n4.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 12c Release 1 Grid Infrastructure (12.1.0.2.0) for Linux x86-64.

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

Install Flow:

1). Select Installation Option.

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

Choose option "Configure a Standard Cluster", then click Next to continue.
3). Select Installation Type.

Choose option "Advanced Installation", then click Next to continue.
4). Select Product Languages.

Select all languages, then click Next to continue.
5). Grid Plug and Play Information.

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.

Provide the list of nodes with their public hostname and virtual hostname, then click **Next** to continue.
7). Specify Network Interface Usage.

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

<table>
<thead>
<tr>
<th>Interface Name</th>
<th>Subnet</th>
<th>Use for</th>
</tr>
</thead>
<tbody>
<tr>
<td>bond1</td>
<td>10.1.1.0</td>
<td>Public</td>
</tr>
<tr>
<td>bond2</td>
<td>192.168.1.0</td>
<td>Private</td>
</tr>
</tbody>
</table>

Note: If you intend to store Oracle Cluster Registry (OCR) and voting disk files using Oracle Flex Automatic Storage Management (Oracle Flex ASM), then you must designate at least one of the private interface subnets either as "ASM" or as "ASM & Private".
8). Storage Option Information.

You can place Oracle Cluster Registry (OCR) files and voting disk files on Oracle ASM storage, or on a file system. Oracle ASM can be configured on this cluster or can be an existing ASM on a storage server cluster.

- **Use Standard ASM for storage**
  
  Choose this option to configure Local Oracle ASM in this cluster and store OCR and voting disk files on it. ASM instance will be configured on all nodes of the cluster.

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

- **Configure as ASM Client Cluster**
  
  Choose this option to store OCR and Voting disk files on Oracle ASM Storage configured on a storage server cluster.

  ASM Client Data: 

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

Choose option "**Use Standard ASM for storage**", then click **Next** to continue.
9). Create ASM Disk Group.

Depending on your needs to create ASM Disk Group, then click Next to continue.
10). Specify ASM Password.

Fill in ASM Password as shown above, then click Next to continue.
11). Failure Isolation Support.

Choose option "Do not use IPMI", then click **Next** to continue.
12). Specify Management Options.

Selected/Deselected option "Register with EM" depend on your needs, then click Next to continue.

Selected by default, then click **Next** to continue.
14). Specify Installation Location.

Fill in **Oracle base** and **Software location**, then click **Next** to continue.
15). Create Inventory.

Specify a directory for installation metadata files if this is your first installation on this host, then click **Next** to continue.
16). Root script execution configuration.

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: [redacted]
  - Use `sudo`
    - Program path: `/usr/local/bin/sudo`
    - User name: oracle
    - Password: [redacted]

While configuring the software, certain operations have to be performed as "root" user. Choose the option as shown above, the Installer will perform these operations automatically. Fill in the password for "root" user, then click Next to continue.
17). Perform Prerequisite Checks.

Perform Pre-Check as shown above; Click Fix&Check Again to recheck the system.
Follow the prompts, manual run Fixup Script as "root" user on each node, then click **OK**.

Select option "**Ignore All**", then click **Next** to continue.
Installation Summary as shown above, click **Install** to continue.
19). Install Product.

Completed 'prepare for configuration steps'. Here to stay and install Oracle Patch 18456643 first, then click Yes to run configuration scripts.
Oracle CVU failed. Ignore the error then click OK to continue.
Setup completed, click Next to continue.

Click Yes to confirm.

The installation of Oracle Grid Infrastructure for a Cluster is Finished.
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.provo.novell.com is enabled
VIP c2n1-vip.provo.novell.com is running on node: c2n1
VIP c2n2-vip.provo.novell.com is enabled
VIP c2n2-vip.provo.novell.com is running on node: c2n2
VIP c2n3-vip.provo.novell.com is enabled
VIP c2n3-vip.provo.novell.com is running on node: c2n3
VIP c2n4-vip.provo.novell.com is enabled
VIP c2n4-vip.provo.novell.com is running on node: c2n4
Network is enabled
Network is running on node: c2n1
Network is running on node: c2n4
Network is running on node: c2n3
Network is running on node: c2n2
ONS is enabled
ONS daemon is running on node: c2n1
ONS daemon is running on node: c2n4
ONS daemon is running on node: c2n3
ONS daemon is running on node: c2n2
```
3). Check status of designated resources.

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

<table>
<thead>
<tr>
<th>Name</th>
<th>Target</th>
<th>State</th>
<th>Server</th>
<th>State details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Local Resources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ora.LISTENER.lsnr</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n1</td>
<td>STABLE</td>
</tr>
<tr>
<td></td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n2</td>
<td>STABLE</td>
</tr>
<tr>
<td></td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n3</td>
<td>STABLE</td>
</tr>
<tr>
<td></td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n4</td>
<td>STABLE</td>
</tr>
<tr>
<td>ora.SUSETEST.dg</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n1</td>
<td>STABLE</td>
</tr>
<tr>
<td></td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n2</td>
<td>STABLE</td>
</tr>
<tr>
<td></td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n3</td>
<td>STABLE</td>
</tr>
<tr>
<td></td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n4</td>
<td>STABLE</td>
</tr>
<tr>
<td>ora.asm</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n1</td>
<td>Started,STABLE</td>
</tr>
<tr>
<td></td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n2</td>
<td>Started,STABLE</td>
</tr>
<tr>
<td></td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n3</td>
<td>Started,STABLE</td>
</tr>
<tr>
<td></td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n4</td>
<td>Started,STABLE</td>
</tr>
<tr>
<td>ora.net1.network</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n1</td>
<td>STABLE</td>
</tr>
<tr>
<td></td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n2</td>
<td>STABLE</td>
</tr>
<tr>
<td></td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n3</td>
<td>STABLE</td>
</tr>
<tr>
<td></td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n4</td>
<td>STABLE</td>
</tr>
<tr>
<td>ora.ons</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n1</td>
<td>STABLE</td>
</tr>
<tr>
<td></td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n2</td>
<td>STABLE</td>
</tr>
<tr>
<td></td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n3</td>
<td>STABLE</td>
</tr>
<tr>
<td></td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n4</td>
<td>STABLE</td>
</tr>
<tr>
<td><strong>Cluster Resources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ora.LISTENER_SCAN1.lsnr</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n4</td>
<td>STABLE</td>
</tr>
<tr>
<td>ora.LISTENER_SCAN2.lsnr</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n3</td>
<td>STABLE</td>
</tr>
<tr>
<td>ora.LISTENER_SCAN3.lsnr</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n1</td>
<td>STABLE</td>
</tr>
<tr>
<td>ora.MGMTLSNR</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n1</td>
<td>169.254.38.57 10.1.1,STABLE</td>
</tr>
<tr>
<td>ora.c2n1.vip</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n1</td>
<td>STABLE</td>
</tr>
<tr>
<td>ora.c2n2.vip</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n2</td>
<td>STABLE</td>
</tr>
<tr>
<td>ora.c2n3.vip</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n3</td>
<td>STABLE</td>
</tr>
<tr>
<td>ora.c2n4.vip</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n4</td>
<td>STABLE</td>
</tr>
<tr>
<td>ora.cvu</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n1</td>
<td>STABLE</td>
</tr>
<tr>
<td>ora.mgmtdb</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n1</td>
<td>STABLE</td>
</tr>
<tr>
<td>ora.oc4j</td>
<td>ONLINE</td>
<td>ONLINE</td>
<td>c2n1</td>
<td>Open,STABLE</td>
</tr>
</tbody>
</table>
4). Check OCR and Voting disk files.

```
oracle@c2n1:~> /home/grid/bin/ocrcheck
Status of Oracle Cluster Registry is as follows:
  Version : 4
  Total space (kbytes) : 409568
  Used space (kbytes) : 1696
  Available space (kbytes) : 407872
  ID : 1286433802
  Device/File Name : +SUSETEST
                     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   3195ba343d234f0cbf92bf2df0f7d3b9 (/dev/oradata/disk1) [SUSETEST]
2. ONLINE   3410554dce114fa1bfb86b8cd1f3288b (/dev/oradata/disk2) [SUSETEST]
3. ONLINE   69bb2fac7bac4f71bf4b3ec63154f76c (/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 12c Release 1 (12.1.0.2.0) for Linux x86-64.

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

**Install Flow:**

1). Configure Security Updates.

Provide your email address to be informed of security issues, then click **Next** to continue.
2). Select Installation Option.

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

Choose option "Oracle Real Application Clusters database installation", then click Next to continue.
Select all nodes in the cluster, then click **Next** to continue.
5). Select Product Languages.

Select all languages, then click **Next** to continue.

Choose option "Enterprise Edition", then click Next to continue.
7). Specify Installation Location.

Fill in **Oracle base** and **Software location** as shown above, then click **Next** to continue.
8). Privileged Operating System groups.

SYS privileges are required to create a database using operating system (OS) authentication. Membership in OS Groups grants the corresponding SYS privilege, e.g., membership in OSDBA grants the SYSDBA privilege.

- Database Administrator (OSDBA) group: dba
- Database Operator (OSOPER) group (Optional): 
- Database Backup and Recovery (OSBACKUPDBA) group: dba
- Data Guard administrative (OSDGDBA) group: dba
- Encryption Key Management administrative (OSKMDBA) group: dba

Selected by default, then click **Next** to continue.
9). Perform Prerequisite Checks.

Perform Prerequisite Checks

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

Configure Security Updates
Installation Option
Grid Installation Options
Nodes Selection
Product Languages
Database Edition
Installation Location
Operating System Groups
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.

Check Again Fix & Check Again Snow Failed All Nodes Ignore All

<table>
<thead>
<tr>
<th>Checks</th>
<th>Status</th>
<th>Fixable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packages lib820-0.3.104</td>
<td>Warning</td>
<td>No</td>
</tr>
<tr>
<td>Package: libstdc++-3.3.3</td>
<td>Warning</td>
<td>No</td>
</tr>
<tr>
<td>Package: libstdc++-43-3.3.3-20081022</td>
<td>Warning</td>
<td>No</td>
</tr>
<tr>
<td>Package: libstdc++-43-3.3.3-20081022</td>
<td>Warning</td>
<td>No</td>
</tr>
<tr>
<td>Package: libstdc++-43-3.3.3-20081022</td>
<td>Warning</td>
<td>No</td>
</tr>
<tr>
<td>Package: libstdc++-43-3.3.3-20081022</td>
<td>Warning</td>
<td>No</td>
</tr>
<tr>
<td>Maximum locked memory check</td>
<td>Warning</td>
<td>Yes</td>
</tr>
</tbody>
</table>

This is a prerequisite condition to test whether the package "lib820-0.3.104" is available on the system. (more details)

Check Failed on Nodes: [c2n1, c2n3, c2n2, c2n4]

Perform Pre-Check as shown above; Click Fix & Check Again to recheck the system.

Fixup Script

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

Script: /tmp/CVU_121.1.0.2.0_oracle/runfixup.sh

Nodes: c2n1 c2n3 c2n2 c2n4

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

This is a prerequisite condition to test whether the package "lib820-0.3.104" is available on the system. (more details)

Check Failed on Nodes: [c2n1, c2n3, c2n2, c2n4]
Follow the prompts, manual run Fixup Script as "root" user on each node, then click **OK**.

```
c2nl:~ # /tmp/CVU_12.1.0.2.0_oracle/runfixup.sh
All Fix-up operations were completed successfully.
```
Select option "Ignore All", then click **Next** to continue.
Installation Summary as shown above, click **Install** to continue.
11). Install Product.

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

1-4. Using DBCA to create Oracle RAC 12.1.0.2 DB.

1). Database Operation.

Choose option "Create Database", then click Next to continue.
Choose option "Advanced Mode", then click Next to continue.
3). Database Template.

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

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

(Note: Oracle Database 12C supports Container Database, you also can create CDB depend on your needs.)
Server Pools info as shown above, click **Next** to continue.
6). Management Options.

Specify the management options for the database, then click **Next** to continue.
Specify administrative password for DB users, then click **Next** to continue.
8). Storage Locations.

Specify database files storage information as shown above, then click Next to continue.
9). Database Options.

According to your needs to specify whether or not to add the schemas to your database, then click **Next** to continue.
Choose option "Typical Settings" and adjust parameters to meet your requirements, then click Next to continue.
11). Creation Options.

Select the database creation options as shown above, then click Next to continue.
12). Prerequisite Checks.

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

Database Configuration Summary as shown above, check the information, then click Finish to continue.
Database creating progress as shown above, waiting until the creation is complete.
15). Finish.

Database configuration complete. For details check the logfiles at:
/home/oracle/app/cfstop/logs/cdbca/SUSEDB.

Database Information:
Global Database Name: SUSEDB
System Identifier(SID) Prefix: SUSEDB
Server Parameter File name: /SUSETEST01/SUSEDB/spfileSUSEDB ora
EM Database Express URL: https://rc2-scan.provo.novell.com:5500/em

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.

Database creation complete, some information as shown above. Click Close to dismiss the screen.
1-5. Post-Install Checks.

1). Verify database status and configuration.

```
oracle@c2n1:~> export ORACLE_HOME=/home/oracle/app/product/12.1.0/dbhome_1

Instance SUSEDB_1 is running on node c2n2
Instance SUSEDB_2 is running on node c2n3
Instance SUSEDB_3 is running on node c2n4
Instance SUSEDB_4 is running on node c2n1
```

```
oracle@c2n1:~> /home/oracle/app/product/12.1.0/dbhome_1/bin/srvctl config database -d susedb -a

Database unique name: SUSEDB
Database name: SUSEDB
Oracle home: /home/oracle/app/product/12.1.0/dbhome_1
Oracle user: oracle
Spfile: +SUSETEST01/SUSEDB/PARAMETERFILE/spfile.274.908484433
Password file: +SUSETEST01/SUSEDB/PASSWORD/pwdsusedb.256.908484093
Domain:
Start options: open
Stop options: immediate
Database role: PRIMARY
Management policy: AUTOMATIC
Server pools: susepool
Disk Groups: SUSETEST01
Mount point paths:
Services:
Type: RAC
Start concurrency:
Stop concurrency:
Database is enabled
Database is individually enabled on nodes:
Database is individually disabled on nodes:
OSDBA group: dba
OSOPER group:
Database instances:
Configured nodes:
Database is policy managed
```

```
oracle@c2n1:~> /home/grid/bin/crsctl stat res -t
--------------------------------------------------------------------------------
Name           Target  State        Server                   State details
--------------------------------------------------------------------------------
Local Resources                                                                
--------------------------------------------------------------------------------
ora.LISTENER.lsnr
  ONLINE ONLINE  c2n1        STABLE
  ONLINE ONLINE  c2n2        STABLE
  ONLINE ONLINE  c2n3        STABLE
  ONLINE ONLINE  c2n4        STABLE
ora.SUSETEST.dg
  ONLINE ONLINE  c2n1        STABLE
  ONLINE ONLINE  c2n2        STABLE
  ONLINE ONLINE  c2n3        STABLE
  ONLINE ONLINE  c2n4        STABLE
ora.SUSETEST01.dg
```

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ONLINE  ONLINE       c2n1                     STABLE
ONLINE  ONLINE       c2n2                     STABLE
ONLINE  ONLINE       c2n3                     STABLE
ONLINE  ONLINE       c2n4                     STABLE

ora.asm
ONLINE  ONLINE       c2n1                     Started,STABLE
ONLINE  ONLINE       c2n2                     Started,STABLE
ONLINE  ONLINE       c2n3                     Started,STABLE
ONLINE  ONLINE       c2n4                     Started,STABLE

ora.net1.network
ONLINE  ONLINE       c2n1                     STABLE
ONLINE  ONLINE       c2n2                     STABLE
ONLINE  ONLINE       c2n3                     STABLE
ONLINE  ONLINE       c2n4                     STABLE

ora.ons
ONLINE  ONLINE       c2n1                     STABLE
ONLINE  ONLINE       c2n2                     STABLE
ONLINE  ONLINE       c2n3                     STABLE
ONLINE  ONLINE       c2n4                     STABLE

Cluster Resources
ora.LISTENER_SCAN1.lsnr
  1 ONLINE ONLINE       c2n4                     STABLE
ora.LISTENER_SCAN2.lsnr
  1 ONLINE ONLINE       c2n3                     STABLE
ora.LISTENER_SCAN3.lsnr
  1 ONLINE ONLINE       c2n1                     STABLE
ora.MGMTLSNR
  1 ONLINE ONLINE       c2n1                     169.254.38.57 10.1.1.1,STABLE
ora.c2n1.vip
  1 ONLINE ONLINE       c2n1                     STABLE
ora.c2n2.vip
  1 ONLINE ONLINE       c2n2                     STABLE
ora.c2n3.vip
  1 ONLINE ONLINE       c2n3                     STABLE
ora.c2n4.vip
  1 ONLINE ONLINE       c2n4                     STABLE
ora.cvu
  1 ONLINE ONLINE       c2n4                     STABLE
ora.mgmtdb
  1 ONLINE ONLINE       c2n1                     Open,STABLE
ora.oc4j
  1 ONLINE ONLINE       c2n1                     STABLE
ora.scan1.vip
  1 ONLINE ONLINE       c2n4                     STABLE
ora.scan2.vip
  1 ONLINE ONLINE       c2n3                     STABLE
ora.scan3.vip
  1 ONLINE ONLINE       c2n1                     STABLE
ora.susedb.db
  1 ONLINE ONLINE       c2n2                     Open,STABLE
  2 ONLINE ONLINE       c2n3                     Open,STABLE
  3 ONLINE ONLINE       c2n4                     Open,STABLE
  4 ONLINE ONLINE       c2n1                     Open,STABLE
2). Verify Oracle Enterprise Manager.
Additional Comments

- Edit CV_ASSUME_DISTID=SUSE11 parameter in database/stage/cvu/cv/admin/cvu_config &
  grid/stage/cvu/cv/admin/cvu_config

- Apply Patch 20737462 to address CVU issues relating to lack of reference data

- 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