Tutorial Target	Installing Oracle Database 12c R1 on Linux 6 with ASM
Version / Date	1.0 / Feb-2016
Required Software and Packages	 Oracle VirtualBox software, version 5. This tutorial was implemented on VirtualBox 5.0.12 for Windows which can be downloaded from Oracle web site. I made a copy of it <u>here</u>. Oracle Virtualbox VM appliance which has a fresh installation of Oracle Linux 6.7 (seed VM).
	• The procedure to create it from scratch is documented <u>here</u> , or can be watched at Youtube <u>here</u> .
	• Alternatively, you can download a pre-built one from <u>here</u> .
	• Oracle Grid Infrastructure 12c R1 installation files. This can be downloaded from Oracle site. Search for a page titled "Oracle Grid Infrastructure Downloads". At the time of this writing, its link is <u>here</u> . This tutorial was implemented using Oracle Grid Infrastructure 12c Release 1 (12.1.0.2).
	Oracle Database 12c R1 installation files
	• WinSCP utility: to copy the files to and from the Oracle VM box
	• Xming : to display the GUI windows in your hosting Windows PC. Just look for its download page, download it, and install it using Full Installation option. It is straight forward.
	• Putty : which provides a command line prompt to connect to a Linux server from Windows
Required Hardware	Memory to run the VM machine: 4 GB
	Expected storage space needed to hold the VM appliance: 40 GB
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Tutorial Target and Description

This tutorial describes the hands-on practical procedure to install Oracle Database 12c R1 on a Linux server (Oracle Linux 6.7).

Tutorial Procedure Plan

- 1. Clone the Oracle Linux pre-built VM appliance from a seed
- 2. Create virtual hard disks for ASM
- 3. Alter network configuration and hostname
- 4. Set up environment variables for OS accounts: grid and oracle
- 5. Install Oracle ASM packages
- 6. Create ASM disk volumes
- 7. Install Oracle Grid Infrastructure software
- 8. Create ASM disk groups
- 9. Install Oracle database software
- 10. Create an Oracle database

Note: Download the required software and packages before you start implementing the tutorial.

Installation Architecture

The tutorial builds a system with the following architecture diagram:



Tutorial Procedure

1. Clone the Oracle Linux pre-built VM appliance from a seed

Make sure you have enough free disk space to clone the appliance



	?	×
Clone Virtual Machine		
New machine name		
Please choose a name for the new virtual machin machine will be a done of the machine Oracle L i	ie. The r inux 6.3	new 7.
Orade DB 12c		
Reinitialize the MAC address of all network ca	rds	
Expert Mode Next	Car	ncel
	?	×
← Clone Virtual Machine		
Clone type		

Please choose the type of clone you wish to create.

If you choose **Full clone**, an exact copy (including all virtual hard disk files) of the original virtual machine will be created.

If you choose **Linked clone**, a new machine will be created, but the virtual hard disk files will be tied to the virtual hard disk files of original machine and you will not be able to move the new virtual machine to a different computer without moving the original as well.

If you create a **Linked clone** then a new snapshot will be created in the original virtual machine as part of the cloning process.

Clone Cancel

Full clone

○ Linked clone





2. Create virtual hard disks for ASM

We create 3 virtual disks CRSDISK1 (2GB), DATADISK1(50GB) & FRADISK1(50GB).



VirtualBox - Question
You are about to add a virtual hard disk to controller SCSI.
Would you like to create a new, empty file to hold the disk contents or select an existing one?
Create new disk Cancel
? ×
Create Virtual Hard Disk
Hard disk file type
Please choose the type of file that you would like to use for the new virtual hard disk. If you do not need to use it with other virtualization software you can leave this setting unchanged.
VDI (VirtualBox Disk Image)
VMDK (Virtual Machine Disk) VHD (Virtual Hard Disk)
O HDD (Parallels Hard Disk)
QED (QEMU enhanced disk) QCOW (QEMU Copy-On-Write)
Expert Mode Next Cancel
? ×
 Create Virtual Hard Disk
Storage on physical hard disk
Please choose whether the new virtual hard disk file should grow as it is used (dynamically allocated) or if it should be created at its maximum size (fixed
size). A dynamically allocated hard disk file will only use space on your physical
hard disk as it fills up (up to a maximum fixed size), although it will not shrink again automatically when space on it is freed.
A fixed size hard disk file may take longer to create on some systems but is often faster to use.
Dynamically allocated
) Fixed size
Next Cancel
? ×
 Create Virtual Hard Disk
File location and size
Please type the name of the new virtual hard disk file into the box below or dick
on the folder icon to select a different folder to create the file in.
Select the size of the virtual hard disk in megabytes. This size is the limit on the
amount of file data that a virtual machine will be able to store on the hard disk.
4.00 MB 2.00 TB
Create Cancel

Repeat the procedure to create DATADISK1(50GB) & FRADISK1(50GB).



Optionally, edit the description of the VM appliance:



3. Alter network configuration and hostname

Make the Network Adapter Bridged:

First, make sure the Network adapter in the appliance settings is attached to Bridged Adapter. This will make your VM appliance appears in your network as a separate host and will be assigned an IP address based on your network configuration. For more information, check out this <u>documentation</u>.

Oracle DB 12c - Setti	ngs	?	×
E General	Network		
🛒 System	Adapter 1 Adapter 2 Adapter 3 Adapter 4		
Display	Enable Network Adapter		
😥 Storage	Attached to: Bridged Adapter 🔻		
խ Audio	Name: Realtek PCIe GBE Family Controller #2 Advanced		•
Network			
🚫 Serial Ports			
🏈 USB			
Shared Folders			
User Interface			
	OK Cancel	He	lp

Fix the MAC Address of the eth0

When you make a clone of a VM appliance, the MAC address of the network card of the cloned appliance will be changed. This will make Linux add a new device "eth1" and the old one "eth0" will be inactive. You need to fix this.

Obtain the new MAC address from the Settings of the Clone appliance:

🥝 O	racle DB 12c - Sett	ings				?	×
	General	Network					
	System	Adapter 1 Adapter 2	Adapter 3 Adapte	r 4			
	Display	Enable Network Adapt	ter				
\square	Storage	Attached to:	Bridged Adapter 🔹				
	Audio	Name:	Realtek PCIe GBE Family C	ontroller #2			•
₽	Network	Adapter Type:	Intel PRO/1000 MT Deskto	op (82540EM)			v
	Serial Ports	Promiscuous Mode:	Deny				•
	USB	MAC Addres <mark>s:</mark>	0800270AA208				G
	Shared Folders		Cable Connected				
	User Interface		Port Forwarding				
				OK	Cancel	He	elp

Startup the VM appliance and login as root.

Open a terminal window and edit the udev rule for network devices /etc/udev/rules.d/70-persistent-net.rules Copy the new mac address to the line of your eth0 rule and delete the new rule for eth1.



Enter the new MAC address in the file /etc/sysconfig/network-scripts/ifcfg-eth0 as well:

[root@srv1 ~]# cat /etc/sysconfig/network-scripts/ifcfg-eth0 DEVICE=eth0 TYPE=Ethernet UUID=92A5490b-1a26-46ea-8806-2d61037cdb56 ONBOOT=yes NM_CONTROLLED=yes BOOTPROTO=dhcp #WADDR=08:00:27:A0:83:DF HWADDR=08:00:27:0A:82:08 DEFROUTE=yes PEERNOS=yes PEERNOS=yes PEERROUTES=yes IPV4_FAILURE_FATAL=yes IPV4FAILT=no NAME="System eth0"

Reboot

Perform the Network configuration

We need to set the DNS server in the VM appliance. Obtain the DNS sever IP address configured in your network.

Note: If you do not know the DNS IP address in your network, try the following command in the command prompt in the host machine

```
C:\>ipconfig /all | find "DNS"
..
Connection-specific DNS Suffix . :
DNS Servers . . . . . . . . . . . . 192.168.1.1
..
```

Obtain the IP address assigned to the VM appliance and take a note of it.



We are going to make this IP address a static IP address for this machine.

Login as root and open a terminal window.

Run system-config-network command

the utility window will open. Make sure the "Device Configuration" select and press ENTER



Select eth0 and press ENTER



Enter the IP address of the machine and DNS and Gateway IP addresses taken from the previous step:







 $Confirm \ the \ configuration \ modifications \ in \ /etc/sysconfig/network-scripts/ifcfg-eth0:$

[root@srv1 ~]# cat /etc/sysconfig/network-scripts/ifcfg-eth0 DEVICE=eth0 TYPE=Ethernet UUID=92a5490b-1a26-46ea-8806-2d61037cdb56 ONBOOT=yes NM_CONTROLLED=yes BOOTPROTO=none #HWADDR=08:00:27:A0:83:DF HWADDR=08:00:27:0a:a2:08 DEFROUTE=yes PEERROUTES=yes IPV4_FAILURE_FATAL=yes IPV6INIT=no NAME="System eth0" DNS2=192.168.1.1 DNS1=192.168.1.1 USERCTL=no IPADDR=192.168.1.144 NETMASK=255.255.255.0 GATEWAY=192.168.1.1

Update /etc/hosts file

vi /etc/hosts
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
192.168.1.144 srv1.localdomain srv1

Test the changes:

```
[root@srv1 ~]# ping srv1
PING srv1.localdomain (192.168.1.144) 56(84) bytes of data.
64 bytes from srv1.localdomain (192.168.1.144): icmp_seq=1 ttl=64 time=0.015 ms
64 bytes from srv1.localdomain (192.168.1.144): icmp_seq=2 ttl=64 time=0.024 ms
^C
```

Reboot!

Connect to the VM appliance using Putty

Putty is a nice utility which provides a command prompt from Windows client to connect to Linux server. Let's configure it here to connect to our VM appliance.

Ping the VM IP address from your host machine to make sure it is seen. It should see it.



Start Putty and connect to the VM:

🕵 PuTTY Configuration		\times
PuTTY Configuration Category: -Session -Logging -Teminal -Keyboard -Bel -Features -Window -Appearance -Behaviour -Translation -Selection -Colours -Conection -Data -Proxy -Teinet -Rlogin -SH -SH -SH	Basic options for your PuTTY session Specify the destination you want to connect to Host Name (or IP address) Port 192.168.1.144 [22 Connection type: Series Basic options for your PuTTY session Series Load, save or delete a stored session Saved Sessions Default Settings Load Save Default Settings Default Settings Default Save Default	×
Serial	Close <u>wi</u> ndow on exit: O Always O Never O Only on clean exit	
About	Qpen Cancel	



You can control the font in the command prompt as follow:



Save the configuration and connect:

🕵 PuTTY Configuration		×
Category:		
- Session Logging	Basic options for your PuTTY se Specify the destination you want to conne	ssion ct to
E Ieminal Keyboard Bell	Host Name (or IP address) 192.168.1.144	Port 22
Features □ Window	Connection type:	H O Serial
Appearance Behaviour Translation Selection	Load, save or delete a stored session Saved Sessions Srv 1]
Colours	Default Settings	Load
Data Proxy	srv08 2	Save
Telnet Rlogin		Delete
Serial	Close window on exit: ○ Always ○ Never	lean exit
About	3 Open	Cancel

PuTTY Sec	urity Alert	×
	The server's host key is not cached in the registry. You have no guarantee that the server is the computer you think it is. The server's rsa2 key fingerprint is: ssh-rsa 2048 fb:23:12:f6:2e:0f:58:cd:1a:09:90:dd:0c:99:7f:ba If you trust this host, hit Yes to add the key to PUTTY's cache and carry on connecting. If you want to carry on connecting just once, without adding the key to the cache, hit No. If you do not trust this host, hit Cancel to abandon the connection.	
	Yes No Cancel	
Proot@	srv1:~	
login as root@192 [root@sr	: root .168.1.144's password: v1 ~]#	l

4. Set up environment variables for OS accounts: grid and oracle

Open terminal window and as oracle make a backup copy of the bash profile file:

cp ~/.bash_profile ~/.bash_profile_bkp

Add the following to the file:

vi ~/.bash_profile paste below code to /home/oracle/.bash_profile file # .bash_profile # -----# .bash_profile # ----------# OS User: oracle # Application: Oracle Database Software Owner # Version: Oracle 12c Release 1 # -----# Get the aliases and functions if [-f ~/.bashrc]; then . ~/.bashrc fi # -----# ORACLE_SID # -----# Specifies the Oracle system identifier (SID) ORACLE_SID=oradb; export ORACLE_SID # -----# ORACLE UNQNAME # -----# Set ORACLE_UNQNAME equal to the database unique name. # -----ORACLE_UNQNAME=oradb; export ORACLE_UNQNAME # -----# JAVA_HOME # -----JAVA_HOME=/usr/bin/java; export JAVA_HOME # -----# ORACLE_BASE # -----# Specifies the base of the Oracle directory structure # for Optimal Flexible Architecture (OFA) compliant # database software installations. # -----ORACLE_BASE=/u01/app/oracle; export ORACLE_BASE # -----# ORACLE_HOME # -----# Directory containing the Oracle Database software. ORACLE_HOME=\$ORACLE_BASE/product/12.1.0/db_1; export ORACLE_HOME # -----# ORACLE_TERM # -----

Defines a terminal definition. If not set, it # defaults to the value of your TERM environment # variable. Used by all character mode products. # -----ORACLE_TERM=xterm; export ORACLE_TERM # -----# NLS_DATE_FORMAT # -----NLS_DATE_FORMAT="DD-MON-YYYY HH24:MI:SS" export NLS_DATE_FORMAT # ----------# TNS_ADMIN # ------# Specifies the directory containing the Oracle Net # Services configuration files like listener.ora, # tnsnames.ora, and sqlnet.ora. # ------TNS_ADMIN=\$ORACLE_HOME/network/admin; export TNS_ADMIN # -----# PATH # -----# Used by the shell to locate executable programs; # must include the \$ORACLE_HOME/bin directory. # -----PATH=.:\${JAVA_HOME}/bin:\${PATH}:\$HOME/bin:\$ORACLE_HOME/bin PATH=\${PATH}:/usr/bin:/usr/local/bin export PATH # ----------# LD_LIBRARY_PATH # -----# Specifies the list of directories that the shared # library loader searches to locate shared object # libraries at runtime. # ------LD LIBRARY PATH=\$ORACLE HOME/lib LD_LIBRARY_PATH=\${LD_LIBRARY_PATH}:\$ORACLE_HOME/oracm/lib LD_LIBRARY_PATH=\${LD_LIBRARY_PATH}:/lib:/usr/lib:/usr/local/lib export LD_LIBRARY_PATH # -----# CLASSPATH # ----------# Specifies the directory or list of directories that # contain compiled Java classes. # _____ CLASSPATH=\$ORACLE_HOME/JRE CLASSPATH=\${CLASSPATH}:\$ORACLE_HOME/jlib CLASSPATH=\${CLASSPATH}:\$ORACLE_HOME/rdbms/jlib CLASSPATH=\${CLASSPATH}:\$ORACLE_HOME/network/jlib export CLASSPATH # ----------# THREADS_FLAG # ------# All the tools in the JDK use green threads as a # default. To specify that native threads should be # used, set the THREADS_FLAG environment variable to # "native". You can revert to the use of green # threads by setting THREADS_FLAG to the value

```
# "green".
# -----
THREADS_FLAG=native; export THREADS_FLAG
# -----
# TEMP, TMP, and TMPDIR
# -----
export TEMP=/tmp
export TMPDIR=/tmp
# -----
# UMASK
# -----
# Set the default file mode creation mask
# (umask) to 022 to ensure that the user performing
# the Oracle software installation creates files
# with 644 permissions.
# ------
umask 022
```

Switch to root user and create grid user and assign it to its groups:

```
useradd -u 54323 -g oinstall -G dba grid
passwd grid
```

Switch to grid user and modify its bash profile as follows:

```
cp ~/.bash_profile ~/.bash_profile_bkp
vi ~/.bash_profile
# .bash_profile
# OS User: grid
# Application: Oracle Grid Infrastructure
# Version: Oracle 12c Release 1
# -----
# Get the aliases and functions
if [ -f ~/.bashrc ]; then
. ~/.bashrc
fi
# -----
# ORACLE_SID
# -----
# Specifies the Oracle system identifier (SID)
# for the Automatic Storage Management (ASM)instance
# running on this node.
# -----
ORACLE_SID=+ASM; export ORACLE_SID
# -----
# JAVA_HOME
# -----
       _____
# Specifies the directory of the Java SDK and Runtime
# Environment.
# -----
JAVA_HOME=/usr/bin/java; export JAVA_HOME
# -----
# ORACLE_BASE
# -----
```

Specifies the base of the Oracle directory structure # for Optimal Flexible Architecture (OFA) compliant # installations. The Oracle base directory for the # grid installation owner is the location where # diagnostic and administrative logs, and other logs # associated with Oracle ASM and Oracle Clusterware # are stored. # ------ORACLE_BASE=/u01/app/grid; export ORACLE_BASE # -----# ORACLE HOME # ------# Specifies the directory containing the Oracle # Grid Infrastructure software. For grid # infrastructure for a cluster installations, the Grid # home must not be placed under one of the Oracle base # directories, or under Oracle home directories of # Oracle Database installation owners, or in the home # directory of an installation owner. During # installation, ownership of the path to the Grid # home is changed to root. This change causes # permission errors for other installations. # -----ORACLE_HOME=/u01/app/12.1.0/grid; export ORACLE_HOME # -----# ORACLE TERM # ------ORACLE TERM=xterm; export ORACLE TERM # -----# TNS ADMIN # -----# Specifies the directory containing the Oracle Net # Services configuration files like listener.ora, # tnsnames.ora, and sqlnet.ora. TNS_ADMIN=\$ORACLE_HOME/network/admin; export TNS_ADMIN # -----# PATH # -----PATH=.:\${JAVA_HOME}/bin:\${PATH}:\$HOME/bin:\$ORACLE_HOME/bin PATH=\${PATH}:/usr/bin:/usr/local/bin export PATH # ------# TEMP, TMP, and TMPDIR export TEMP=/tmp export TMPDIR=/tmp # ------# UMASK # ----umask 022

Create Oracle software grid home directories:

Logout from grid and login as root, then perform the following:

mkdir -p /u01/app/oracle
mkdir -p /u01/app/grid

mkdir -p /u01/app/12.1.0/grid chown -R grid:oinstall /u01 chown oracle:oinstall /u01/app/oracle chmod -R 775 /u01

5. Install Oracle ASM packages

Verify oracleasm package is installed:

[root@srv1 ~]# rpm -qa | grep oracleasm oracleasm-support-2.1.8-1.el6.x86_64

Install Oracle ASMLib package

The oracleasm kernel driver for the 64-bit (x86_64) Red Hat Compatible Kernel for Oracle Linux 6 can be installed manually from ULN or http://public-yum.oracle.com using the yum tool:

yum install kmod-oracleasm

Further information can be obtained from a page in Oracle site titled:"Oracle ASMLib Downloads for Oracle Linux 6"

http://www.oracle.com/technetwork/server-storage/linux/asmlib/ol6-1709075.html

[root@srv1 ~]# yur	m install kr	nod-oracleasm				
Loaded plugins: re	efresh-packa	agekit, security, ul	ninfo			
Setting up Instal	l Process					
public_ol6_UEKR3_latest			1.2 kB 0	00:00		
<pre>public_ol6_latest</pre>			1.4 kB 6	00:00		
Resolving Depender	ncies					
> Running trans	action check	<				
> Package kmod	-oracleasm.	<86_64 0:2.0.8-6.el6	_7 will be installed			
> Finished Deper	ndency Resol	lution				
Dependencies Reso	lved					
Package	Arch	Version	Repository	Size		
Installing: kmod-oracleasm	x86_64	2.0.8-6.el6_7	public_ol6_latest	35 k		
Transaction Summa	ry					
Install 1 Pa	ackage(s)					
Total download si:	ze: 35 k					
Installed size: 1	17 k					
Is this ok [y/N]:	у					
Downloading Packag	ges:					
kmod-oracleasm-2.0	0.8-6.el6_7	.x86_64.rpm			35 kB	00:00
Running rpm_check_	_debug					
Running Transactio	on Test					
Transaction Test	Succeeded					
Running Transactio	on					
Installing : km	od-oracleasm	n-2.0.8-6.el6_7.x86_	54			
1/1						
Verifying : km	od-oracleasm	n-2.0.8-6.el6_7.x86_	54			
1/1						
Installed:						
kmod-oracleasm.	x86_64 0:2.0	0.8-6.el6_7				
Complete!	mplete!					

Configure and load the ASM kernel module:

The "oracleasm configure" will do the following:

o create the /etc/sysconfig/oracleasm configuration file

o create the /dev/oracleasm mount point

 $\circ\,$ mounts the ASMLib driver file system

[root@srv1 ~]# oracleasm configure -i

Configuring the Oracle ASM library driver.

This will configure the on-boot properties of the Oracle ASM library driver. The following questions will determine whether the driver is loaded on boot and what permissions it will have. The current values will be shown in brackets ('[]'). Hitting <ENTER> without typing an answer will keep that current value. Ctrl-C will abort.

Default user to own the driver interface []: grid Default group to own the driver interface []: dba Start Oracle ASM library driver on boot (y/n) [n]: y Scan for Oracle ASM disks on boot (y/n) [y]: y Writing Oracle ASM library driver configuration: done

Load the oracleasm kernel module:

[root@srv1 ~]# /usr/sbin/oracleasm init Creating /dev/oracleasm mount point: /dev/oracleasm Loading module "oracleasm": oracleasm Configuring "oracleasm" to use device physical block size Mounting ASMlib driver filesystem: /dev/oracleasm

6. Create ASM disk volumes

List the disks in the OS, you should see the disks created earlier:

```
[root@srv1 ~]# fdisk -1 | grep "Disk /dev/sd"
Disk /dev/sda: 107.4 GB, 107374182400 bytes
Disk /dev/sdb: 2147 MB, 2147483648 bytes
Disk /dev/sdc: 53.7 GB, 53687091200 bytes
Disk /dev/sdd: 53.7 GB, 53687091200 bytes
In order to use those disks with ASM, partitions should be created in them.
use fdisk <device file>
then press: n, p, 1, ENTER, ENTER, w - to apply changes
Do this for all the disks sdb,sdc,sdd
Following is the output done on sdb:
[root@srv1 ~]# fdisk /dev/sdb
Device contains neither a valid DOS partition table, nor Sun, SGI or OSF disklabel
Building a new DOS disklabel with disk identifier 0xd2973f79.
Changes will remain in memory only, until you decide to write them.
After that, of course, the previous content won't be recoverable.
Warning: invalid flag 0x0000 of partition table 4 will be corrected by w(rite)
WARNING: DOS-compatible mode is deprecated. It's strongly recommended to
         switch off the mode (command 'c') and change display units to
         sectors (command 'u').
Command (m for help): n
Command action
   e extended
       primary partition (1-4)
   р
p
Partition number (1-4): 1
First cylinder (1-261, default 1):
Using default value 1
Last cylinder, +cylinders or +size{K,M,G} (1-261, default 261):
Using default value 261
Command (m for help): w
The partition table has been altered!
Calling ioctl() to re-read partition table.
Syncing disks.
Verify:
```

[root@srv1 ~]# fdisk -1 | grep "/dev/s" Disk /dev/sda: 107.4 GB, 107374182400 bytes /dev/sda1 * 1 64 512000 83 Linux /dev/sda2 64 13055 104344576 8e Linux LVM Disk /dev/sdb: 2147 MB, 2147483648 bytes /dev/sdb1 1 261 2096451 83 Linux Disk /dev/sdc: 53.7 GB, 53687091200 bytes /dev/sdc1 1 6527 52428096 83 Linux Disk/dev/sdd: 53.7 GB, 53687091200 bytes /dev/sdd1 1 6527 52428096 83 Linux

Create ASM disks:

oracleasm createdisk CRSDISK1 /dev/sdb1

oracleasm createdisk DATADISK1 /dev/sdc1

oracleasm createdisk FRADISK1 /dev/sdd1

[root@srv1 ~]# oracleasm createdisk CRSDISK1 /dev/sdb1 Writing disk header: done Instantiating disk: done [root@srv1 ~]# oracleasm createdisk DATADISK1 /dev/sdc1 Writing disk header: done Instantiating disk: done [root@srv1 ~]# oracleasm createdisk FRADISK1 /dev/sdd1 Writing disk header: done Instantiating disk: done [root@srv1 ~]# oracleasm listdisks CRSDISK1 DATADISK1 FRADISK1

Reboot!

7. Install Oracle Grid Infrastructure software

Copy the installation files to the VM appliance:

Use WinSCP to copy Oracle Grid Infrastructure installation files to the VM appliance. As grid user, I created the directory /home/grid/source to copy the installation files to it

[root@srv1 ~]# su - grid [grid@srv1 ~]\$ pwd /home/grid [grid@srv1 ~]\$ mkdir source



×

After the files were copied, as root, make grid user and oinstall group the owner of the installation files:

[root@srv1 ~]# chown grid:oinstall /home/grid/source/linuxamd64_12102_grid_*

Run Xming and configure Putty for it

Run Xming to view Oracle GUI Installer windows in your host Windows client machine. You should see its icon in the task bar mini icons.

Then, you need to configure PyTTY session with port forwarding enabled to be able to display GUI windows via Xming server and test it with xclock command.

🕵 PuTTY Configuration		×
Category:		
- Session	Basic options for your PuTTY session	
Logging	Specify the destination you want to connect to	
- Keyboard	Host Name (or IP address) Port	
Bell	192.168.1.144 22	
Features	Connection type:	
- Window	ORaw OTelnet ORlogin SSH OSe	rial
	Load, save or delete a stored session	
Translation	Saved Sessions	
Selection	srv1	
Colours	Default Settings 2 Loa	-
- Connection		
Proxy	Sav	B
Telnet	Dele	ie -
Riogin		
E-SSH Sedel		
···· Senai	Close window on exit:	
	Always Never Only on clean exit	
About	Onen Caro	al
About	Open Cano	ei
PuTTY Configuration		×
Dategoor:		
Tomical +	Ontions controlling SSH V11 forwarding	
Keyboard	Viti (
Bell	Clockle X11 featuration	
Features		
E- Window	X display location localhost	
Behaviour	Remote X11 authentication protocol	1
Translation	Mill-Magic-Cookie-1 O ADM-Addronzation-	
Selection		
Colours		
Connection		
Provo		
Telnet		
Riogin		
Kex		
Auth		
×11		
Tunnels		
Bugs 🗸		
About	Onen Caro	
About	Open Cano	ei
PuTTY Configurati	0 0	
S . a		
Category:		
Session	 Basic options for your PuTTY 	session
Logging	Specify the destination you want to con	nect to
Terminal	Heat Name (or IR address)	Part
- Keyboard	Host Ivame (or IF address)	Pon
Bell	192.168.1.144	22
Features	Connection type:	
- Window	◯ Raw ◯ Telnet ◯ Rlogin ● S	SH 🔾 Seria
- Appearance		
- Behaviour	Load, save or delete a stored session	
Translation	Saved Sessions	
Selection	srv1	
Colours	Default Settings	lord
- Connection	oem	Load
- Data	srv07	Save
- Proxy	srvU8	
- Telnet	SIV I	Delete
Rlogin		
⊨- SSH		
- Kex	Close window on exit	
- Auth	Always Never Only on	ı clean exit
- TTY	Contraction of Contraction of Contraction	
- X11	× 2	
About	Open	Cancel

Xclock is not installed in our appliance. To install it, simply run the following command:

Х

yum install xclock

Run xclock to test the configuration changes. You should see the clock application running in your host Windows machine:



Switch to grid user install the software

Switch to grid user then use xauth command to set our session cookies for X11 forwarding to work

```
[root@srv1 ~]# xauth list
srv1.localdomain/unix:10 MIT-MAGIC-COOKIE-1 1f999629ceb74de9c492b1129e243877
[root@srv1 ~]# su - grid
[grid@srv1 ~]$ xauth add srv1.localdomain/unix:10 MIT-MAGIC-COOKIE-1 1f999629ceb74de9c492b1129e243877
xauth: creating new authority file /home/grid/.Xauthority
[grid@srv1 ~]$ export DISPLAY=localhost:10.0
```

Unzip the installation files and run the installer:

```
[grid@srv1 source]$ unzip linuxamd64_12102_grid_1of2.zip > /dev/null
[grid@srv1 source]$ unzip linuxamd64_12102_grid_2of2.zip > /dev/null
[grid@srv1 source]$ cd grid
[grid@srv1 grid]$ ./runInstaller
Starting Oracle Universal Installer...
```

Checking Temp space: must be greater than 415 MB. Actual 79652 MB Passed Checking swap space: must be greater than 150 MB. Actual 5999 MB Passed Checking monitor: must be configured to display at least 256 colors. Actual 16777216 Passed Preparing to launch Oracle Universal Installer from /tmp/OraInstall2016-01-29_11-13-35PM. Please wait ...

Select Installation Option	
🙊 Installation Option	Install and Configure Oracle Grid Infrastructure for a <u>cluster</u>
Cluster Type	Install and Configure Oracle Grid Infrastructure for a Standalone Server
Installation Type	
Cluster Configuration	Upgrau Oracle Grid Infrastructure or Oracle Automatic Storage Management
Network Interface Usage	O Install Oracle Gn of rastructure Software Only
Storage Option	
OCR Storage	
Voting Disk Storage	
Management Options	you need to select second option here

🔬 Oracle Grid Infrastructure 12c Re	elease 1 Installer - Step 2 of 9	– 🗆 X
Select Product Languages		
Installation Option Product Languages Operating System Groups Installation Location Root script execution Prerequisite Checks Summary Install Product Finish	Select the languages in which y Available languages: Arabic Bengali Brazilian Portuguese Bulgarian Canadian French Catalan Croatian Creach Darish Dutch Egyptian English (United Kingdom) Estonian Finnish French Greek	CRID INFRASTRUCTURE
Hep	Hebrew Hungarian Icelandic Indonesian Italian Itaasnace	■ Eack Bect> Install Cancel

In the next wizard window, we expect to see the ASM disks. But they actually did not appear in our case, as shown below:

Oracle Grid Infrastructure 12c R	elease 1 Installer - Step	3 of 12		-	
eate ASM Disk Group					. 12
 Installation Option Product Languages 	Select Disk Group (Disk group name	characteristics and select disks			
Create ASM Disk Group	Redundancy	◯ High ● Normal ◯ External			
Management Options Operating System Groups Installation Location	Allocation Unit Size	E 1 ▼ MB			
Prerequisite Checks Summary Install Product Finish		Disk Path	Size	(in MB)	Status
			Chan	ge Discov	ery <u>P</u> ath.

To fix this, we need to change the discovery path. Click on Change Discovery Path button and change it to /dev/oracleasm/disks/*

Celease 1 Installer - Step 3 of 12 - 🗆 🗙
Select Disk Group characteristics and select disks
Disk group name DATA
Redundancy O High () Normal External
Allocation <u>U</u> nit Size 1 ▼ MB
Add Disks
Changing the Disk Discovery Path will affect ALL Disk Groups (in MB) Status
Disk Discovery Path: //dev/oracleasm/disks/*
QK Cancel
Change Discovery Path

⊖Hi <u>a</u> h ⊙No <u>r</u> mal <u>⊙External</u> 2		
e 1 MB		
isks 🔿 <u>A</u> ll Disks		
Disk Path	Size (in MB)	Status
asm/disks/CRSDISK1	2047 0	andidate
asm/disks/DATADISK1	51199 0	andidate
asm/disks/FRADISK1	51199 0	andidate
	 High Normal ⊙ External 2 e 1 → MB isks All Disks Disk Path 1 asm/disks/CRSDISK1 asm/disks/FRADISK1 	High Normal ⊙ External 2 2 e MB isks All Disks Disk Path Size (in MB) asm/disks/CRSDISK1 2047 (characteristic) asm/disks/FRADISK1 51199 (characteristic)

ase 1 Installer - S	Step 4 of 12				-	
		0	G			12
The new Oracl SYSASM privile with SYSDBA p	e Automatic Storage Man eges for administration. C rivileges to monitor the A	agement (Oracle Pracle recomment (SM instance,	ASM) instance ds that you cre	requires its c ate a less priv	wn SYS us /ileged ASI	er with MSNMP use
Specify the pa	- ssword for these user acc	ounts.				
🔵 Use <u>d</u> iffere	nt passwords for these ac	counts				
	Password					
<u>A</u> SMSNMP						
Ose same p	asswords for these accou	unts				
Spacify Da	countril land		Confirm Process	ord:		
зресну <u>Р</u> а	sswora:	<u>\</u>	_ontirm Passwi	ora:	•	
dessages: A Specify Pass	word:[INS-30011] The p	assword entered	does not confi	orm to the Or	acle recom	mended
standards.						
			< <u>B</u> ack	<u>N</u> ext >	Install	Cancel
se 1 Installer -	Step 5 of 12				-	
5		0.0	À i			12
Control confi Register w OMS host OMS port EM Admir EM Admir	guration to perform the r ith Enterprise Manager (E : : : User Name: : Passygord:	egistration. M) Cloud Contro		· 		
			< <u>B</u> ack	<u>N</u> ext >	<u>I</u> nstall	Canc
Select the nar	ne of the operating syste	m group, that yo	u want to use	for operating	system au	uthenticatio
to Oracle Aut	omatic Storage Managem	ient.				
Oracle <u>A</u> SM A	dministrator (OSASM) Gr	oup	dba	-		
Oracle ASM D	BA (OSDBA for ASM) Gro	up	oinstall			
		of Group (Option				
			< <u>B</u> ack	<u>N</u> ext >	<u>I</u> nstall	Can
🔄 Oracle Gri	id Infrastructure 12c R	elease 1 Installe	er			
1	[INS-41808] Possil	ble invalid choi	ice for OSAS	M Group.		
	Are you sure you v	want to continu	1E ?			
			Ye	s	No	Deta

Specify a base location the Oracle base directo and configuration files	for storing all Oracle software and configuration-related files. This location is ry. Create one Oracle base for each operating system user. By default, software are installed by version and database name in the Oracle base directory.
Oracle base: /u01/ap	p/grid
Specify a location for st directory. This software	oring Oracle software files separate from configuration files in the Oracle base directory is the Oracle Grid Infrastructure home directory.
Software location: /uC	11/app/12.1.0/grid Browse
	CReek North Concel
Oracle Grid Infrastruc	ture 12c Release 1 Installer X
(INS-320)18] The selected Oracle home is outside of Oracle base.
<u> </u>	and the continue 2
Are you	sure you want to continue ?
	Yes No Details
	GRID INFRASTRUCTURE
'ou are starting your firs :xample, install log files) ip subdirectories for eac equires 150 kilobytes of	I installation on this host. Specify a directory for installation metadata files (for . This directory is called the "inventory directory". The installer automatically sets . hproduct to contain inventory data. The subdirectory for each product typically 'disk space.
nventory <u>D</u> irectory: /ul	01/app/oralnventory Browse
Members of the following inventory directory (oral)	operating system group (the primary group) will have write permission to the nventory).
orainventory Group Nam	e: oinstall
	<back next=""> Install Cancel</back>
	Cancel
While configuring the col	Cancel
While configuring the sof	< Back Next > Install Cancel Units Intrado I note I one
while configuring the soft o have the installer perforseow. 2 A glummatically run con	Karce, certain operations have to be performed as "root" user. You can choose rm these operations automatically by specifying inputs for one of the options
While configuring the sof o have the Installer perfo selow.	
While configuring the sof o have the Installer perfo selow.	
While configuring the sof o have the Installer perfo selow.	tware, certain operations have to be performed as "root" user. You can choose some these operations automatically by specifying inputs for one of the options figuration scripts edential
While configuring the sof o have the Installer perfo selow.	
While configuring the sof to have the installer perfo pelow. ④ Use "root" user <u>cr</u> Password : ○ Use guido Program path : User name.	
While configuring the sof o have the Installer perfo below.	
Mhile configuring the sof to have the Installer perfo elow.	
While configuring the sof to have the Installer perfo below.	
Mile configuring the sof o have the installer perfo below. Use "root" user gr Passgord : Program path : User name : Password :	
While configuring the sof o have the installer perfo below. O Use "root" user gr Passgord : O Use gudo Program path : User name : Password :	
Yhile configuring the sof o have the installer perfo elow. Use "root" user gr Password : Use gudo Program path : User name : Passwgrd :	



Solution of the structure of the structu	staller —							
Configuration scripts generat privileged user (root). Installer user credentials provided earl Are you sure you want to cont	ed by the Installer need to be ru r will run these scripts using the ier. inue ?	n as a ; privileged es <u>N</u> o						
🛓 Oracle Grid Infrastructure 12c F	Release 1 Installer - Step	13 of 13				_		×
Finish						CLE [.] TRUCTUR	12	2 ¢
🔍 Installation Option	The installation of	Oracle Grid In	frastructure for a Stand	alone Server	was successful			
Product Languages								
Create ASM Disk Group								
ASM Password								
Management Options								
Operating System Groups								
 Installation Location 								
Create Inventory								
Root script execution								
Prerequisite Checks								
y Summary								
Install Product								
🧅 Finish								
Help				< <u>B</u> ack	<u>N</u> ext >	Install	<u> </u>	se

Check CRS services status:

crsctl status resource -t

Do not close the Putty command prompt window at this stage. Go to next section and execute the commands over there using the same Putty window. If you have already closed it, start it, login as root, and re-run the "xauth list" again, switch to grid, and re-run the commands "xauth add" and "export DISPLAY" as shown earlier.

8. Create ASM disk groups

As grid initiate ASM Configuration Assistant:

[grid@srv1 grid]\$ asmca





M: Disk Groups					-		×
ASM Instance: +ASM							
Disk Groups Volume:	s ASM Cluster	File Systems					
You can choose to create groups with 11.2 ASM co	a new disk grou mpatibility or hig	p or add disks to Jher.	an existing disk gr	oup. To create dynam	ic volumes, yo	u need d	isk
Tip: To perform operatio Disk Groups	ns on a disk groi	up, right mouse cl	ick on the row.				
Disk Group Name	Size (GB)	Free (GB)	Usable (GB)	Redundancy	State		
CRS	2.00	1.94	1.94	EXTERN	MOUNTE	D	
DATA	50.00	49.95	49.95	EXTERN	MOUNTE	D	
Create Mount All	Dismount All						

Create Disk Group Name FRA

Disk Group Name FRA

Redundancy

Redu



: Disk Groups					-		×
SM Instance: +ASM							
Disk Groups Volume	s ASM Cluster	r File Systems					
ou can choose to creat	e a new disk grou	ip or add disks to	an existing disk gro	oup. To create dynam	ic volumes, yo	u need d	lisk
roups with 11.2 ASM co	mpatibility or hig	gher.					
ip: To perform operatio	ns on a disk gro	up, right mouse c	lick on the row.				
Disk Groups						_	
Disk Group Name	Size (GB)	Free (GB)	Usable (GB)	Redundancy	State		٦
CRS	2.00	1.94	1.94	EXTERN	MOUNTE	D	
DATA	50.00	49.95	49.95	EXTERN	MOUNTE	D	
FRA	50.00	49.95	49.95	EXTERN	MOUNTE	D	7
					\sim	_	/
Create Mount All	Dismount All						

Although it is optional, if your disk free space allows it, I'd recommend shutting down the VM and taking a backup copy of it at this stage.

9. Install Oracle database software

Switch to oracle user and create a directory to save the installation files in it:

[root@srv1 ~]# su - oracle
[oracle@srv1 ~]\$ mkdir source
[oracle@srv1 ~]\$ cd source

Using WinSCP copy the installation files to that folder:

퉒 Oracle Database 12c R1 (12.1.0.2.0) for Linux x86-6	4 - root@192.168.1.144	- WinSCP						-		×
Local Mark Files Commands Session Options	Remote Help									
🖶 🚟 📚 Synchronize 🔳 🧬 💽 🍈	😭 Queue 🔹 🛛 Transfe	r Settings De	efault	• 🥵 •						
📮 root@192.168.1.144 🚅 New Session										
🛫 Z: RootFolder 🔹 🤗 😨 🛛 💠 🔹	🖻 🗈 🏠 🧶 🐁			- 🥌 source - 🔗 😨 🖛 - 🔶 -	1 🗈 🖻 😭	2	😭 Find Fi	les 🤤	6	
📑 🕼 Upload 🎲 📝 Edit 🗙 🋃 🕞 Properties 📔				👔 🔐 Download 🙀 📝 Edit 🗙 🏑 🕞 Pro	perties 🚰		$+ - \forall$			
Z:\Software\Oracle\Database\Oracle Database 12c R1 (12.1.0.2.0) for Linux x8	5-64		/home/oracle/source						
Name			Si	Name	Size	Cha	nged		1	Rights
t				t		1/29	/2016 10:06:5	55 PM		wx
linuxamd64_12102_database_1of2.zip		1,	,634,322 k							
inuxamd64_12102_database_2of2.zip	🕒 Open		990,753 k							
	Z Edit									
	Edit With	•								
	🔒 Upload	F5								
	Upload and Delet	e F6								
	X Delete	F8								
	🛃 Rename	F2								
	Custom Comma	nds 🕨								
	File Names	•								
	Properties	F9								
	System Menu									
2 564 MP of 2 564 MP in 2 of 2			,	0 R of 0 R in 0 of 0						,
Upload selected local file(s) to remote directory				0000000			SETP-3	=1	0	00:32

Similar to what we have done with grid, get the Xming working for current oracle user session, as follows:

```
[oracle@srv1 source]$ exit
logout
[root@srv1 ~]# xauth list
srv1.localdomain/unix:10 MIT-MAGIC-COOKIE-1 06e8d60356207d4e15c7e1a4f4185ad3
[root@srv1 ~]# su - oracle
[oracle@srv1 ~]$ xauth add srv1.localdomain/unix:10 MIT-MAGIC-COOKIE-1 06e8d60356207d4e15c7e1a4f4185ad3
xauth: creating new authority file /home/oracle/.Xauthority
[oracle@srv1 ~]$ export DISPLAY=localhost:10
```

To test, issue xclock command:

Poracle@srv1:~
interinferet -12 metric source 'source's file estate
[oracle X -bash: found
[oracle
[oracle
[oracle]
[oracle urce
[oracle] 1s
[oracle]
1
[routherst -14 month list
STATE AND
[continent] -14 mg - oracle
[tracieServi -]S south and ervi, localdomain/uniscid MIT-MR
Xauth: creating new authority file /home/cracie/.kauthorit
[marie#ervi -] TIPLAT-LocalMost.cld
[oracle@srv1 ~]\$ xclock)
Warning: Missing charsets in String to FontSet conversion

Unzip the installation zip files:

[oracle@srv1	~]\$ cd source/	,					
[oracle@srv1	source]\$ unzip	linuxamd64	_12102_	_database_	_1of2.zip	>	/dev/null
[oracle@srv1	source]\$ unzip	linuxamd64	_12102_	_database_	_2of2.zip	>	/dev/null

Run the installer:

```
[oracle@srv1 source]$ cd database/
[oracle@srv1 database]$ ./runInstaller
```

			-	
Oracle Database 12c Release 1 Ir	nstaller - Step 1 of 9		- 0	×
Configure Security Update	s		DATABASE 12	C
Configure Security Updates	Provide your email address to be and initiate configuration manag	informed of security issues, install the pr er. <u>View details</u> .	roduct	
🙀 Installation Option	E <u>m</u> ail:			
Grid Installation Options		Easier for you if you use your My Oracle	Support email	
Install Type		autressytusername.		
Typical Installation	I wish to receive security upd	ates via My Oracle Support.		
Prerequisite Checks	My Oracle Support Password:			
Summary				
🍦 Install Product				
Ú Finish				
Help		< Back	ext > Install Canc	el
	1	^ ^		_
🔬 My Oracle Support Usernar	me/Email Address Not Specifi	ed X]	
You have not j	provided an email address.			
Do you wish to	o remain uninformed of critica	al security issues in your		
configuration	?			
		Yes No		





<u>H</u>elp

<<u>B</u>ack Next > Install Cancel



10. Create an Oracle database

Configure a dedicate database Listener

Configure a dedicate database Listener (this is different from the default Listener running in the gird):

[oracle@srv1 database]\$ netca

State Net Configuration Assistant: W	/elcome — 🗆 🗙
	Welcome to the Oracle Net Configuration Assistant. This tool will take you through the common configuration steps, listed below. Choose the configuration you would like to do: © Listener configuration © Naming Methods configuration © Local Net Service Name configuration © Directory Usage Configuration
Cancel Help	Sack Next >>
🛓 Oracle Net Configuration Assistant: Li	stener Configuration, Listener 🦳 🗆 🗙
Cancel Help	For remote connections to be made to your Oracle database, you must configure a Oracle Net listener. The Oracle Net Configure, rename or delete a listener. Select what you want to do:
Oracle Net Configuration Assistant: Li	Stener Configuration, Listener Name — Ц X For remote connections to be made to your Oracle database you must have at least one Oracle Net listener. Enter the name of the listener you want to create: Listener name: LISTENER_ORADB
Cancel Help	G Back Next >

Gracle Net Configuration Assis	tant: Listener Configuration, Select Protocols	-		×
	You can configure the listener to accept connec more protocols. Select which protocols you war this listener. Keep your configuration as simple configuring only the protocols you need.	tions over t to config as possib	one or ure for le by	
	Available Protocols Selected Prot TCPS IPC]	
Cancel Help	S Back Next	»)		
🧟 Oracle Net Configuration Assis	stant: Listener Configuration, TCP/IP Protocol	_		×
	Which TCP/IP port number should the listener number selected should not be used by any this computer. O Use the standard port number of 1521 © Use another port number: 1522	r use? The other softv	port vare on	
Gracle Net Configuration Assis	stant: Listener Configuration, More Listeners?	-		×
	Would you like to configure another No O Yes	listener?		
Cancel Help	🤇 Back Next	»)		



Check the status of the created listener, and start is if it was down:

lsnrctl status listener_oradb
lsnrctl start listener_oradb

Create the Database

Run dbca (Database Creation Assistant) to create a database

[oracle@srv1 database]\$ dbca



Database Carl Carl Carl	and County Database Str. 2. Col.		
Database Configuration Assista	ant - Create Database - Step 2 of 14		
Creation Mode			DATABASE
 Database Operation 	Create a database with default	configuration	
Creation Mode	<u>G</u> lobal Database Name:		
Database Template	<u>S</u> torage Type:	Automatic Storage Management	(ASM) 💌
Database Identification	Database Files Location:	+FRA	Browse
Management Options	F <u>a</u> st Recovery Area:	+DATA	Browse
Storage Locations	Database Character Set:	WE8MSWIN1252 - MS Windows	Tode Page 1252 8-bit Wes 🔻
Database Options	Administrative Password :		
Initialization Parameters	Confirm Password:		
Creation Options	Create As Container Data	abase	
Summary	Pluggable Database Nam	ie:	
Progress Page	Advanced Mode		
U Finish			
Help		< <u>B</u> ack	Next > Einish Cancel
A Database Configuration Assista	ant - Create Database - Step 3 of 14		- 🗆 X
Database Template		OX X	ORACLE 12
			DATABASE
Database Operation	Templates that include datafiles	contain pre-created databases. They	allowyou to create a new database
 <u>Creation Mode</u> 	when you need to change attribu	ur or more. Use templates without d ites like block size, which cannot be	atafiles only when necessary, such as altered after database creation.
Database Template	Select a template for your databa	ise.	
Database Identification Management Ontions	Select Template	or Transaction Processing	Includes Datafiles Yes
Database Credentials	Custom Database	:	No
Storage Locations			102
Help		< Back	Next > Einish Cancel
· ·····		•	
🧟 Database Configuration Assista	ant - Create Database - Step 4 of 14		- 🗆 X
Database Identification			
 Database Operation 	Provide the identifier information	on required to access the database u	niquely. An Oracle database is
Creation Mode	uniquely identified by a Global database is referenced by at lea	database name, typically of the form ast one Oracle instance which is unic	"name.domain". Additionally, a uely identified from any other
 Database Template 	instance on this system by an C	Dracle system identifier (SID).	
Database Identification	<u>G</u> lobal Database Name: oradb	localdomain	
Database Credentials	SID: oradb		
Storage Locations	Create As Container Databa	se	
Database Options	Creates a database contain enables database virtualizat	er for consolidating multiple databas tion: A container database (CDB) can	es into a single database and have zero or more pluggable
Initialization Parameters	databases (PDB).		
Creation Options	Create an Empty Contain	ier Database	
Summary	 Create a Container Datab 	pase with one or more PDBs	
Progress Page	Number of PDBs:	1.	
- Finish	<u>P</u> DB Name:		
Help	-	< <u>B</u> ack	Next > Einish Cancel
Database Configuration Assist	ant - Create Database - Step 5 of 14		- п х
Management Options			DATABASE Z
Database Operation	Specify the management options	for the database.	
	Configure Enterprise Manage	r (EM) Database Express	
Creation Mode	DM Describer of Description Description	FEOO	
Creation Mode	EM Database Express Port:	SSOU	
Creation Mode Database Template Database Identification Management Options	EM Database Express Port:	ager (EM) Cloud Control	
Creation Mode Database Template Database Identification Management Options Database Credentials	EM Database Express Port:	ager (EM) Cloud Control	
Creation Mode Database Template Database Identification Management Options Database Credentials Storage Locations	EM Database Express Port:	ger (EM) Cloud Control	
Creation Mode Database Template Database Identification Management Options Database Credentials Storage Locations Database Options	EM Database Express Port: Register with Enterprise Mana QMS Host: OMS Port: EM Admin Username:	ger (EM) Cloud Control	
Creation Mode Database Template Database Itemplate Management Options Database Credentials Storage Locations Database Options Initialization Parameters	EM Database Express Port: Register with Enterprise Mana QMS Host: OMS Port: EM Admin Username: EM Admin Password:	ager (EM) Cloud Control	

LAUASE STELLEURATS		3	XLX.	ORACL	<u>-</u> 12
tabase creachtrais				DATABASE	
Database Operation	For security reasons, you	a must specify passwords f	for the following use	r accounts in the r	new database.
Creation Mode	Use Different Adminis	trative Passwords			
Database Template	User Nam	ie F	Password	Confirm	Password
Database Identification	SYS				
Management Options	STSTEM				
Database Credentials					
Storage Locations					
Database Options					
nitialization Parameters	Use the Same Adminis	trative Password for All Ac	counts		
Creation Options	Password:				
Prerequisite Checks	Confirm Password				
Sum mary	Zouna Lassacia.				
Progress Page					
	Messages:				
	Password: The passwor	rd entered does not confor	rm to the Oracle reco	mmended standa	rds. A passwo
	A should have minimum	of 8 characters in length. In one lower case character a	n addition, the passy nd one digit	word must contain	at least one
			in one argin		
telp			< Back	Next > Einis	sh Canc
work configuration		744		DATABASE	
Database Operation	Listener Selection				
Database Operation Creation Mode Database Template	Listener Selection Listeners from Grid Infr listener in Database Ora	astructure home and Datal cle home, specify the lister	base Oracle home ar ner name and port.	e listed below. To	create a new
Database Operation Creation Mode Database Template Database Identification	Listener Selection Listeners from Grid Infr listener in Database Ora Select Listeners.	astructure home and Data Icle home, specify the lister	base Oracle home ar ner name and port.	e listed below. To	create a new
Database Operation Creation Mode Database Template Database Identification Management Options	Listener Selection Listeners from Grid Infr listener in Database Ora Select Listeners.	astructure home and Data icle home, specify the lister	base Oracle home ar ner name and port. Oracle Home	e listed below. To	create a new
Database Operation Creation Mode Database Template Database Identification Management Options Database Oredentials	Listener Selection Listeners from Grid Infr listener in Database Ora Select Listeners. Select Name V LISTENER_ORADE	astructure home and Data tole home, specify the lister Port 1522 /u01/app/oracle	base Oracle home ar ner name and port. Oracle Home :/product/12.1.0/db	e listed below. To	create a new Status Down
Database Operation Creation Mode Database Template Database Identification Management Options Database Credentials Network Configuration	Listener Selection	astructure home and Data cele home, specify the liste Port 1522 /u01/app/oracle	base Oracle home ar ner name and port. Oracle Home :/product/12.1.0/db	e listed below. To	create a new Status Down
Database Operation Creation Mode Database Template Database Identification Management Options Database Credentials. Network Configuration Storage Locations	Listener Selection	astructure home and Data scle home, specify the liste Port 1522 /u01/app/oracle	base Oracle home ar ner name and port. Oracle Home :/product/12.1.0/db	e listed below: To	create a new Status Down
Database Operation Creation Mode Database Template Database Identification Management Options Database Credentials Network Configuration Storace Locations Database Options	Listener Selection	astructure home and Data Licle home, specify the liste Port 1522 /u01/app/oracle	base Oracle home ar ner name and port. Oracle Home :/product/12.1.0/db	e listed below. To	create a new Status Down
Database Operation Creation Mode Database Template Database Identification Management Options Database Credentials Network Configuration Storage Locations Database Options Initialization Parameters	Listener Selection	astructure home and Data cle home, specify the liste Port 1522 /u01/app/oracle	base Oracle home ar ner name and port. Oracle Home :/product/12.1.0/db	e listed below. To _1	create a new Status Down
Database Operation Creation Mode Database Template Database Identification Management Options Database Credentials Network Configuration Storace Locations Database Options Initialization Parameters Creation Options	Listener Selection Listeners from Grid Infr listener in Database Ora Select Listeners. Select Name LISTENER_ORADE Create a New Listene Listener Name	astructure home and Data acle home, specify the liste Port 1 1522 //u01/app/oracle	base Oracle home ar ner name and port. Oracle Home :/product/12.1.0/db	e listed below. To 1	create a new Status Down
Database Operation Creation Mode Database Template Database Identification Management Options Database Ordentials Network: Configuration Storate Locations Database Options Initialization Parameters Creation Options Pereoguistic Checks	Listener Selection Listeners from Grid Infr listener in Database Ora Select Listeners. Select Name USTENER_ORADE Greate a New Listene Listener Name	astructure home and Data cicle home, specify the liste Port 1522 /u01/app/oracle	base Oracle home an ner name and port. Oracle Home :/product/12.1.0/dt	e listed below. To 1	create a new Status Down
Database Operation Creation Mode Database Template Database Identification Management Options Database Ordentials Network Configuration Storate Locations Initialization Parameters Creation Options Prerequisite Checks	Listener Selection Listeners from Grid Infr Listeners from Grid Infr Listeners. Select Listeners. Select Name USTENER_ORADE Greate a New Listene Listener Name. Listener Name. Listener Port.	astructure home and Data acle home, specify the liste Port 1 1522 /u01/app/oracle r	base Oracle home ar ner name and port. Oracle Home /product/12.1.0/db	e listed below: To	Create a new Status Down
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I had issues with selecting from the drop list items in the following windows with my mouse. It worked fine with me using the keyboard.

torage Locations Database Operation Creation Mode Database Operation Database files Storage Type: Automatic Storage Management (ASM) ▼ Database Identification Use Database File Locations from Template Output Output Database Credentials File Location: Howerk Configuration Image: Use Oracle-Managed Files Database Options File Location: Howerk Configuration Image: Use Oracle-Managed Files Database Options File Location: Hatabase Options File Location: Patabase Options File Location: Patabase Options File Location: Patabase Options Choose the recovery options for the database. Regovery files Storage Type: Automatic Storage Management (ASM) ▼ Initialization Parameters Fast Recovery Area Fast Recovery Area: Fast Recovery Area Fast Recovery Area: Fast Recovery Area Fast Recovery Area Fast Recovery Area Summary Fast Recovery Area Size:	Database Configuration Acciet	tant - Croste Databare - Step 8 of 15
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Help < Back	Einish Ei	Enable Artringing Egit Archive Mode Parameters File Location Variables File Location Variables Enable Artringing Enable Artringing File Location Variables File Location Variables Enable Artringing Enable Artringing File Location Variables Enable Artringing Enable Artringing Enable Artringing Enable Artringing Enable Artringing Enable Artringing Enables Sample Schemas Database History. It will also create a tablespace called EXAMPLE. The tablespace will be about 150 MB. Specify whether or not to add the Sample Schemas to your database. Samgle Schemas Specify the SQL scripts you want to run after the database is created. The scripts are run in the order they

Database Operation	Memory Sizing Characte	er Sets C <u>o</u> nnect	ion Mode	
Creation Mode Database Template	Iypical Settings Memory Size (SGA and PGA):	1440 MB		
Database Identification	Percentage: 4	0%	250 MB	3696 MB
Management Options	Use Automatic Memory Ma	nagement	Show Memory Distr	ibution
Database Credentials	Custom Settings			
Network Configuration	Caston serings			
Storage Locations	Memory Management	Automatic :	Shared Memory Management	*
Database Options	S <u>G</u> A Size:		1,080 🔺 M Bytes 🔻	
Initialization Parameters	PGA Size:		360 🖨 M Bytes 💌	
Creation Options	Total Mamory for Oracla:	1.4.4.0 MB		
Prerequisite Checks	rotar memory for oracle.			
Summany				
Progress Page				

Page: 44



Set the control files parameter to ("+DATA/{DB_UNIQUE_NAME}/control1.ctl", "+FRA/{DB_UNIQUE_NAME}/control2.ctl")

🛓 All Initialization Pa	arameters						×
Name 🔺		Value		Override D	efault	Category	
cluster_database		FALSE				Cluster Database	-
compatible		12.1.0.2.0			×	Miscellaneous	
control_files		RA/{DB_UNIQUE_I	NAME}/control2.ctl")			File Configuration	
db_block_size		8			×	Cache and I/O	
db_create_file_dest		+DATA			×	File Configuration	1
db_create_online_lo	g_dest_1	1				File Configuration	
db_create_onlip						File Configuration	
db_domain	("+DATA	/{DB UNIOUE	NAME}/contro	ol1.ctl	·.]	Database Identification	
db_name	"+ERA /		NAME \/control	2 c+1"	<u>í</u>	Database Identification	
db_recovery_f		[00_001605]	nanej/concros	.2		File Configuration	1
db_recovery_file_de:	st_size	45			V	File Configuration	
db_unique_name	-				•	Miscellaneous	
instance number		0				Cluster Database	-
log archive dest 1		-				Archive	- 2000
log_archive_dest_2						Archive	- "
log archive dest sta	ate 1	enable				Archive	
log_archive_dest_sta	<u>-</u> ate 7	enable				Archive	
nis language	c	AMERICAN				NUS	
nis_language						NLS	
						NL3	
open_cursors		300			<u> </u>	Cursors and Library C	
pya_ayyreyate_tary	ei	200			<u> </u>	Sort, Hash Joins, Bitma	
processes		500			v	Processes and sessions	
remote_listener						Network Registration	
remote_login_passw	orafile	EXCLUSIVE		✓		Security and Auditing	
sessions		172				Processes and Sessions	
sga_target		1080		✓		SGA Memory	
shared_servers		U				Shared Server	
🔬 Database Configuration Assistant	t - Create Database - Step	o 10 of 15		x]		
Initialization Parameters			DATABAS	E 12°			
Database Operation	Memory Sizing	I <u>C</u> haracter Sets C <u>o</u> nnecti	on Mode				
Creation Mode	Select the mode in	which you want your database t	to operate by default:				
Database lemplate Database Identification	 Dedicated Serve For each client 	er Mode connection the database will all	ocate a resource dedicated to servir	ig only that			
Management Options	client. Use this when clients wi	mode when the number of tota	I client connections is expected to b inning requests to the database	e small or			
Database Credentials	Shared Server N	Ande	ining requests to the database.				
Network Configuration	Several client c	onnections share a database-al	located pool of resources. Use this	mode when a			
Storage Locations	large number o system resourc	if users need to connect to the o ces. The Oracle shared server fo	database simultaneously while effici eature will be enabled.	ently utilizing			
 Database Options 	Channel Company	an aidi a sha muu han ad an an a					
Initialization Parameters	Shared Servers specifies the number of server processes that you want to create when an instance is started up.						
<u>Creation Options</u>	Shared Ser <u>v</u> er:			1 🔺			
Prerequisite Checks							
Summary Progress Page							
Finish							
	All Initialization Par	rameters					
Help			< <u>Back Next > Eini</u>	ish Cancel			

🛓 Database Configuration Assistan	it - Create Database -	Step 11 of 15		-	
Creation Options				ORACLE DATABASE	12 ^c
Database Operation Creation Mode Database Template Database Identification Management Options Database Credentials Network Configuration Storage Locations	Select the databa © <u>C</u> reate Databa © <u>Save as a Data</u> N <u>a</u> me: <u>D</u> escription:	se creation options se base Template oradb This is a template	created from an existing template -	General Purpose.	
Creation Options Creation Options Prerequisite Checks Summary Progress Page Finish	✓ <u>G</u> enerate Data D <u>e</u> stination D	base Creation Scrip irectory: /u01/ar	nts pp/oracle/admin/oradb/scripts	Customize Storage	Browse
Help	at - Create Database	- Step 13 of 15	< Back	Next > Einish	Cancel
Summary	it - Create Database -	oreh io of 10		ORACLE	12¢

Summary		DATABASE
Database Operation	Database Configuration Assistant: Summary	
<u>Creation Mode</u> <u>Database Template</u>	Create Database -	Summary
Database Identification Management Options	Database Configuration Summary	domain
Database Credentials Network Configuration	Database Configuration Type	art Enabled Single Instance
Storage Locations	SID: oradb Create As Container Database No	
Database Options Initialization Parameters	Storage Type: Automatic Memory Configuration Type: Automatic	Storage Management (ASM) Shared Memory Management
Creation Options Prerequisite Checks	Template Name: General Pur Database Configuration Details	pose or Transaction Processing
🥪 Summary	Database Components	
Progress Page	Component	Selected
 Finish 	Oracle JVM	true
	Oracle Text	true
	Oracle Multimedia	true
	Oracle OLAP	true
	Oracle Spatial	true
	Oracle Label Security	true
	L Comple Columna	
Help		< <u>Back</u> Next > <u>Finish</u> Cancel

rogress Page		
Database Operation Creation Mode Database Template Database Identification Management Ontions	Progress Clone database "oradb localdom ain" creation in progress 16%	
Database Credentials	Steps	Status
	Registering database with Oracle Restart	Finished
Network Configuration	Copying database files	In Progress
Storage Locations	Completing Database Creation	
Database Options		
Initialization Parameters		
Creation Options		
Prerequisite Checks		
Summary		
Progress Page		
- Finish		
	Agtivity Log	
Help	< Back N	lext > Finish Cance

🧟 Database Configuration Assistan	t - Create Database - Step 15 of 15 - 🗆 🗙					
Finish						
Patabase Operation	The generation of the script "/u01/app/oracle/admin/oradb/scripts" is successful.					
Creation Mode	The template "oradb" creation completed.					
 Database Template 	Database creation complete. For details check the logfiles at:					
 Database Identification 	/u01/app/oracle/cfgtoollogs/dbca/oradb.					
 Management Options 	Database Information: Clobal Database Name: oradb localdomain					
 Database Credentials 	System Identifier(SID): oradb					
Network Configuration	EM Database Express URL: https://srv1.localdomain:5500/em					
Storage Locations	Note: All database accounts except SYS and SYSTEM are locked. Select the Password					
 Database Options 	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					
Initialization Parameters	strongly recommends changing the default passwords immediately after unlocking the account.					
Creation Options	Password Management					
Prerequisite Checks						
 Summary 						
 Progress Page 						
Sinish						
Help	< <u>Back</u> <u>N</u> ext> Einish <u>C</u> lose					

Connect to the database using sqlplus utility for testing:

[oracle@srv1 database]\$ echo \$ORACLE_SID oradb [oracle@srv1 database]\$ sqlplus system SQL*Plus: Release 12.1.0.2.0 Production on Sat Jan 30 13:27:27 2016 Copyright (c) 1982, 2014, Oracle. All rights reserved. Enter password: Last Successful login time: Sat Jan 30 2016 13:25:43 +04:00 Connected to: Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit Production With the Partitioning, Automatic Storage Management, OLAP, Advanced Analytics and Real Application Testing options SQL> exit Disconnected from Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit Production

Disconnected from Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit Production With the Partitioning, Automatic Storage Management, OLAP, Advanced Analytics and Real Application Testing options

Test the Enterprise Manager Database Express

If you want to test from hosting machine, use the url https://192.168.1.144:5500/em



Sounds good, isn't it?

About Database Autostart

Traditionally, when you create a standalone Oracle database without ASM, you need to configure Linux to auto-start it with the server reboot. When you use the ASM, the Grid Infrastructure service will take care of this.

Try rebooting the VM machine, login as grid, and check the status of the database. You will see it up and running, as follows:

[grid@srv1 ~]\$ srvctl status database -d oradb

Database is running.

Practically, you do not need to do anything here. I just want to point that out.

[grid@srv1 ~]\$ crsctl config has CRS-4622: Oracle High Availability Services autostart is enabled.