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Introduction

One of the biggest obstacles preventing people from setting up test RAC environments is the requirement for shared storage. In a production environment, shared storage is often provided by a SAN or high-end NAS device, but both of these options are very expensive when all you want to do is get some experience installing and using RAC. A cheaper alternative is to use a FireWire disk enclosure to allow two machines to access the same disk(s), but that still costs money and requires two servers. A third option is to use virtualization to fake the shared storage.

Using VirtualBox you can run multiple Virtual Machines (VMs) on a single server, allowing you to run both RAC nodes on a single machine. In addition, it allows you to set up shared virtual disks, overcoming the obstacle of expensive shared storage.



Before you launch into this installation, here are a few things to consider.

- The finished system includes the host operating system, two guest operating systems, two sets of Oracle Grid Infrastructure (Clusterware + ASM) and two Database instances all on a single server. As you can imagine, this requires a significant amount of disk space, CPU and memory.
- Following on from the last point, the VMs will each need at least 3G of RAM, preferably 4G if you don't want the VMs to swap like crazy. As you can see, 11gR2 RAC requires much more memory than 11gR1 RAC. Don't assume you will be able to run this on a small PC or laptop. You won't.
- This procedure provides a bare bones installation to get the RAC working. There is no redundancy in the Grid Infrastructure installation or the ASM installation. To add this, simply create double the amount of shared disks and select the "Normal" redundancy option when it is offered. Of course, this will take more disk space.
- During the virtual disk creation, I always choose not to preallocate the disk space. This makes virtual disk access slower during the installation, but saves on wasted disk space. The shared disks must have their space preallocated.
- This is not, and should not be considered, a production-ready system. It's simply to allow you to get used to installing and using RAC.
- The Single Client Access Name (SCAN) should be defined in the DNS or GNS and round-robin between one of 3 addresses, which are on the same subnet as the public and virtual IPs. Prior to 11.2.0.2 it could be defined as a single IP address in the "/etc/hosts" file, which is wrong and will cause the cluster verification to fail, but it allowed you to complete the install without the presence of a DNS. This does not seem to work for 11.2.0.2 onward.
- The virtual machines can be limited to 2Gig of swap, which causes a prerequisite check failure, but doesn't prevent the installation working. If you want to avoid this, define 3+Gig of swap.
- This article uses the 64-bit versions of Oracle Linux and Oracle 11g Release 2.
- When doing this installation on my server, I split the virtual disks on to different physical disks ("/u02", "/u03", "/u04"). This is not necessary, but makes things run a bit faster.

Download Software

Download the following software.

- Oracle Linux 6.3
- VirtualBox
 Oracle 11g Release 2 (11.2.0.3) Software (64 bit)

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VirtualBox Installation

First, install the VirtualBox software. On RHEL and its clones you do this with the following type of command as the root user.

rpm -Uvh VirtualBox-4.2-4.2.6_82870_fedora17-1.x86_64.rpm

The package name will vary depending on the host distribution you are using. Once complete, VirtualBox is started from the "Applications > System Tools > Oracle VM VirtualBox" menu option.

Virtual Machine Setup

Now we must define the two virtual BAC nodes. We can save time by defining one VM, then cloning it when it is installed.

Start VirtualBox and click the "New" button on the toolbar. Enter the name "ol6-112-rac1", OS "Linux" and Version "Oracle (64 bit)", then click the "Next" button.

-	
9	Create Virtual Machine
	Name and operating system
	Places chaose a descriptive name for the new
	virtual machine and select the type of operating
	system you intend to install on it. The name you
	identify this machine.
	Name: 06-112-rac1
	Type: Linux
	Version: Oracle (64 hit)
Hid	e Description < Back Next > Cancel
nter "4096" as the base	e memory size, then click the "Next" button.
ý	Create Virtual Michine
	Memory size
	 Select the amount of memory (RAM) in megabytes to be allocated to the virtual machine.
	The recommended memory size is 512 MB
	merecommended memory see is 512 MB.
	4096 MB
	4 MB 24576 MB
	< <u>B</u> ack <u>N</u> ext > Cancel
	< <u>Back</u> Next > Cancel
cept the default option	< Back Next > Cancel to create a new virtual hard disk by clicking the "Create" button.



Hard drive file type
Please choose the type of file that you would like to use for the new virtual hard drive. 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)
○ HDD (Parallels Hard Disk)
 QED (QEMU enhanced disk)
 QCOW (QEMU Copy-On-Write)
Hide Description < Back Next > Cancel

1	Create Virtual Hard Drive
	Storage on physical hard drive
	Please choose whether the new virtual hard drive 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 drive file will only use space on your physical hard drive 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 drive file may take longer to create on some systems but is often faster to use.
	 Dynamically allocated
	○ <u>F</u> ixed size
	< <u>B</u> ack <u>N</u> ext > Cancel

Accept the default location and set the size to "30G", then click the "Create" button. If you can spread the virtual disks onto different physical disks, that will improve performance.

9	Create Virtual Hard Vrive 🔷 🛪 🛪
	File location and size
	Please type the name of the new victual hard drive file into the box below or click on the folder icon to select a different folder to create the file in.
	ol6-112-rac1
	Select the size of the virtual hard drive in medabytes. This size is the limit on the amount of file data that a virtual machine will be able to store on the hard drive. 30.00 GB 4.00 MB 2.00 TB
	< <u>B</u> ack Create Cancel

The "ol6-112-rac1" VM will appear on the left hand pane. Scroll down the "Details" tab on the right and click on the "Network" link.

Ele Machine Help		
🔘 🤣 🤣 🦑 New Settings Start Discard		😟 Details 🛛 🗐 Snapshot
S KM 12c Cloud Control	📕 General	E Preview
🕥 Oracle WebLogic	Name: ol6-112-rac1 Operating System: Oracle (64 bit)	
Oracle RAC Windows	System	
0 0L5 112 AC	Base Memory: 4096 MB Boot Order: Happy. CD/DVD-ROM, Hard Disk Acceleration: VTx/AMD-V, Nested Paging, PAE/PD	ol6-112-rac1
$\langle \rangle$	😨 Display	
\backslash	Video Memory: 12 MB Remote Desktop Server: Disabled	
\sim	Storage	
	Controller: DE DE Secondary Master: [CD/DVD] Empty Controller: SATA SATA Port 0: ol6-112-rac1.vdi (Normal	30.00 (8)
	Gr Audio	
	Host Driver: PulseAudio Controller: ICH AC97	
	📑 Network	
	Adapter 1: Intel PRO/1000 MT Desktop (NAT)	
	Ø USB	
	Nevice Riters: 0 (0 active)	
	General folders	
	None	
	Description	
	None	

Make sure "Adapter 1" is enabled, set to "Bridged Adapter", then click on the "Adapter 2" tab.

3	ol6-112-racl - Settings
 General System Display Storage Audio Network Serial Ports USB Shared Folders 	Network Adapter 1 Adapter 2 Adapter 3 Adapter 4 ✓ Enable Network Adapter Attached to: Bridged Adapter ♀ Name: em1 ◇ Advanced
	Select a settings category from the list on the left-hand side and move the mouse over a settings item to get more information.
👩 Help	<u>● Cancel</u> <u></u>

Make sure "Adapter 2" is enabled, set to "Bridged Adapter" or "Internal Network", then click on the "System" section.

General General	Network
🗾 System 🛐 Display	Adapter <u>1</u> Adapter <u>2</u> Adapter <u>3</u> Adapter <u>4</u>
Storage Audio National	☑ Enable Network Adapter Attached to: Internal Network ↓ ↓
Serial Ports	Name: intnet
Ø USB	▶ Advanced
	Select a settings category from the list on the left-hand side and move the mouse over a settings item to get more information.

Move "Hard Disk" to the top of the boot order and uncheck the "Floppy" option, then click the "OK" button.

General
System
 Display Storage Audio Network Serial Ports USB Shared Folders

The virtual machine is now configured so we can start the guest operating system installation.

Guest Operating System Installation

With the new VM highlighted, click the "Start" button on the toolbar. On the "Select start-updisk" screen, choose the relevant Oracle Linux ISO image and click the "Start" button.



The resulting console window will contain the Oracle Linux boot screen.



Continue through the Oracle Linux 6 installation as you would for a basic server. A general pictorial guide to the installation can be found <u>here</u>. More specifically, it should be a server installation with a minimum of 4G+ swap, firewall disabled, SELinux set to permissive and the following package groups installed:

- Base System > Base
- Base System > Client management tools
- Base System > Compatibility libraries
- Base System > Hardware monitoring utilities
- Base System > Large Systems Performance
- Base System > Network file system client
- Base System > Performance Tools
- Base System > Perl Support
- Servers > Server Platform
- Servers > System administration tools
- Desktops > Desktop
- Desktops > Desktop Platform

```
Podany zestaw grup pakietów
instalacyjnych należy traktować
informacyjnie, ponieważ na obydwu
masyznach wirtualnych zostały już
zainstalowane odpowienie grupy
pakietów systemu operacyjnego
Linux. Proszę porównać ten punkt
instrukcji z odpowiednim punktem
instrukcji podanej w suplemencie
do wykładów 1 - 3.
```

ORACLE-BASE - Oracle Database 11g Release 2 (11.2.0.3.0) RAC O...

http://www.oracle-base.com/articles/11g/oracle-db-11gr2-rac-installat...

	Gdy na interfejsie sieciowym eth0 nie został		
 Desktops > Fonts 	ustawiony globalny adres IP, a jedynie		
 Desktops > General Purpose Desktop 	192.168.xxx.111, to wystarczy jeszcze		
Desktops > Graphical Administration Tools	tylko jeden interfejs sieciowy ethl		
Desktops > Input Methods Desktops > X Window System	dla prywatnego adresu IP, który w roku 2016		
Applications > Internet Browser	ma być zdefiniowany wg wzorca ustalonego		
 Development > Additional Development 	w głównej cześci wyk 11 – 13 Jest to bardzo		
 Development > Development Tools 	ważno oby uniknać konfliktu adrosów IP III		
	wazne, aby unikinąć kontitiktu autesow ir :::		
To be consistent with the rest of the article, the following information should be set during the installation:			

- hostname: ol6-112-rac1.localdomain
- IP Address eth0: 192.168.0.111 (public address)
- Default Gateway eth0: 192.168.0.1 (public address)
- IP Address eth1: 192.168.1.111 (private address)
- Default Gateway eth1: none

Zastosować nazwę domenową i adres IP wg wzorców ustalonych w głównej części wykładu !!!!

You are free to change the IP addresses to suit your network, but remember to stay consistent with those adjustments throughout the rest of the article.

Oracle Installation Prerequisites

Perform either the Automatic Setup or the Manual Setup to complete the basic prerequisites. The Additional Setup is required for all installations.

Automatic Setup

If you plan to use the "oracle-rdbms-server-11gR2-preinstall" package to perform all your prerequisite setup, follow the instructions at http://public-yum.oracle.com to setup the yum repository for OL, then perform the following command.

yum install oracle-rdbms-server-11gR2-preinstall

All necessary prerequisites will be performed automatically.

It is probably worth doing a full update as well, but this is not strictly speaking necessary.

yum update

Manual Setup

If you have not used the "oracle-rdbms-server-11gR2-preinstall" package to perform all prerequisites, you will need to manually perform the following setup tasks.

In addition to the basic OS installation, the following packages must be installed whilst logged in as the root user. This includes the 64-bit and 32-bit versions of some packages. The commented out packages are those already installed if you have followed the suggested package selection.

```
# From Oracle Linux 6 DVD
cd /media/cdrom/Server/Packages
#rpm -Uvh binutils-2.*
#rpm -Uvh compat-libstdc++-33*
#rpm -Uvh elfutils-libelf-0.*
#rpm -Uvh libaio-0.*
rpm -Uvh libaio-devel-0.*
#rpm -Uvh sysstat-9.*
#rpm -Uvh glibc-2.*
#rpm -Uvh glibc-common-2.*
#rpm -Uvh glibc-devel-2.* glibc-headers-2.*
rpm -Uvh ksh-2*
#rpm -Uvh make-3.*
#rpm -Uvh libgcc-4.*
#rpm -Uvh libstdc++-4.*
rpm -Uvh libstdc++-4.*.i686*
#rpm -Uvh libstdc++-devel-4.*
#rpm -Uvh gcc-4.*x86_64*
#rpm -Uvh gcc-c++-4.*x86_64*
#rpm -Uvh --allfiles elfutils-libelf-0*x86_64* elfutils-libelf-devel-0*x86_64*
rpm -Uvh elfutils-libelf-0*i686* elfutils-libelf-devel-0*i686*
rpm -Uvh libtool-ltdl*i686*
rpm -Uvh ncurses*i686*
```

```
rpm -Uvh readline*i686*
rpm -Uvh unixODBC*
cd /
eject
```

Add or amend the following lines to the "/etc/sysctl.conf" file.

```
fs.aio-max-nr = 1048576
fs.file-max = 6815744
#kernel.shmall = 2097152
#kernel.shmmax = 1054504960
kernel.shmmni = 4096
# semaphores: semmsl, semmns, semopm, semmni
kernel.sem = 250 32000 100 128
net.ipv4.ip_local_port_range = 9000 65500
net.core.rmem_default=262144
net.core.wmem_default=262144
net.core.wmem_default=262144
```

Run the following command to change the current kernel parameters.

/sbin/sysctl -p

Add the following lines to the "/etc/security/limits.conf" file.

oracle soft nproc 2047 oracle hard nproc 16384 oracle soft nofile 4096 oracle hard nofile 65536 oracle soft stack 10240	Te parametry powinny być już wprowadzone w skopiowanych maszynach, ale należy je zweryfikować.
---	---

Add the following lines to the "/etc/pam.d/login" file, if it does not already exist.

```
session required pam_limits.so
```

Create the new groups and users.

```
groupadd -g 1000 oinstall
groupadd -g 1200 dba
useradd -u 1100 -g oinstall -G dba oracle
passwd oracle
groupadd -g 1200 dba
useradd -u 1100 -g oinstall -G dba oracle
passwd oracle
groupadd -g 1200 dba
useradd -u 1100 -g oinstall -G dba oracle
passwd oracle
```

```
Użytkownik oracle oraz grupy oinstall i dba
powinne być już utworzone w skopiowanych
maszynach, ale należy to zweryfikować.
Oczywiście liczbowe identyfikatory
użytkownika oraz grup nie muszą być takie
same jak w niniejszej instrukcji.
```

Additional Setup

Perform the following steps whilst logged into the "ol6-112-rac1" virtual machine as the root user.

Set the password for the "oracle" user.

nassiva oraclo	Hasło powinno być takie samo na obydwu węzłach i tak pow	vinno
passwa oracie	być w skopiowanych maszynach, ale należy to zweryfikować	5 .

Install the following package from the Oracle grid media after you've defined groups.

```
Poniższą instalację na obydwu węzłach należy wykonać z pakietu Oracle Grid Infrastucture
       cd /your/path/to/grid/rpm
       rpm -Uvh cvuqdisk*
                                                              Zastosować nazwy domenowe
 If you are not using DNS, the "/etc/hosts" file must contain the following information.
                                                              swoich hostów na maszynach
                                                              wirtualnych i swoje adresy
       127.0.0.1
                      localhost.localdomain localhost
                                                              IP zgodne z ustaleniami!!!
       # Public
       192.168.0.111 ol6-112-rac1.localdomain
                                                     ol6-112-rac1
                                                     ol6-112-rac2
       192.168.0.112 ol6-112-rac2.localdomain
       # Private
       192.168.1.111
                      ol6-112-rac1-priv.localdomain
                                                    ol6-112-rac1-priv
```

192.168.1.112 # Virtual	ol6-112-rac2-priv.localdomain	ol6-112-rac2-priv
192.168.0.113 192.168.0.114	ol6-112-rac1-vip.localdomain ol6-112-rac2-vip.localdomain	ol6-112-rac1-vip ol6-112-rac2-vip
# SCAN 192.168.0.115 192.168.0.116 192.168.0.117	ol6-112-scan.localdomain ol6-11 ol6-112-scan.localdomain ol6-11 ol6-112-scan.localdomain ol6-11	<pre>2-scan 2-scan 2-scan 2-scan</pre> Należy zarówno skonfigurować wpisy do /etc/hosts , jaki DNS zgodnie z punktem 1 instrukcji przedstawionej w głównej części wykł. 11 - 13 !!!

Note. Even with the SCAN address defined in the hosts file, it still needs to be defined on the DNS to round-robin between 3 addresses on the same subnet as the public IPs. The DNS configuration is described <u>here</u>. Having said that, I normally include everything except the SCAN entries when using DNS.

Amend the "/etc/security/limits.d/90-nproc.conf" file as described below. See MOS Note [ID 1487773.1]

# Change this * soft nproc	1024	Ta zmiana powinna być już zrobiona w skopiowanych
# To this * - nproc 16384		maszynach, ale należy to zweryfikować.

Change the setting of SELinux to permissive by editing the "/etc/selinux/config" file, making sure the SELINUX flag is set as follows.

```
SELINUX=permissive
```

```
Ta zmiana powinna być już zrobiona w skopiowanych maszynach, ale należy to zweryfikować.
```

If you have the Linux firewall enabled, you will need to disable or configure it, as shown <u>here</u> or <u>here</u>. The following is an example of disabling the firewall.

# service iptables stop		wyrdolony w choprowanyon
<pre># chkconfig iptables off ma</pre>	aszynach, ale należy	to zweryfikować.

Either configure NTP, or make sure it is not configured so the Oracle Cluster Time Synchronization Service (ctssd) can synchronize the times of the RAC nodes. If you want to deconfigure NTP do the following.

```
# service ntpd stop
Shutting down ntpd:
# chkconfig ntpd off
# mv /etc/ntp.conf /etc/ntp.conf.orig
# rm /var/run/ntpd.pid
```

If you want to use NTP, you must add the "-x" option into the following line in the "/etc/sysconfig/ntpd" file.

OPTIONS="-x -u ntp:ntp -p /var/run/ntpd.pid"

Then restart NTP.

service ntpd restart

Create the directories in which the Oracle software will be installed.

mkdir -p /u01/app/11.2.0.3/grid mkdir -p /u01/app/oracle/product/11.2.0.3/db_1 chown -R oracle:oinstall /u01 chmod -R 775 /u01/ Jeśli na skopiowanych maszynach posiadamy już pewną strukturę podkatalogów w /u01 , to należy ją uporządkować zgodnie z tą instrukcją i usunąć wszystkie pliki poza plikami pakietów instalacyjnych.

[OK]

```
Log in as the "oracle" user and add the following lines at the end of the "/home/oracle/.bash_profile" file.

Proszę zastosować swoją nazwę domenową hosta i swoje ścieżki dostępu

# Oracle Settings

TMP=/tmp; export TMP

TMPDIR=$TMP; export TMPDIR

ORACLE_HOSTNAME=ol6-112-racl.localdomain; export ORACLE_HOSTNAME

ORACLE_UNQNAME=RAC; export ORACLE_UNQNAME
```

ORACLE_BASE=/u01/app/oracle; export ORACLE_BASE GRID_HOME=/u01/app/11.2.0.3/grid; export GRID_HOME DB_HOME=\$ORACLE_BASE/product/11.2.0.3/db_1; export DB_HOME ORACLE_HOME=\$DB_HOME; export ORACLE_HOME ORACLE_SID=RAC1; export ORACLE_SID ORACLE_TERM=xterm; export ORACLE_TERM BASE_PATH=/usr/sbin:\$PATH; export BASE_PATH PATH=\$ORACLE_HOME/bin:\$BASE_PATH; export PATH LD_LIBRARY_PATH=\$ORACLE_HOME/lib:/lib:/usr/lib; export LD_LIBRARY_PATH CLASSPATH=\$ORACLE_HOME/JRE:\$ORACLE_HOME/jlib:\$ORACLE_HOME/rdbms/jlib; export CLASSPATH if [\$USER = "oracle"]; then if [\$SHELL = "/bin/ksh"]; then ulimit -p 16384 ulimit -n 65536 else ulimit -u 16384 -n 65536 fi fi alias grid_env='. /home/oracle/grid_env' alias db_env='. /home/oracle/db_env' Create a file called "/home/oracle/grid_env" with the following contents. ORACLE_SID=+ASM1; export ORACLE_SID ORACLE_HOME=\$GRID_HOME; export ORACLE_HOME PATH=\$ORACLE_HOME/bin:\$BASE_PATH; export PATH LD_LIBRARY_PATH=\$ORACLE_HOME/lib:/lib:/usr/lib; export LD_LIBRARY_PATH CLASSPATH=\$ORACLE_HOME/JRE:\$ORACLE_HOME/jlib:\$ORACLE_HOME/rdbms/jlib; export CLASSPATH Create a file called "/home/oracle/db_env" with the following contents. ORACLE_SID=RAC1; export ORACLE_SID ORACLE_HOME=\$DB_HOME; export ORACLE_HOME PATH=\$ORACLE_HOME/bin:\$BASE_PATH; export PATH LD_LIBRARY_PATH=\$ORACLE_HOME/lib:/lib:/usr/lib; export LD_LIBRARY_PATH CLASSPATH=\$ORACLE_HOME/JRE:\$ORACLE_HOME/jlib:\$ORACLE_HOME/rdbms/jlib; export CLASSPATH Once the "/home/oracle/grid_env" has been run, you will be able to switch between environments as follows. \$ grid_env \$ echo \$ORACLE_HOME /u01/app/11.2.0.3/grid \$ db_env \$ echo \$ORACLE_HOME /u01/app/oracle/product/11.2.0.3/db_1 Ś We've made a lot of changes, so it's worth doing a reboot of the VM at this point to make sure all the changes have taken effect. # shutdown -r now Install Guest Additions Click on the "Devices > Install Guest Additions" menu option at the top of the VM screen. If you get the option to auto-run take it. If not, then run the following commands. cd /media/VBOXADDITIONS sh ./VBoxLinuxAdditions.run The VM will need to be restarted for the additions to be used properly. The next section requires a shutdown so no additional restart is needed at this time.



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
    p primary partition (1-4)
p
Partition number (1-4): 1
First cylinder (1-652, default 1):
Using default value 1
Last cylinder, +cylinders or +size{K,M,G} (1-652, default 652):
Using default value 652
```

```
Command (m for help): w
The partition table has been altered!
Calling ioctl() to re-read partition table.
Syncing disks.
#
```

In each case, the sequence of answers is "n", "p", "1", "Return", "Return" and "w".

Once all the disks are partitioned, the results can be seen by repeating the previous "Is" command.

```
# cd /dev
# ls sd*
sda sdal sda2 sdb sdb1 sdc sdc1 sdd sdd1 sde sde1
#
```

Configure your UDEV rules, as shown here.

Add the following to the "/etc/scsi_id.config" file to configure SCSI devices as trusted. Create the file if it doesn't already exist.

options=-g

The SCSI ID of my disks are displayed below.

```
# /sbin/scsi_id -g -u -d /dev/sdb
1ATA_VBOX_HARDDISK_VB348c4cfc-e3924169
# /sbin/scsi_id -g -u -d /dev/sdc
1ATA_VBOX_HARDDISK_VB5a922b63-bdda991a
# /sbin/scsi_id -g -u -d /dev/sdd
1ATA_VBOX_HARDDISK_VB4bcd7321-f022a60f
# /sbin/scsi_id -g -u -d /dev/sde
1ATA_VBOX_HARDDISK_VBec4843fc-6004ae11
#
```

Using these values, edit the "/etc/udev/rules.d/99-oracle-asmdevices.rules" file adding the following 4 entries. All parameters for a single entry must be on the same line.

```
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent", RESULT=="
NAME="asm-disk1", OWNER="oracle", GROUP="dba", MODE="0660"
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent", RESULT=="
NAME="asm-disk2", OWNER="oracle", GROUP="dba", MODE="0660"
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent", RESULT=="
NAME="asm-disk3", OWNER="oracle", GROUP="dba", MODE="0660"
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent", RESULT=="
NAME="asm-disk3", OWNER="oracle", GROUP="dba", MODE="0660"
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent", RESULT=="
NAME="asm-disk4", OWNER="oracle", GROUP="dba", MODE="0660"
```

Load updated block device partition tables.

```
# /sbin/partprobe /dev/sdb1
# /sbin/partprobe /dev/sdc1
# /sbin/partprobe /dev/sdd1
# /sbin/partprobe /dev/sde1
```

Test the rules are working as expected.

/sbin/udevadm test /block/sdb/sdb1

Reload the UDEV rules and start UDEV.

/sbin/udevadm control --reload-rules
/sbin/start_udev

The disks should now be visible and have the correct ownership using the following command. If they are not visible, your UDEV configuration is incorrect and must be fixed before you proceed.



Start the "ol6-112-rac2" virtual machine by clicking the "Start" button on the toolbar. Ignore any network errors during the

ORACLE-BASE - Oracle Database 11g Release 2 (11.2.0.3.0) RAC O... http://www.oracle-base.com/articles/11g/oracle-db-11gr2-rac-installat...

Interfejsy sieciowe węzła RAC2 powinny być już skonfigurowane zgodnie z punktem 1 instrukcji podanej w głównej części wykł. 11 - 13, ale warto to zweryfikować startup. wykorzystując informacje zawarte w górnej połowie tej strony. Log in to the "ol6-112rac2" virtual machine as the "root" user so we can reconfigure the network settings to match the following.

• • •	hostname: ol6-112-rac2.localdomain IP Address eth0: 192.168.0.112 (public address) Default Gateway eth0: 192.168.0.1 (public address) IP Address eth1: 192.168.1.112 (private address) Default Gateway eth1: none	5)	Zastosować zgodne z ustaleniami naz domenową hosta i adresy IP na swoje drugiej maszynie wirtualnej !!!!	wę j
Amend	mend the hostname in the "/etc/sysconfig/network" file. $\begin{bmatrix} We \\ k \end{bmatrix}$		e wszystkich opisanych tutaj	
	NETWORKING=yes HOSTNAME=ol6-112-rac2.localdomain	zc hc	godne z ustaleniami swoje nazwy dome: ostów i swoje adresy IP !!!	nowe

Check the MAC address of each of the available network connections. Don't worry that they are listed as "eth2" and "eth3". These are dynamically created connections because the MAC address of the "eth0" and "eth1" connections is incorrect.

```
# ifconfig -a | grep eth
eth2 Link encap:Ethernet HWaddr 08:00:27:95:ED:33
         Link encap:Ethernet HWaddr 08:00:27:E3:DA:B6
eth3
#
```

Edit the "/etc/sysconfig/network-scripts/ifcfg-eth0", amending only the IPADDR and HWADDR settings as follows and deleting the UUID entry. Note, the HWADDR value comes from the "eth2" interface displayed above.

```
HWADDR=08:00:27:95:ED:33
IPADDR=192.168.0.112
```

Edit the "/etc/sysconfig/network-scripts/ifcfg-eth1", amending only the IPADDR and HWADDR settings as follows and deleting the UUID entry. Note, the HWADDR value comes from the "eth3" interface displayed above.

```
HWADDR=08:00:27:E3:DA:B6
IPADDR=192.168.1.112
```

Edit the "/home/oracle/.bash profile" file on the "ol6-112-rac2" node to correct the ORACLE SID and ORACLE_HOSTNAME values.

```
ORACLE_SID=RAC2; export ORACLE_SID
ORACLE_HOSTNAME=ol6-112-rac2.localdomain; export ORACLE_HOSTNAME
```

Also, amend the ORACLE_SID setting in the "/home/oracle/db_env" and "/home/oracle/grid_env" files.

Restart the "ol6-112-rac2" virtual machine and start the "ol6-112-rac1" virtual machine. When both nodes have started, check they can both ping all the public and private IP addresses using the following commands.

```
ping -c 3 ol6-112-rac1
ping -c 3 ol6-112-rac1-priv
ping -c 3 ol6-112-rac2
ping -c 3 ol6-112-rac2-priv
```

At this point the virtual IP addresses defined in the "/etc/hosts" file will not work, so don't bother testing them.

Check the UDEV rules are working on both machines. In previous versions of OL6 the "/etc/udev/rules.d/99-oracleasmdevices.rules" file copied between servers during the clone without any issues. For some reason, this doesn't seem to happen on my OL6.3 installations, so you may need to repeat the UDEV configuration on the second node if the output of the following command is not consistent on both nodes.

```
# ls -al /dev/asm*
brw-rw----. 1 oracle dba 8, 17 Jan 12 20:16 /dev/asm-disk1
brw-rw----. 1 oracle dba 8, 33 Jan 12 20:16 /dev/asm-disk2
brw-rw----. 1 oracle dba 8, 49 Jan 12 20:16 /dev/asm-disk3
brw-rw----. 1 oracle dba 8, 65 Jan 12 20:16 /dev/asm-disk4
```

<pre>operacy nych Linux Eych wezłow w celu zapewnienia tzw. rokuważności ssh d</pre>	· · · ·	ację połączenia ssn między węzłami KAC uzytkownikow oracle system
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	Select the "Skip software Download Software Update Download Software Updates Apply Software Updates Installation Option Installation Type Cluster Configuration Installations Prerequisite Checks Summary Install Product Finish	e updates" option, then click the "Next" button. e updates" option, then click the "Next" button. podstawie pliku GL_installatid do którego link znajduje się w podpunkcie D punktów 2 i głównej części wykł. 11 - 13 tes Image: The second software updates for this installation. Software updates consist of recommended updates to the installer system requirement checks, patchaet updates (PSUs), and other recommended patches. Select one of the following options: Use My Oracle Support credentials for download My Oracle Support password: Proxy Settings Itse Browse
	Select the "Skip software Download Software Update Download Software Updates Apply Software Updates Installation Option Installation Type Cluster Configuration Installations Prerequisite Checks Summary Install Product Finish	e updates" option, then click the "Next" button. tes Download software updates for this installation. Software updates consist of recommended updates to the installer system requirement checks, patchset updates (PSUs), and other recommended updates to the installer system requirement checks, patchset updates (PSUs), and other recommended updates to the installer system requirement checks, patchset updates (PSUs), and other 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 password: Proxy Settings. Test Connection Use pre-gownloaded software updates Spip software updates
	\$./runInsta Select the "Skip software Download Software Update Download Software Updates Apply Software Updates Installation Type Cluster Configuration Install Locations Prerequisite Checks Summary Install Product Finish	a updates" option, then click the "Next" button. podstawie pliku GL_installati a updates" option, then click the "Next" button. gidwnej części wykł. 11 - 13 tes CECEE 118 Oownload software updates for this installation. Software updates consist of recommended updates to the installation software updates (PSUs), and other recommended updates to the installation software updates (PSUs), and other recommended patches. Select one of the following options: Use My Oracle Support credentials for download My Oracle Support gestower updates Proxy Settings Test Connection Use pre-gownloaded software updates Browee Skip software updates Browee
Help Back Next> Install Cancel	\$./runInsta Select the "Skip software Download Software Update Download Software Updates Apply Software Updates Installation Option Installation Type Cluster Configuration Install Locations Prerequisite Checks Summary Install Product Finish	<pre>podstawie pliku GI_installati do którego link znajduje się w podpunkcie D punktów 2 i głównej części wykł. 11 - 13</pre>
Help Leip	\$./runInsta Select the "Skip software Download Software Update Download Software Updates Apply Software Updates Installation Type Cluster Configuration Installation Type Cluster Configuration Install Locations Prerequisite Checks Summary Install Product Finish	a updates" option, then click the "Next" button.
Help <rack next=""> Install Cancel Select the "Install and Configure Oracle Grid Infrastructure for a Cluster" option, then click the "Next" button.</rack>	Select the "Skip software Download Software Updates Apply Software Updates Apply Software Updates Installation Type Cluster Configuration Installation Type Cluster Configuration Install Product Finish Help Select the "Install and Co	Inter production: Operation: Op
Help Cancel Select the "Install and Configure Oracle Grid Infrastructure for a Cluster" option, then click the "Next" button.	\$./runInsta Select the "Skip software Download Software Update Download Software Updates Apply Software Updates Apply Software Updates Installation Type Cluster Configuration Install Eccasions Prerequisite Checks Summary Install Product Finish	<pre>http://www.initiality.com/initi</pre>



the second s	Specify basic configuration information for the	grid infrastructure.
nstallation Option	SCAN Name: 016-112-scan	
nstallation Type	Public Hostname	Virtual Hostparte
Cluster Configuration	ol6-112-rac1.localdomain	ol6-112-rac1-vip.localdomain
h <u>stall Locations</u> Prerequisite Checks Lummany Install Product Linish		
		Igentify network interfaces
		<back next=""> Install Cancel</back>
elp		

Public <u>H</u> ostname:	ol6-112-rac2.localdomain	
<u>V</u> irtual Hostname:	ol6-112-rac2-vip.localdomain	
	C OK	

Click the "SSH Connectivity..." button and enter the password for the "oracle" user. Click the "Setup" button to to configure SSH connectivity, and the "Test" button to test it once it is complete.

Download Software Updates	Specify basic configuration information for	the grid infrastructure.
nstallation Option	SCAN Name: 016-112-scan	
nstallation Type	Public Hostname	Virtual Hostname
Cluster Configuration	ol6-112-rac1.localdomain	ol6-112-rac1-vip.localdomain
stall Locations	ol6-112-rac2.localdomain	ol6-112-rac2-vip.localdomain
instan Locations		
rerequisite unecks		
iummary		1004 ANN 100
nstall Product	SSH <u>Connectivity</u>	Ise Cluster Configuration File Add Edit Remove
inish	OS Username: oracle User home is shared by the selected no Reuse private and public <u>k</u> eys existing i	OS Password:
		Identify network interfaces

Click the "Identify network interfaces..." button and check the public and private networks are specified correctly. Once you are happy with them, click the "OK" button and the "Next" button on the previous screen.

Identify the planned use for each global interface shown in the box below as Public, Private, or Do Not Use. Private interfaces are used by Oracle Grid Infrastructure for internode traffic.

If there is more than one subnet associated with an interface, then change the interface's attributes to associate the interface name with the additional subnets.

Interface Name	Subnet	Interface Type
th0	192.168.0.0	Public
th1	192.168.1.0	Private

Enter "/u01/app/11.2.0.3/grid" as the software location and "Automatic Storage Manager" as the cluster registry storage type. Enter the ASM password, select "dba" as the group and click the "Next" button.

Installation Option Registry (OCR), and the (SYSASM) for Oracle. Installation Type Oracle Base: Install Locations Software Location: Prerequisite Checks Summary Install Product Cluster Registry Stor Summary Cluster Registry Cluster Registry Stor Install Product SYSASM Password Finish SYSASM Password OSASM group: OSASM group: Help Ether redundancy to "External", click the ain screen and select all 4 disks and click reate ASM Disk Group Select Disk Group Chase Download Software Updates Select Disk Group Chase Installation Type Cluster Configuration	Automatic Storage Management. //u01/app/oracle //u01/app/11.2.0. age Type: Oracle Automatic cocation: d: meeting d: meeting d: meeting dba "Change Discovery Path" < the "Next" button. aracteristics and select disks ATA	Id be given the administrative	Browse Browse Browse Browse Browse Browse Browse Istail Cancel path to "/dev/ See 118	/asm*". Return the
Installation Type Cluster Configuration Install Locations Prereauisite Checks Summary Install Product Finish Elis	<pre>////app/oracle ///u01/app/11.2.0 age Type: Oracle Automatic .ccation: d:</pre>	3/grid (* Storage Management * < Back Next> in " button and set the DATAB		/asm*". Return the
Cluster Configuration Oracle Bage: Install Locations Software Location: Prereauisite Checks Software Location: Summary Cluster Registry Stor Install Product Cluster Registry Stor Finish SYSASM Password Confirm Password OSASM group: Help	<pre>//u01/app/oracle //u01/app/oracle //u01/app/11.2.0 age Type: Oracle Automatic .cocation: d:</pre>	3/grid 1 Storage Management 1 < Back Next> In button and set the DATAB	Browse Browse Browse Browse Cancel path to "/dev/ See 118	/asm*". Return the
Install Locations Prereaulisite Checks Summary Install Product Finish SYSASM Passwork Confirm Pa	<pre>////app/11.2.0. age Type: Oracle Automatic cocation: d:</pre>	3/grid Storage Management	Srowse Browse Browse Browse Browse Cancel path to "/dev/	/asm*". Return the
Prerequisite Checks Summary Install Product Finish SYSASM Password Confirm Password OSASM group: Uster Registry II SYSASM Password Confirm Password OSASM group: Uster Registry II SYSASM Password Confirm Password OSASM group: Uster Registry II SYSASM Password Confirm Password OSASM group: Uster Registry II SYSASM Password Confirm Password OSASM group: Uster Registry II SYSASM Password Confirm Password OSASM group: Uster Registry II SYSASM Password Confirm Password OSASM group: Uster Registry II SYSASM Password Confirm Password OSASM group: Uster Registry II SYSASM Password SYSASM Password OSASM group: Uster Registry II SYSASM Password OSASM group: OSASM group: Uster Registry II SYSASM Password OSASM group: OSA	age Type: Oracle Automatic Location: d:	Storage Management	Istall Cancel path to "/dev/	/asm*". Return the
Summary Install Product Finish Finish Cluster Registry L SYSASM Password Confirm Password Confirm Password OSASM group: Help t the redundancy to "External", click the in screen and select all 4 disks and click eate ASM Disk Group Download Software Updates Installation Type Cluster Configuration	<pre>contine Addomate d:</pre>	<back next=""> In button and set the CRACE</back>	Istall Cancel path to "/dev/	/asm*". Return the
Eleip Listall Product Finish SYSASM Passwork Confirm Passwork OSASM group: USASM group: Lielp t the redundancy to "External", click the in screen and select all 4 disks and click reate ASM Disk Group Download Software Updates Installation Option Installation Type Cluster Configuration	the "Next" button.	<back mext=""> In button and set the CATABA</back>	Istall Cancel path to "/dev/	/asm*". Return the
Finish SYSASM Password Confirm Password OSASM group: USASM group: USAS	d:	<back next=""> In button and set the CRACE</back>	Istall Cancel path to "/dev/	/asm*". Return the
Confirm Passwor OSASM group: USASM Group USASM GROUP USASM GROUP: USASM GROU	d: dba dba (dba (ba (ba (ba (ba (ba (ba (ba (<back next=""> In button and set the CRACE</back>	stall Cancel path to "/dev/	/asm*". Return the AU (allocation
Download Software Updates Download Software Updates Elect Disk Group Char Download Software Updates Elect Disk Group Char Disk Group Name Disk Group Name Cluster Configuration	dba "Change Discovery Path" < the "Next" button. aracteristics and select disks ATA	<pre><back mext=""> // button and set the CRACE ATABA</back></pre>	path to "/dev/	/asm*". Return the
Help t the redundancy to "External", click the in screen and select all 4 disks and click reate ASM Disk Group Covenload Software Updates Installation Option Installation Type Cluster Configuration	"Change Discovery Path' < the "Next" button. aracteristics and select disks ATA	< Back Next> In " button and set the DATABA	path to "/dev/	/asm*". Return the AU (allocation
Help t the redundancy to "External", click the in screen and select all 4 disks and click eate ASM Disk Group Download Software Updates Installation Option Installation Type Cluster Configuration	"Change Discovery Path' < the "Next" button. aracteristics and select disks ATA	<back next=""> In button and set the CRACE</back>	path to "/dev/	/asm*". Return the AU (allocation
Help t the redundancy to "External", click the in screen and select all 4 disks and click eate ASM Disk Group Download Software Updates Installation Option Installation Type Cluster Configuration	"Change Discovery Path' < the "Next" button. aracteristics and select disks ATA	<pre> Back Mext> Mext> Mext> Mext> Mext Mext> Mext Mext</pre>	path to "/dev/	/asm*". Return the AU (allocation
Help t the redundancy to "External", click the in screen and select all 4 disks and click eate ASM Disk Group Download Software Updates Installation Option Installation Type Cluster Configuration	"Change Discovery Path' < the "Next" button. aracteristics and select disks ATA	<pre> Eack Next> button and set the CRAC DATABA </pre>	path to "/dev/	/asm*". Return the AU (allocation
Help t the redundancy to "External", click the in screen and select all 4 disks and click eate ASM Disk Group Download Software Updates Installation Option Installation Type Cluster Configuration	"Change Discovery Path' < the "Next" button. aracteristics and select disks ATA	<back next=""> In " button and set the CRACE DATABA</back>	path to "/dev/	/asm*". Return the AU (allocation
Help t the redundancy to "External", click the in screen and select all 4 disks and click eate ASM Disk Group Download Software Updates Installation Option Installation Type Cluster Configuration	"Change Discovery Path' k the "Next" button. aracteristics and select disks ATA	<back next=""> In " button and set the CRAC</back>	path to "/dev/	/asm*". Return the AU (allocation
t the redundancy to "External", click the in screen and select all 4 disks and click eate ASM Disk Group Download Software Updates Installation Option Installation Type Cluster Configuration	"Change Discovery Path' < the "Next" button. aracteristics and select disks ATA	" button and set the	path to "/dev/	/asm*". Return the AU (allocation
t the redundancy to "External", click the in screen and select all 4 disks and click eate ASM Disk Group Download Software Updates Installation Option Installation Type Cluster Configuration	"Change Discovery Path' < the "Next" button. aracteristics and select disks ATA	" button and set the	path to "/dev/	/asm*". Return the AU (allocation
eate ASM Disk Group Download Software Updates Installation Option Installation Type Cluster Configuration	aracteristics and select disks		LE 11 ^g	AU(allocation
Constallation Type Cluster Configuration	aracteristics and select disks		LE 11 ^g	AU(allocation
Download Software Updates Installation Option Installation Type Cluster Configuration	aracteristics and select disks ATA			AU(allocation
Installation Option Disk Group Name D. Installation Type Redundancy O Cluster Configuration	ATA			
Linstallation Type Redundancy C				units) Size can
Cluster Configuration	High hormal (a) External			be 1,2,4,8,16,3
_	undu Outorillan Olizveruen			or 64MB.
Install Locations AU Size 1	▼ MB			Larger All sizes
Create ASM Disk Group Add Disks				typically provi
Prerequisite Checks	s 🔿 All Disks			nerformance
Summary	- O Zirossa			periormance
Install Product	Disk Path	Size (ir	n MB) Status	advantages for
Finish // dev/asm-disk	d 2		5114 Candidate 5114 Candidate	data warehouse
/dev/asm-disk	3		5114 Candidate	applications
₩] /dev/asm-disk	(4		5114 Candidate	that use large
				sequential read
		Chang	e Discovery Path	
Help		≺ <u>B</u> ack <u>N</u> ext ≻ In	stall Cancel	
cept the default inventory directory by cl	licking the "Next" button.			



Wait while the prerequisite checks complete. If you have any issues, either fix them or check the "Ignore All" checkbox and click the "Next" button.

Y Y	Download Software Updates Installation Option	Some of the minimum requirements for installation are not completed. Review and fix the is the following table, and recheck the system.	ssues listed in
	Installation Type Cluster Configuration	Checks Stat	us Fixable
4	Install Locations	Checks Generation ASM Ignored	No
	Create ASM Disk Group		
0	Prerequisite Checks		
	Summary		
	<u>Summary</u> Install Product		
	<u>Summary</u> Install Product Finish		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<u>Summary</u> Install Product Finish		
	Summary Install Product Finish		
	<u>Summary</u> Install Product Finish		
	<u>Summary</u> Install Product Finish		
	<u>Summary</u> Install Product Finish		
	<u>Summary</u> Install Product Finish		
	Summary Install Product Finish	This is a pre-check to verify if the specified devices meet the requirements for configuration	no through the
	Summary Install Product Finish	This is a pre-check to verify if the specified devices meet the requirements for configuratio Oracle Universal Storage Manager Configuration Assistant. <u>(more details)</u>	on through the

If you are happy with the summary information, click the "Install" button.



When prompted, run the configuration scripts on each node.

Number	Script Location	Nodes
1	/u01/app/oralnventory/orainstRoot.sh	ol6-112-rac1,ol6-112-rac2
2	/u01/app/11.2.0.3/grid/root.sh	016-112-rac1,016-112-rac2
o execut 1. Ope	e the configuration scripts: n a terminal window	
o execut 1. Ope 2. Log	e the configuration scripts: n a terminal window in as "root"	
o execut 1. Ope 2. Log 3. Run	e the configuration scripts: n a terminal window in as "root" the scripts in each cluster node	
o execut 1. Ope 2. Log 3. Run 4. Retu	e the configuration scripts: n a terminal window in as "root" the scripts in each cluster node rn to this window and click "OK" to continu	e
o execut 1. Ope 2. Log 3. Run 4. Retu	e the configuration scripts: n a terminal window in as "root" the scripts in each cluster node rn to this window and click "OK" to continu	e

The output from the "orainstRoot.sh" file should look something like that listed below.

<pre># cd /u01/app/oraInventory</pre>
./orainstRoot.sh
Changing permissions of /u01/app/oraInventory.
Adding read, write permissions for group.
Removing read, write, execute permissions for world.
Changing groupname of /u01/app/oraInventory to oinstall. The execution of the script is complete. #

The output of the root.sh will vary a little depending on the node it is run on. Example output can be seen here (Node1, Node2).

Once the scripts have completed, return to the "Execute Configuration Scripts" screen on "rac1" and click the "OK" button.

1 /u01/app/oralnventory/orainstRoot.sh ol6-112-rac1,ol6-112-ra 2 /u01/app/11.2.0.3/grid/root.sh ol6-112-rac1,ol6-112-ra 4	Number	Script Location	Nodes
2 /u01/app/11.2.0.3/grid/root.sh ol6-112-rac1,ol6-112-ra 4 ol6-112-rac1,ol6-112-ra 5 execute the configuration scripts:	1	/u01/app/oralnventory/orainstRoot.sh	ol6-112-rac1,ol6-112-rac2
control of the configuration scripts: 1. Open a terminal window	2	/u01/app/11.2.0.3/grid/root.sh	ol6-112-rac1,ol6-112-rac2
3. Run the scripts in each cluster node	2. Log	in as "root"	
Return to this window and click "OK" to continue	2. Log 3. Run	in as "root" the scripts in each cluster node	
Zup the script on the local node first. After successful completion, you can rup the	2. Log 3. Run 4. Reti	in as "root" the scripts in each cluster node im to this window and click "OK" to continu	ie

Wait for the configuration assistants to complete.

nload Software Updates	Progress	
allation Option	95%	
liation Type	Starting 'Oracle Cluster Verification Utility'	
er Configuration		
Locations	- Status	
Disk Group	Install Grid Infrastructure for a Cluster	Succeeded
antony	 Prepare 	Succeeded
	 Copy files 	Succeeded
Checks	 Link binaries 	Succeeded
	 Setup files 	Succeeded
	 Perform remote operations 	Succeeded
uct	Secure Root Scripts	Succeeded
	Configure Oracle Grid Infrastructure for a Cluster	In Progress
	 Update Inventory 	Succeeded
	 Oracle Net Configuration Assistant 	Succeeded
	 Automatic Storage Management Configuration Assistant 	Succeeded
	 Oracle Cluster Verification Utility 	In Progress
		Details Betry

We expect the verification phase to fail with an error relating to the SCAN, assuming you are not using DNS.

INFO: Checking Single Client Access Name (SCAN)... INFO: Checking name resolution setup for "rac-scan.localdomain"... INFO: ERROR: INFO: PRVF-4664 : Found inconsistent name resolution entries for SCAN name "rac-scan.] INFO: ERROR: INFO: PRVF-4657 : Name resolution setup check for "rac-scan.localdomain" (IP address INFO: ERROR: INFO: PRVF-4664 : Found inconsistent name resolution entries for SCAN name "rac-scan] INFO: Verification of SCAN VIP and Listener setup failed

Provided this is the only error, it is safe to ignore this and continue by clicking the "Next" button.

Click the "Close" button to exit the installer.

Finish	DATABASE 118	
Download Software Updates Installation Option Installation Type Cluster Configuration Install Locations Create ASM Disk Group Create Inventory Prerequisite Checks Summary Install Product Finish	The installation of Oracle Grid Infrastructure for a Cluster was successful.	
Неір	< Back Next > Install Close	
The grid infrastructure ins	chociaż poniższy opis jest właściwy, należy utworzyć bazę na ASM za pomocą wcześniej zainstalowanego dbca, tworząc najpierw jej szablon, tzn. tak jak zostało to zaprezentowane w wykł. 11 - 13 w punkcie 4 z uwzględnieniem poprzedzających go podpunktów F i	/I i G.
\$ cd /host/s \$./runInsta Uncheck the security update	oftware/oracle/11gR2/11.2.0 0/linux64_database ller ates checkbox and click the "Next" button and "Yes" on the subsequent warning dialog.	
Configure Security Updates Download Software Updates Apply Software Updates	Provide your email address to be informed of security issues, install the product and initiate configuration manager. <u>View details</u> . Email: Easier for you if you use your My Oracle Support email address/username.	
Grid Installation Options Install Type Typical Installation Prerequisite Checks Summary Install Product Finish	I wish to receive security updates via My Oracle Support. My Oracle Support Password:	
Halm		

Check the "Skip software updates" checkbox and click the "Next" button.

Nownload Software Updates	
npply Software Updates	the installer system requirement checks, patchset updates (PSUs), and other recommended patches.
nstallation Option	Select one of the following options:
	○ Use My Oracle Support credentials for download
and installation Options	My Oracle Support gser name
nstall Type	My Oracle Support password
Typical Installation	Proxy Settings [Test Connection]
Prerequisite Checks	Office pre-downloaded software undates
ournmary	
inish	
000309	(●) <u>Skip</u> software updates
elp	< <u>Back</u> <u>Next</u> Install Cancel
pt the "Create and co at Installation Option	nfigure a database" option by clicking the "Next" button.
Configure Security Undates	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
nstallation Option	existing database" option.
rid Installation Options	
nstall Type	O Install gatabase software only
ypical Installation	O Lingrade an existing database
Prerequisite Checks	
ummary	
nstall Product	
inish	





Wait for the prerequisite check to complete. If there are any problems either fix them, or check the "Ignore All" checkbox and click the "Next" button.



Configure Security Updates	Progress	
Download Software Lindates	10%	
o o modul sontinu e o putites		
Installation Option	Extracting files to '/u01/app/oracle/product/11.2.0.3/db_1'.	
System Class		
Grid Installation Options	_Status-	
Install Type	Oracle Database installation	In Progress
Tunical Installation	🖌 • Prepare	Succeeded
rypical instantion	🤣 🔹 Copy files	In Progress
Prerequisite Checks	Link binaries	Pending
Summary	Setup files	Pending
	 Perform remote operations 	Pending
Install Product	Oracle Database configuration	Pending
	Execute Root Scripts	Pending
Finish		
/ Finish		Details Retry S

Once the software installation is complete the Database Configuration Assistant (DBCA) will start automatically.

Application	Copying database files	
Development	Creating and starting oracle instance	
utomatic	Creating cluster database views	
ompilation for ava and PL/SQL	Completing Database Creation	
Database resident		
HP	Clone database creation in progress	
Aicrosoft Access	36%	
polication Express		
	Log files for the current operation are located at:	
	/uoi/app/oracie/crgcoologs/dbca/kAc	
	(Stop)	

Once the Database Configuration Assistant (DBCA) has finished, click the "OK" button.

Database creation complete. For details check the logfiles at: /u01/app/oracle/cfgtoollogs/dbca/RAC.
Database Information: Clobal Database Name: RAC.localdomain System Identifier(SID) Prefix: RAC Server Parameter File name: +DATA/RAC/spfileRAC.ora
The Database Control URL is https://ol6-112-rac1. localdomain: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: /u01/app/oracle/product/11.2.0.3/db.1/ol6-112- rac1_RAC/sysman/config/emkey.ora. Ensure this file is

file is lost. 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.

backed up as the encrypted data will become unusable if this

	Password Management.
(<u>ок</u>)

When prompted, run the configuration scripts on each node. When the scripts have been run on each node, click the "OK" button.

Number	Script Location	Nodes
1	/u01/app/oracle/product/11.2.0.3/db_1/root.sh	ol6-112-rac1,ol6-112-
•		
•		
•	e the configuration scripts:	
c execut 1 One	e the configuration scripts:	
o execut 1. Ope 2. Log	e the configuration scripts: n a terminal window n as "root"	
o execut 1. Ope 2. Log 2. Bup	e the configuration scripts: n a terminal window n as "root"	

Click the "Close" button to exit the installer.

Finish	DATABASE 11g
Configure Security Updates	The installation of Oracle Database was successful. Note:
Installation Option System Class Grid Installation Options Install Type Typical Installation Prerequisite Checks Summary Install Product	Enterprise Manager Database Control URL - (RAC) : https://ol6-112-racl.localdomain:1158/em
See Finish	
Help	<back next=""> (nstall ⊆lose</back>

The RAC database creation is now complete.

Check the Status of the RAC

There are several ways to check the status of the RAC. The *srvctl* utility shows the current configuration and status of the RAC database.

```
$ srvctl config database -d RAC
Database unique name: RAC
Database name: RAC
Oracle home: /u01/app/oracle/product/11.2.0.3/db_1
Oracle user: oracle
Spfile: +DATA/RAC/spfileRAC.ora
Domain: localdomain
Start options: open
Stop options: immediate
Database role: PRIMARY
Management policy: AUTOMATIC
Server pools: RAC
Database instances: RAC2, RAC1
Disk Groups: DATA
Mount point paths:
Services:
Type: RAC
Database is administrator managed
$
$ srvctl status database -d RAC
Instance RAC1 is running on node ol6-112-rac1
Instance RAC2 is running on node ol6-112-rac2
$
```

The V\$ACTIVE_INSTANCES view can also display the current status of the instances.

```
$ sqlplus / as sysdba
SQL*Plus: Release 11.2.0.3.0 Production on Tue Sep 27 22:20:14 2011
Copyright (c) 1982, 2011, Oracle. All rights reserved.
Connected to:
```

Oracle Database 11g Enterprise Edition Release 11.2.0.3.0 - 64bit Production With the Partitioning, Real Application Clusters, Automatic Storage Management, OI Data Mining and Real Application Testing options	LAF
SQL> SELECT inst_name FROM v\$active_instances;	
INST_NAME	
ol6-112-rac1.localdomain:RAC1 ol6-112-rac2.localdomain:RAC2	
SQL>	

If you have configured Enterprise Manager, it can be used to view the configuration and current status of the database using a URL like "https://ol6-112-rac1.localdomain:1158/em".

Home Performance Availability Server	Schema Data Movement Software and Support Topology
Latest	Data Collected From Target Jan 12, 2013 10:47:47 PM GMT (Refresh) View Data Automatically (60 sec) *
General	Host CPU Active Sessions
(Shutdown) Black Cut	100%
Status Up	75 15
instances z (3 z)	50 Dther 1.0 User VO
Availability (%) 100 (Lest 24 hours)	25 05 CPU
Database Name RAC Version 11.2.0.3.0	o 🗖 oo
Cluster <u>d6-112-scan</u> View 41 Presention	
A REACH LIGHTINGS	Load 2.64 Maximum CPU 2
Diagnostic Summary	Space Summary High Availability
Apple Findings	Database Size (GB) Unavailable Console Details
Active Incidents 🕢 0	Segment Advisor n Flashback Database Logging Disabled
Key SQL Profiles Unavailable	Recommendations = Policy Violations
Alerts	
Caragory All Critical Warnings	1 And
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