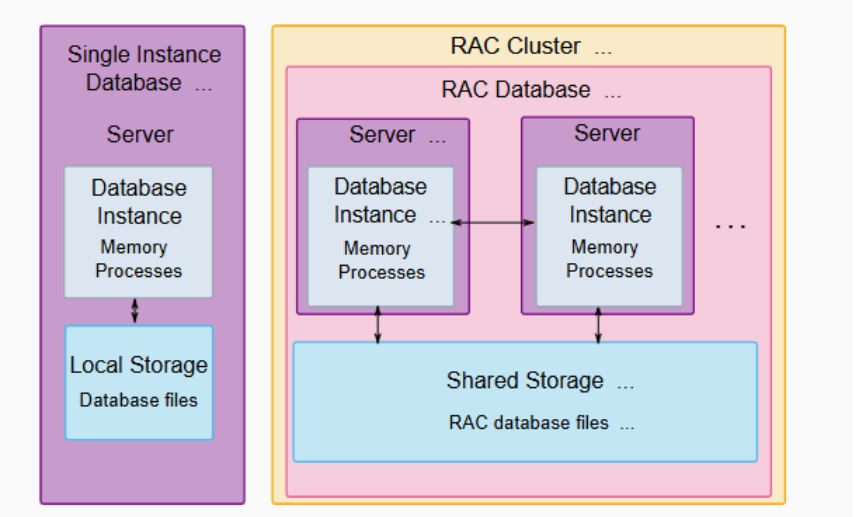
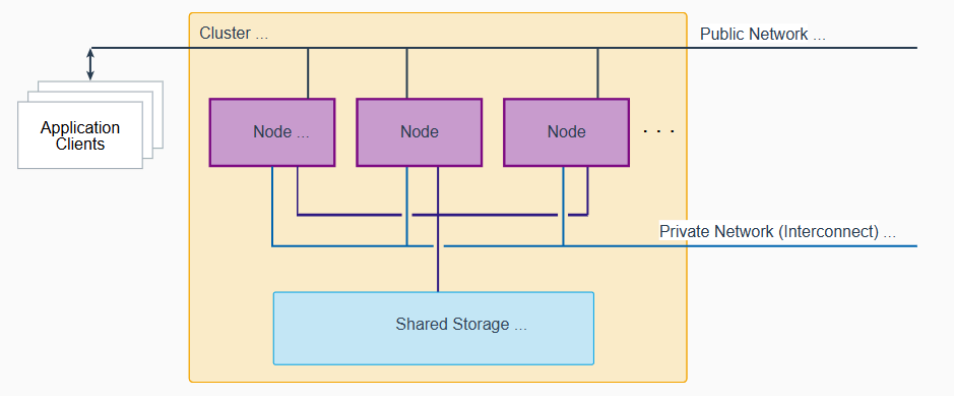
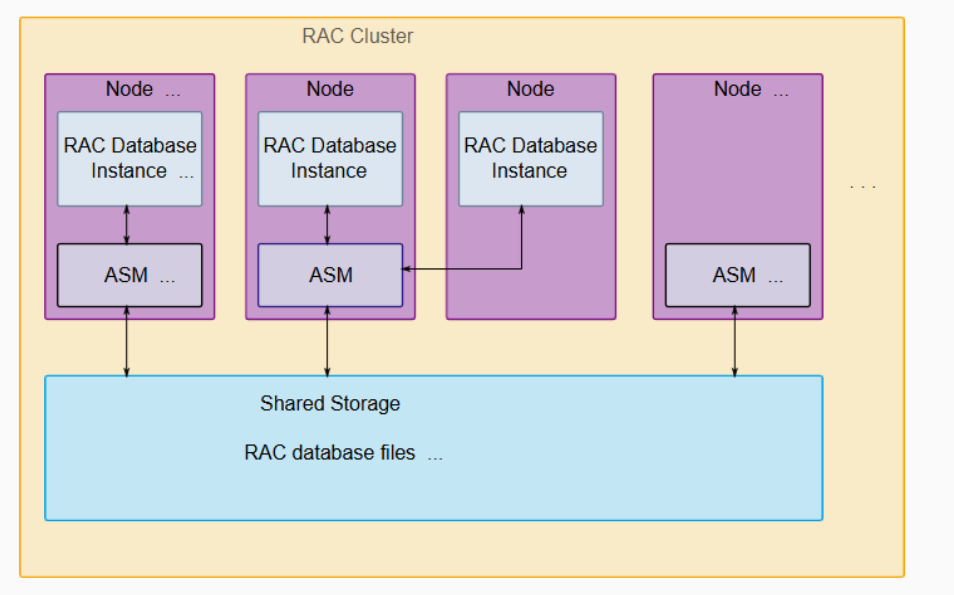
RAC (1) - install Linux, create ASM (IP설정, Disks)

나는 28,29번 가져감

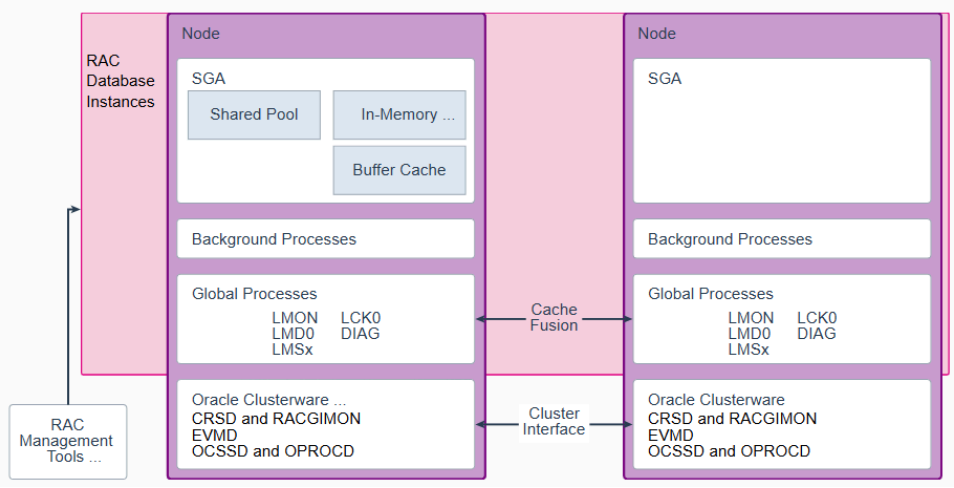
▼ Oracle Real Application Clusters 19c Technical Architecture







뭉태기



- 또 다른 메모리 영역에 존재한다, 네트워크로 연결됨 (서버들)
- 소프트웨어들끼리는 따로 작동
- 전부 네트워크를 통해 이어져있는 서버와 저장공간 등등
- 게이트웨이필요없음, IP 두 개 있음 된다
- 빠른속도의 작업들을 처리한다
- 외부에서 이 서버를 인식할 수 있는 IP필요
- 내장 LAN필요
- DNS서버형식을 빌려서 스캔(일반적으로 인식할 수 있는 서버)
- shared storage는 공유하는 데이터, 리두로드, 컨트롤파일, 아카이브파일들을 따로 관리하는 영역이다
  - OS가 감당할 수 없어서 스토리지를 따로 관리하는 소프트웨어를 설치하는 경우있음
  - 이제는 ASM이 많이 안정화되었다
- 메모리에서 메모리로 데이터를 넘긴다
- RAC때문에 오라클 쓰는 회사들 있음
- RAC를 활용하는 이유 : DB는 항상 오픈되어 있어야하기 때문에(HA요청때문에)

▼ 오라클 19c RAC 설치(VM 필요 설정 포함) 1, 2번까지

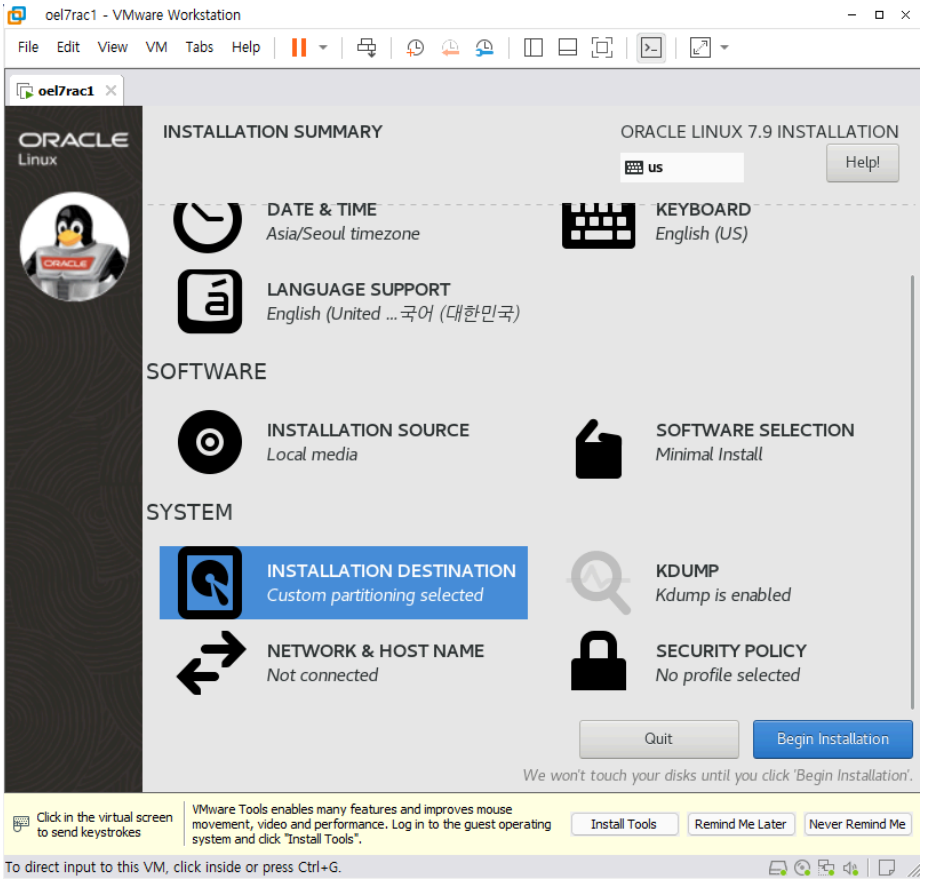
1. install Linux :현재 oel7.9, DISK할당, 네트워크 세팅 등등
2. create ASM : 앞서 만든 DISK이용해서 세팅

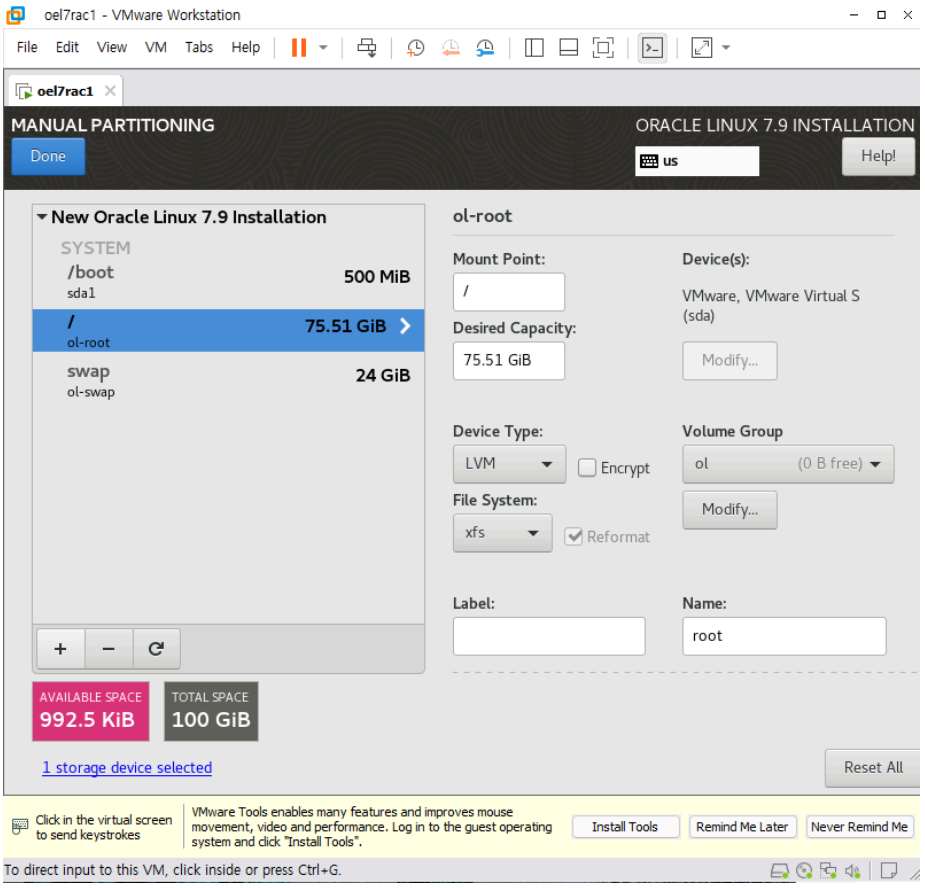
   -이 시점에 서버 복사-

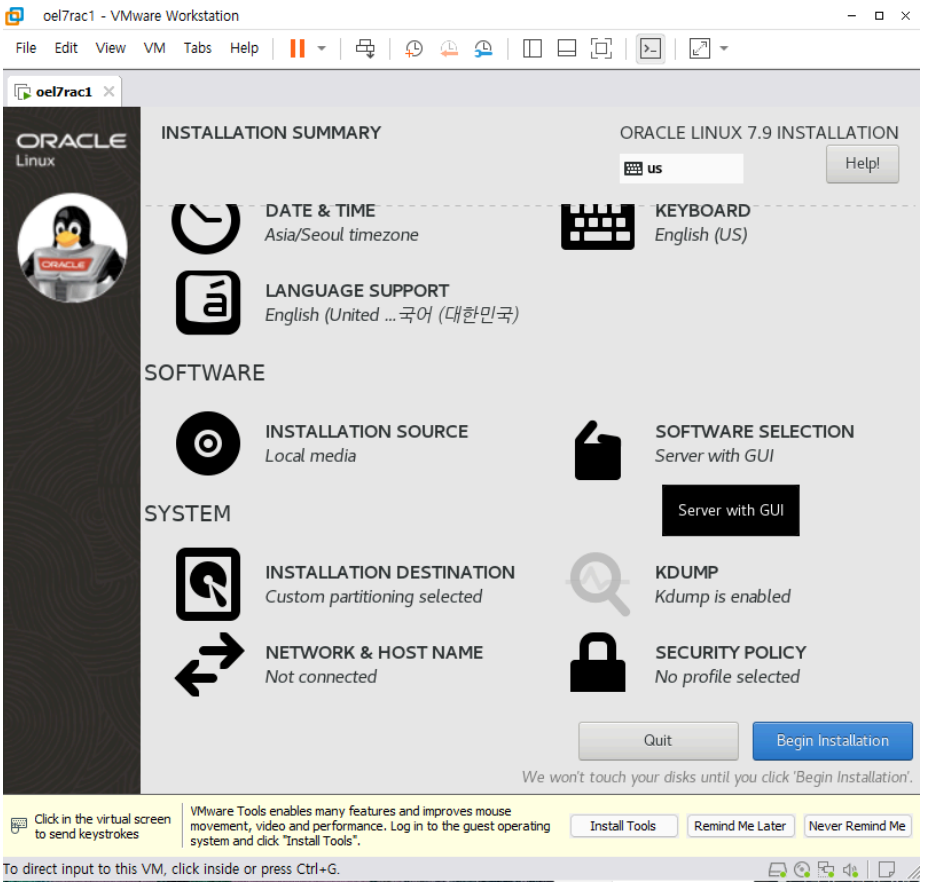
3. install grid :현재 19.3,
4. install DB S/W + create DB

1. install Linux :현재 oel7.9, DISK할당, 네트워크 세팅 등등

1. VMware세팅




oel7rac1 - VMware Workstation
File Edit View VM Tabs Help
oel7rac1
MANUAL PARTITIONING
Done
ORACLE LINUX 7.9 INSTALLATION
us
Help!
New Oracle Linux 7.9 Installation
SYSTEM
/boot
sda1
500 MiB
/
ol-root
75.51 GiB
swap
ol-swap
24 GiB
ol-root
Mount Point:
/
Desired Capacity:
75.51 GiB
Device(s):
VMware, VMware Virtual S (sda)
Modify...
Device Type:
LVM
Encrypt
Volume Group
ol
(0 B free)
Modify...
File System:
xfs
Reformat
Label:
Name:
root
AVAILABLE SPACE
992.5 KiB
TOTAL SPACE
100 GiB
1 storage device selected
Reset All
Click in the virtual screen to send keystrokes
VMware Tools enables many features and improves mouse movement, video and performance. Log in to the guest operating system and click "Install Tools".
Install Tools
Remind Me Later
Never Remind Me
To direct input to this VM, click inside or press Ctrl+G.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File Edit View VM Tabs Help
oel7rac1
ORACLE Linux
INSTALLATION SUMMARY
ORACLE LINUX 7.9 INSTALLATION
us
Help!
DATE & TIME
Asia/Seoul timezone
KEYBOARD
English (US)
LANGUAGE SUPPORT
English (United ...국어 (대한민국)
SOFTWARE
INSTALLATION SOURCE
Local media
SOFTWARE SELECTION
Server with GUI
Server with GUI
SYSTEM
INSTALLATION DESTINATION
Custom partitioning selected
KDUMP
Kdump is enabled
NETWORK & HOST NAME
Not connected
SECURITY POLICY
No profile selected
Quit
Begin Installation
We won't touch your disks until you click 'Begin Installation'.
Click in the virtual screen to send keystrokes
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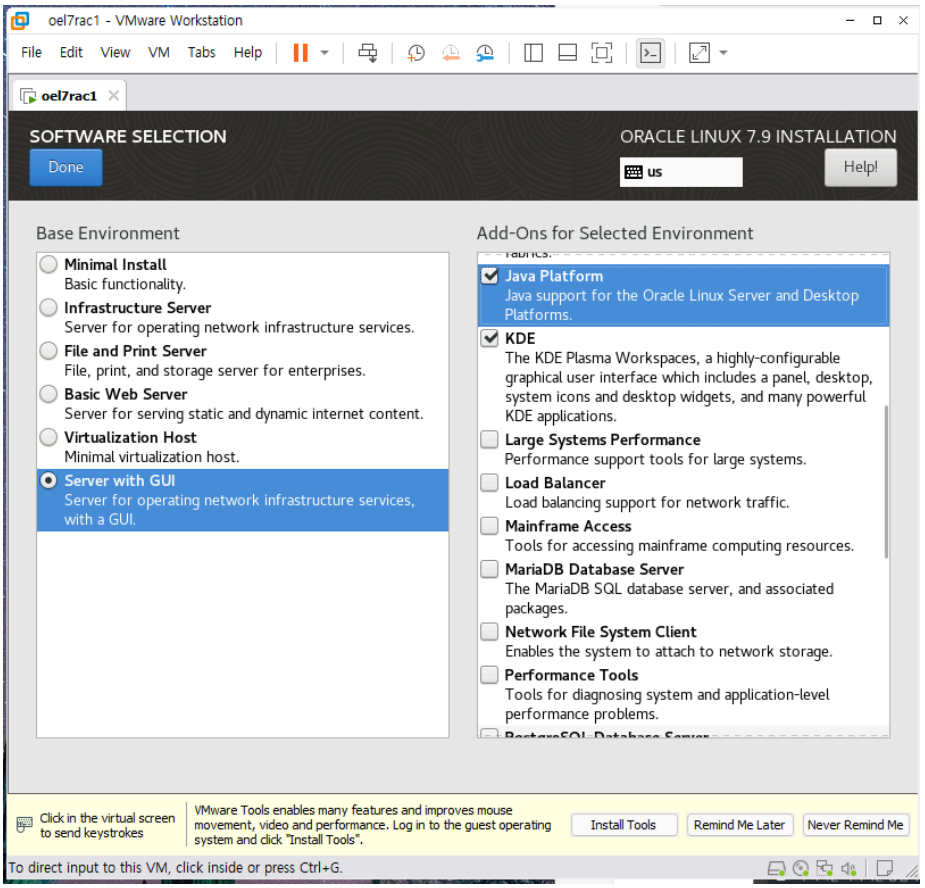
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SOFTWARE SELECTION
Done
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us
Help!
Base Environment
Minimal Install
Basic functionality.
Infrastructure Server
Server for operating network infrastructure services.
File and Print Server
File, print, and storage server for enterprises.
Basic Web Server
Server for serving static and dynamic internet content.
Virtualization Host
Minimal virtualization host.
Server with GUI
Server for operating network infrastructure services, with a GUI.
Add-Ons for Selected Environment
Java Platform
Java support for the Oracle Linux Server and Desktop Platforms.
KDE
The KDE Plasma Workspaces, a highly-configurable graphical user interface which includes a panel, desktop, system icons and desktop widgets, and many powerful KDE applications.
Large Systems Performance
Performance support tools for large systems.
Load Balancer
Load balancing support for network traffic.
Mainframe Access
Tools for accessing mainframe computing resources.
MariaDB Database Server
The MariaDB SQL database server, and associated packages.
Network File System Client
Enables the system to attach to network storage.
Performance Tools
Tools for diagnosing system and application-level performance problems.
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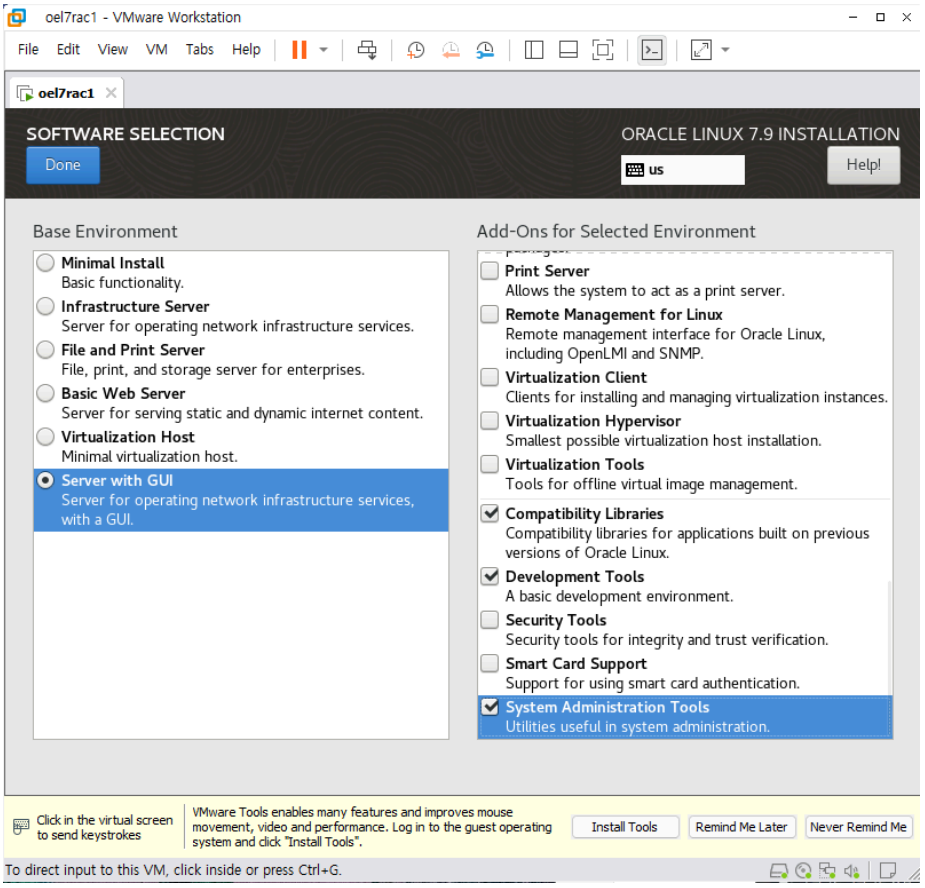
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Print Server
Allows the system to act as a print server.
Remote Management for Linux
Remote management interface for Oracle Linux, including OpenLMI and SNMP.
Virtualization Client
Clients for installing and managing virtualization instances.
Virtualization Hypervisor
Smallest possible virtualization host installation.
Virtualization Tools
Tools for offline virtual image management.
Compatibility Libraries
Compatibility libraries for applications built on previous versions of Oracle Linux.
Development Tools
A basic development environment.
Security Tools
Security tools for integrity and trust verification.
Smart Card Support
Support for using smart card authentication.
System Administration Tools
Utilities useful in system administration.
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Remind Me Later
Never Remind Me
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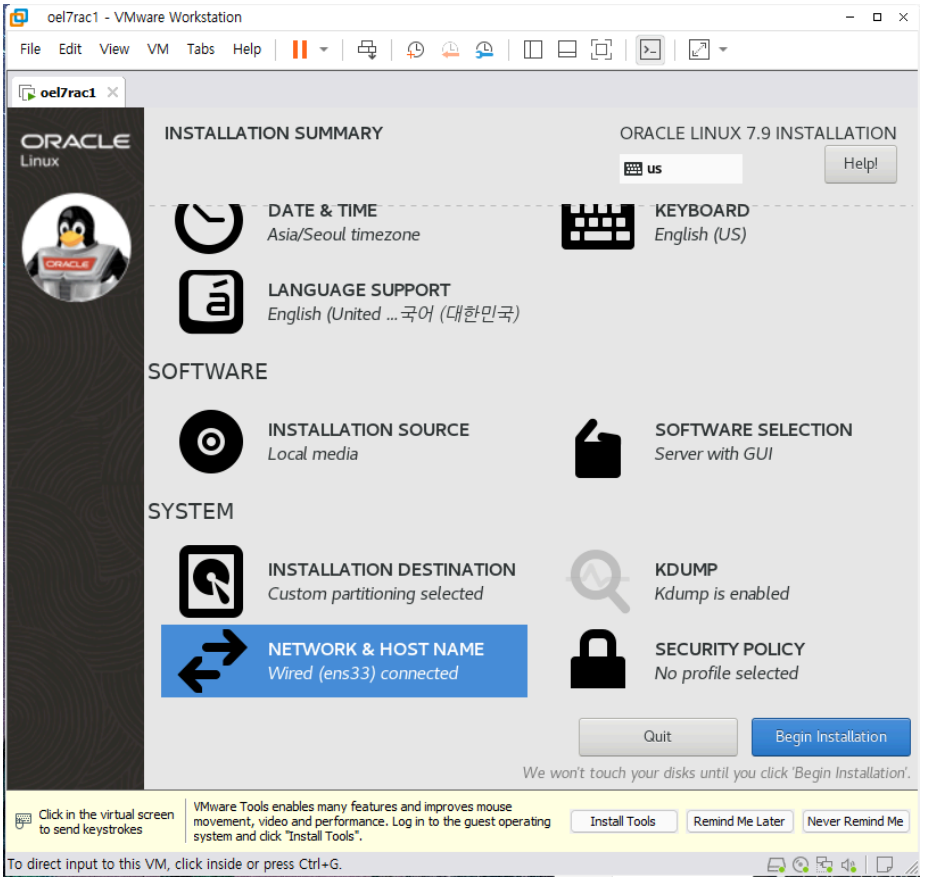
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INSTALLATION SOURCE
Local media
SOFTWARE SELECTION
Server with GUI
SYSTEM
INSTALLATION DESTINATION
Custom partitioning selected
KDUMP
Kdump is enabled
NETWORK & HOST NAME
Wired (ens33) connected
SECURITY POLICY
No profile selected
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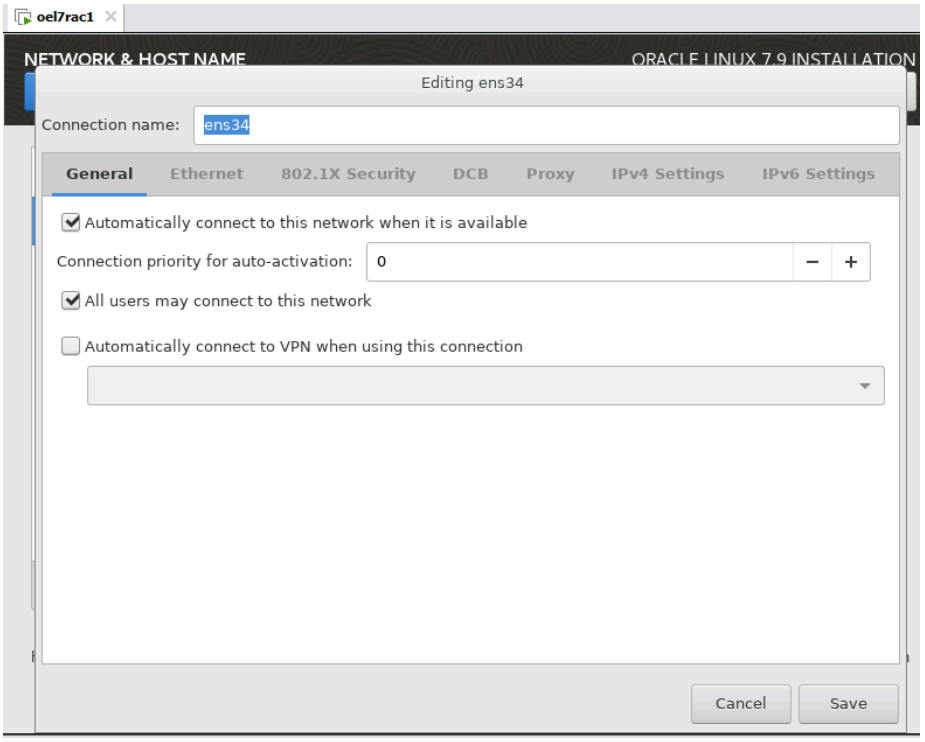
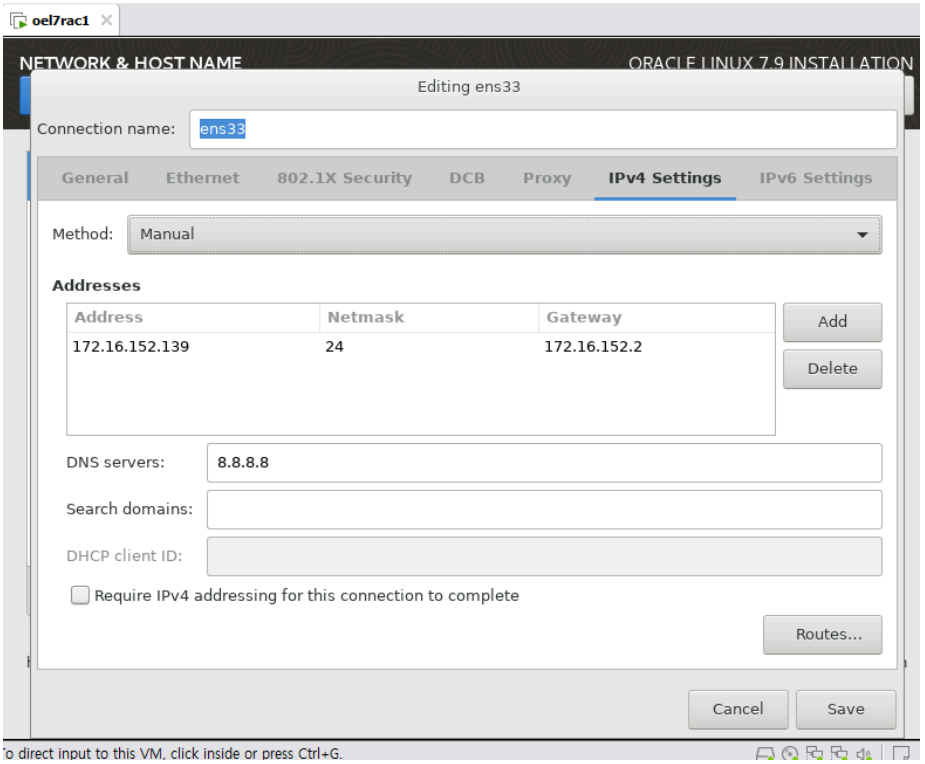

oel7rac1
NETWORK & HOST NAME
ORACLE LINUX 7.9 INSTALLATION
Editing ens34
Connection name:
ens34
General
Ethernet
802.1X Security
DCB
Proxy
IPv4 Settings
IPv6 Settings
Automatically connect to this network when it is available
Connection priority for auto-activation:
0
All users may connect to this network
Automatically connect to VPN when using this connection
Cancel
Save


oel7rac1
NETWORK & HOST NAME
ORACLE LINUX 7.9 INSTALLATION
Editing ens33
Connection name:
ens33
General
Ethernet
802.1X Security
DCB
Proxy
IPv4 Settings
IPv6 Settings
Method:
Manual
Addresses
Address
Netmask
Gateway
172.16.152.139
24
172.16.152.2
Add
Delete
DNS servers:
8.8.8.8
Search domains:
DHCP client ID:
Require IPv4 addressing for this connection to complete
Routes...
Cancel
Save
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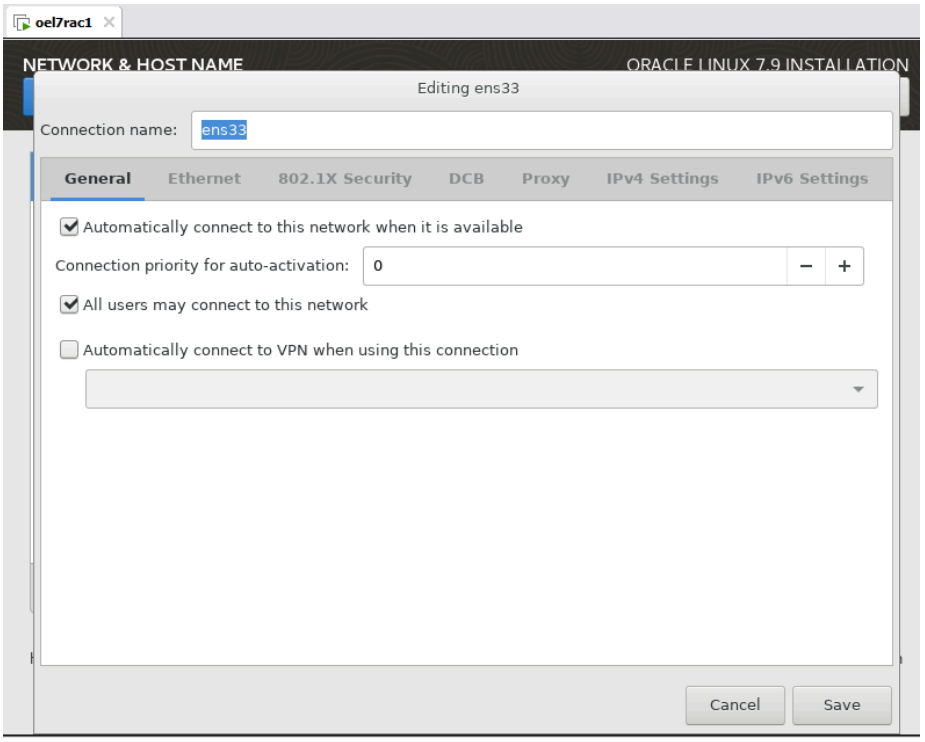
oel7rac1
NETWORK & HOST NAME
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Connection name: ens33
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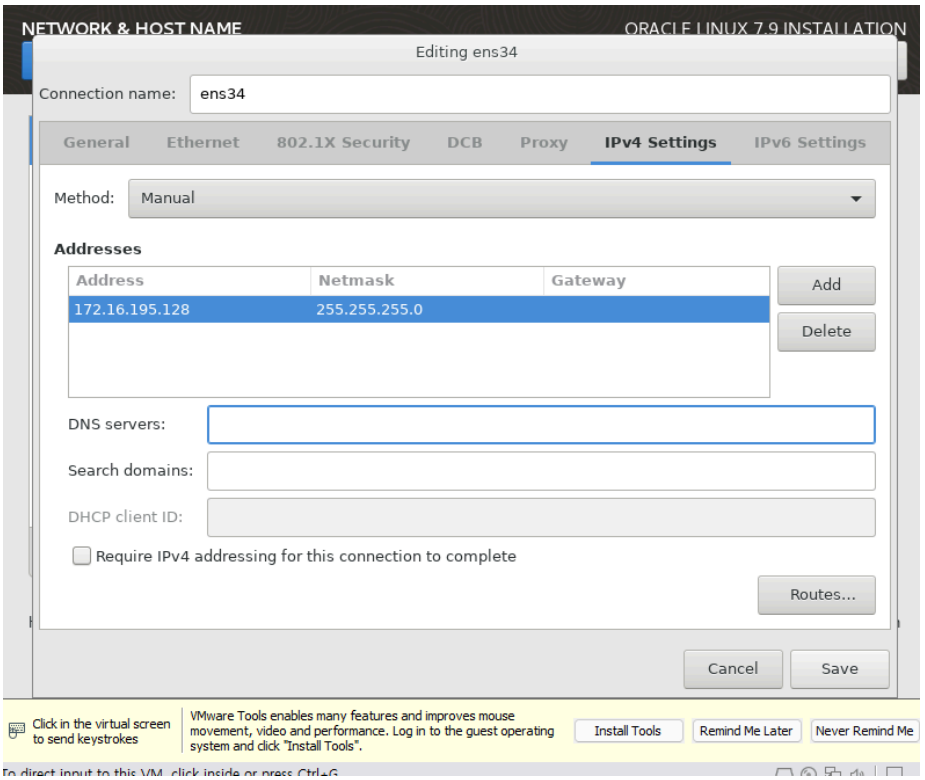
NETWORK & HOST NAME
ORACLE LINUX 7.9 INSTALLATION
Editing ens34
Connection name: ens34
General
Ethernet
802.1X Security
DCB
Proxy
IPv4 Settings
IPv6 Settings
Method: Manual
Addresses
Address
Netmask
Gateway
172.16.195.128
255.255.255.0
Add
Delete
DNS servers:
Search domains:
DHCP client ID:
Require IPv4 addressing for this connection to complete
Routes...
Cancel
Save
Click in the virtual screen to send keystrokes
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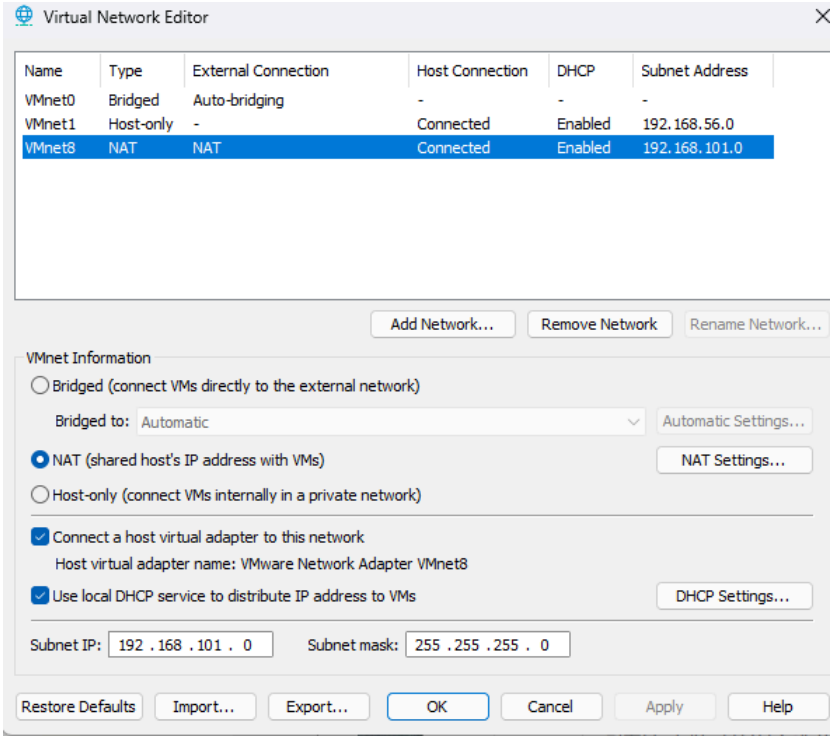
Remind Me Later
Never Remind Me



2. 오라클 19c RAC 설치 시작

yum install oracle-database-preinstall-19c ⇒ 필요한 RPM패키지들을 찾아준다

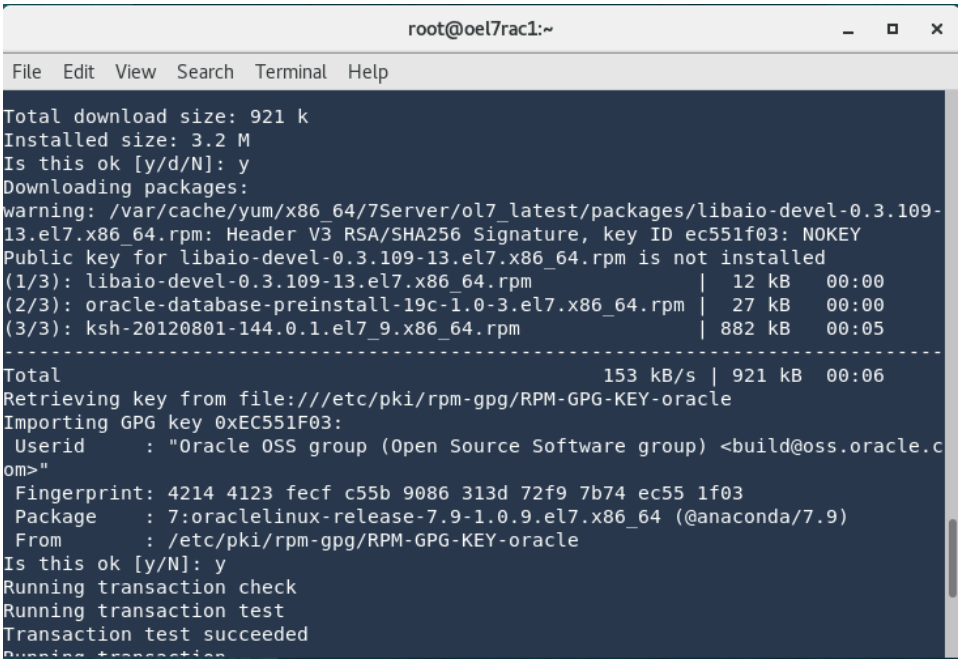
```
[root@oel7rac1 ~]# ps -ef|grep yum
root     12664 11158  3 12:57 ?        00:00:15 /usr/bin/python /usr/share/Packa
geKit/helpers/yum/yumBackend.py get-updates none
root     13112 12889  0 13:04 pts/2    00:00:00 grep --color=auto yum
[root@oel7rac1 ~]# rm -rf /var/run/yum.pid
[root@oel7rac1 ~]# yum install oracle-database-preinstall-19c
Loaded plugins: langpacks, ulninfo
Resolving Dependencies
--> Running transaction check
---> Package oracle-database-preinstall-19c.x86_64 0:1.0-3.el7 will be installed
--> Processing Dependency: ksh for package: oracle-database-preinstall-19c-1.0-3
.el7.x86_64
--> Processing Dependency: libaio-devel for package: oracle-database-preinstall-
19c-1.0-3.el7.x86_64
--> Running transaction check
---> Package ksh.x86_64 0:20120801-144.0.1.el7_9 will be installed
---> Package libaio-devel.x86_64 0:0.3.109-13.el7 will be installed
--> Finished Dependency Resolution

Dependencies Resolved
```

에러발생화면

🚨 에러가 나는 경우 🚨

ps -ef|grep yum <← yum 프로세서 kill

rm -rf /var/run/yum.pid <← 파일 제거



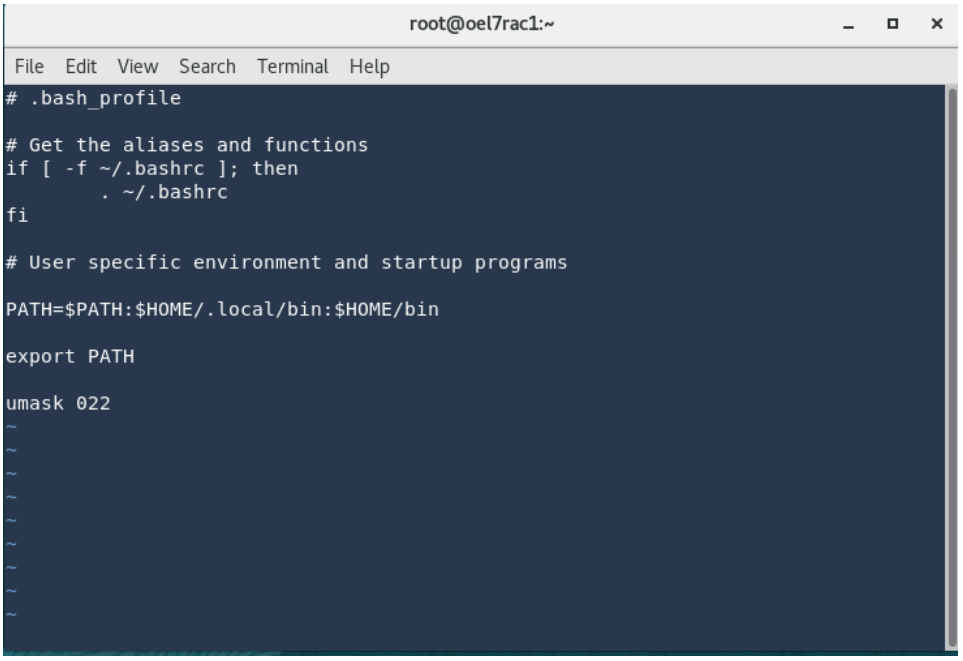
y두번

- Root:
[root@oel7rac1 ~]# cat /etc/group
[root@oel7rac1 ~]# groupadd dba <← 이미 생성

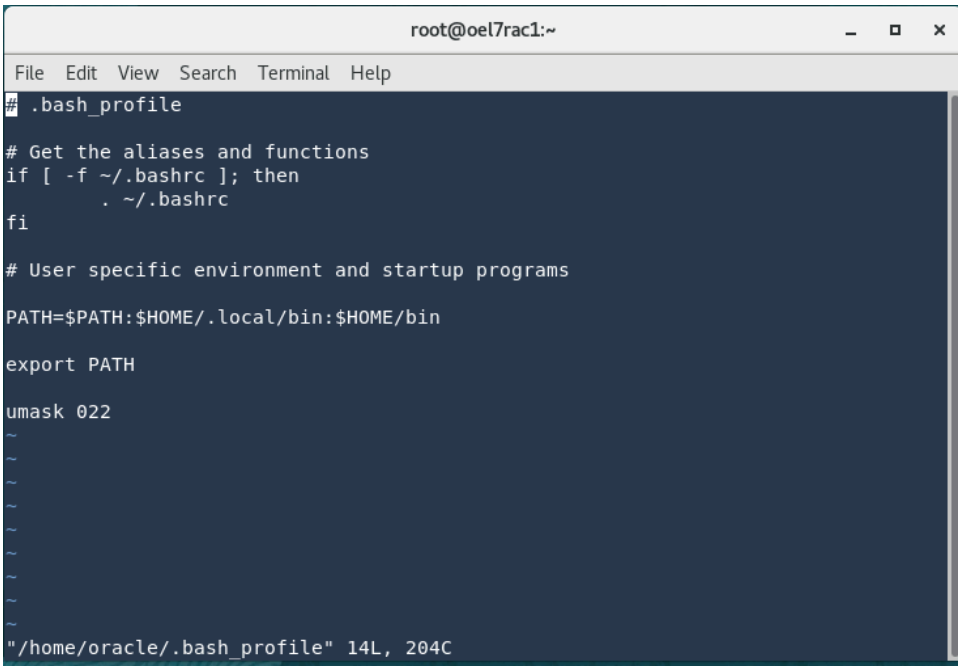
[root@oel7rac1 ~]# cat /etc/passwd

[root@oel7rac1 ~]# useradd -s /bin/bash -g dba grid
[root@oel7rac1 ~]# usermod -g dba oracle
[root@oel7rac1 ~]# groupdel oracle

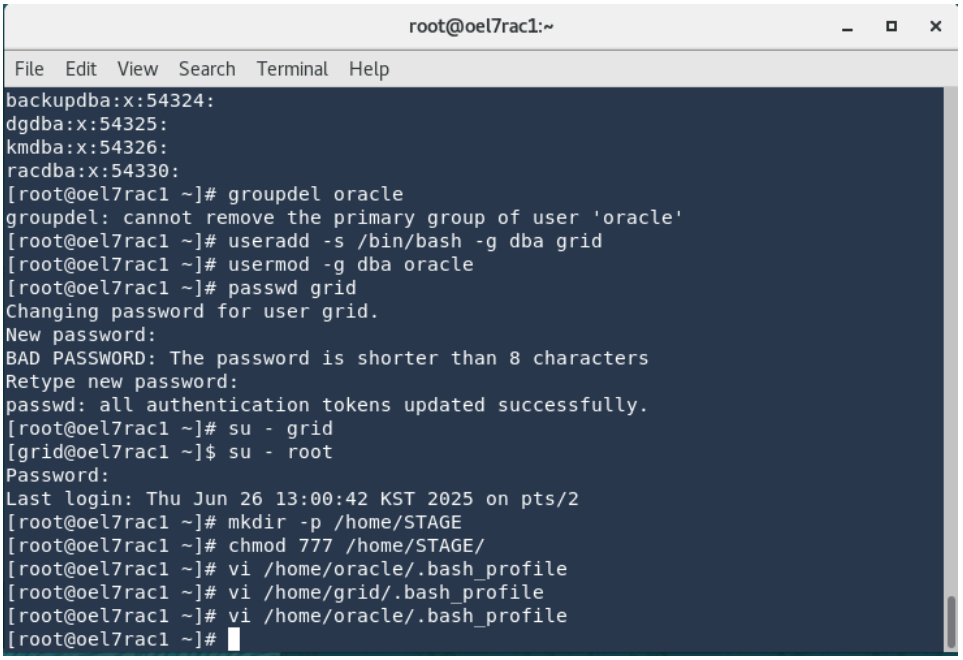
[root@oel7rac1 ~]# passwd grid
[root@oel7rac1 ~]# mkdir -p /home/STAGE
[root@oel7rac1 ~]# chmod 777 /home/STAGE/



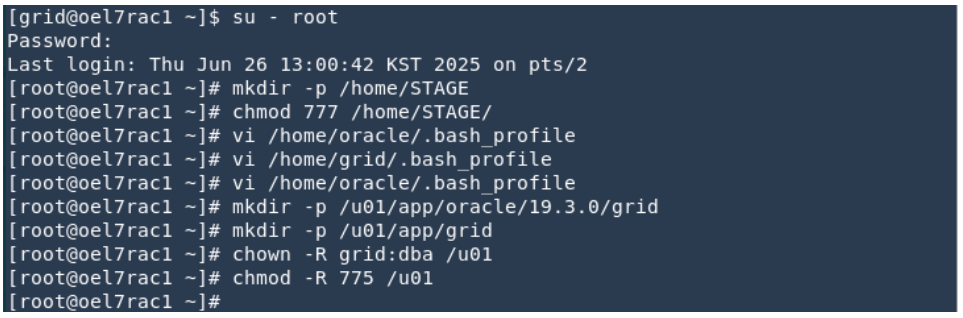
#cd /home/grid/.bash_profile에 umask022추가



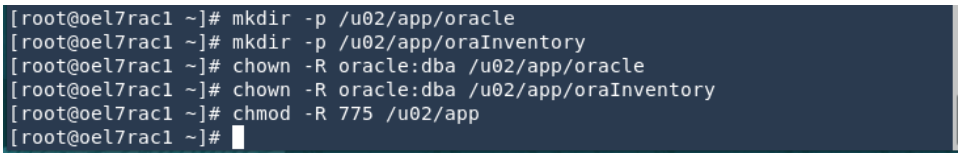
cd /home/oracle/.bash_profile 에 umask 022 추가



grid에 필요권한 설정

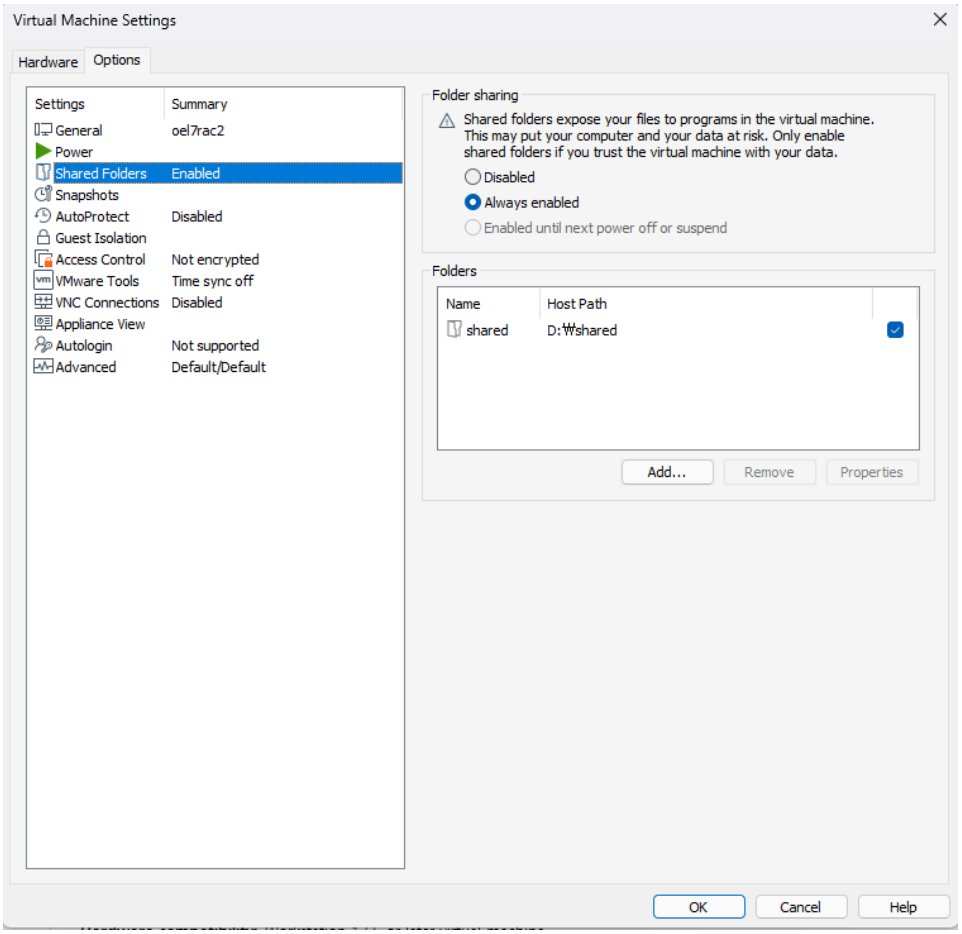


grid에 필요 디렉토리 설정



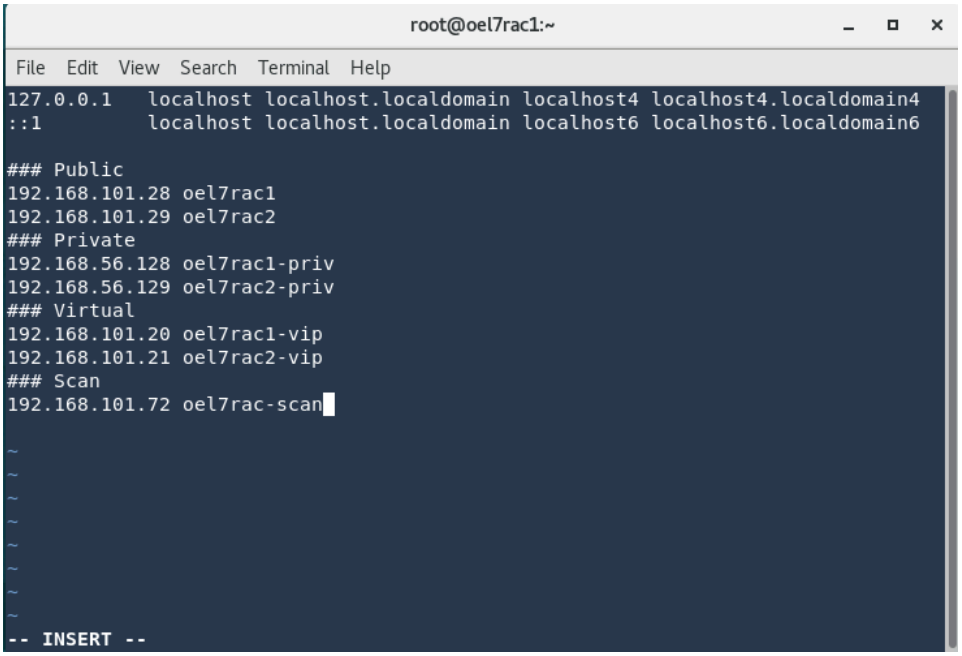
oracle에 필요 디렉토리 설정

- Root
[root@oel7rac1 ~]# mkdir -p /u01/app/oracle/19.3.0/grid
[root@oel7rac1 ~]# mkdir -p /u01/app/grid
[root@oel7rac1 ~]# chown -R grid:dba /u01
[root@oel7rac1 ~]# chmod -R 775 /u01
⇒ 여기까지 그리드
[root@oel7rac1 ~]# mkdir -p /u02/app/oracle
[root@oel7rac1 ~]# mkdir -p /u02/app/oraInventory
[root@oel7rac1 ~]# chown -R oracle:dba /u02/app/oracle
[root@oel7rac1 ~]# chown -R oracle:dba /u02/app/oraInventory
[root@oel7rac1 ~]# chmod -R 775 /u02/app
= >공유폴더 shared 연결 (vm 세팅 -> 옵션)




```
[root@oel7rac1 ~]# cd /mnt/hgfs/shared/
[root@oel7rac1 shared]# ls
정리해            demobld.sql      OracleXE112_Win64  setup_sqlt
code_ex           human_resources  results2pdf        ttf
customer_orders   oel7.vmdk        scim               V1009690-01.iso
[root@oel7rac1 shared]# ls
정리해            human_resources    results2pdf  V1009690-01.iso
code_ex           ITWILL (6).zip     scim         V982063-01.zip
customer_orders   oel7.vmdk          setup_sqlt   V982068-01.zip
demobld.sql       OracleXE112_Win64  ttf
[root@oel7rac1 shared]# mv V98* /home/STAGE/
```

```
[root@oel7rac1 ~]# ip addr
[root@oel7rac1 ~]# vi /etc/hosts
```



[root@oel7rac1 ~]# vi /etc/hosts

Public ⇒ 외부에서 들어올 때 찾아 올 IP

192.168.101.28 oel7rac1 ⇒ 나는 끝자리 28,29번 사용
192.168.101.29 oel7rac2

Private ⇒ 게이트웨이 없이 뒤야함, 나가지 않는다

192.168.56.128 oel7rac1-priv
192.168.56.129 oel7rac2-priv

Virtual ⇒ public보다 많이 쓰기도 함

192.168.101.20 oel7rac1-vip ⇒ 끝자리 20,21사용
192.168.101.21 oel7rac2-vip

Scan ⇒ 3개 사용을 오라클에선 권장하긴함, 바깥에서 타고 들어 올 때 길 찾아줌

192.168.101.72 oel7rac-scan

호스트네임 확인

```
[root@oel7rac1 ~]# hostnamectl  set-hostname  oel7rac1
[root@oel7rac1 ~]# hostnamectl  set-hostname  oel7rac1  --pretty
[root@oel7rac1 ~]# hostnamectl  set-hostname  oel7rac1  --static
[root@oel7rac1 ~]# hostnamectl  set-hostname  oel7rac1  --transient
[root@oel7rac1 ~]# hostnamectl  status
```

```
[root@oel7rac1 ~]# grep MemTotal /proc/meminfo
   MemTotal:        7856532 kB

[root@oel7rac1 ~]# grep SwapTotal /proc/meminfo
 SwapTotal:      25698300 kB
```

```
[root@oel7rac1 ~]# vi /etc/security/limits.conf
grid      soft    nofile    4096
grid      hard    nofile    65536
grid      soft    nproc     16384
grid      hard    nproc     16384
grid      soft    stack     10240
grid      hard    stack     32768
grid      soft    memlock   3145728
grid      hard    memlock   3145728

oracle      soft    nofile    4096
oracle      hard    nofile    65536
oracle      soft    nproc     16384
oracle      hard    nproc     16384
oracle      soft    stack     10240
oracle      hard    stack     32768
oracle      soft    memlock   3145728
oracle      hard    memlock   3145728
```

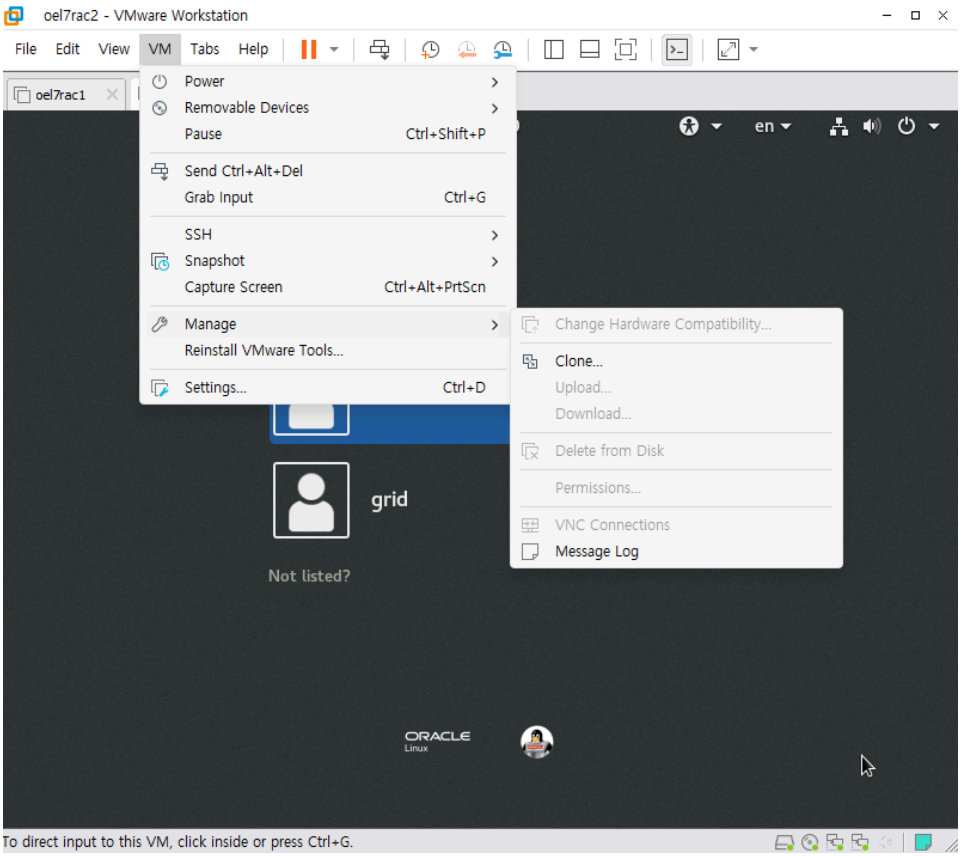
```
[root@oel7rac1 ~]# systemctl stop firewalld
[root@oel7rac1 ~]# systemctl disable firewalld
```

```
[root@oel7rac1 ~]# yum install ntp
```

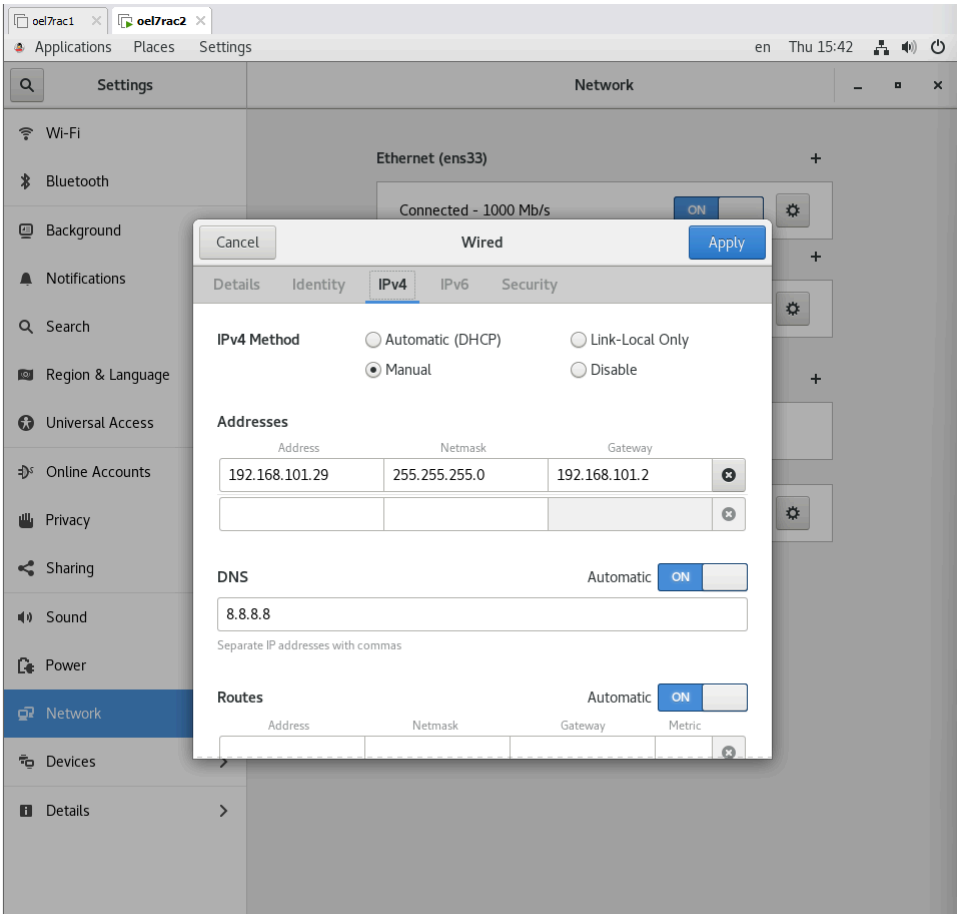
```
[root@oel7rac1 ~]# systemctl start ntpd
[root@oel7rac1 ~]# systemctl enable ntpd
[root@oel7rac1 ~]# systemctl status ntpd

[root@oel7rac1 ~]# shutdown -h 0
```

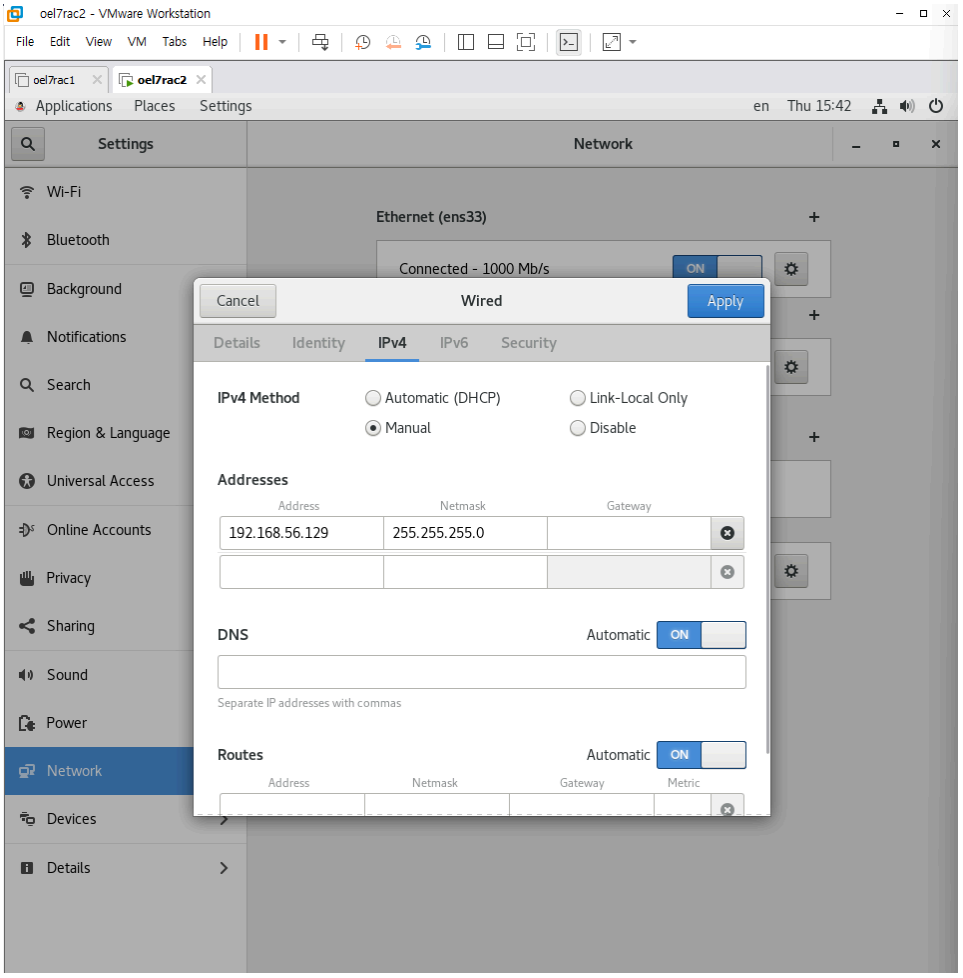
2. create ASM : 앞서 만든 DISK이용해서 세팅

-이 시점에 서버 복사-


oel7rac2 - VMware Workstation
File Edit View VM Tabs Help
oel7rac1
Power
Removable Devices
Pause Ctrl+Shift+P
Send Ctrl+Alt+Del
Grab Input Ctrl+G
SSH
Snapshot
Capture Screen Ctrl+Alt+PrtScn
Manage
Reinstall VMware Tools...
Settings... Ctrl+D
Change Hardware Compatibility...
Clone...
Upload...
Download...
Delete from Disk
Permissions...
VNC Connections
Message Log
en
grid
Not listed?
ORACLE Linux
To direct input to this VM, click inside or press Ctrl+G.

clone선택


oel7rac1
oel7rac2
Applications Places Settings
en Thu 15:42
Settings
Network
Wi-Fi
Bluetooth
Background
Notifications
Search
Region & Language
Universal Access
Online Accounts
Privacy
Sharing
Sound
Power
Network
Devices
Details
Ethernet (ens33)
Connected - 1000 Mb/s
ON
Cancel
Wired
Apply
Details Identity IPv4 IPv6 Security
IPv4 Method
Automatic (DHCP)
Link-Local Only
Manual
Disable
Addresses
Address Netmask Gateway
192.168.101.29 255.255.255.0 192.168.101.2
DNS
Automatic ON
8.8.8.8
Separate IP addresses with commas
Routes
Automatic ON
Address Netmask Gateway Metric



⇒RAC2에서는 아까 지정해준 IP주소로 바꿔준다(public, private...)

```
[root@oel7rac1 ~]# hostnamectl  set-hostname  oel7rac2
 [root@oel7rac1 ~]# hostnamectl  set-hostname  oel7rac2  --pretty
 [root@oel7rac1 ~]# hostnamectl  set-hostname  oel7rac2  --static
 [root@oel7rac1 ~]# hostnamectl  set-hostname  oel7rac2  --transient
 hostnamectl  set-hostname  oel7rac2  --transient
 [root@oel7rac1 ~]# hostnamectl  status
```

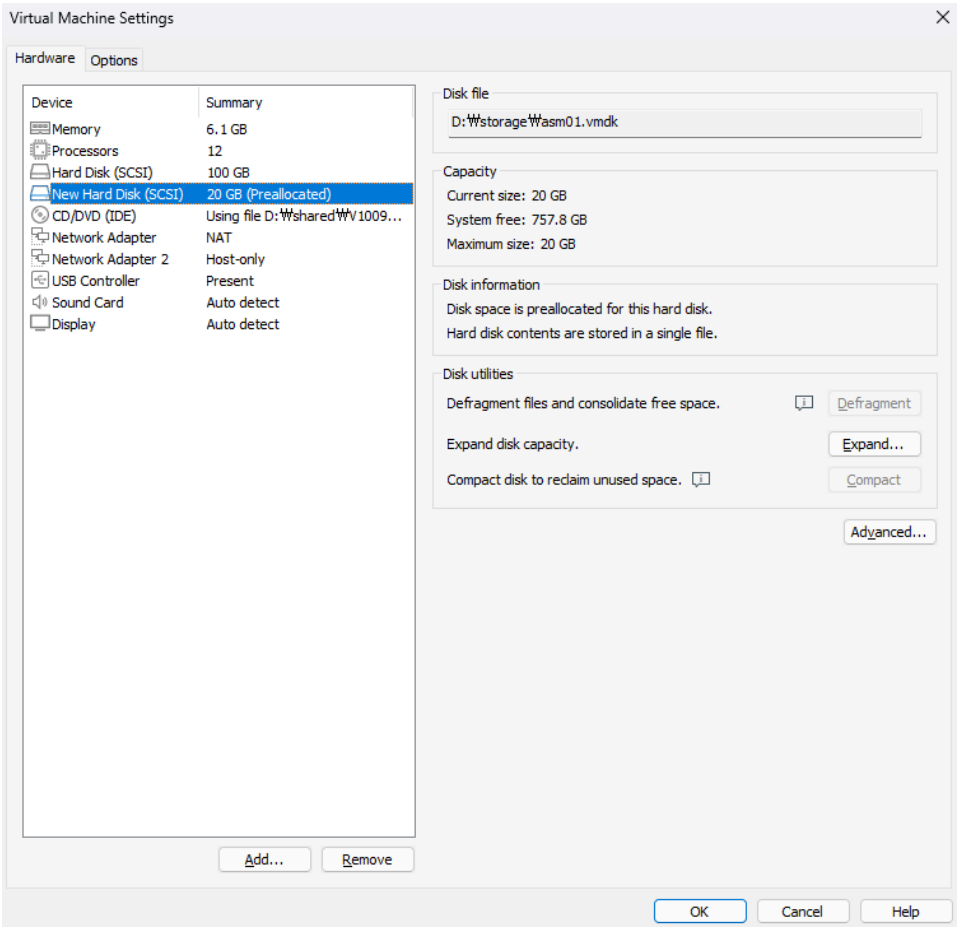
```
* 각 노드별 Reboot
[root@oel7rac1 ~]# reboot

[root@oel7rac1 ~]# reboot
```

```
[grid@oel7rac2 ~]$ ssh oel7rac2 ⇒ rac1 grid에서 확인

[oracle@oel7rac2 ~]$ ssh oracle@oel7rac1 ⇒ rac2의 oracle에서 확인
```

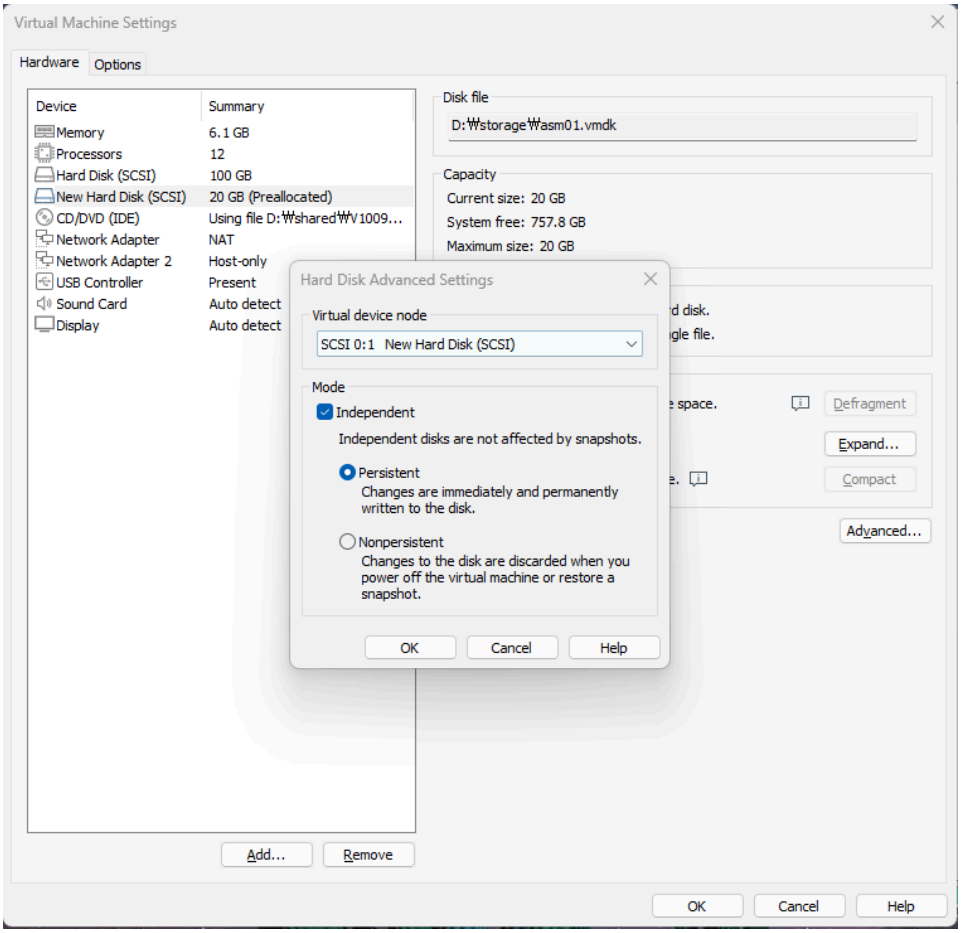
```
asmlib 설치

[root@oel7rac1 ~]# yum list *oracleasm*
```

```
[root@oel7rac1 ~]# yum install oracleasm-support

[root@oel7rac1 ~]# yum install kmod-oracleasm

[root@oel7rac2 ~]# yum list *oracleasm*

[root@oel7rac2 ~]# yum install oracleasm-support

[root@oel7rac2 ~]# yum install kmod-oracleasm
```

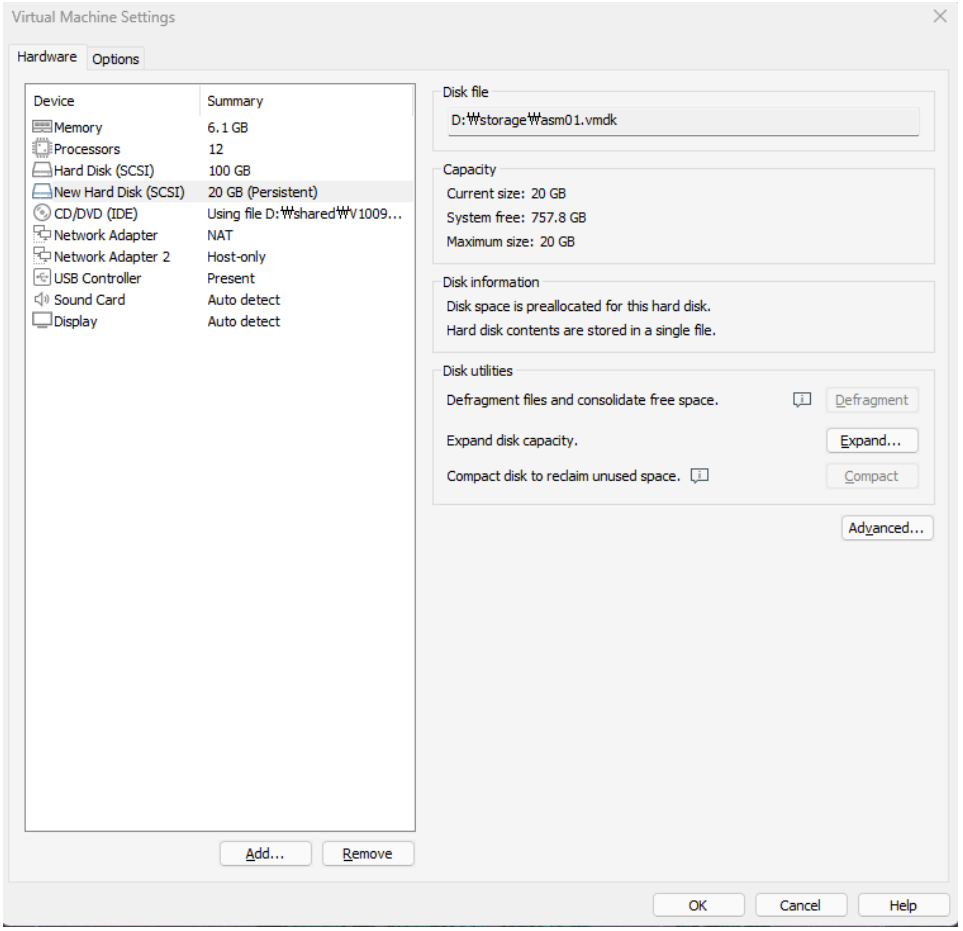
```
- rac1/rac2
[root@oel7rac1 ~]# shutdown -h 0
[root@oel7rac2 ~]# shutdown -h 0
```



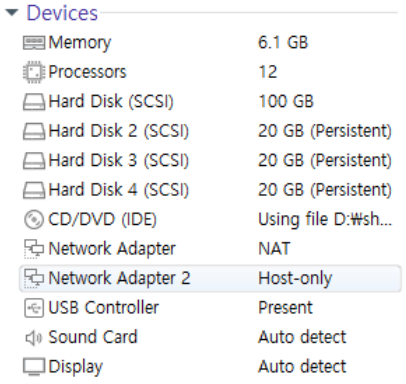
rac1에 하드디스크 20G 붙여주기 (allocate), 경로는 아까 D드라이브에 만든 storage, 이름은 asm01부터 03까지만들기



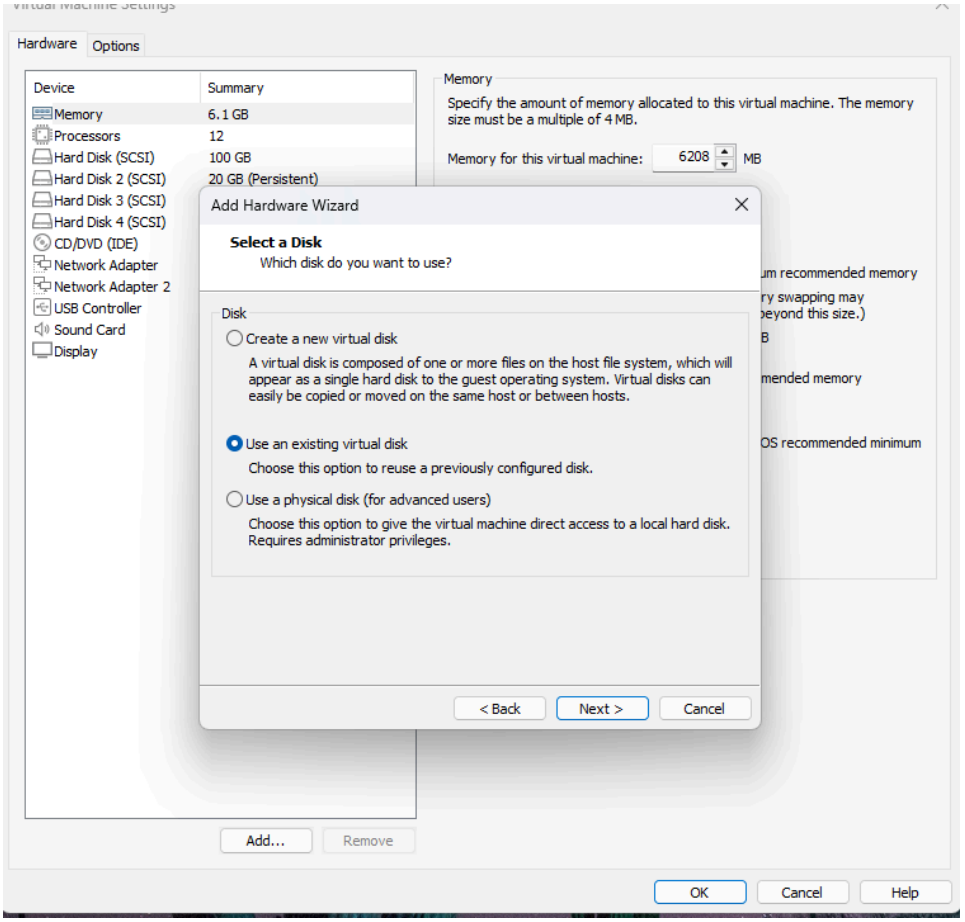
preallocated인 디스크를 누르고 오른쪽 중앙의 advance클릭, independent누르고 persistent로 변환



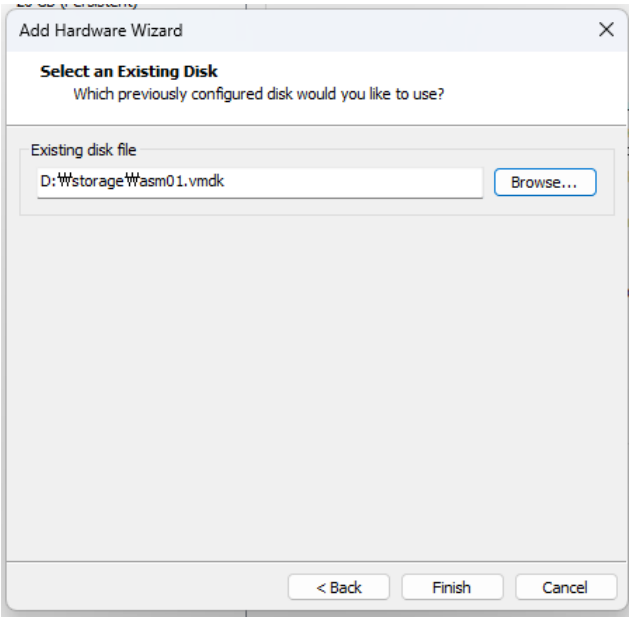
꼭 persistent가 된 것 확인



asm01, asm02, asm03 만들기



rac2에서!!!! 1의 디스크를 가져온다



1에서 만든것 재탕하는 2

```
-- Attach한 Disk 속성 변경: Independent

-- D:₩OEL7RAC1₩oel7rac1.vmx 수정
scsi0:1.fileName = "ASM01.vmdk"
scsi0:1.present = "TRUE"
scsi0:1.deviceType = "disk"
scsi0:1.mode = "independent-persistent"
scsi0:5.fileName = "ASM05.vmdk"
scsi0:5.present = "TRUE"
scsi0:5.deviceType = "disk"
scsi0:5.mode = "independent-persistent"
scsi0:3.fileName = "ASM03.vmdk"
scsi0:3.present = "TRUE"
scsi0:3.deviceType = "disk"
scsi0:3.mode = "independent-persistent"
scsi0:4.fileName = "ASM04.vmdk"
scsi0:4.present = "TRUE"
scsi0:4.deviceType = "disk"
scsi0:4.mode = "independent-persistent"
scsi0:2.fileName = "ASM02.vmdk"
scsi0:2.present = "TRUE"
scsi0:2.deviceType = "disk"
scsi0:2.mode = "independent-persistent"
disk.locking = "FALSE"
diskLib.dataCacheMaxSize = "0"
scsi0.sharedBus = "virtual"
```

받은 스크립트에서

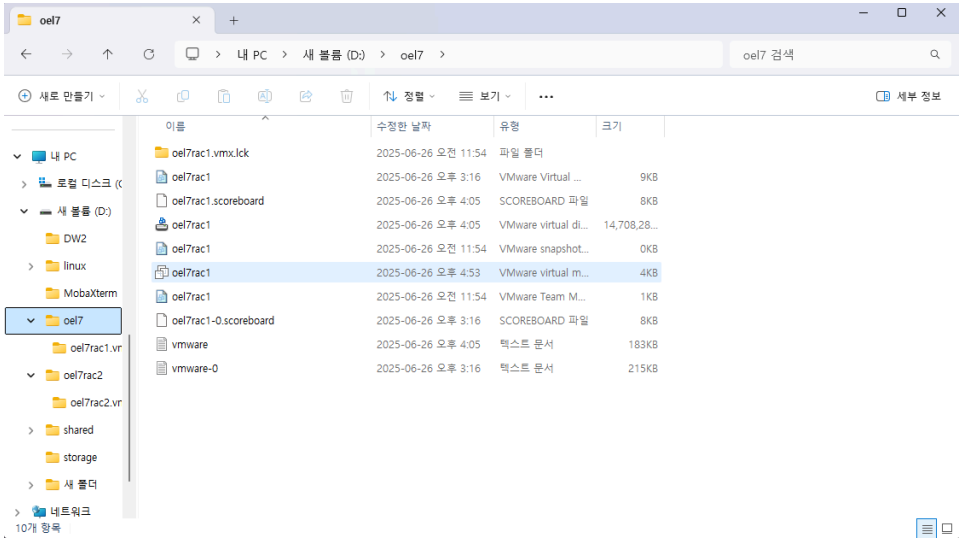
```
scsi0:1.deviceType = "disk"
```

```
scsi0:2.deviceType = "disk"
```

```
scsi0:3.deviceType = "disk"
```

```
disk.locking = "FALSE"
diskLib.dataCacheMaxSize = "0"
scsi0.sharedBus = "virtual"
```

위 내용을 VMware virtual machine configuration파일에 아래 형태처럼 복붙해준다(1,2둘 다)



```
scsi0:2.fileName = "D:₩storage₩asm02.vmdk"
scsi0:2.mode = "independent-persistent"
scsi0:2.deviceType = "disk"
scsi0:2.present = "TRUE"
scsi0:3.fileName = "D:₩storage₩asm03.vmdk"
scsi0:3.mode = "independent-persistent"
scsi0:3.deviceType = "disk"
scsi0:3.present = "TRUE"
scsi0:1.fileName = "D:₩storage₩asm01.vmdk"
scsi0:1.mode = "independent-persistent"
scsi0:1.deviceType = "disk"
scsi0:1.present = "TRUE"
disk.locking = "FALSE"
diskLib.dataCacheMaxSize = "0"
scsi0.sharedBus = "virtual"
```

붙인결과물

<RAC1에서>

```
[root@oel7rac1 ~]# /usr/sbin/oracleasm configure -i
Configuring the Oracle ASM library driver.
```

```
[root@oel7rac1 ~]#  /usr/sbin/oracleasm init
```

```
[root@oel7rac1 ~]# fdisk -l
[root@oel7rac1 ~]# lsblk
[root@oel7rac1 ~]# fdisk /dev/sdb                n-p-엔터-엔터-엔터-w
[root@oel7rac1 ~]# fdisk /dev/sdc                n-p-엔터-엔터-엔터-w
[root@oel7rac1 ~]# fdisk /dev/sdd                n-p-엔터-엔터-엔터-w
```

```
[root@oel7rac1 ~]# pvcreate /dev/sdb1 /dev/sdc1   /dev/sdd1   /dev/sde1   /dev/sdf1
```

```
[root@oel7rac1 ~]# pvcreate /dev/sdb1 /dev/sdc1   /dev/sdd1
  Physical volume "/dev/sdb1" successfully created.
  Physical volume "/dev/sdc1" successfully created.
  Physical volume "/dev/sdd1" successfully created.
```

```
[root@oel7rac1 ~]# oracleasm createdisk DATA1 /dev/sdb1
Writing disk header: done
Instantiating disk: done
[root@oel7rac1 ~]# oracleasm createdisk DATA2 /dev/sdc1
Writing disk header: done
Instantiating disk: done
[root@oel7rac1 ~]# oracleasm createdisk FRA   /dev/sdd1
Writing disk header: done
Instantiating disk: done
[root@oel7rac1 ~]# oracleasm listdisks
```

```
[root@oel7rac1 ~]# oracleasm listdisks
DATA1
DATA2
FRA
```

<RAC2에서>

```
[root@oel7rac1 ~]# /usr/sbin/oracleasm configure -i
```

```
[root@oel7rac1 ~]#  /usr/sbin/oracleasm init
```

```
[root@oel7rac2 ~]# oracleasm scandisks
```

```
[root@oel7rac2 ~]# oracleasm scandisks
Reloading disk partitions: done
Cleaning any stale ASM disks...
Scanning system for ASM disks...
Instantiating disk "DATA2"
Instantiating disk "DATA1"
Instantiating disk "FRA"
```

<RAC1과 2 둘 다 grid에 스크립트 삽입>

```
$ cd /home/grid/.bash_profile
```

```
export LANG=C
export ORACLE_BASE=/u01/app/grid
export ORACLE_HOME=/u01/app/oracle/19.3.0/grid
export ORACLE_SID=+ASM1
export LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib
export NLS_LANG=AMERICAN_AMERICA.AL32UTF8
export PATH=$ORACLE_HOME/bin:$PATH

alias oh='cd $ORACLE_HOME'
alias dbs='cd $ORACLE_HOME/dbs'
alias net='cd $ORACLE_HOME/network/admin'
```

<RAC1에서 파일 압축풀기>

```
[grid@oel7rac1 ~]$ cd /u01/app/oracle/19.3.0/grid
[grid@oel7rac1 grid]$ unzip -q /home/STAGE/V982068-01.zip
```

```
[grid@oel7rac1 grid]$ ls
OPatch      deinstall      inventory  ord       rhp            tomcat
QOpatch     demo           javavm     ords      root.sh        ucp
addnode     diagnostics    jdbc       oss       root.sh.old    usm
assistants  dmu            jdk        oui       root.sh.old.1  utl
bin         env.ora        jlib       owm       rootupgrade.sh welcome.html
cha         evm            ldap       perl      runcluvfy.sh   wlm
clone       gpnp           lib        plsql     sdk            wwg
crs         gridSetup.sh   md         precomp   slax           xag
css         has            network    qos       sqlpatch       xdk
cv          hs             nls        racg      sqlplus
dbjava      install        opmn       rdbms     srvm
dbs         instantclient  oracore    relnotes  suptools
```

gridSetup.sh 있는지 확인

```
[grid@oel7rac1 grid]$ ./gridSetup.sh
ERROR: Unable to verify the graphical display setup. This application requires X display. Make sure that xd
pyinfo exist under PATH variable.
```

```
No X11 DISPLAY variable was set, but this program performed an operation which requires it.
[grid@oel7rac1 grid]$ export DISPLAY=192.168.101.1:0
[grid@oel7rac1 grid]$ ./gridSetup.sh
Launching Oracle Grid Infrastructure Setup Wizard...
```

6월26일 여기까지 6월27일에 [grid@oel7rac1 grid]$ ./gridSetup.sh부터 다시