



ABLESTACK Online Docs  
ABLESTACK-V4.0-4.0.15

# ASM 및 GI 구성

Oracle RAC를 구성하기 위해 ASM 및 Grid Infrastructure를 설치 및 구성하는 가이드입니다.

### Info

가이드에 사용되는 입력값은 예시입니다. 필요시 환경에 맞게 변경 가능합니다.

## ASM(Automatic Storage Management) 구성

Oracle에서 만든 자동으로 스토리지를 관리하는 소프트웨어로써, 데이터 베이스에서 사용하는 모든 파일(Control File, Archive log file, Redolog File, DataDump File, DataFile, SPFILE 등)에 대해 자동저장공간 관리를 위해 ASM을 구성합니다.

### 네트워크 IP 세팅 확인 (노드 : 전체 / 계정 : root)

```
ip a
```

### 결과 값

- node1 : Eth0 : 192.168.0.110/24, Eth1 : 10.1.1.110/24
- node2 : Eth0 : 192.168.0.120/24, Eth1 : 10.1.1.120/24

### 공유 디스크 세팅 확인 (노드 : 전체 / 계정 : root)

```
lsblk
```

디스크 목록에 sdb가 있는지 확인

```
[root@ol7rac1 ~]# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sdb          8:16   0 100G  0 disk
sr0         11:0    1 1024M  0 rom
sdc          8:32   0 100G  0 disk
sda          8:0    0 100G  0 disk
├─sda2       8:2    0   99G  0 part
│  └─ol-swap 252:1   0   16G  0 lvm  [SWAP]
│  └─ol-root 252:0   0   83G  0 lvm  /
└─sda1       8:1    0    1G  0 part /boot
[root@ol7rac1 ~]#
```

```
[root@ol7rac2 ~]# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sdb          8:16   0 100G  0 disk
sr0         11:0    1 1024M  0 rom
sdc          8:32   0 100G  0 disk
sda          8:0    0 100G  0 disk
├─sda2       8:2    0   99G  0 part
│  └─ol-swap 252:1   0   16G  0 lvm  [SWAP]
│  └─ol-root 252:0   0   83G  0 lvm  /
└─sda1       8:1    0    1G  0 part /boot
[root@ol7rac2 ~]#
```

### 호스트 네임 세팅 (노드 : node1 / 계정 : root)

```
hostnamectl set-hostname ol7rac1
```

### 호스트 네임 세팅 (노드 : node2 / 계정 : root)

```
hostnamectl set-hostname ol7rac2
```

### 오라클 데이터베이스 구성전 설치 (노드 : 전체 / 계정 : root)

```
yum install -y oracle-database-preinstall-19c
```

preinstall이 완료되면 자동으로 rpm을 설치하고, 필요 그룹을 생성하고 해당 설치과정에서는 dba 그룹만 사용

#### 그룹 자동생성 확인 (노드 : 전체 / 계정 : root )

```
cat /etc/group
```

```
dba:x:54322:  
oper:x:54323:  
backupdba:x:54324:  
dgdba:x:54325:  
kmdba:x:54326:  
racdba:x:54330:
```

#### oracle, grid 유저 생성 및 비밀번호 수정 (노드 : 전체 / 계정 : root )

```
useradd -s /bin/bash -g dba oracle  
passwd oracle  
useradd -s /bin/bash -g dba grid  
passwd grid
```

#### 유저 생성 확인 (노드 : 전체 / 계정 : root )

```
id oracle  
(출력)  
uid=1000(oracle) gid=54322(dba) groups=54322(dba)  
  
id grid  
(출력)  
uid=1001(grid) gid=54322(dba) groups=54322(dba)
```

#### 계정별 bash\_profile 수정 (노드 : 전체 / 계정 : root )

```
vi ~/.bash_profile  
  
(추가)  
umask 022  
  
vi ~grid/.bash_profile  
  
(추가)  
umask 022  
  
vi ~oracle/.bash_profile  
  
(추가)  
umask 022
```

#### Grid 설치 폴더 생성 및 권한설정 (노드 : 전체 / 계정 : root )

```
mkdir -p /u01/app/19.0.0/grid  
mkdir -p /u01/app/grid  
chown -R grid:dba /u01  
chmod -R 775 /u01
```

#### hosts 파일에 ip 등록 (노드 : 전체 / 계정 : root )

```
vi /etc/hosts
```

(추가)

```
### Public
192.168.0.110 ol7rac1
192.168.0.120 ol7rac2
### Private
10.1.1.110 ol7rac1-priv
10.1.1.120 ol7rac2-priv
### Virtual
192.168.0.121 ol7rac1-vip
192.168.0.122 ol7rac2-vip
### SCAN (스캔을 안쓰는 경우 세팅을 안해도 되는데 구성시 필수여서 입력해야함)
192.168.0.123 ol7rac-scan
192.168.0.124 ol7rac-scan
192.168.0.125 ol7rac-scan
```

### Memory 확인 (노드 : 전체 / 계정 : root )

```
grep MemTotal /proc/meminfo
```

(결과)

GI는 8GB 이상, DB는 1GB 이상.

### Swap 공간 확인 (노드 : 전체 / 계정 : root )

```
grep SwapTotal /proc/meminfo
```

(결과)

메모리크기의 1~1.5배 이어야함. <16GB

### [필요시] swap 볼륨 추가 (노드 : 전체 / 계정 : root )

> 10GB 생성

```
dd if=/dev/zero of=/etc/swapfile bs=1024 count=1000000
```

> Swap 파일로 포맷

```
mkswap /etc/swapfile
```

> Swap 공간으로 활성화

```
swapon /etc/swapfile
```

> /etc/fstab 파일에 추가

```
vi /etc/fstab
```

(추가)

```
/etc/swapfile          swap          swap          defaults        0 0
```

### ntp 설치 및 불필요 프로그램 종료 (노드 : 전체 / 계정 : root )

```

> ntpd 설치
yum install -y ntp

> ntpd 설정 파일 수정
vi /etc/sysconfig/ntpd

(수정)
# Command line options for ntpd
#OPTIONS="-g"
OPTIONS="-x -u ntp:ntp -p /var/run/ntpd.pid"

> ntpd 실행 및 상태확인
systemctl enable --now ntpd
systemctl status ntpd

> 불필요 소프트웨어 종료
systemctl disable --now avahi-daemon

> 방화벽 종료 (운영시 종료X)
systemctl disable --now firewalld

```

### Resource Limit 관련 파라메타 세팅 (노드 : 전체 / 계정 : root )

```

vi /etc/security/limits.conf

(추가) #End of file 바로 위에
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

```

```
#@student - maxlogins 4
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

# End of file
```

**asmlib 설치 ( 노드 : 전체 / 계정 : root )**

```
yum install -y oracleasm-support
yum install -y kmod-oracleasm
```

## ASM Disk 구성 작업

1,2,5번 작업은 모든 노드에서 수행하고 3,4번 작업은 1번 노드에서만 수행합니다.

**asmlib 설치 ( 노드 : 전체 / 계정 : root )**

```
/usr/sbin/oracleasm configure -i
(입력)
grid > dba > y > y 순으로 입력
```

**oracleasm 커널모듈 로딩 ( 노드 : 전체 / 계정 : root )**

```
/usr/sbin/oracleasm init
```

**사용할 수 있는 Disk 확인 및 파티션 생성 ( 노드 : node1 / 계정 : root )**

```
lsblk
fdisk /dev/sdb (n > 엔터 > 엔터 > 엔터 > w) 파티션 생성
pvcreate /dev/sdb1
```

**ASM disk scan ( 노드 : 전체 / 계정 : root )**

```
oracleasm scandisks

(결과)
1,2번 노드에 DATA가 출력되는지 확인
```

```
[root@ol7rac1 ~]# oracleasm listdisks
DATA
[root@ol7rac1 ~]# █
```

```
[root@ol7rac2 ~]# oracleasm listdisks
DATA
[root@ol7rac2 ~]# █
```

### grid S/W 설치 ( 노드 : node1 / 계정 : root )

```
mkdir -p /home/STAGE
cd /home/STAGE
wget https://gofile.me/3ThCa/3vK04a0LS
wget https://gofile.me/3ThCa/XUd4hxJIV
( 다운로드 : LINUX.X64_193000_grid_home.zip, LINUX.X64_193000_grid_home.zip 파일은 다운로드 사이트 >
https://www.oracle.com/database/technologies/oracle19c-linux-downloads.html 오라클 계정으로 로그인
해야 다운로드 가능 )
```

### grid 계정 bash\_profile 수정 ( 노드 : node1 / 계정 : grid )

```
su - grid
vi .bash_profile

( 추가 )
export LANG=C
export ORACLE_BASE=/u01/app/grid
export ORACLE_HOME=/u01/app/19.0.0/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'
```

### grid 계정 bash\_profile 수정 ( 노드 : node2 / 계정 : grid )

```
su - grid
vi .bash_profile

( 추가 )
export LANG=C
export ORACLE_BASE=/u01/app/grid
export ORACLE_HOME=/u01/app/19.0.0/grid
export ORACLE_SID=+ASM2
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'
```

~grid/.bash\_profile 확인

```
# .bash_profile

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
    . ~/.bashrc
fi

# User specific environment and startup programs

PATH=$PATH:$HOME/.local/bin:$HOME/bin

export PATH

umask 022

export LANG=C
export ORACLE_BASE=/u01/app/grid
export ORACLE_HOME=/u01/app/19.0.0/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'
```

```
# .bash_profile

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
    . ~/.bashrc
fi

# User specific environment and startup programs

PATH=$PATH:$HOME/.local/bin:$HOME/bin

export PATH

umask 022

export LANG=C
export ORACLE_BASE=/u01/app/grid
export ORACLE_HOME=/u01/app/19.0.0/grid
export ORACLE_SID=+ASM2
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'
```

#### grid 설치파일 압축 풀기 ( 노드 : node1 / 계정 : grid )

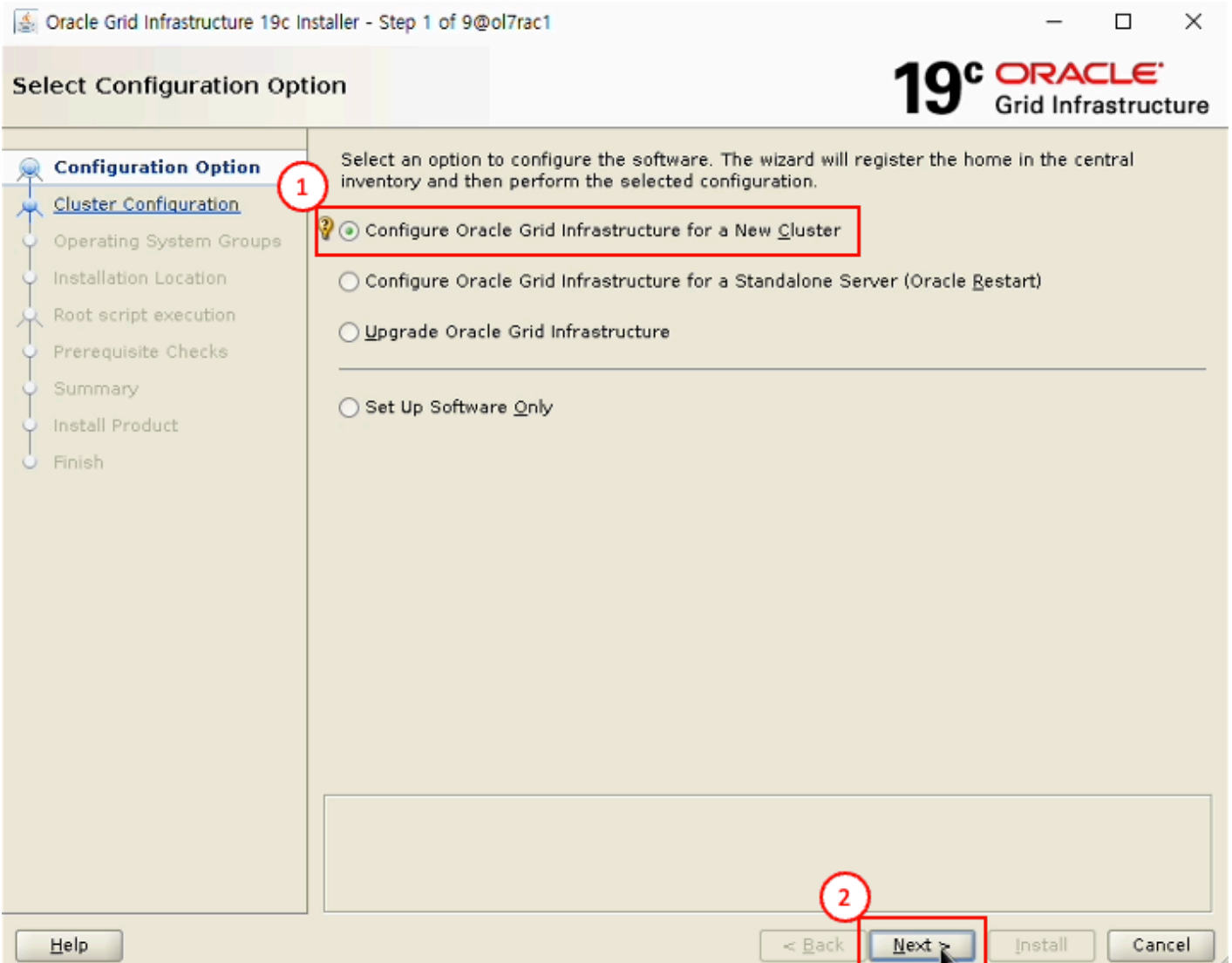
```
cd /u01/app/19.0.0/grid
unzip -q /home/STAGE/LINUX.X64_193000_grid_home.zip
(1번노드에서만 풀면 됨 > 설치시 다른노드에 자동 복사함)
```

#### grid infrastructure 설치 ui 구동 ( 노드 : node1 / 계정 : grid )

```
> 윈도우 x-trem으로 접속하여 실행 (mac os 에서는 설치 UI 화면 깨짐 / windows MobaXtrem 사용)
su - grid
/u01/app/19.0.0/grid/gridSetup.sh
```

## grid infrastructure 구성

grid infrastructure 구성 마법사를 통해 작업을 진행합니다.



- Configure Oracle Grid Infrastructure for a New Cluster 선택
- Next 버튼 클릭

## Select Cluster Configuration

**19<sup>c</sup>** ORACLE<sup>®</sup>  
Grid Infrastructure

**1** Choose the required cluster configuration.

Configure an Oracle Standalone Cluster

Configure an Oracle Domain Services Cluster

Configure an Oracle Member Cluster for Oracle Databases

Configure an Oracle Member Cluster for Applications

Oracle Extended clusters are special purpose clusters that constitute nodes which span across multiple sites. Specify a minimum of 3 site names and a maximum of 5 (e.g., siteA, siteB, siteC).

Configure as an Oracle Extended cluster

Site names:

**2**

Help < Back Next > Install Cancel

- Configure an Oracle Standalone Cluster 선택
- Next 버튼 클릭

## Grid Plug and Play Information

Configuration Option  
Cluster Configuration  
**Grid Plug and Play**  
Cluster Node Information  
Network Interface Usage  
Storage Option  
Create Grid Infrastructure Ma  
Grid Infrastructure Managem  
Create ASM Disk Group  
ASM Password  
Operating System Groups  
Installation Location  
Root script execution  
Prerequisite Checks  
Summary  
Install Product  
Finish

Single Client Access Name (SCAN) allows clients to use one name in connection strings to connect to the cluster as a whole. Client connect requests to the SCAN name can be handled by any cluster node.

Create Local SCAN

Cluster Name: ol7rac-cluster  
SCAN Name: ol7rac-scan  
SCAN Port: 1521

Use Shared SCAN  
SCAN Client Data:  Browse...

Configure GNS

Configure nodes Virtual IPs as assigned by the Dynamic Networks

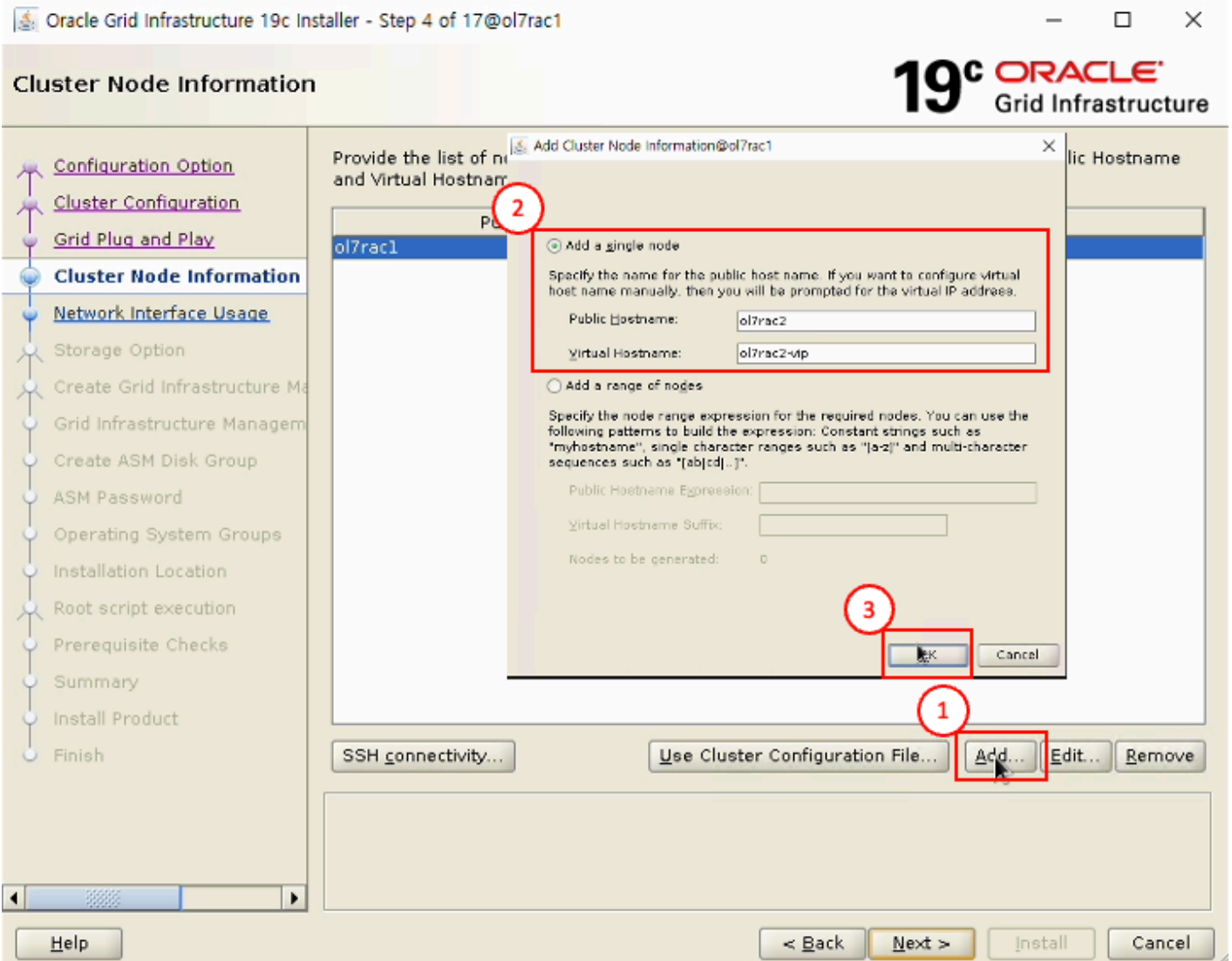
Create a new GNS

GNS V<sub>IP</sub> Address:   
GNS Sub Domain:

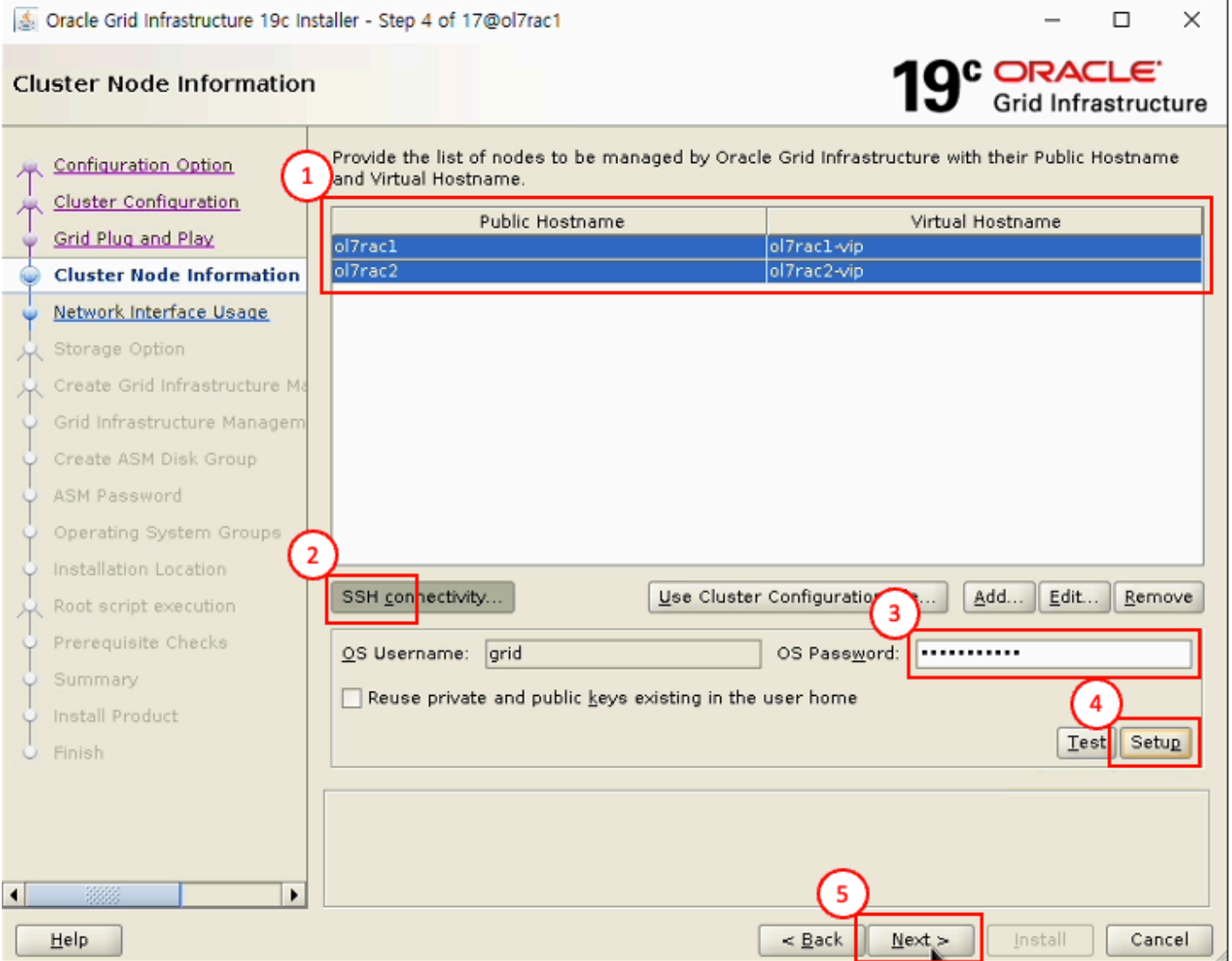
Use Shared GNS  
GNS Client Data:  Browse...

Help < Back Next > Install Cancel

- Cluster Name : ol7rac-cluster 입력
- SCAN Name : ol7rac-scan 입력
- SCAN Port : 1521 입력
- Next 버튼 클릭



- Add 버튼 클릭
- Public Hostname : ol7rac2 입력
- Virtual Hostname : ol7rac2-vip 입력
- Ok 버튼 클릭



- ol7rac1, ol7rac2 선택
- SSH connectivity 클릭
- OS Password : grid 계정 비밀번호 입력
- Setup 버튼 클릭
- Next 버튼 클릭

## Specify Network Interface Usage

**19<sup>c</sup>** ORACLE<sup>®</sup>  
Grid Infrastructure[Configuration Option](#)[Cluster Configuration](#)[Grid Plug and Play](#)[Cluster Node Information](#)**Network Interface Usage**[Storage Option](#)[Create Grid Infrastructure Ma](#)[Grid Infrastructure Managem](#)[Create ASM Disk Group](#)[ASM Password](#)[Operating System Groups](#)[Installation Location](#)[Root script execution](#)[Prerequisite Checks](#)[Summary](#)[Install Product](#)[Finish](#)

Private interfaces are used by Oracle Grid Infrastructure for internode traffic.

Interface Name	Subnet	Use for
eth0	192.168.0.0	Public
eth1	10.1.1.0	ASM & Private
virbr0	192.168.122.0	Do Not Use

Help

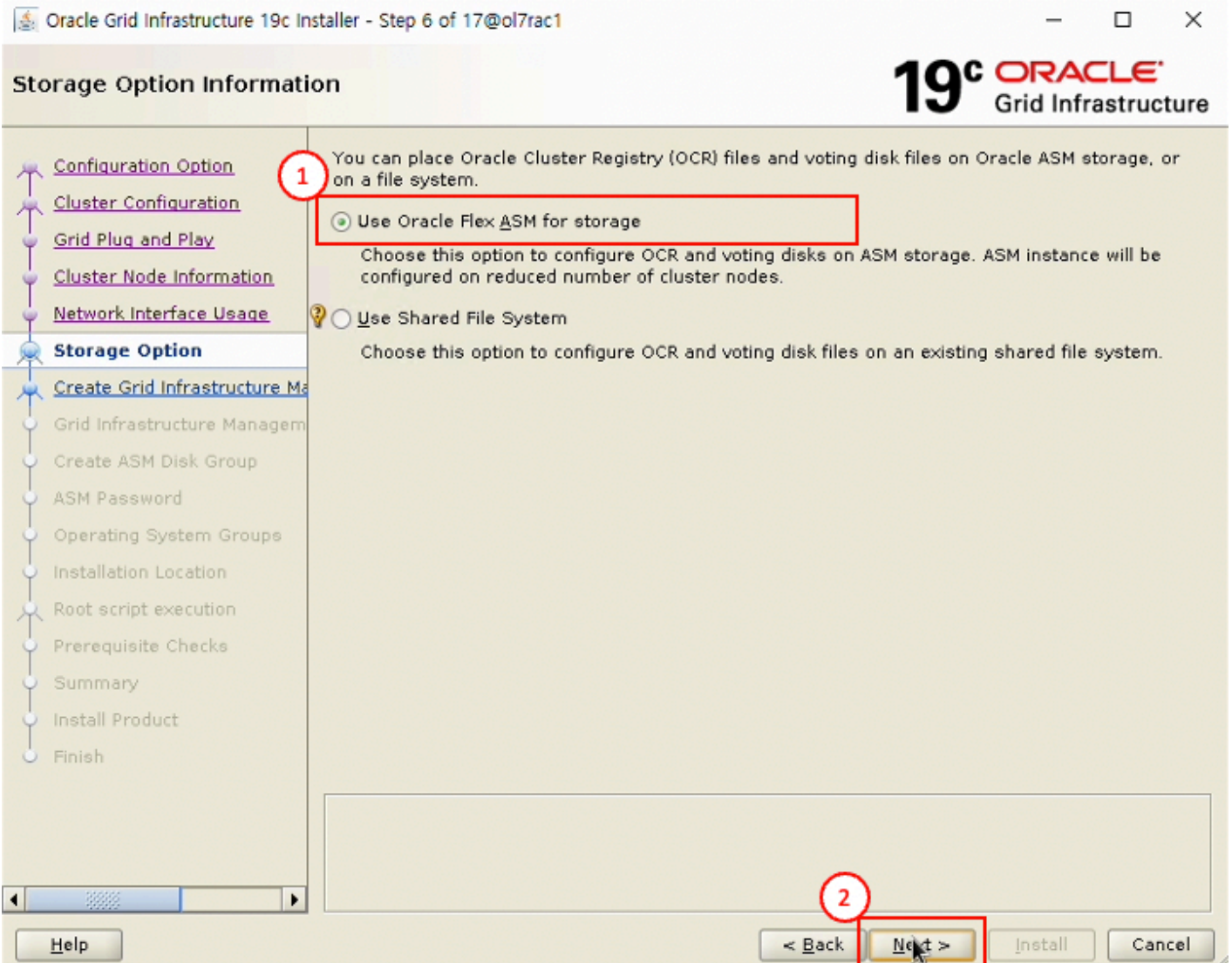
&lt; Back

Next &gt;

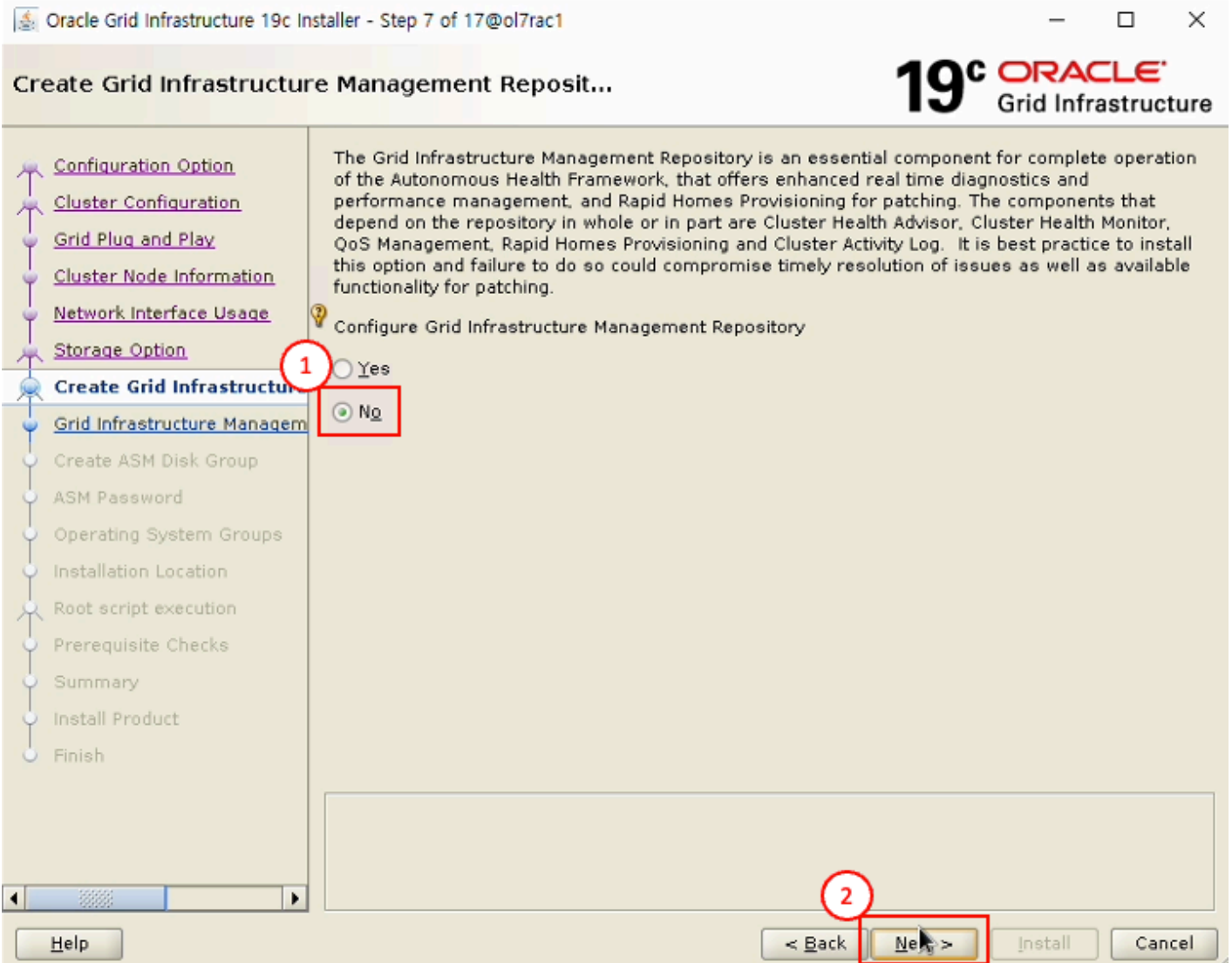
Install

Cancel

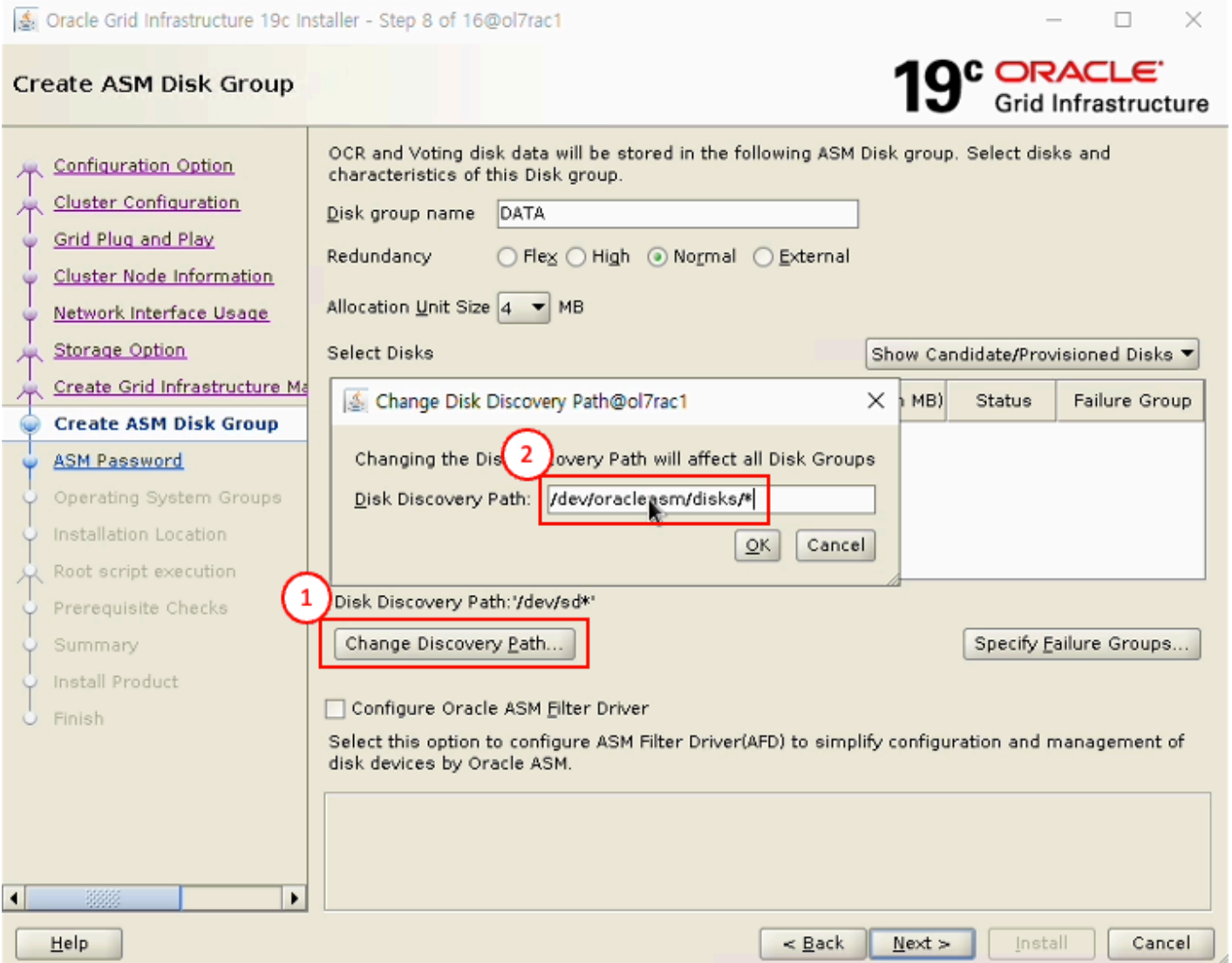
- eth0 : Public
- eth1 : ASM & Private
- Next 버튼 클릭



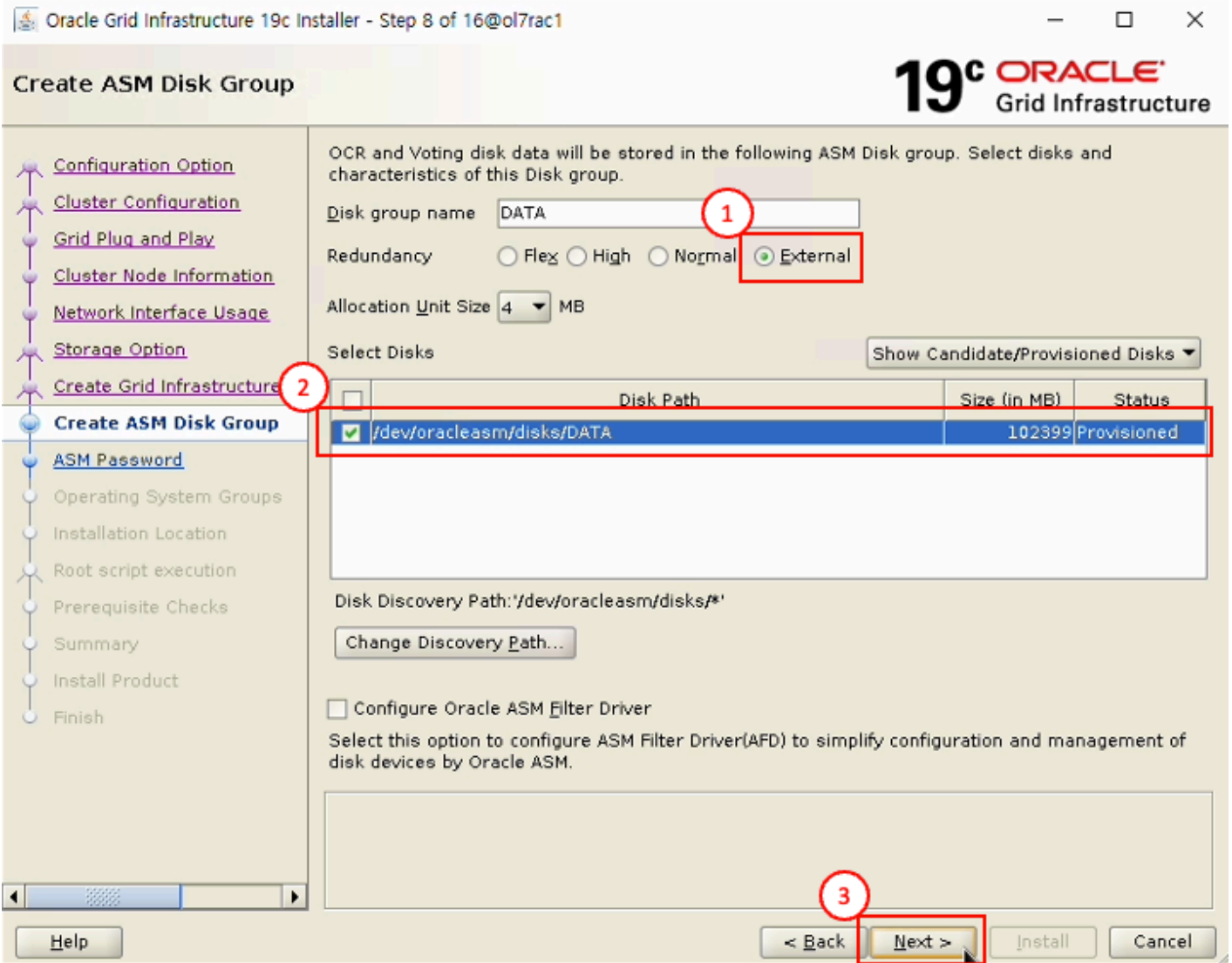
- Use Oracle Flex ASM for storage 선택
- Next 버튼 클릭



- No 선택
- Next 버튼 클릭



- Change Discovery Path 선택
- /dev/oracleasm/disks/\* 입력
- 엔터 입력



- External 선택
- /dev/oracleasm/disks/DATA 선택
- Next 버튼 클릭

### Specify ASM Password

The new Oracle Automatic Storage Management (Oracle ASM) instance requires its own SYS user with SYSASM privileges for administration. Oracle recommends that you create a less privileged ASMSNMP user with SYSDBA privileges to monitor the ASM instance.

Specify the password for these user accounts.

Use different passwords for these accounts

	Password	Confirm Password
SYS	<input type="text"/>	<input type="text"/>
ASMSNMP	<input type="text"/>	<input type="text"/>

Use same passwords for these accounts

Specify Password:  Confirm Password:

**1** (points to ASM Password in left sidebar)

**2** (points to Use same passwords for these accounts)

**3** (points to Next > button)

오라클 관리자 계정 비밀번호 입력 - Use same passwords for these accounts 선택 - 비밀번호 입력 - Next 버튼 클릭

**Failure Isolation Support**

Choose one of the following Failure Isolation Support options.

Use Intelligent Platform Management Interface (IPMI)

To ensure successful installation with IPMI enabled, ensure your IPMI drivers are properly installed and enabled.

User Name :

Password :

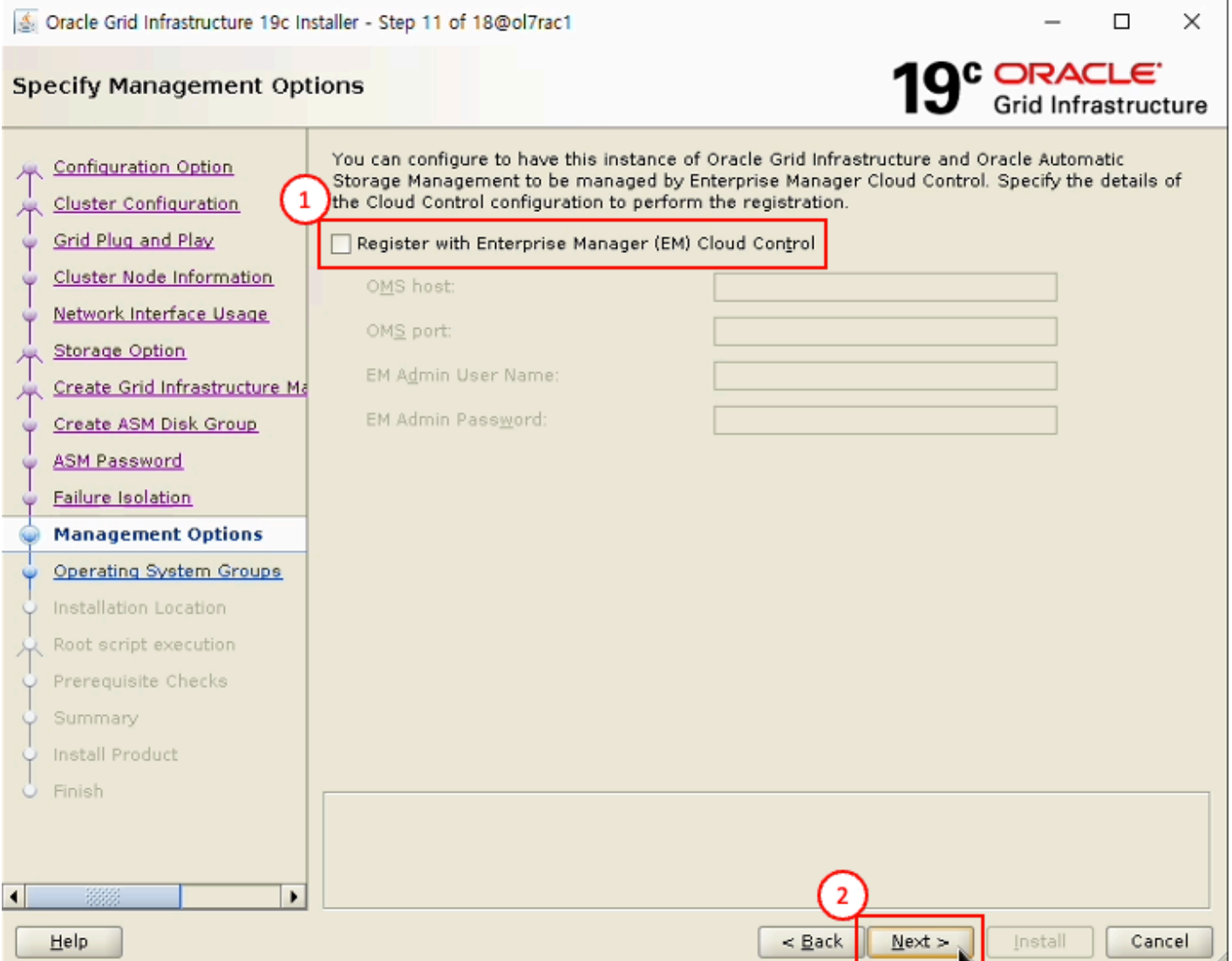
Do not use Intelligent Platform Management Interface (IPMI)

1

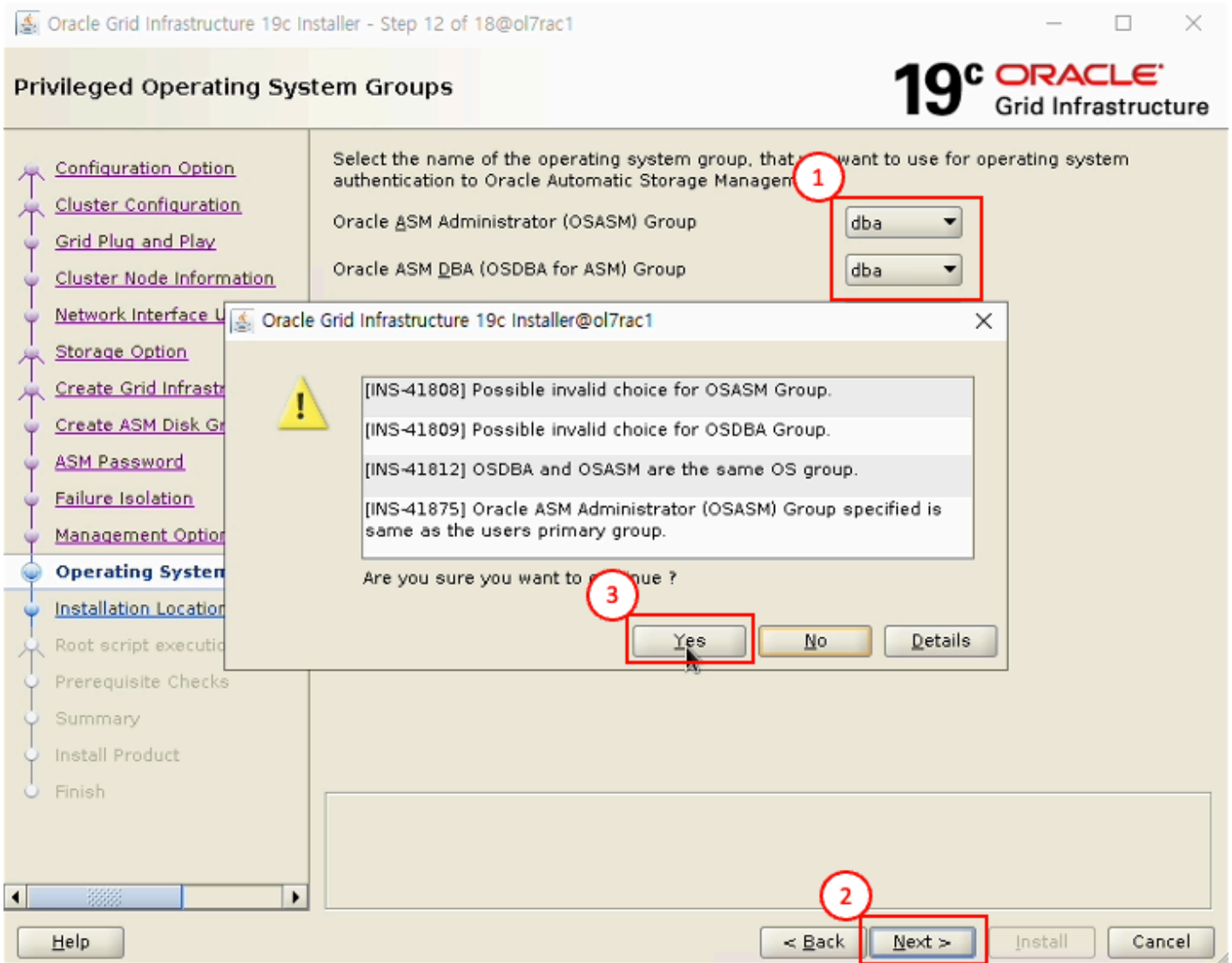
2

Help < Back Next > Install Cancel

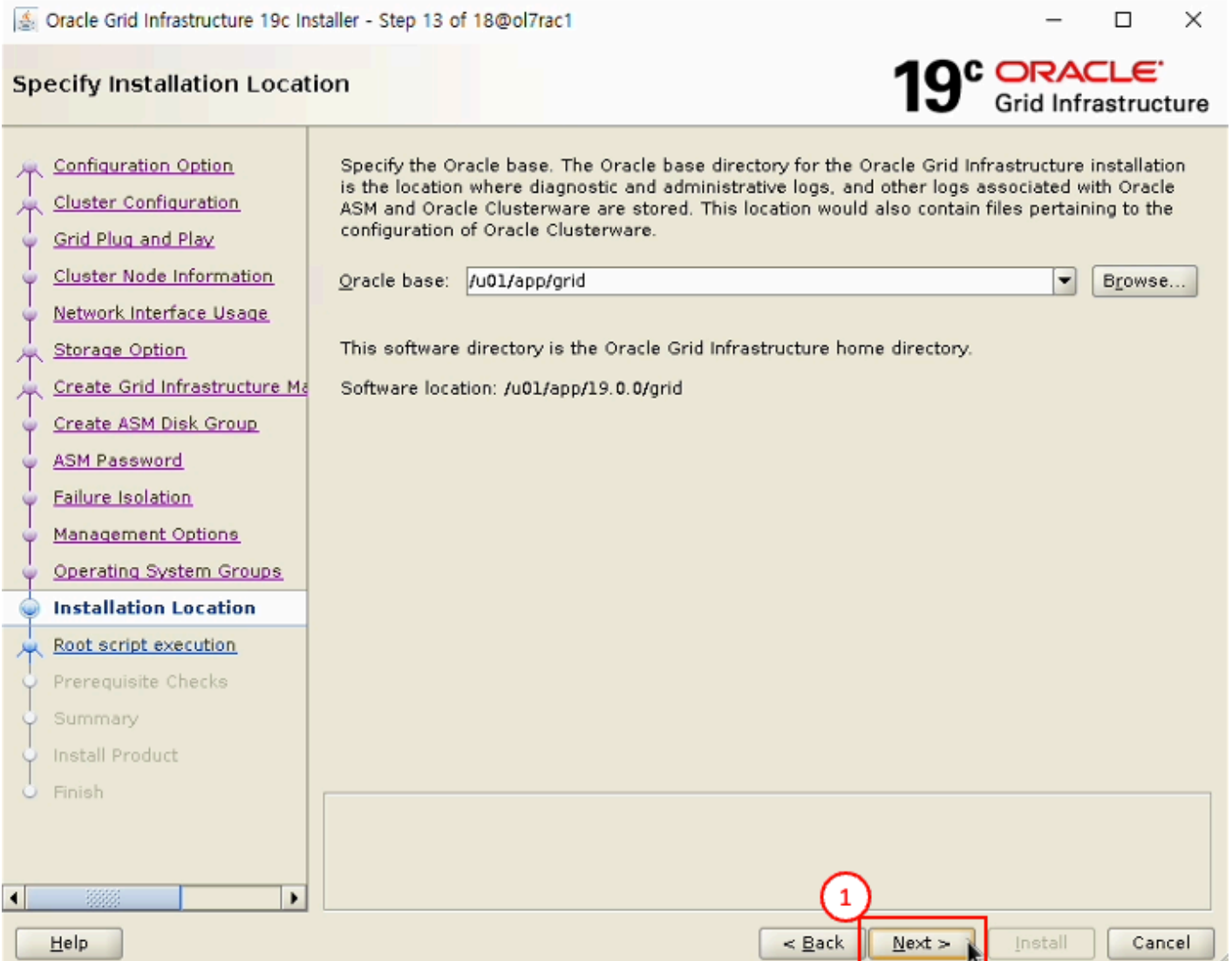
- Do not use Intelligent Platform Management Interface (IPMI) 선택
- Next 버튼 클릭



- Register with Enterprise Manager (EM) Cloud Control 해제
- Next 버튼 클릭



- OSASM group, OSDBA for ASM Group dba로 선택
- Next 버튼 클릭
- Yes 버튼 클릭



- Next 버튼 클릭

## Create Inventory

**19<sup>c</sup> ORACLE<sup>®</sup>**  
Grid Infrastructure

- Configuration Option
- Cluster Configuration
- Grid Plug and Play
- Cluster Node Information
- Network Interface Usage
- Storage Option
- Create Grid Infrastructure Metadata
- Create ASM Disk Group
- ASM Password
- Failure Isolation
- Management Options
- Operating System Groups
- Installation Location
- Create Inventory**
- Root script execution
- Prerequisite Checks
- Summary
- Install Product
- Finish

You are starting your first installation on this host. Specify a directory for installation metadata files (for example, install log files). This directory is called the "inventory directory". The installer automatically sets up subdirectories for each product to contain inventory data. The subdirectory for each product typically requires 150 kilobytes of disk space.

Inventory Directory: 

Members of the following operating system group (the primary group) will have write permission to the inventory directory (orainventory).

orainventory Group Name: dba

1

&lt; Back

Next &gt;

Install

Cancel

- Next 버튼 클릭

## Root script execution configuration

**19<sup>c</sup> ORACLE<sup>®</sup>**  
Grid Infrastructure

During the software configuration, certain operations have to be performed as "root" user. You can choose to have the installer perform these operations automatically by specifying inputs for one of the options below. The input specified will also be used by the installer to perform additional prerequisite checks.

**1**

Automatically run configuration scripts

Use "root" user credential

Password :

Use sudo

Program path :

User name :

Password :

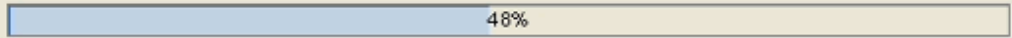
**1**

- Automatically run configuration scripts 선택
- Password : root 계정 비밀번호 입력
- Next 버튼 클릭

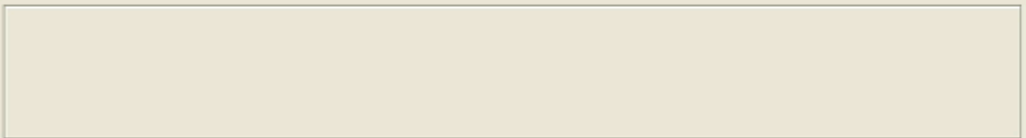
### Perform Prerequisite Checks

- Configuration Option
- Cluster Configuration
- Grid Plug and Play
- Cluster Node Information
- Network Interface Usage
- Storage Option
- Create Grid Infrastructure Ma
- Create ASM Disk Group
- ASM Password
- Failure Isolation
- Management Options
- Operating System Groups
- Installation Location
- Create Inventory
- Root script execution
- Prerequisite Checks**
- Summary
- Install Product
- Finish

Verifying that the target environment meets minimum installation and configuration requirements for products you have selected. This can take time. Please wait.



Checking Multicast or broadcast check ...



Help

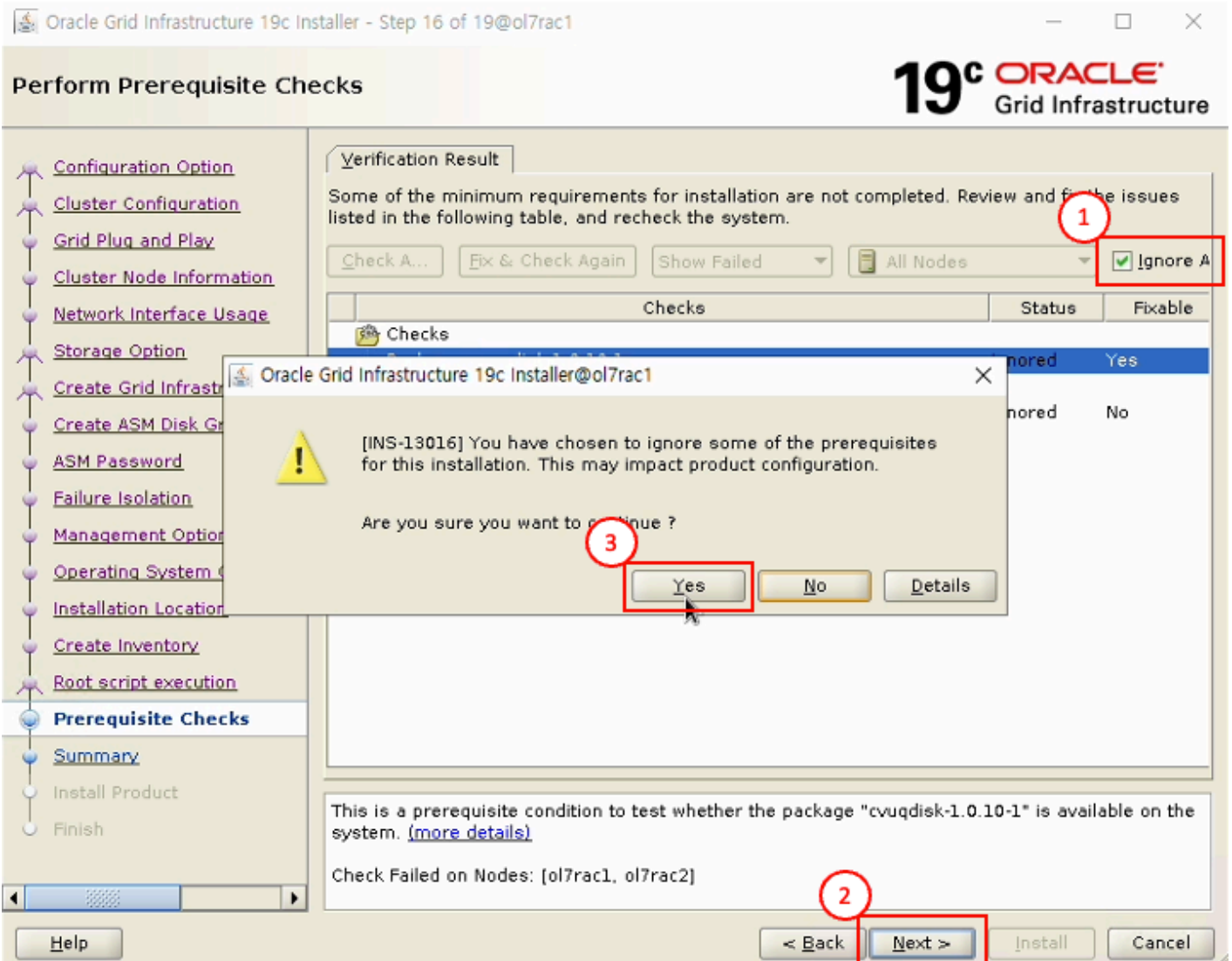
< Back

Next >

Install

Cancel

- 설치 전 체크 테스트 화면



- Ignore 선택
- Next 버튼 클릭
- Yes 버튼 클릭

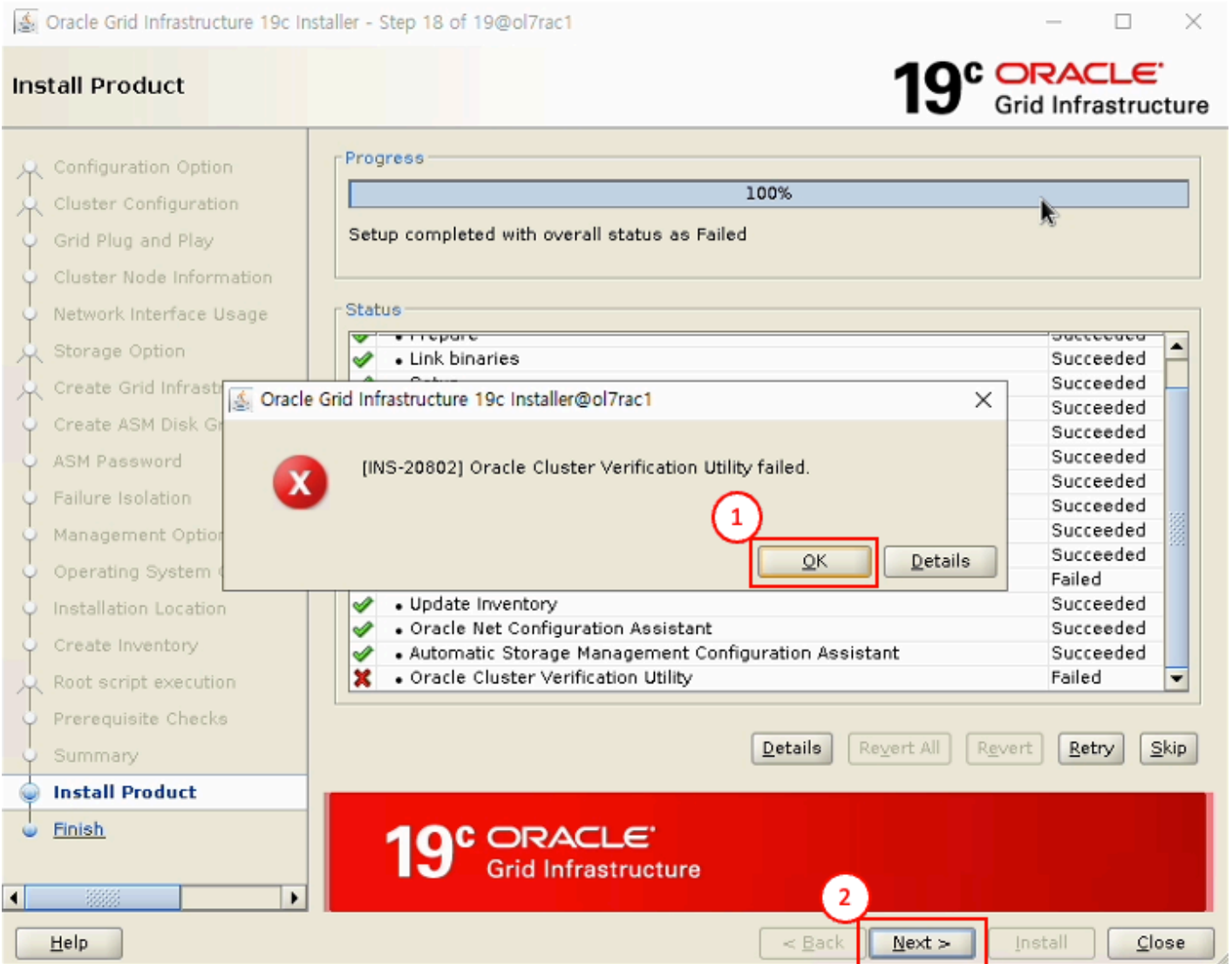
**Summary**

**Oracle Grid Infrastructure 19c Installer**

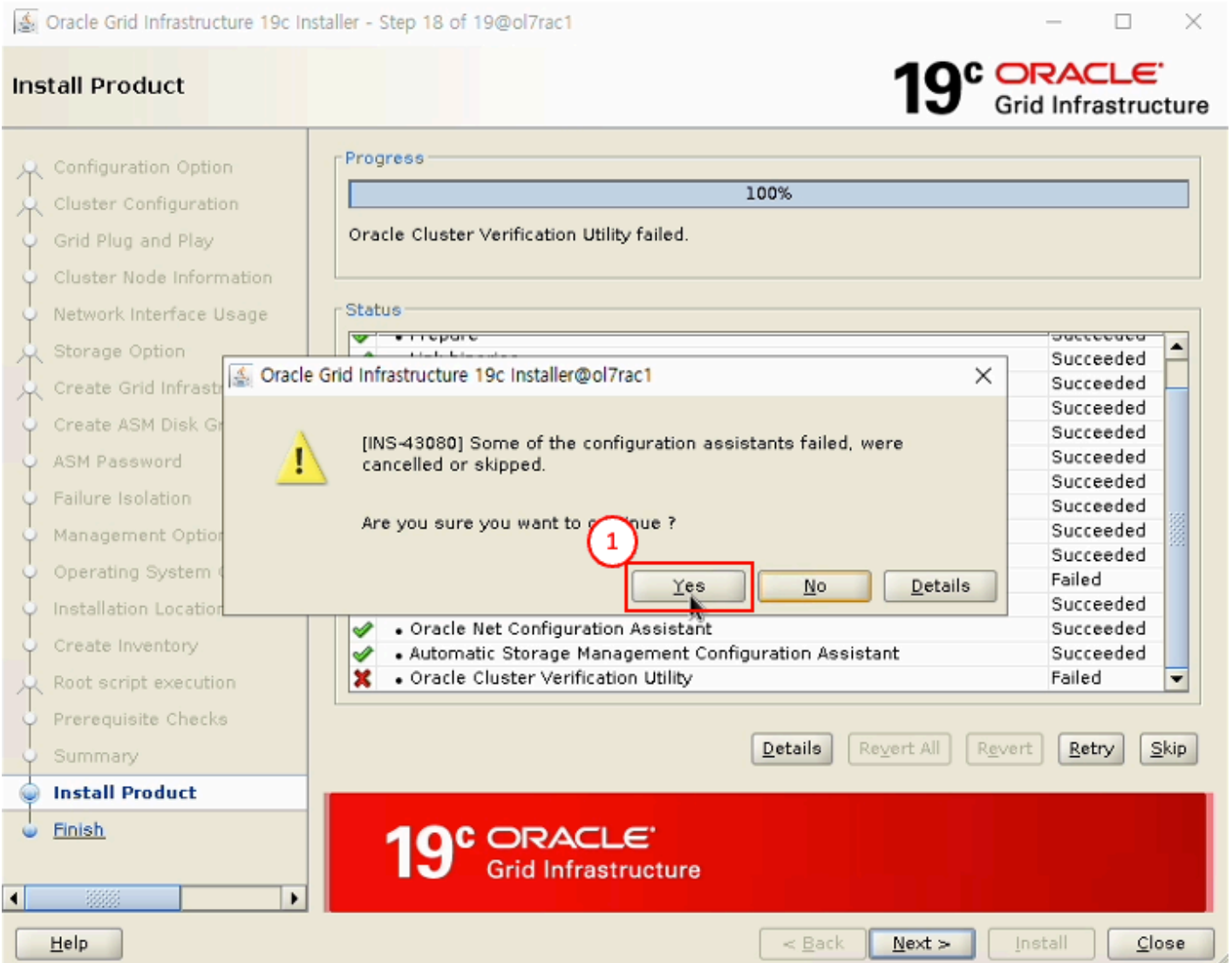
- Global Settings**
  - Config Option: Configure Oracle Grid Infrastructure for a New Cluster [\[Edit\]](#)
  - Oracle base for Oracle Grid Infrastructure: /u01/app/grid [\[Edit\]](#)
  - Grid home: /u01/app/19.0.0/grid
  - Privileged Operating System Groups: dba (OSDBA), dba (OSASM) [\[Edit\]](#)
  - Root script execution configuration: Root user credential [\[Edit\]](#)
- Inventory information**
  - Inventory location: /u01/app/orainventory [\[Edit\]](#)
  - Central inventory (orainventory) group: dba [\[Edit\]](#)
- Management information**
  - Management method: None [\[Edit\]](#)
- Grid Infrastructure Settings**
  - Cluster Configuration: Standalone Cluster [\[Edit\]](#)
  - Cluster Name: ol7rac-cluster [\[Edit\]](#)
  - Hub nodes: ol7rac1,ol7rac2 [\[Edit\]](#)
  - SCAN Type: Local SCAN
  - Single Client Access Name (SCAN): ol7rac-scan [\[Edit\]](#)
  - SCAN Port: 1521 [\[Edit\]](#)
  - Public Interface(s): eth0 [\[Edit\]](#)
  - ASM & Private Interface(s): eth1 [\[Edit\]](#)
- Storage Information**
  - Storage Type: Oracle ASM [\[Edit\]](#)

Buttons: [Save Response File...](#), [< Back](#), [Next >](#), **Install**, [Cancel](#)

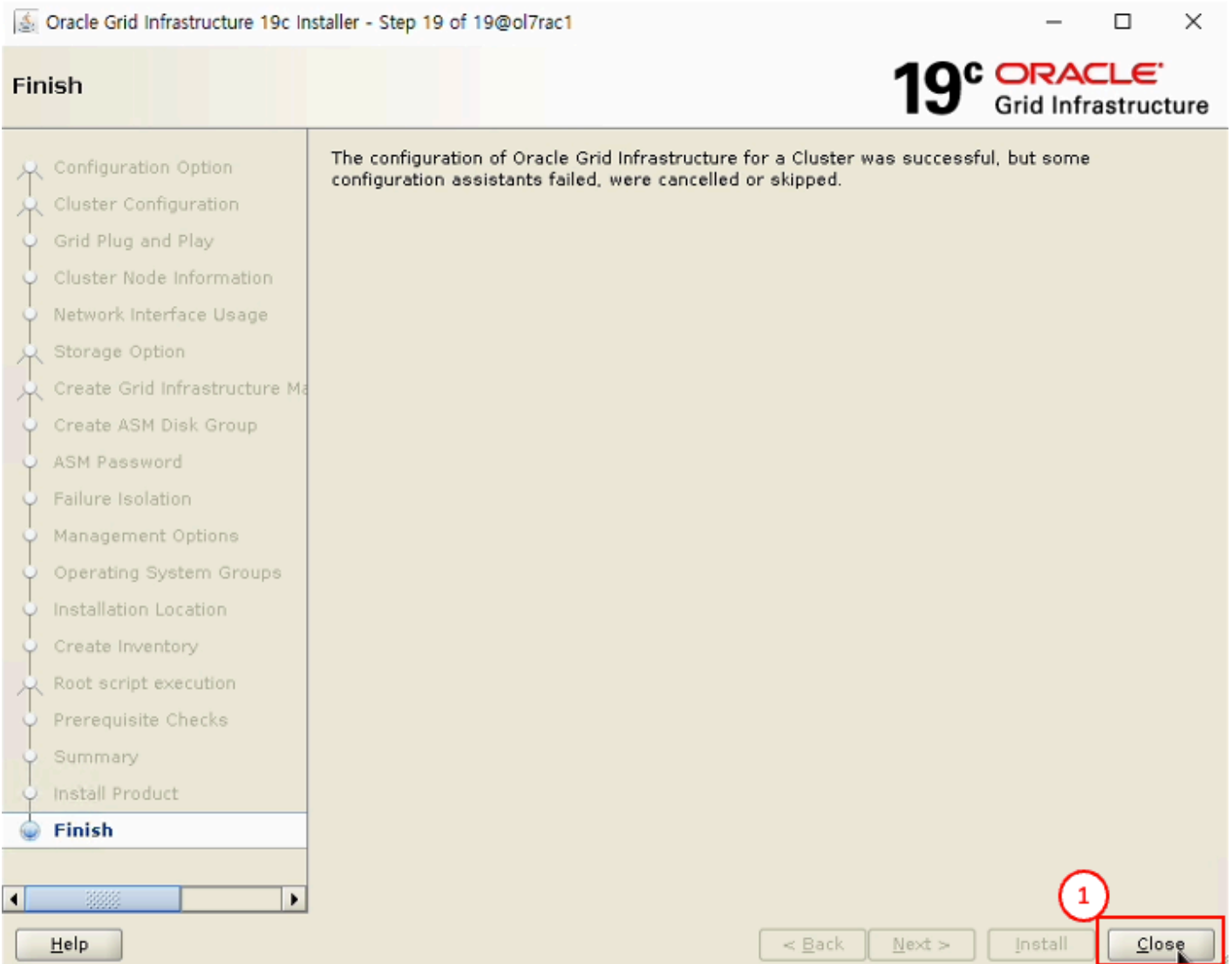
- Install 버튼 클릭



- Ok 버튼 클릭
- Next 버튼 클릭



- Yes 버튼 클릭 (SCAN 구성 관련 에러 무시하고 진행)



- Close 버튼 클릭

ASM 및 Grid Infrastructure 구성 완료

**Grid Infrastructure 구성 확인 ( 노드 : node1 / 계정 : grid )**

```
crsctl stat res -t
```

```
[grid@ol7rac1 oraInventory]$ crsctl stat res -t
-----
Name                Target  State        Server          State details
-----
Local Resources
-----
ora.LISTENER.lsnr
      ONLINE  ONLINE      ol7rac1         STABLE
      ONLINE  ONLINE      ol7rac2         STABLE
ora.chad
      ONLINE  ONLINE      ol7rac1         STABLE
      ONLINE  ONLINE      ol7rac2         STABLE
ora.net1.network
      ONLINE  ONLINE      ol7rac1         STABLE
      ONLINE  ONLINE      ol7rac2         STABLE
ora.ons
      ONLINE  ONLINE      ol7rac1         STABLE
      ONLINE  ONLINE      ol7rac2         STABLE
-----
Cluster Resources
-----
ora.ASMNET1LSNR_ASM.lsnr(ora.asmgroup)
      1      ONLINE  ONLINE      ol7rac1         STABLE
      2      ONLINE  ONLINE      ol7rac2         STABLE
      3      OFFLINE OFFLINE                        STABLE
ora.DATA.dg(ora.asmgroup)
      1      ONLINE  ONLINE      ol7rac1         STABLE
      2      ONLINE  ONLINE      ol7rac2         STABLE
      3      OFFLINE OFFLINE                        STABLE
ora.LISTENER_SCAN1.lsnr
      1      ONLINE  ONLINE      ol7rac2         STABLE
ora.LISTENER_SCAN2.lsnr
      1      ONLINE  ONLINE      ol7rac1         STABLE
ora.LISTENER_SCAN3.lsnr
      1      ONLINE  ONLINE      ol7rac1         STABLE
ora.asm(ora.asmgroup)
      1      ONLINE  ONLINE      ol7rac1         Started,STABLE
      2      ONLINE  ONLINE      ol7rac2         Started,STABLE
      3      OFFLINE OFFLINE                        STABLE
ora.asmnet1.asmnetwork(ora.asmgroup)
      1      ONLINE  ONLINE      ol7rac1         STABLE
      2      ONLINE  ONLINE      ol7rac2         STABLE
      3      OFFLINE OFFLINE                        STABLE
ora.cvu
      1      ONLINE  ONLINE      ol7rac1         STABLE
ora.ol7rac1.vip
      1      ONLINE  ONLINE      ol7rac1         STABLE
ora.ol7rac2.vip
      1      ONLINE  ONLINE      ol7rac2         STABLE
ora.qosmserver
      1      ONLINE  ONLINE      ol7rac1         STABLE
ora.scan1.vip
      1      ONLINE  ONLINE      ol7rac2         STABLE
ora.scan2.vip
      1      ONLINE  ONLINE      ol7rac1         STABLE
ora.scan3.vip
      1      ONLINE  ONLINE      ol7rac1         STABLE
-----
```

ASM 및 GI 작업이 완료 되었으며, 다음 작업으로 Oracle 데이터베이스 소프트웨어 설치 및 데이터베이스 구성 작업을 진행합니다.

# ABLESTACK Online Docs