_1-ASM & GI installation

Installation Oracle ASM et Grid Infrastucture 19c

DOCUMENT TECHNIQUE

Install Oracle ASM

Prérequis

yum install -y oracleasm

yum install -y oracleasm-support

rpm -ivh /mnt/dbbkp/sources_oracle/oracleasmlib-2.0.12-1.el7.x86_64.rpm

Source :

https://access.redhat.com/documentation/en-us/reference_architectures/2017/html-single
/deploying_oracle_database_12c_release_2_on_red_hat_enterprise_linux_7/index#oracle_packages

Package

Récupérer la liste des packages et les mettre dans text.log :

```
binutils
compat-libcap1
compat-libstdc++-33
gcc
gcc-c++
glibc
glibc-devel
ksh
libgcc
libstdc++
libstdc++-devel
libaio
libaio-devel
libXext
libXtst
libX11
libXau
libxcb
libXi
make
sysstat
libXmu
libXt
libXv
libXxf86dga
libdmx
libXxf86misc
libXxf86vm
xorg-x11-utils
xorg-x11-xauth
nfs-utils
smartmontools
```

```
yum install `awk '{print $1}' ./text.log`
```

Config sys

Modification du fichier /etc/selinux/config pour la config système en mettant le paramètre "Mode from config file" à enforcing :

```
[root@duorapoc001 tmp]# SELINUX=enforcing
[root@duorapoc001 tmp]# sestatus
SELinux status:                 enabled
SELinuxfs mount:                /sys/fs/selinux
SELinux root directory:         /etc/selinux
Loaded policy name:             targeted
Current mode:                   permissive
Mode from config file:          enforcing
Policy MLS status:              enabled
Policy deny_unknown status:     allowed
Max kernel policy version:      31
```

Ajouté dans le fichier ../sysctl.conf :

```
kernel.sem = 250 32000 100 128
```

Pour éviter les erreurs du type

```
ORA-27154: post/wait create failed
ORA-27300: OS system dependent operation:semget failed with status: 28
ORA-27301: OS failure message: No space left on device
ORA-27302: failure occurred at: sskgpcreates

[root@duorapoc001 sysctl.d]# sysctl -p ../sysctl.conf
vm.swappiness = 10
net.core.wmem_max = 1048576
net.core.rmem_max = 4194304
kernel.shmmni = 4096
kernel.shmmax = 4398046511104
kernel.shmall = 1073741824
kernel.sem = 250 32000 100 128
fs.aio-max-nr = 1048576
fs.file-max = 6815744
net.ipv4.ip_local_port_range = 9000 65500
net.core.rmem_default = 262144
net.core.wmem_default = 262144
kernel.sem = 250 32000 100 128
```

Groupes sys

Le groupe principale de grid doit être oinstall

Le groupe principale de oracle doit être oinstall

Voici la liste des groupes à ajouter :

```
groupadd --gid xxxx oinstall
groupadd --gid xxxx asmdba
groupadd --gid xxxx asmoper
groupadd --gid xxxx asmadmin
groupadd --gid xxxx oper
groupadd --gid xxxx backupdba
groupadd --gid xxxx dgdba
groupadd --gid xxxx kmdba
groupadd --gid xxxx racdba
usermod --uid 500 --gid oinstall --groups dba,oper,asmdba,racdba,backupdba,dgdba,kmdba oracle
usermod --uid 510 --gid oinstall --groups dba,asmadmin,asmdba,asmoper,racdba grid
[root@duorapoc002 ~]# usermod -a -G oinstall oracle
[root@duorapoc002 ~]# usermod -a -G oinstall grid
```

Créer les disques ASM avec UDEV

ARCHBO-9523 - Détails de la demande en cours d'obtention... `ÉTAT`

ARCHBO-10801 - Détails de la demande en cours d'obtention... `ÉTAT`

ARCHBO-10981 - Détails de la demande en cours d'obtention... `ÉTAT`

En tout il y aura 5 disques ASM créé avec UDEV comprenant :

- trois disques en **redondances normales** pour le diskgroup ORA_CRS
- deux disques en **redondances externes** pour les diskgroups ORA_ARCH et ORA_DATA

Voici les 5 disques :

- DATA01 : nécessaire pour stocker les data et indexe de la base avec redondance externe
- ARCH01 : nécessaire pour stocker les archivelogs de la base avec redondance externe
- OCRS01 : nécessaire pour stocker Oracle Cluster Registry et voting files dans l' ASM avec redondance normal
- OCRS02 : nécessaire pour stocker Oracle Cluster Registry et voting files dans l'ASM avec redondance normal
- OCRS03 : nécessaire pour stocker Oracle Cluster Registry et voting files dans l'ASM avec redondance normal

```
[grid@duorapoc002:+ASM]$ cat /etc/udev/rules.d/99_oracle_asm_devices.rules
ACTION=="add|change", ENV{ID_WWN}=="0x6000c29f26b5676e", SYMLINK+="oracleasm/DATA01", GROUP="oinstall", OWNER="
grid", MODE="6751"   => sdc
ACTION=="add|change", ENV{ID_WWN}=="0x6000c295686e77c0", SYMLINK+="oracleasm/ARCH01", GROUP="oinstall", OWNER="
grid", MODE="6751"   => sdd
ACTION=="add|change", ENV{ID_WWN}=="0x6000c296bb79f675", SYMLINK+="oracleasm/OCRS01", GROUP="oinstall", OWNER="
grid", MODE="6751"   => sdg
ACTION=="add|change", ENV{ID_WWN}=="0x6000c299e9c3592c", SYMLINK+="oracleasm/OCRS02", GROUP="oinstall", OWNER="
grid", MODE="6751"   => sdh
ACTION=="add|change", ENV{ID_WWN}=="0x6000c29304800948", SYMLINK+="oracleasm/OCRS03", GROUP="oinstall", OWNER="
grid", MODE="6751"   => sdi

#récupérer les ID de disque :
udevadm info --query=all --path=/sys/block/sda | grep ID_WWN

Afficher les alias :

ls -l /dev/DATA01 /dev/ARCH01 /dev/OCRS0*
```

Mettre chmod 6751 pour les disques créé afin qu'oracle puisse écrire dans les disques appartenant à "grid" :

```
brwxrwx--x. 1 grid oinstall 8, 32  2 févr. 19:24 /dev/sdc
brwxrwx--x. 1 grid oinstall 8, 48  2 févr. 19:24 /dev/sdd
brwxrwx--x. 1 grid oinstall 8, 80  2 févr. 19:24 /dev/sdf

Ajouter le droit en écriture pour le groupe : chmod g+w

ls -altr /dev/oracleasm/iid
-rwxrwx--- 1 grid oinstall 0 Mar 12 12:41 0000000000000001
-rwxrwx--- 1 grid oinstall 0 Mar 12 12:41 0000000000000002
-rwxrwx--- 1 grid oinstall 0 Mar 12 12:41 0000000000000003
-rwxrwx--- 1 grid oinstall 0 Mar 12 12:46 0000000000000005

Vérifier qu'il y a bien le sticky bit sur : ls -trlh $ORACLE_HOME/bin/oracle et ls -ltr $GRID_HOME/bin/oracle
-rwxr-x--x. 1 grid oinstall 418591368 Feb 8 16:59 /grid/oracle/product/19.0/bin/oracle
-rwsr-s--x 1 oracle dba 390M Jul 17 14:40 /u01/app/oracle/product/12.2.0/db/bin/oracle
-rwsr-s--x 1 grid oinstall 372714122 Jul 17 13:57 /u01/app/oracle/product/12.2.0/grid/bin/oracle

sinon :
```

chmod ug+s /grid/oracle/product/19.0/bin/oracle

Initialiser l'ASM

```
[root@duorapoc001 dev]#  oracleasm configure -i
[root@duorapoc001 dev]#  oracleasm init
```

redémarrer le serveur

Vérifier après reboot :

[root@ruoraacc002 ~]# oracleasm-discover
Using ASMLib from /opt/oracle/extapi/64/asm/orcl/1/libasm.so
[ASM Library - Generic Linux, version 2.0.12 (KABI_V2)]

Créer les disques ASM avec partitions systèmes

```
oracleasm createdisk DATA01 /dev/sdg1

oracleasm createdisk ARCH01 /dev/sdf1

oracleasm createdisk OCRS01 /dev/sde1
```

[root@duorapoc001 dev]# oracleasm listdisks

ARCH01

DATA01

OCRS01

[root@duorapoc001 dev]# oracleasm scandisks

Reloading disk partitions: done

Cleaning any stale ASM disks...

Scanning system for ASM disks...

[root@duorapoc002 sources_oracle]# oracleasm-discover

Using ASMLib from /opt/oracle/extapi/64/asm/orcl/1/libasm.so

[ASM Library - Generic Linux, version 2.0.12 (KABI_V2)]

Discovered disk: ORCL:ARCH01 [262141952 blocks (134216679424 bytes), maxio 512, integrity none]

Discovered disk: ORCL:DATA01 [262141952 blocks (134216679424 bytes), maxio 512, integrity none]

Discovered disk: ORCL:OCRS01 [262141952 blocks (134216679424 bytes), maxio 512, integrity none]

Afficher les disques candidats :

asmcmd lsdsk --candidate -p

Install Grid Infrastructure

Unzip les sources

Unzip les sources du grid oracle infrastructure en tant que grid :

mkdir -p /grid/oracle/product/19.0

export GRID_HOME=/grid/oracle/product/19.0

unzip /mnt/dbbkp/sources_oracle/19cR3/LINUX.X64_193000_grid_home.zip -d $GRID_HOME

rpm -ivh /grid/oracle/product/19.0/cv/rpm/cvuqdisk-1.0.10-1.rpm

Grid setup

chmod 775 /app

su - grid

Lancer le grid setup :

cd /grid/oracle/product/19.0

./gridSetup.sh

19^c ORACLE® Grid Infrastructure

Sélectionner une option de configuration

- **Option de configuration**
- Créer un groupe de disques
- Mot de passe ASM
- Groupes de systèmes d'expl
- Emplacement d'installation
- Exécution des scripts racine
- Vérifications des prérequis
- Récapitulatif
- Installer le produit
- Terminer

Sélectionnez une option pour configurer le logiciel. L'assistant inscrit le répertoire de base dans l'inventaire central, puis effectue la configuration sélectionnée.

○ Configurer Oracle Grid Infrastructure pour un nouveau cluster

◉ Configurer Oracle Grid Infrastructure pour un serveur autonome (Oracle Restart)

○ Mettre à niveau Oracle Grid Infrastructure

───

○ Configurer le logiciel uniquement

Aide   < Précédent   Suivant >   Installer   Annuler

asm_diskstring = '/dev/*0*'

Create Inventory

19^c ORACLE
Grid Infrastructure

- Configuration Option
- Create ASM Disk Group
- ASM Password
- 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: /app/oraInventory   Browse...

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

oraInventory Group Name: oinstall

Help   < Back   Next >   Install   Cancel

Perform Prerequisite Checks

19c ORACLE
Grid Infrastructure

Configuration Option
Create ASM Disk Group
ASM Password
Management Options
Operating System Groups
Installation Location
Create Inventory
Root script execution
Prerequisite Checks
Summary
Install Product
Finish

Verification Result

Some of the minimum requirements for installation are not completed. Review and fix the issues listed in the following table, and recheck the system.

[Check Again] [Fix & Check Again] [Show Failed ▼]   ☑ Ignore All

Checks	Status	Fixable
📋 Checks		
Physical Memory	Ignored	No
Swap Size	Ignored	No

This is a prerequisite condition to test whether the system has at least 8GB (8388608.0KB) of total physical memory. (more details)
Expected Value : 8GB (8388608.0KB)
Actual Value   : 3.6824GB (3861296.0KB)

[Help]   [< Back] [Next >] [Install] [Cancel]

Install Product
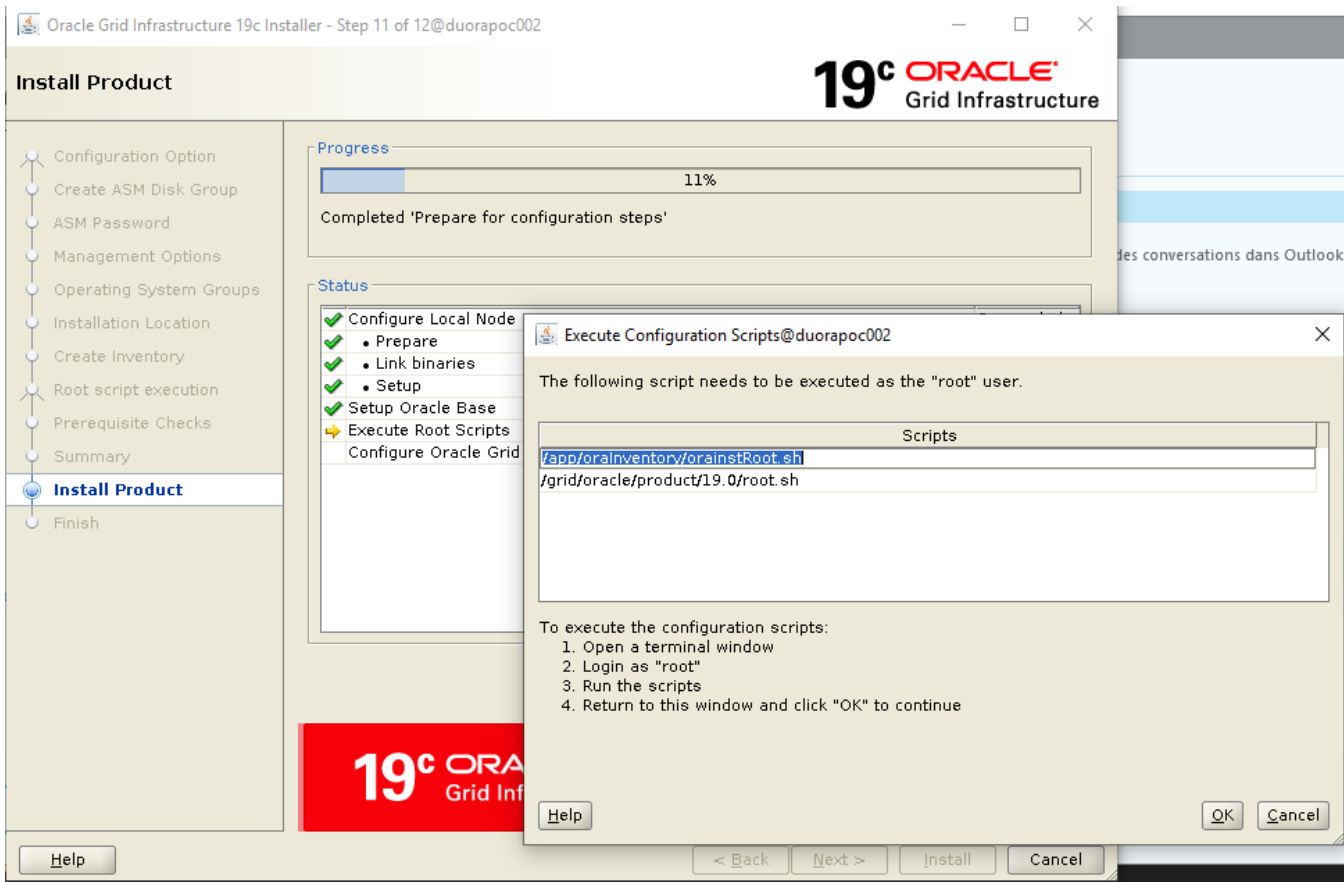
19c ORACLE
Grid Infrastructure

Configuration Option
Create ASM Disk Group
ASM Password
Management Options
Operating System Groups
Installation Location
Create Inventory
Root script execution
Prerequisite Checks
Summary
Install Product
Finish

Progress

11%

Completed 'Prepare for configuration steps'

Status

Configure Local Node
• Prepare
• Link binaries
• Setup
Setup Oracle Base
Execute Root Scripts
Configure Oracle Grid

Execute Configuration Scripts@duorapoc002

The following script needs to be executed as the "root" user.

Scripts
/app/oraInventory/orainstRoot.sh
/grid/oracle/product/19.0/root.sh

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

Help | OK | Cancel

19c ORA
Grid Inf

Help | < Back | Next > | Install | Cancel

```
[root@duorapoc002 19.0]#
[root@duorapoc002 19.0]# /grid/oracle/product/19.0/root.sh
Performing root user operation.

The following environment variables are set as:
    ORACLE_OWNER= grid
    ORACLE_HOME=  /grid/oracle/product/19.0

Enter the full pathname of the local bin directory: [/usr/local/bin]:
The contents of "dbhome" have not changed. No need to overwrite.
The contents of "oraenv" have not changed. No need to overwrite.
The contents of "coraenv" have not changed. No need to overwrite.

Entries will be added to the /etc/oratab file as needed by
Database Configuration Assistant when a database is created
Finished running generic part of root script.
Now product-specific root actions will be performed.
Using configuration parameter file: /grid/oracle/product/19.0/crs/install/crsconfig_params
The log of current session can be found at:
  /grid/oracle/crsdata/duorapoc002/crsconfig/roothas_2020-12-17_04-57-50PM.log
2020/12/17 16:57:51 CLSRSC-363: User ignored prerequisites during installation
LOCAL ADD MODE
Creating OCR keys for user 'root', privgrp 'root'..
Operation successful.
PROT-29: The Oracle Cluster Registry location is already configured
2020/12/17 16:57:55 CLSRSC-155: Replace of older local-only OCR failed
LOCAL ONLY MODE
Successfully accumulated necessary OCR keys.
Creating OCR keys for user 'root', privgrp 'root'..
Operation successful.
CRS-4664: Node duorapoc002 successfully pinned.
2020/12/17 16:57:57 CLSRSC-330: Adding Clusterware entries to file 'oracle-ohasd.service'
```
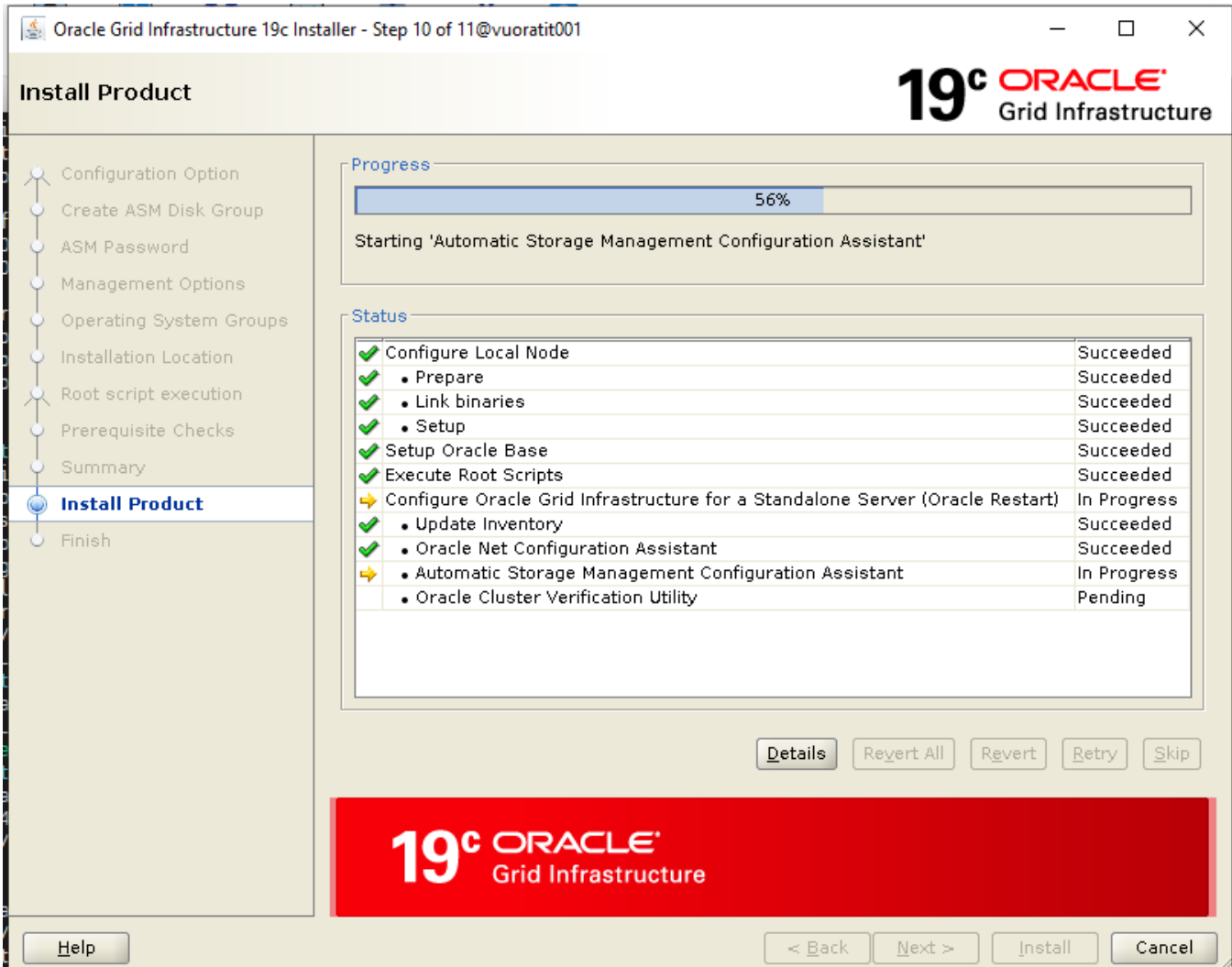
ATTENDRE QUE LE SCRIPT RENDE LA MAIN :

```
duorapoc002     2020/12/17 17:00:09     /grid/oracle/crsdata/duorapoc002/olr/backup_20201217_170009.olr     724960844
2020/12/17 17:00:10 CLSRSC-327: Successfully configured Oracle Restart for a standalone server
[root@duorapoc002 19.0]#
[root@duorapoc002 19.0]#
[root@duorapoc002 19.0]#
[root@duorapoc002 19.0]#
[root@duorapoc002 19.0]#
```

Install Product

19c ORACLE®
Grid Infrastructure

- Configuration Option
- Create ASM Disk Group
- ASM Password
- Management Options
- Operating System Groups
- Installation Location
- Create Inventory
- Root script execution
- Prerequisite Checks
- Summary
- **Install Product**
- Finish

Progress

78%

Automatic Storage Management Configuration Assistant failed.

Status

|	Succeeded
✔ Configure Local Node	Succeeded
✔ • Prepare	Succeeded
✔ • Link binaries	Succeeded
✔ • Setup	Succeeded
✔ Setup Oracle Base	Succeeded
✔ Execute Root Scripts	Succeeded
⇨ Configure Oracle Grid Infrastructure for a Standalone Server (Oracle Restart)	In Progress
✔ • Update Inventory	Succeeded
✔ • Oracle Net Configuration Assistant	Succeeded
✘ • Automatic Storage Management Configuration Assistant	Failed
• Oracle Cluster Verification Utility	Pending

Details   Revert All   Revert   Retry   Skip
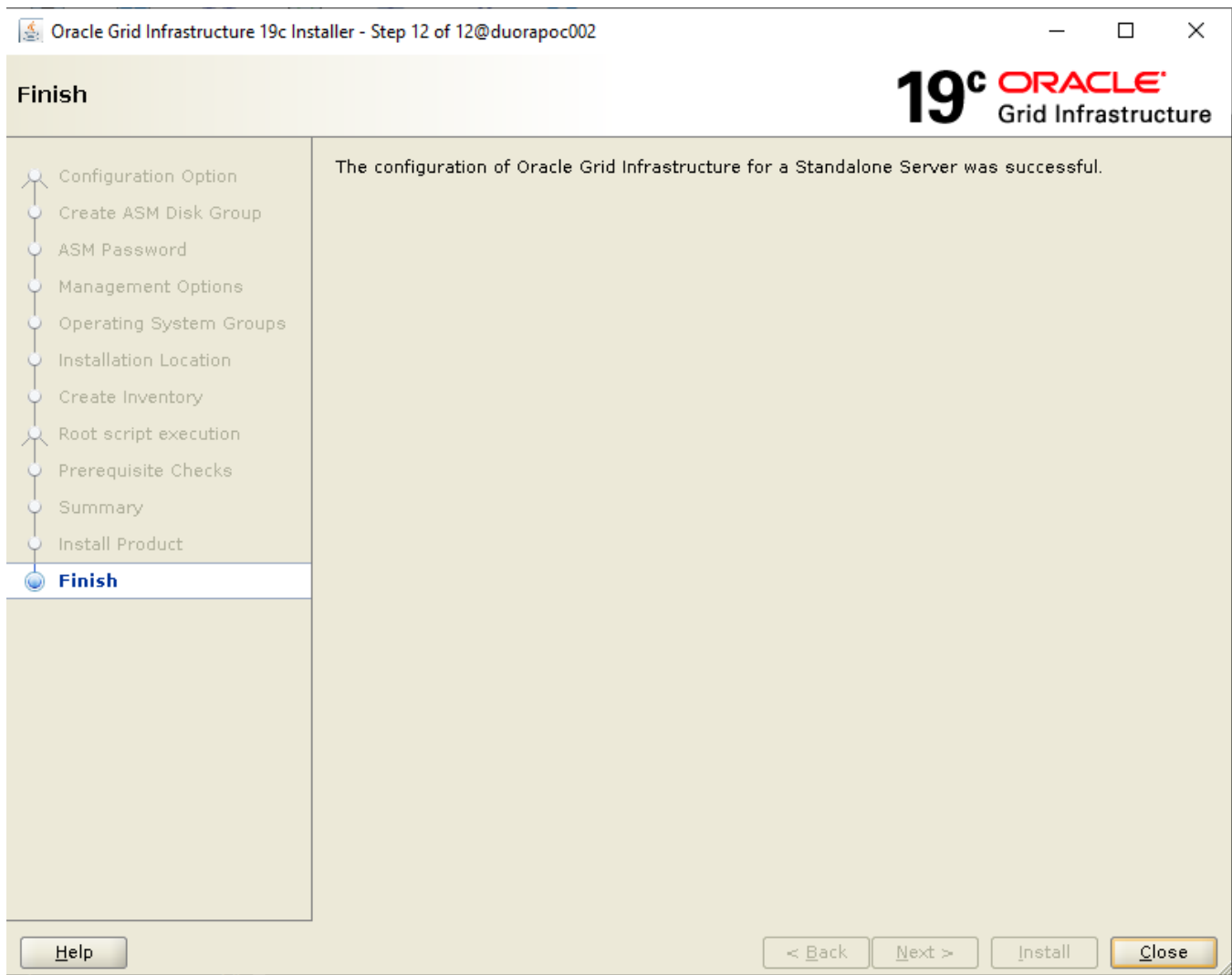
Vérifier cela :

duorapoc002 2020/09/16 16:43:03 /grid/oracle/crsdata/duorapoc002/olr/backup_20200916_164303.olr 724960844
2020/09/16 16:43:04 CLSRSC-327: Successfully configured Oracle Restart for a standalone server

et faire "retry".

The response file for this session can be found at:
/grid/oracle/product/19.0/install/response/grid_2020-09-16_04-09-53PM.rsp

You can find the log of this install session at:
/tmp/GridSetupActions2020-09-16_04-09-53PM/gridSetupActions2020-09-16_04-09-53PM.log
You can find the log of this install session at:
/grid/oraInventory/logs/UpdateNodeList2020-09-16_04-09-53PM.log
Moved the install session logs to:
/grid/oraInventory/logs/GridSetupActions2020-09-16_04-09-53PM

Grid patches

[grid@duorapoc001 admin]$ kfod op=patches

List of Patches
===============
29401763
29517242
29517247
29585399

```
[grid@duorapoc001 admin]$ kfod op=patchlvl
------------------
Current Patch level
==================
724960844
```

=> si le patch level est différent de celui indiqué alors faire :

```
[root@duorapoc002 ~]# cd /grid/oracle/product/19.0/crs/install
[root@duorapoc002 install]# ./roothas.sh -unlock
Using configuration parameter file: /grid/oracle/product/19.0/crs/install/crsconfig_params
The log of current session can be found at:
/grid/oracle/crsdata/duorapoc002/crsconfig/haunlock__2020-12-16_01-12-46PM.log


2020/12/16 13:12:58 CLSRSC-347: Successfully unlock /grid/oracle/product/19.0
```

Vérification

```
[grid@vuoratit001:+ASM]$ asmcmd
ASMCMD> lsdsk
Path
/dev/ARCH01
/dev/DATA01
/dev/OCRS01
/dev/OCRS02
/dev/OCRS03

ASMCMD> lsdg
State Type Rebal Sector Logical_Sector Block AU Total_MB Free_MB Req_mir_free_MB Usable_file_MB Offline_disks
Voting_files Name
MOUNTED NORMAL N 512 512 4096 4194304 384000 383656 128000 127828 0 N ORA_CRS/
```

Création des diskgroups

```
Voir les disques candidats
[grid@vuoratit001:+ASM]$ asmcmd lsdsk --candidate -p

#srvctl start asm

Création du diskgroup ORA_CRS :
asmca -silent -createDiskGroup -diskGroupName ORA_CRS -diskList '/dev/OCRS01','/dev/OCRS02','/dev/OCRS03' -
redundancy normal


sqlplus / as sysasm
```

Création des diskgroup ORA_DATA et ORA_ARCH :

```
SQL> CREATE DISKGROUP ORA_ARCH EXTERNAL REDUNDANCY DISK '/dev/ARCH01';
Diskgroup created.
SQL> CREATE DISKGROUP ORA_DATA EXTERNAL REDUNDANCY DISK '/dev/DATA01';
Diskgroup created.


ALTER DISKGROUP ORA_DATA SET ATTRIBUTE 'compatible.asm' = '19.0';

ALTER DISKGROUP ORA_ARCH SET ATTRIBUTE 'compatible.asm' = '19.0';


set lines 250
col PATH for a35
SELECT name, header_status, path FROM V$ASM_DISK;
select group_number, name, state, type, total_mb, free_mb, usable_file_mb from v$asm_diskgroup;


NAME HEADER_STATU PATH
---------------------------- ------------ ----------------------------------
ORA_CRS_0002 MEMBER /dev/OCRS03
ORA_ARCH_0000 MEMBER /dev/ARCH01
ORA_CRS_0000 MEMBER /dev/OCRS01
ORA_DATA_0000 MEMBER /dev/DATA01
ORA_CRS_0001 MEMBER /dev/OCRS02

GROUP_NUMBER NAME STATE TYPE TOTAL_MB FREE_MB USABLE_FILE_MB
------------ ---------------------------- ----------- ------ ---------- ---------- --------------
1 ORA_CRS MOUNTED NORMAL 384000 383656 127828
2 ORA_ARCH MOUNTED EXTERN 128000 127307 127307
3 ORA_DATA MOUNTED EXTERN 128000 123459 123459
```

Supprimer l'installation

cd /grid/deinstall

1. [grid@duorapoc001 deinstall]$ ./deinstall
2. lancer en root :

```
/grid/crs/install/roothas.sh -force  -deconfig -paramfile "/tmp/deinstall2020-08-18_02-37-00PM/response
/deinstall_OraGI19Home1.rsp"
```

```
/grid/oracle/product/19.0/oui/bin/runInstaller -updateNodeList -silent ORACLE_HOME=/grid/oracle/product/19.0 -
local CRS=false
```

Log :   /app/oraInventory/logs/hadeconfig.log

2020/08/18 14:41:49 CLSRSC-337: Successfully deconfigured Oracle Restart stack

Si besoin supprimer le contenu de l'oratab, les fichiers qui sont sous /etc/oracle et /etc/oraInst.loc

Si les erreurs suivants sont rencontrées :

PROTL-4: Failed to retrieve data from the local registry
2020/12/17 16:31:04 CLSRSC-169: Failed to create or upgrade OLR
Died at /grid/oracle/product/19.0/crs/install/oraolr.pm line 562.

alors faire :
cd /var/tmp/.oracle
rm -rf *.*

ligne 600 : /grid/oracle/product/19.0/crs/install/oraolr.pm

rempalcer $status = run_as_user($CFG->params('ORACLE_OWNER'),

par $status = run_as_user('root',

SOLUTION

Unless it is mentioned explicitly, the commands in the steps to be run by OS User owning the GI Home:

1] If there is any ACFS mounted then unmount them

```
umount <mount point>
```

2] Stop Oracle Restart if required

```
<GI Home>/bin/crsctl stop has
```

3] Remove Oracle Restart, the following command needs to be run from root login:

```
# <GI Home>/perl/bin/perl -I/<GI Home>/perl/lib -I/<GI Home>/crs/install /<GI Home>/crs/install/roothas.pl -deconfig -force
```

And at the end you will see

```
CRS-4133: Oracle High Availability Services has been stopped.
2013/07/26 12:21:32 CLSRSC-337: Successfully deconfigured Oracle Restart stack
```

4] Configure Oracle Restart, the following command needs to be run from root login:

```
# cd <GI Home>
# ./root.sh
```

/grid/oracle/product/19.0/perl/bin/perl -I/grid/oracle/product/19.0/perl/lib -I/grid/oracle/product/19.0/crs/install /grid/oracle/product/19.0/crs/install/roothas.pl -
deconfig -force

Réinitialiser les disques membres

```
dd if=/dev/zero of=/dev/sdc bs=8192 count=1000
dd if=/dev/zero of=/dev/sdd bs=8192 count=1000
dd if=/dev/zero of=/dev/sdg bs=8192 count=1000
dd if=/dev/zero of=/dev/sdh bs=8192 count=1000
dd if=/dev/zero of=/dev/sdi bs=8192 count=1000

En val :
[grid@vuoratit001:+ASM]$ ls -l /dev/DATA01 /dev/ARCH01 /dev/OCRS0*
lrwxrwxrwx 1 root root 3 Dec 28 14:12 /dev/ARCH01 -> sdm
lrwxrwxrwx 1 root root 3 Dec 28 14:12 /dev/DATA01 -> sdl
lrwxrwxrwx 1 root root 3 Dec 28 10:11 /dev/OCRS01 -> sdn
lrwxrwxrwx 1 root root 3 Dec 28 10:40 /dev/OCRS02 -> sdd
lrwxrwxrwx 1 root root 3 Dec 28 12:12 /dev/OCRS03 -> sdc

dd if=/dev/zero of=/dev/sdm bs=8192 count=1000
dd if=/dev/zero of=/dev/sdl bs=8192 count=1000
dd if=/dev/zero of=/dev/sdn bs=8192 count=1000
dd if=/dev/zero of=/dev/sdd bs=8192 count=1000
dd if=/dev/zero of=/dev/sdc bs=8192 count=1000



[grid@vuoratit001:+ASM]$ ls -l /dev/DATA01 /dev/ARCH01 /dev/OCRS0*
lrwxrwxrwx 1 root root 3 Dec 28 14:12 /dev/ARCH01 -> sdm
lrwxrwxrwx 1 root root 3 Dec 28 14:12 /dev/DATA01 -> sdl
lrwxrwxrwx 1 root root 3 Dec 28 10:11 /dev/OCRS01 -> sdn
lrwxrwxrwx 1 root root 3 Dec 28 10:40 /dev/OCRS02 -> sdd
lrwxrwxrwx 1 root root 3 Dec 28 12:12 /dev/OCRS03 -> sdc
```