Add Node to Rac 11Gr2

# Config New Data Server

## Checking requirement

OS : Red Hat 6.5

RAM > 4GB

Swap > 4GB

/tmp > 2GB

* Lệnh kiểm tra RAM

# cat /proc/meminfo | grep MemTotal

MemTotal: 65932788 kB

* Lệnh kiểm tra Swap

# cat /proc/swaps

Filename Type Size Used Priority

/dev/sda3 partition 134217720 0 -1

* Lệnh kiểm tra /tmp

# df -h /tmp

Filesystem Size Used Avail Use% Mounted on

/dev/sda8 7.9G 147M 7.4G 2% /tmp

## Config /etc/hosts: USER ROOT

127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4

#::1 localhost localhost.localdomain localhost6 localhost6.localdomain6

# Public IPs

10.30.5.51 meddb01

10.30.5.52 meddb02

# Private IPs

192.168.1.1 meddb01-priv

192.168.1.2 meddb02-priv

# VIPs

10.30.5.53 meddb01-vip

10.30.5.54 meddb02-vip

# SCAN

* + - 1. meddb-scan

## Config Kernel: USER ROOT

* CONFIG KERNEL PARAMETERS:

# vi /etc/sysctl.conf

kernel.shmmax = 4294967295

kernel.shmall = 2097152

kernel.shmmni = 4096

kernel.sem = 250 32000 100 128

fs.file-max = 6815744

net.ipv4.ip\_local\_port\_range = 9000 65500

net.core.rmem\_default=262144

net.core.rmem\_max=4194304

net.core.wmem\_default=262144

net.core.wmem\_max=1048576

fs.aio-max-nr=1048576

* ACTIVE PARAMETER:

# /sbin/sysctl -p

## **SET RESOURCE LIMITS: USER ROOT**

# vi /etc/security/limits.conf

grid soft nproc 2047

grid hard nproc 16384

grid soft nofile 1024

grid hard nofile 65536

oracle soft nproc 2047

oracle hard nproc 16384

oracle soft nofile 1024

oracle hard nofile 65536

# vi /etc/pam.d/login

session required pam\_limits.so

# vi /etc/profile

if [ \$USER = "oracle" ] || [ \$USER = "grid" ]; then

if [ \$SHELL = "/bin/ksh" ]; then

ulimit -p 16384

ulimit -n 65536

else

ulimit -u 16384 -n 65536

fi

umask 022

fi

## DISABLE FIREWALL: USER ROOT

# service iptables save

# service iptables stop

# chkconfig iptables off

## DISABLE SElinux: USER ROOT

# echo 0 >/selinux/enforce

# setenforce Permissive

# vi /etc/selinux/config

SELINUX=disabled

## INSTALL PACKAGES: USER ROOT

* CREATE REPO:

# mount /dev/cdrom /media/

# cd /media/Packages

# rpm -Uvh deltarpm-\*

# rpm -Uvh python-deltarpm-\*

# rpm -Uvh createrepo-\*

# mkdir /u01/repo

# cp \* /u01/repo/

# cd ..

# rpm --import RPM-GPG-KEY-redhat-beta RPM-GPG-KEY-redhat-release

# cd /u01/repo/

# createrepo /u01/repo/

# vi /etc/yum.repos.d/my\_local.repo

[localrepo]

name=local\_repo

baseurl=file:///u01/repo/

enabled=1

gpgcheck=0

* INSTALL PACKAGE

# cd /u01/repo/

# yum install -y binutils gcc gcc-c++ glibc-devel libgcc libstdc++ make compat-db libXp pdksh sysstat libaio-devel compat-libstdc++-33 elfutils-libelf-devel kmod-oracleasm oracleasmlib oracleasm-support –nogpgcheck

## GROUP, USER: USER ROOT

* FOR GRID:

# groupadd -g 1000 oinstall

# groupadd -g 1200 asmadmin

# groupadd -g 1201 asmdba

# groupadd -g 1202 asmoper

# useradd -m -u 1100 -g oinstall -G asmadmin,asmdba,asmoper -d /home/grid -s /bin/bash -c "Grid Infrastructure Owner" grid

# passwd grid

* FOR ORACLE:

# groupadd -g 1300 dba

# groupadd -g 1301 oper

# useradd -m -u 1101 -g oinstall -G dba,oper,asmdba -d /home/oracle -s /bin/bash -c "Oracle Software Owner" oracle

# passwd oracle

## MAKE DIRECTORY: USER ROOT

# mkdir -p /u01/app/grid

# mkdir -p /u01/app/11.2.0/grid

# chown -R grid:oinstall /u01

# mkdir -p /u01/app/oracle

# chown oracle:oinstall /u01/app/oracle

# chmod -R 775 /u01

## CONFIG .bash\_profile:

* User Grid:

$ vi .bash\_profile

ORACLE\_SID=+ASM2

export ORACLE\_SID

ORACLE\_BASE=/u01/app/grid

export ORACLE\_BASE

ORACLE\_HOME=/u01/app/11.2.0/grid

export ORACLE\_HOME

SHLIB\_PATH=$ORACLE\_HOME/lib32:$ORACLE\_HOME/rdbms/lib32

export SHLIB\_PATH

PATH=$PATH:$ORACLE\_HOME/bin

export PATH

CLASSPATH=$ORACLE\_HOME/JRE:$ORACLE\_HOME/jlib:$ORACLE\_HOME/rdbms/jlib/:$ORACLE\_HOME/network/jlib

export CLASSPATH

umask 022

* User Oracle

$ vi .bash\_profile

ORACLE\_BASE=/u01/app/oracle

export ORACLE\_BASE

ORACLE\_HOME=/u01/app/oracle/11.2.0/db

export ORACLE\_HOME

ORACLE\_SID=mediadb2

export ORACLE\_SID

SHLIB\_PATH=$ORACLE\_HOME/lib32:$ORACLE\_HOME/rdbms/lib32

export SHLIB\_PATH

PATH=$PATH:$ORACLE\_HOME/bin

export PATH

CLASSPATH=$ORACLE\_HOME/JRE:$ORACLE\_HOME/jlib:$ORACLE\_HOME/rdbms/jlib/:$ORACLE\_HOME/network/jlib

export CLASSPATH

umask 022

## **CONFIG ASMLIB USER ROOT**:

# /usr/sbin/oracleasm configure -i

Configuring the Oracle ASM library driver.

This will configure the on-boot properties of the Oracle ASM library

driver. The following questions will determine whether the driver is

loaded on boot and what permissions it will have. The current values

will be shown in brackets ('[]'). Hitting <ENTER> without typing an

answer will keep that current value. Ctrl-C will abort.

Default user to own the driver interface []:

grid

Default group to own the driver interface []:

asmadmin

Start Oracle ASM library driver on boot (y/n) [n]:

y

Scan for Oracle ASM disks on boot (y/n) [y]:

y

Writing Oracle ASM library driver configuration: done

# /usr/sbin/oracleasm init

Creating /dev/oracleasm mount point: /dev/oracleasm

Loading module "oracleasm": oracleasm

Mounting ASMlib driver filesystem: /dev/oracleasm

[root@racnode1 ~]# /usr/sbin/oracleasm createdisk CRSVOL1 /dev/iscsi/crs1/part1

Writing disk header: done

Instantiating disk: done

[root@racnode2 ~]# /usr/sbin/oracleasm scandisks

Reloading disk partitions: done

Cleaning any stale ASM disks...

Scanning system for ASM disks...

Instantiating disk "FRAVOL1"

Instantiating disk "DATAVOL1"

Instantiating disk "CRSVOL1"

# Pre-installation Tasks for Oracle Grid Infrastructure for a Cluster

## Verify cvuqdisk

Verify the cvuqdisk utility was successfully installed.

|  |
| --- |
| [root@racnode3 rpm]# **ls -l /usr/sbin/cvuqdisk**  -rwsr-xr-x 1 root oinstall 14000 Sep 3 2011 /usr/sbin/cvuqdisk |

## Verify New Node (HWOS)

From one of the active nodes in the existing cluster, log in as the Oracle Grid Infrastructure owner and run cvuqdisk at the post-hardware installation to ensure that racnode3 (the Oracle RAC node to be added) is ready from the perspective of the hardware and operating system.

|  |
| --- |
| [root@racnode1 ~]# **su - grid**  [grid@racnode1 ~]$ **echo $GRID\_HOME**  /u01/app/11.2.0/grid  [grid@racnode1 ~]$ **echo $ORACLE\_HOME**  /u01/app/11.2.0/grid  [grid@racnode1 ~]$ **$GRID\_HOME/bin/cluvfy stage -post hwos -n racnode3** |

If the CVU was successful, the command will end with:

Post-check for hardware and operating system setup was successful.

Otherwise, the CVU will print meaningful error messages.

## New Node (NEW NODE PRE)

Use CVU as the Oracle Grid Infrastructure owner one last time to determine the integrity of the cluster and whether it is ready for the new Oracle RAC node to be added.

|  |
| --- |
| [grid@racnode1 ~]$ **$GRID\_HOME/bin/cluvfy stage -pre nodeadd -n racnode3 -fixup -verbose** |

If the CVU was successful, the command will end with:

Pre-check for node addition was successful.

Otherwise, the CVU will create fixup scripts (if the -fixup option was specified) with instructions to fix the cluster or node if the verification fails.

Có thể bỏ qua 1 số option bằng lệnh sau

export IGNORE\_PREADDNODE\_CHECKS=Y

# Extend for a Cluster to the New Node

## Extend Oracle Grid Infrastructure

* If you are not using GNS (like me):

|  |
| --- |
| [grid@racnode1 ~]$ **id**  uid=1100(grid) gid=1000(oinstall) groups=1000(oinstall),1200(asmadmin),1201(asmdba),1202(asmoper)  [grid@racnode1 ~]$ **cd $GRID\_HOME/oui/bin**  [grid@racnode1 bin]$ **./addNode.sh -silent "CLUSTER\_NEW\_NODES={racnode3}" "CLUSTER\_NEW\_VIRTUAL\_HOSTNAMES={racnode3-vip}"** |

* If you are using GNS:

|  |
| --- |
| [grid@racnode1 ~]$ **id**  uid=1100(grid) gid=1000(oinstall) groups=1000(oinstall),1200(asmadmin),1201(asmdba),1202(asmoper)  [grid@racnode1 ~]$ **cd $GRID\_HOME/oui/bin**  [grid@racnode1 bin]$ **./addNode.sh -silent "CLUSTER\_NEW\_NODES={racnode3}"** |

* If the command is successful, you should see a prompt similar to the following:

|  |
| --- |
| ...  The following configuration scripts need to be executed as the "root" user in each new cluster node.  Each script in the list below is followed by a list of nodes.  /u01/app/oraInventory/orainstRoot.sh #On nodes racnode3  /u01/app/11.2.0/grid/root.sh #On nodes racnode3  To execute the configuration scripts:  1. Open a terminal window  2. Log in as "root"  3. Run the scripts in each cluster node  The Cluster Node Addition of /u01/app/11.2.0/grid was successful.  Please check '/tmp/silentInstall.log' for more details. |

Run the orainstRoot.sh and root.sh commands on the new Oracle RAC node. The root.sh script performs the work of configuring Grid Infrastructure on the new node and includes adding High Availability Services to the/etc/inittab so that CRS starts up when the machine starts. When root.sh completes, all services for Oracle Grid Infrastructure will be running.

|  |
| --- |
| [root@racnode3 ~]# **/u01/app/oraInventory/orainstRoot.sh**  [root@racnode3 ~]# **/u01/app/11.2.0/grid/root.sh** |

It is best practice to run the CVU from one of the initial nodes in the Oracle RAC one last time to verify the cluster is integrated and that the new node has been successfully added to the cluster at the network, shared storage, and clusterware levels.

|  |
| --- |
| [grid@racnode1 ~]$ **$GRID\_HOME/bin/cluvfy stage -post nodeadd -n racnode3 -verbose** |

## Extend Oracle Database Software to the New Node

From one of the active nodes in the existing Oracle RAC, log in as the Oracle owner (oracle) and execute the addNode.sh script to install and configure the Oracle Database software on the new node. Like with Oracle Grid Infrastructure, the only mode to run the addNode.sh script is with the -silent option. The GUI installation method is no longer available.

|  |
| --- |
| [oracle@racnode1 ~]$ **cd $ORACLE\_HOME/oui/bin**  [oracle@racnode1 bin]$ **./addNode.sh -silent "CLUSTER\_NEW\_NODES={racnode3}"** |

If the command is successful, you should see a prompt similar to the following:

|  |
| --- |
| ...  The following configuration scripts need to be executed as the "root" user in each new cluster node.  Each script in the list below is followed by a list of nodes.  /u01/app/oracle/product/11.2.0/dbhome\_1/root.sh #On nodes racnode3  To execute the configuration scripts:  1. Open a terminal window  2. Log in as "root"  3. Run the scripts in each cluster node  The Cluster Node Addition of /u01/app/oracle/product/11.2.0/dbhome\_1 was successful.  Please check '/tmp/silentInstall.log' for more details. |

Run the root.sh command on the new Oracle RAC node as directed:

|  |
| --- |
| [root@racnode3 ~]# **/u01/app/oracle/product/11.2.0/dbhome\_1/root.sh** [http://www.idevelopment.info/images/mini_browse.gif](http://www.idevelopment.info/data/Oracle/DBA_tips/Oracle11gRAC/resources/AddNode11gR2RACOnRHEL55/oracle/root_sh.txt) |

## Add New Instance to the Cluster Database

Use either the Oracle Database Configuration Assistant (DBCA) GUI or the SRVCTL command-line interface to add a new instance to the existing cluster database running on the new Oracle RAC node. Specifically, an instance named racdb3 will be added to the pre-existing racdb cluster database.

This section describes both methods that can be used to add a new Oracle instance to an existing cluster database — DBCA or SRVCTL.

To use the GUI method, log in to one of the active nodes in the existing Oracle RAC as the Oracle owner (oracle) and execute the DBCA.

|  |
| --- |
| [oracle@racnode1 ~]$ **dbca &** |

## Add New Instance to any Services - (Optional)

After adding the new instance to the configuration using either DBCA or SRVCTL, add the new instance to any services you may have.

|  |
| --- |
| [oracle@racnode3 ~]$ **srvctl add service -d racdb -s racdbsvc.idevelopment.info -r racdb3 -u**  [oracle@racnode3 ~]$ **srvctl start service -d racdb**  [oracle@racnode3 ~]$ **srvctl config service -d racdb -s racdbsvc.idevelopment.info**  Service name: racdbsvc.idevelopment.info  Service is enabled  Server pool: racdb\_racdbsvc.idevelopment.info  Cardinality: 3  Disconnect: false  Service role: PRIMARY  Management policy: AUTOMATIC  DTP transaction: false  AQ HA notifications: false  Failover type: NONE  Failover method: NONE  TAF failover retries: 0  TAF failover delay: 0  Connection Load Balancing Goal: LONG  Runtime Load Balancing Goal: NONE  TAF policy specification: NONE  Edition:  Preferred instances: racdb3,racdb1,racdb2  Available instances: |

## Verify New Instance

|  |
| --- |
| [oracle@racnode3 ~]$ **srvctl status database -d racdb -v**  Instance racdb1 is running on node racnode1 with online services racdbsvc.idevelopment.info. Instance status: Open.  Instance racdb2 is running on node racnode2 with online services racdbsvc.idevelopment.info. Instance status: Open.  Instance racdb3 is running on node racnode3 with online services racdbsvc.idevelopment.info. Instance status: Open. |

|  |
| --- |
| SQL> **select inst\_id, instance\_name, status,**  2 **to\_char(startup\_time, 'DD-MON-YYYY HH24:MI:SS') as "START\_TIME"**  3 **from gv$instance order by inst\_id;**  INST\_ID INSTANCE\_NAME STATUS START\_TIME  ---------- ---------------- ------------ --------------------  1 racdb1 OPEN 26-APR-2012 22:12:38  2 racdb2 OPEN 27-APR-2012 00:16:50  3 racdb3 OPEN 26-APR-2012 23:11:22 |

## Configure TNSNAMES

When extending the Oracle Database software, a copy of the current $ORACLE\_HOME/network/admin/tnsnames.ora file was copied to the new node which contains entries for all of the initial instances. Update thetnsnames.ora file on each node by adding entries for the new instance.

|  |
| --- |
| RACDB3.IDEVELOPMENT.INFO =  (DESCRIPTION =  (ADDRESS = (PROTOCOL = TCP)(HOST = racnode3-vip.idevelopment.info)(PORT = 1521))  (CONNECT\_DATA =  (SERVER = DEDICATED)  (SERVICE\_NAME = racdb.idevelopment.info)  (INSTANCE\_NAME = racdb3)  )  )  LISTENERS\_RACDB3.IDEVELOPMENT.INFO =  (ADDRESS\_LIST =  (ADDRESS = (PROTOCOL = TCP)(HOST = racnode3-vip.idevelopment.info)(PORT = 1521))  )  LISTENERS\_RACDB.IDEVELOPMENT.INFO =  (ADDRESS\_LIST =  (ADDRESS = (PROTOCOL = TCP)(HOST = racnode1-vip.idevelopment.info)(PORT = 1521))  (ADDRESS = (PROTOCOL = TCP)(HOST = racnode2-vip.idevelopment.info)(PORT = 1521))  (ADDRESS = (PROTOCOL = TCP)(HOST = racnode3-vip.idevelopment.info)(PORT = 1521))  ) |

## OEM Database Control

If you configured Oracle Enterprise Manager (Database Control), add the new instance to DB Control monitoring without recreating the repository.

The URL for this example is: https://racnode1.idevelopment.info:1158/em

### Check OEM DB Control Cluster Configuration

After extending the cluster database by adding a new instance, use the emca from one of the original Oracle RAC nodes to check the current DB Control cluster configuration.

|  |
| --- |
| [oracle@racnode1 ~]$ **emca -displayConfig dbcontrol -cluster**  STARTED EMCA at Apr 27, 2012 12:21:40 AM  EM Configuration Assistant, Version 11.2.0.3.0 Production  Copyright (c) 2003, 2011, Oracle. All rights reserved.  Enter the following information:  Database unique name: **racdb**  Service name: **racdb.idevelopment.info**  Do you wish to continue? [yes(Y)/no(N)]: **y**  Apr 30, 2012 9:05:58 PM oracle.sysman.emcp.EMConfig perform  INFO: This operation is being logged at /u01/app/oracle/cfgtoollogs/emca/racdb/emca\_2012\_04\_30\_21\_05\_17.log.  Apr 30, 2012 9:05:58 PM oracle.sysman.emcp.EMDBPostConfig showClusterDBCAgentMessage  INFO:  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Current Configuration \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  INSTANCE NODE DBCONTROL\_UPLOAD\_HOST  ---------- ---------- ---------------------  racdb racnode1 racnode1.idevelopment.info  racdb racnode2 racnode1.idevelopment.info  racdb racnode3 <not configured>  Enterprise Manager configuration completed successfully  FINISHED EMCA at Apr Apr 30, 2012 9:05:58 PM |

### Add Instance to DB Control Monitoring

In this example, OEM Database Control agent is running on the initial two Oracle RAC nodes. The agent for the new instance will need to be configured and started from one of the original Oracle RAC nodes.

|  |
| --- |
| [oracle@racnode3 ~]$ **emca -addInst db**  STARTED EMCA at Apr 30, 2012 9:51:49 PM  EM Configuration Assistant, Version 11.2.0.3.0 Production  Copyright (c) 2003, 2011, Oracle. All rights reserved.  Enter the following information:  Database unique name: **racdb**  Service name: **racdb.idevelopment.info**  Node name: **racnode3**  Database SID: **racdb3**  Do you wish to continue? [yes(Y)/no(N)]: **y**  Apr 30, 2012 9:52:36 PM oracle.sysman.emcp.EMConfig perform  INFO: This operation is being logged at /u01/app/oracle/cfgtoollogs/emca/racdb/racdb3/emca\_2012\_04\_30\_21\_51\_35.log.  Apr 30, 2012 9:56:29 PM oracle.sysman.emcp.util.GeneralUtil initSQLEngineLoacly  WARNING: null  Apr 30, 2012 9:56:29 PM oracle.sysman.emcp.ParamsManager checkListenerStatusForDBControl  WARNING: Error initializing SQL connection. SQL operations cannot be performed  Apr 30, 2012 9:56:33 PM oracle.sysman.emcp.util.DBControlUtil stopOMS  INFO: Stopping Database Control (this may take a while) ...  Apr 30, 2012 9:58:36 PM oracle.sysman.emcp.EMDBCConfig instantiateOC4JConfigFiles  INFO: Propagating /u01/app/oracle/product/11.2.0/dbhome\_1/oc4j/j2ee/OC4J\_DBConsole\_racnode3\_racdb to remote nodes ...  Apr 30, 2012 10:26:35 PM oracle.sysman.emcp.EMAgentConfig deployStateDirs  INFO: Propagating /u01/app/oracle/product/11.2.0/dbhome\_1/racnode3\_racdb to remote nodes ...  Apr 30, 2012 10:33:19 PM oracle.sysman.emcp.util.DBControlUtil secureDBConsole  INFO: Securing Database Control (this may take a while) ...  Apr 30, 2012 10:48:58 PM oracle.sysman.emcp.util.DBControlUtil startOMS  INFO: Starting Database Control (this may take a while) ...  Apr 30, 2012 10:59:09 PM oracle.sysman.emcp.EMDBPostConfig performAddInstConfiguration  INFO: Database Control started successfully  Apr 30, 2012 11:13:20 PM oracle.sysman.emcp.EMDBPostConfig showClusterDBCAgentMessage  INFO:  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Current Configuration \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  INSTANCE NODE DBCONTROL\_UPLOAD\_HOST  ---------- ---------- ---------------------  racdb racnode1 racnode1.idevelopment.info  racdb racnode2 racnode1.idevelopment.info  racdb racnode3 racnode1.idevelopment.info  Apr 30, 2012 11:13:20 PM oracle.sysman.emcp.EMDBPostConfig invoke  WARNING:  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* WARNING \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  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/dbhome\_1/racnode1\_racdb/sysman/config/emkey.ora.  Ensure this file is backed up as the encrypted data will become unusable if this file is lost.  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Enterprise Manager configuration completed successfully  FINISHED EMCA at Apr 30, 2012 11:13:20 PM |

## Extend Oracle ACFS Cluster File System to the New Node

Verify the volume device(s) are externalized to the OS on the new node and appear dynamically as special file(s) in the /dev/asm directory.

|  |
| --- |
| [root@racnode3 ~]# **ls -l /dev/asm/**  total 0  brwxrwx--- 1 root asmadmin 252, 76289 Apr 26 18:44 docsvol1-149 |

Manually start the Oracle ASM volume driver on the new Oracle RAC node (if necessary).

|  |
| --- |
| [root@racnode3 ~]# **/u01/app/11.2.0/grid/bin/acfsload start -s** |

Verify the modules were successfully loaded.

|  |
| --- |
| [root@racnode3 ~]# **lsmod | grep oracle**  oracleacfs 1670360 2  oracleadvm 260320 6  oracleoks 321904 2 oracleacfs,oracleadvm  oracleasm 84136 1 |

Configure the Oracle ASM volume driver to load automatically on system startup.

|  |
| --- |
| [root@racnode3 ~]# **cat > /etc/init.d/acfsload <<EOF**  **#!/bin/sh**  **# chkconfig: 2345 30 21**  **# description: Load Oracle ASM volume driver on system startup**  **ORACLE\_HOME=/u01/app/11.2.0/grid**  **export ORACLE\_HOME**  **\$ORACLE\_HOME/bin/acfsload start -s**  **EOF**  [root@racnode3 ~]# **chmod 755 /etc/init.d/acfsload**  [root@racnode3 ~]# **chkconfig --add acfsload**  [root@racnode3 ~]# **chkconfig --list | grep acfsload**  acfsload 0:off 1:off 2:on 3:on 4:on 5:on 6:off |

Verify the Oracle Grid Infrastructure 'ora.registry.acfs' resource exists.

|  |
| --- |
| [root@racnode3 ~]# **su - grid -c crs\_stat | grep acfs**  NAME=ora.registry.acfs  TYPE=ora.registry.acfs.type |

Copy the Oracle ACFS executables to /sbin and set the appropriate permissions. The Oracle ACFS executables are located in theGRID\_HOME/install/usm/EL5/<ARCHITECTURE>/<KERNEL\_VERSION>/<FULL\_KERNEL\_VERSION>/bin directory or in the /u01/app/11.2.0/grid/install/usm/cmds/bin directory (12 files) and include any file without the\*.ko extension.

|  |
| --- |
| [root@racnode3 ~]# **cd /u01/app/11.2.0/grid/install/usm/EL5/x86\_64/2.6.18-8/2.6.18-8.el5-x86\_64/bin**  [root@racnode3 bin]# **cp acfs\* /sbin; chmod 755 /sbin/acfs\***  [root@racnode3 bin]# **cp advmutil\* /sbin; chmod 755 /sbin/advmutil\***  [root@racnode3 bin]# **cp fsck.acfs\* /sbin; chmod 755 /sbin/fsck.acfs\***  [root@racnode3 bin]# **cp mkfs.acfs\* /sbin; chmod 755 /sbin/mkfs.acfs\***  [root@racnode3 bin]# **cp mount.acfs\* /sbin; chmod 755 /sbin/mount.acfs\***  [root@racnode3 ~]# **cd /u01/app/11.2.0/grid/install/usm/cmds/bin**  [root@racnode3 bin]# **cp acfs\* /sbin; chmod 755 /sbin/acfs\***  [root@racnode3 bin]# **cp advmutil\* /sbin; chmod 755 /sbin/advmutil\***  [root@racnode3 bin]# **cp fsck.acfs\* /sbin; chmod 755 /sbin/fsck.acfs\***  [root@racnode3 bin]# **cp mkfs.acfs\* /sbin; chmod 755 /sbin/mkfs.acfs\***  [root@racnode3 bin]# **cp mount.acfs\* /sbin; chmod 755 /sbin/mount.acfs\*** |

Modify any of the Oracle ACFS shell scripts copied to the /sbin directory (above) to include the ORACLE\_HOME for Grid Infrastructure. The successful execution of these scripts requires access to certain Oracle shared libraries that are found in the Grid Infrastructure Oracle home. Since many of the Oracle ACFS shell scripts will be executed as the root user account, the ORACLE\_HOME environment variable will typically not be set in the shell and will result in the executable to fail. For example:

|  |
| --- |
| [root@racnode1 ~]# **/sbin/acfsutil registry**  /sbin/acfsutil.bin: error while loading shared libraries: libhasgen11.so:  cannot open shared object file: No such file or directory |

An easy workaround to get past this error is to set the ORACLE\_HOME environment variable for the Oracle Grid Infrastructure home in the Oracle ACFS shell scripts on all Oracle RAC nodes. The ORACLE\_HOME should be set at the beginning of the file after the header comments as shown in the following example:

|  |
| --- |
| #!/bin/sh  #  # Copyright (c) 2001, 2009, Oracle and/or its affiliates. All rights reserved.  #  **ORACLE\_HOME=/u01/app/11.2.0/grid**  ORA\_CRS\_HOME=%ORA\_CRS\_HOME%  if [ ! -d $ORA\_CRS\_HOME ]; then  ORA\_CRS\_HOME=$ORACLE\_HOME  fi  ... |

Add the ORACLE\_HOME environment variable for the Oracle Grid Infrastructure home as noted above to the following Oracle ACFS shell scripts on all Oracle RAC nodes:

* /sbin/acfsdbg
* /sbin/acfsutil
* /sbin/advmutil
* /sbin/fsck.acfs
* /sbin/mkfs.acfs
* /sbin/mount.acfs

Verify the volume device(s).

|  |
| --- |
| [root@racnode3 ~]# **ls -l /dev/asm**  total 0  brwxrwx--- 1 root asmadmin 252, 76289 Apr 26 18:44 docsvol1-149 |

Create a directory that will be used to mount the new Oracle ACFS.

|  |
| --- |
| [root@racnode3 ~]# **mkdir /oradocs** |

Mount the volume.

|  |
| --- |
| [root@racnode3 ~]# **/bin/mount -t acfs /dev/asm/docsvol1-149 /oradocs** |

Verify that the cluster file system mounted properly.

|  |
| --- |
| [root@racnode3 ~]# **mount**  /dev/mapper/VolGroup00-LogVol00 on / type ext3 (rw)  proc on /proc type proc (rw)  sysfs on /sys type sysfs (rw)  devpts on /dev/pts type devpts (rw,gid=5,mode=620)  /dev/mapper/VolGroup01-LogVol00 on /local1 type ext3 (rw)  /dev/sda1 on /boot type ext3 (rw)  tmpfs on /dev/shm type tmpfs (rw)  none on /proc/sys/fs/binfmt\_misc type binfmt\_misc (rw)  sunrpc on /var/lib/nfs/rpc\_pipefs type rpc\_pipefs (rw)  oracleasmfs on /dev/oracleasm type oracleasmfs (rw)  /dev/asm/docsvol1-149 on /oradocs type acfs (rw) |

Verify that the volume (and mount point) is registered in the Oracle ACFS mount registry so that Oracle Grid Infrastructure will mount and unmount volumes on startup and shutdown.

|  |
| --- |
| [root@racnode3 ~]# **/sbin/acfsutil registry**  Mount Object:  Device: /dev/asm/docsvol1-149  Mount Point: /oradocs  Disk Group: DOCS  Volume: DOCSVOL1  Options: none  Nodes: all |