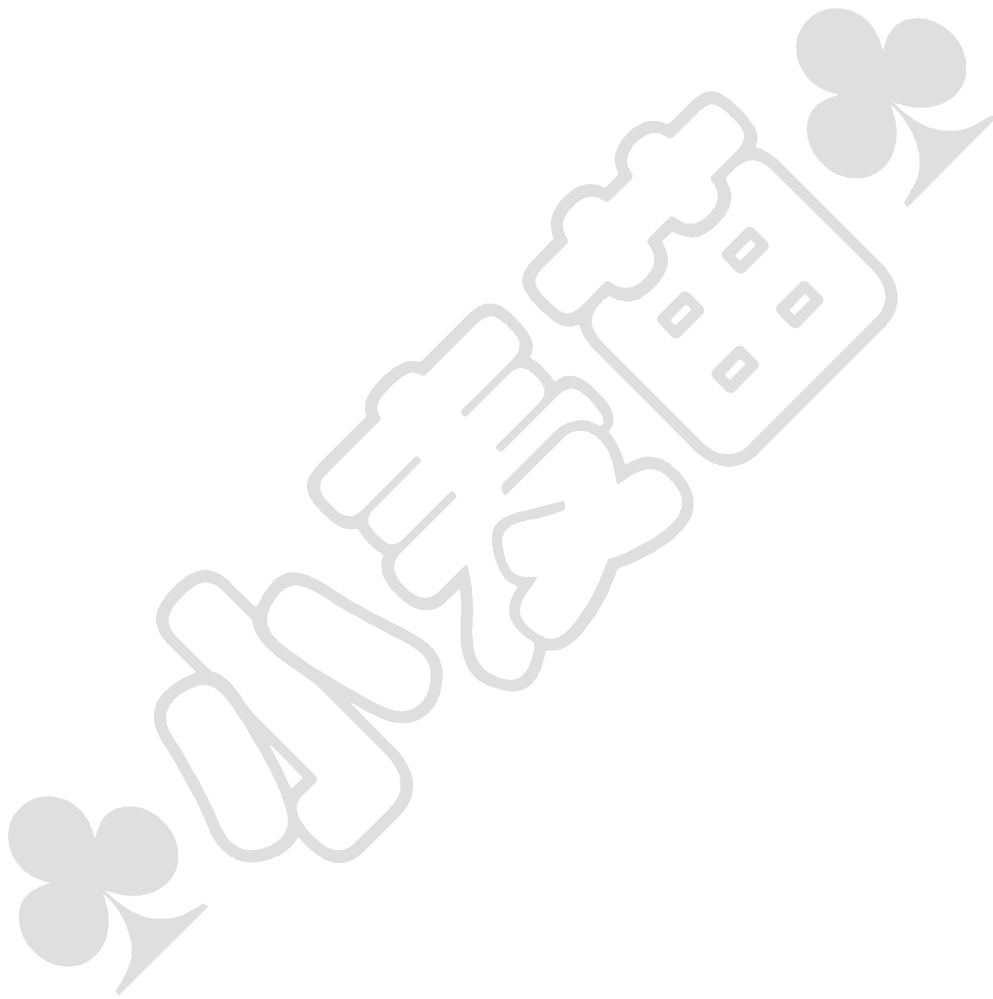


Oracle OCR 的备份与恢复



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1.2 前言部分

1.2.1 导读和注意事项

各位技术爱好者，看完本文后，你可以掌握如下的技能，也可以学到一些其它你所不知道的知识，~o(∩_∩)o~：

① rac 中 OCR 的简介及其作用

② rac 中 OCR 的备份和恢复

③ rac 的健忘与脑裂

④ grid 用户下的日志文件：\$ORACLE_HOME/log 文件夹内容被删除导致集群不能启动如何恢复？(重点)

⑤ 如何修复 11.2 Grid 权限误操作【(How to check and fix file permissions on Grid

Infrastructure environment (文档 ID 1931142.1)】

⑥ 如何修复 ASM 实例名和节点名不一致的情况【How to Change 11.2 ASM Configuration to Match

ASM Instance Name to the Node Where It Runs? (example, +ASM2 on Node2, etc) (文档 ID

1419424.1)】

⑦ permission.pl 脚本的使用

Tips：

① 本文在 ITpub (<http://blog.itpub.net/26736162>) 和博客园 (<http://www.cnblogs.com/lhrbest>) 有同步更新

② 文章中用到的所有代码，相关软件，相关资料请前往小麦苗的云盘下载

(<http://blog.itpub.net/26736162/viewspace-1624453/>)

③ 若文章代码格式有错乱，推荐使用搜狗、360 或 QQ 浏览器，也可以下载 pdf 格式的文档来查看，pdf 文档

下载地址：<http://blog.itpub.net/26736162/viewspace-1624453/>

④ 本篇 BLOG 中命令的输出部分需要特别关注的地方我都用灰色背景和粉红色字体来表示，比如下边的例子中，

thread 1 的最大归档日志号为 33，thread 2 的最大归档日志号为 43 是需要特别关注的地方；而命令一般使用黄

色背景和红色字体标注；对代码或代码输出部分的注释一般采用蓝色字体表示。

```
List of Archived Logs in backup set 11
Thrd Seq      Low SCN      Low Time      Next SCN      Next Time
-----
1      32          1621589      2015-05-29 11:09:52 1625242      2015-05-29 11:15:48
1      33          1625242      2015-05-29 11:15:48 1625293      2015-05-29 11:15:58
2      42          1613951      2015-05-29 10:41:18 1625245      2015-05-29 11:15:49
2      43          1625245      2015-05-29 11:15:49 1625253      2015-05-29 11:15:53

[ZHLHRDB1:root]:/>ls -lsvg -o
T_XDESK_APP1_vg
rootvg
[ZHLHRDB1:root]:/>
00:27:22 SQL> alter tablespace idxtbs read write;

====> 2097152*512/1024/1024/1024=1G
```

本文如有错误或不完善的地方请大家多多指正，ITPUB 留言或 QQ 皆可，您的批评指正是我写作的最大动力。

1.2.2 相关参考文章链接

关于物理和逻辑备份比较好的一篇文章：

<https://gjilevski.com/2010/12/20/backup-and-restore-of-ocr-in-grid-infrastructure-11g-r2-11-2-2/>



Backup and
Restore of OCR |

1.2.3 本文简介

写这篇 blog 的情况是这样的，rac 启动有问题，但是\$GRID_HOME/log 下的文件太多了，我就把下边的内容清空了，结果是集群更加不能启动就连基本的日志也没有了，重启 OS 无效，最后在仔细的想了想查看了一下运行正常的库的\$GRID_HOME/log 下的文件结构，发现有的文件夹最后有个 T 或 t 的权限，由此联想到可能是权限的缘故导致的，于是上 MOS 搜了搜文章果然搜到几篇文章，11.2.0.3.6 以上比较好解决，但是小于这个版本的就不好弄

了，自己总结的方法是重新跑 `root.sh` 脚本，而跑完后集群中注册的很多资源不存在了，于是这个又涉及到 OCR 的备份与恢复。另外执行 `root.sh` 若是顺序不对，或者其他的原因可能导致 asm 实例号和主机号不一致，就是 rac1 上的实例名是+ASM2，这个虽然没有啥影响，但是看着着实不爽，因此更改它们直接的对应关系也比较重要，所以总体而言就引出了文章开头提出的 6 个问题。

1.3 相关知识点扫盲(摘自网络+个人总结)

Clusterware 在运行期间需要两个文件：OCR 和 Voting Disk。这 2 个文件必须存放在共享存储上。OCR 用于解决健忘问题，Voting Disk 用于解决脑裂问题。

1.3.1 OCR Disk

Oracle Clusterware 把整个集群的配置信息放在共享存储上，这个存储就是 OCR Disk。在整个集群中，只有一个节点能对 OCR Disk 进行读写操作，这个节点叫作 Master Node，所有节点都会在内存中保留一份 OCR 的拷贝，同时有一个 OCR Process 从这个内存中读取内容。OCR 内容发生改变时，由 Master Node 的 OCR Process 负责同步到其他节点的 OCR Process。

健忘问题是由于每个节点都有配置信息的拷贝，修改节点的配置信息不同步引起的。Oracle 采用的解决方法就是把把这个配置文件放在共享的存储上，这个文件就是 OCR Disk。OCR 中保存整个集群的配置信息，配置信息以 "Key-Value" 的形式保存其中。在 Oracle10g 以前，这个文件叫作 Server Manageability Repository (SRVM)。在 Oracle 10g，这部分内容被重新设计，并重名为 OCR.. 在 Oracle Clusterware 安装的过程中，安装程序会提示用户指定 OCR 位置。并且用户指定的这个位置会被记录在 `/etc/oracle/ocr.loc` (Linux System、AIX) 或者 `/var/opt/oracle/ocr.loc` (Solaris System) 文件中。而在 Oracle 9i RAC 中，对等的是 `srvConfig.Loc` 文件。Oracle Clusterware 在启动时会根据这里面的内容从指定位置读入 OCR 内容。

```
[zfzhlhrdb3:root]:/>cd /etc/oracle
[zfzhlhrdb3:root]:/etc/oracle>ls -l
total 3160
drwxrwx--- 2 root dba 256 Dec 29 14:16 lastgasp
```

```

-rw-r--r--    1 root    dba                37 Dec 29 14:10 ocr.loc
-rw-r--r--    1 root    system              0 Dec 29 14:10 ocr.loc.orig
-rw-r--r--    1 root    dba                92 Dec 29 14:10 olr.loc
-rw-r--r--    1 root    system              0 Dec 29 14:10 olr.loc.orig
drwxrwxr-x    5 root    dba               256 Dec 29 14:09 oprocd
drwxr-xr-x    3 root    dba               256 Dec 29 14:09 scls_scr
-rws-x---    1 root    dba            1606037 Dec 29 14:09 setasmgid
[zfzhlhrdb3:root]:/etc/oracle>
[zfzhlhrdb3:root]:/etc/oracle>more /etc/oracle/ocr.loc
ocrconfig_loc=+DATA
local_only=FALSE
[zfzhlhrdb3:root]:/etc/oracle>

```

OCR key

整个 OCR 的信息是树形结构，有 3 个大分支。分别是 SYSTEM, DATABASE 和 CRS。每个分支下面又有许多小分支。这些记录的信息只能由 root 用户修改。

1.3.1.1 OCR 包含的内容

OCR 中通常包含下列内容：

- ❖ 节点成员信息
- ❖ 数据库实例，节点，以及其他的映射关系
- ❖ ASM
- ❖ 资源配置信息(vip, services 等等)
- ❖ 服务特性(Service characteristics)
- ❖ Oracle 集群中相关进程的信息
- ❖ CRS 控制的第三方应用程序信息

```

[zfzhlhrdb1:root]:/>ocrdump -local -stdout -xml|more|grep -i \<name\>|sed -e 's/\<NAME\>>//g' -e
's/\<\</NAME\>>//g'|awk -F . '{print $1,$2,$3}'|uniq

```

```

SYSTEM
SYSTEM crs
SYSTEM crs usersecurity
SYSTEM crs deny
SYSTEM crs user_default_dir
SYSTEM ORA_CRS_HOME
SYSTEM WALLET
SYSTEM GNS
SYSTEM version
SYSTEM version localhost
SYSTEM version activeversion
SYSTEM GPnP
SYSTEM GPnP profiles
SYSTEM css
SYSTEM css nodenum_hint
SYSTEM network
SYSTEM network haip
SYSTEM OHASD

```

```
SYSTEM OHASD DM
SYSTEM OHASD SERVERPOOLS
SYSTEM OHASD SERVERS
SYSTEM OHASD TYPES
SYSTEM OHASD RESOURCES
SYSTEM CRS
SYSTEM CRS JOIN_SIGNATURE
SYSTEM OLR
SYSTEM OLR MANUALBACKUP
SYSTEM OCR
SYSTEM OCR BACKUP
DATABASE
DATABASE NODEAPPS
DATABASE VIP_RANGE
DATABASE LOG
DATABASE ASM
DATABASE DATABASES
CRS
[zfzhlhrdb1:root]:/>ocrdump -stdout -xml|more|grep -i \<name\>|sed -e 's/\<NAME\>//g' -e
's/\<\<NAME\>//g'|awk -F . '{print $1,$2,$3}'|uniq
SYSTEM
SYSTEM version
SYSTEM version activeversion
SYSTEM version hostnames
SYSTEM versionstring
SYSTEM WALLET
SYSTEM WALLET APPQOSADMIN
SYSTEM GNS
SYSTEM css
SYSTEM css interfaces
SYSTEM crs
SYSTEM crs versions
SYSTEM crs usersecurity
SYSTEM crs deny
SYSTEM crs user_default_dir
SYSTEM crs e2eport
SYSTEM crs uiport
SYSTEM crs ll
SYSTEM ACFS
SYSTEM ORA_CRS_HOME
SYSTEM evm
SYSTEM evm debug
SYSTEM evm cevkey
SYSTEM evm rmpport
SYSTEM evm cevmpport
SYSTEM DIAG
SYSTEM DIAG status
SYSTEM local_only
SYSTEM WLM
SYSTEM GPnP
SYSTEM GPnP profiles
SYSTEM JAZNFILE
    <name>jazn com</name>
        <name>qosadmin</name>
        <name>oc4jadmin</name>
<name>JtaAdmin</name>
    <name>ascontrol_appadmin</name>
    <name>oc4j-administrators</name>
        <name>qosadmin</name>
        <name>oc4jadmin</name>
        <name>JtaAdmin
    <name>qos_admin</name>
        <name>qosadmin</name>
    <name>oc4j-app-administrators</name>
    <name>users</name>
    <name>ascontrol_monitor</name>
    <name>
        <name>qosadmin</name>
        <name>oc4jadmin</name>
        <name>qos_admin</name>
```

```

        <name>jazn com/oc4j-administrators</name>
        <name>login</name>
        <name>subject propagation</name>
        <name>oracle security jazn
        <name>jazn com/*</name>
        <name>administration</name>
        <name>jazn com</name>
        <name>jazn com/ascontrol_admin</name>
        <name>login</name>
        <name>subject propagation</name>
        <name>oracle security jazn
        <name>orac1
        <name>oracle security jazn
        <name>jazn com/*</name>
        <name>administration</name>
        <name>jazn com</name>
        <name>jazn com/oc4j-app-administrators</name>
        <name>login</name>
        <name>jazn com/users</name>
        <name>login</name>
    <name>oracle security jazn
        <name>coreid password header</name>
        <name>coreid resource operation</name>
        <name>addAllRoles</name>
        <name>coreid password attribute</name>
        <name>coreid resource type</name>
        <name>coreid name attribute</name>
        <name>coreid resource name</name>
        <name>core
    <name>oracle security jazn
        <name>addAllRoles</name>
    <name>oracle security wss
        <name>addAllRoles</name>
    <name>oracle security jazn
        <name>addAllRoles</name>
    <name>oracle security jazn
        <name>addAllRoles</name>
    <name>oracle security jazn
        <name>addAllRoles</name>
    <name>oracle security wss
        <name>addAllRoles</name>
        <name>issuer name 1</name>

```

```

SYSTEM JAZNFILE STATE
SYSTEM CRSADMIN
SYSTEM CRSUSER
SYSTEM CRSD
SYSTEM CRSD DM
SYSTEM CRSD SERVERPOOLS
SYSTEM CRSD SERVERS
SYSTEM CRSD TYPES
SYSTEM CRSD RESOURCES
SYSTEM OCR
SYSTEM OCR BACKUP
DATABASE
DATABASE NODEAPPS
DATABASE NODEAPPS zfzhlhrdb1
DATABASE NODEAPPS zfzhlhrdb2
DATABASE VIP_RANGE
DATABASE LOG
DATABASE ASM
DATABASE ASM zfzhlhrdb1
DATABASE ASM zfzhlhrdb2
DATABASE DATABASES
CRS
CRS CUR
CRS HIS
CRS SEC
CRS STAGE
CRS STAGE node1
CRS STAGE node2

```


[zfzhlhrdb1:root]:/>

1.3.1.2 OCR 存储内容的表现形式

1. 同样地与 Windows 注册表来类比，OCR 其存储内容的表现形式与其相同，是采用键值对的方式来展现。
2. 整个 OCR 的信息是树形结构，有 3 个大分支。分别是 SYSTEM, DATABASE 和 CRS。
3. 每个分支下面又有许多小分支。这些记录的信息只能由 root 用户修改。
4. 可以使用 ocrdump 命令将其内容全部导出或者按分支进行导出。

1.3.2 Voting Disk

Voting Disk 这个文件主要用于记录节点成员状态，在出现脑裂时，决定那个 Partion 获得控制权，其他的 Partion 必须从集群中剔除。在安装 Clusterware 时也会提示指定这个位置。安装完成后可以通过如下命令来查看 Voting Disk 位置。

```
$crsctl query css votedisk
```

```
[zfzhlhrdb3:root]:/dev>crsctl query css votedisk
```

```
## STATE      File Universal Id                File Name Disk group
--  -
1. ONLINE    83cb4909d3254f4ebf1181b024aaf539 (/dev/rhdisk2) [DATA]
Located 1 voting disk(s).
[zfzhlhrdb3:root]:/dev>ls -l /dev/rhdisk*
crw-----  2 root      system      19,  0 Dec 29 10:02 /dev/rhdisk0
crw-----  1 root      system      19,  4 Dec 29 11:15 /dev/rhdisk1
crw-rw----  1 grid     asmadmin    19,  6 Jan 08 15:17 /dev/rhdisk2
crw-rw----  1 root      system      19,  3 Dec 29 11:15 /dev/rhdisk3
crw-rw----  1 root      system      19,  1 Dec 29 11:15 /dev/rhdisk4
crw-----  1 root      system      19,  7 Dec 29 11:15 /dev/rhdisk5
crw-----  1 root      system      19,  8 Dec 29 11:15 /dev/rhdisk6
crw-----  1 root      system      19,  2 Dec 29 11:15 /dev/rhdisk7
crw-----  1 root      system      19,  5 Dec 29 11:15 /dev/rhdisk8
[zfzhlhrdb3:root]:/dev>
```

1.3.3 健忘症 (Amnesia)

集群环境配置文件不是集中存放的，而是每个节点都有一个本地副本，在集群正常运行时，用户可以在任何节点更改集群的配置，并且这种更改会自动同步到其他节点。有一种特殊情况：节点 A 正常关闭，在节点 B 上修改配置，关闭节点 A，启动节点 B。这种情况下，修改的配置文件是丢失的，就是所谓的健忘症。OCR 用于解决健忘问题。

健忘是由于某个节点更新了 OCR 中的内容，而集群中的另外一些节点此时处于关闭，维护或重启阶段，OCR Master 进程来不及将其信息更新到这些异常节点缓存而导致的不一致。譬如，在 A 节点发出了添加 ocr 镜像的命令，在这个时候 B 节点处于重启阶段。重启后 A 已经更新完毕，而此时 B 并不知道已经为 ocr 增加了一个新的镜像磁盘，健忘由此而生。

如下例，节点 bo2dbp 添加了新的 ocr 之后，配置文件发生了变化，此时节点 bo2dbs 的 ocr.loc 会被更新，如果 bo2dbs 处于关闭或重启阶段，则该文件得不到该更新，此即位健忘一例。

1.3.4 脑裂 (Split Brain)

在集群中，节点间通过某种机制（心跳）了解彼此的健康状态，以确保各节点协调工作。假设只有“心跳”出现问题，各个节点还在正常运行，这时，每个节点都认为其他的节点宕机了，自己是整个集群环境中的“唯一建在者”，自己应该获得整个集群的“控制权”。在集群环境中，存储设备都是共享的，这就意味着数据灾难，这种情况就是“脑裂”。“解决这个问题的通常办法是使用投票算法 (Quorum Algorithm)。它的算法机理如下：集群中各个节点需要心跳机制来通报彼此的“健康状态”，假设每收到一个节点的“通报”代表一票。对于三个节点的集群，正常运行时，每个节点都会有 3 票。当节点 A 心跳出现故障但节点 A 还在运行，这时整个集群就会分裂成 2 个小的 partition。节点 A 是一个，剩下的 2 个是一个。这是必须剔除一个 partition 才能保障集群的健康运行。对于有 3 个节点的集群，A 心跳出现问题后，B 和 C 是一个 partition，有 2 票，A 只有 1 票。按照投票算法，B 和 C 组成的集群获得控制权，A 被剔除。如果只有 2 个节点，投票算法就失效了。因为每个节点上都只有 1 票。这时就需要引入第三个设备：Quorum Device。Quorum Device 通常采用共享磁盘，这个磁盘也叫作 Quorum

disk。这个 Quorum Disk 也代表一票。当 2 个结点的心跳出现问题时，2 个节点同时去争取 Quorum Disk 这一票，最早到达的请求被最先满足。故最先获得 Quorum Disk 的节点就获得 2 票。另一个节点就会被剔除。

1.3.5 OCR 命令系列

1.3.5.1 ocrdump

该命令能以 ASCII 的方式打印出 OCR 的内容，但是这个命令不能用作 OCR 的备份恢复，也就是说产生的文件只能用作阅读，而不能用于恢复。

命令格式：`ocrdump [-stdout] [filename] [-keyname name] [-xml]`

参数说明：

`-stdout`：把内容打印输出到屏幕上

`Filename`：内容输出到文件中

`-keyname`：只打印某个键及其子键内容

`-xml`：以 xml 格式打印输出

示例：把 `system.css` 键的内容以 `.xml` 格式打印输出到屏幕

```
[root@raw1 bin]# ./ocrdump -stdout -keyname system.css -xml|more
<OCRDUMP>

<TIMESTAMP>03/08/2010 04:28:41</TIMESTAMP>
<DEVICE>/dev/raw/raw1</DEVICE>
<COMMAND>./ocrdump.bin -stdout -keyname system.css -xml </COMMAND>
.....
```

这个命令在执行过程中，会在 `$CRS_HOME/log/<node_name>/client` 目录下产生日志文件，文件名

`ocrdump_<pid>.log`，如果命令执行出现问题，可以从这个日志查看问题原因。

1.3.5.2 ocrcheck

Ocrcheck 命令用于检查 OCR 内容的一致性,命令执行过程会在\$CRS_HOME/log/nodename/client 目录下

产生 ocrcheck_pid.log 日志文件。这个命令不需要参数。

```
[zfzhlhrdb1:root]:>ocrcheck
Status of Oracle Cluster Registry is as follows :
   Version             :             3
  Total space (kbytes)  :        262120
  Used space (kbytes)   :          3176
 Available space (kbytes) :       258944
           ID           :    362503260
  Device/File Name     :      +DATA
                        Device/File integrity check succeeded

                        Device/File not configured

                        Device/File not configured

                        Device/File not configured

                        Device/File not configured

Cluster registry integrity check succeeded

Logical corruption check succeeded
```

1.3.5.3 ocrconfig

该命令用于维护 OCR 磁盘,安装 clusterware 过程中,如果选择 External Redundancy 冗余方式,则只能输入一个 OCR 磁盘位置。但是 Oracle 允许配置两个 OCR 磁盘互为镜像,以防止 OCR 磁盘的单点故障。OCR 磁盘和 Votedisk 磁盘不一样,OCR 磁盘最多只能有两个,一个 Primary OCR 和一个 Mirror OCR。

```
[root@raw1 bin]# ./ocrconfig --help
Name:
  ocrconfig - Configuration tool for Oracle Cluster Registry.
Synopsis:
  ocrconfig [option]
  option:
    -export <filename> [-s online]
                                - Export cluster register contents to a file
    -import <filename>          - Import cluster registry contents from a file
    -upgrade [<user> [<group>]]
                                - Upgrade cluster registry from previous version
    -downgrade [-version <version string>]
                                - Downgrade cluster registry to the specified version
    -backuploc <dirname>        - Configure periodic backup location
    -showbackup                 - Show backup information
    -restore <filename>         - Restore from physical backup
    -replace ocr|ocrmirror [<filename>]
                                - Add/replace/remove a OCR device/file
    -overwrite                  - Overwrite OCR configuration on disk
    -repair ocr|ocrmirror <filename>
                                - Repair local OCR configuration
    -help                       - Print out this help information

Note:
  A log file will be created in
  $ORACLE_HOME/log/<hostname>/client/ocrconfig_<pid>.log. Please ensure
  you have file creation privileges in the above directory before
```

1.3.6 Oracle RAC OCR 的备份与恢复

Oracle Clusterware 把整个集群的配置信息放在共享存储上，这些信息包括了集群节点的列表、集群数据库实例到节点的映射以及 CRS 应用程序资源信息。也即是存放在 ocr 磁盘 (或者 ocfs 文件) 上。因此对于这个配置文件的重要性是不言而喻的。任意使得 ocr 配置发生变化的操作在操作之间或之后都建议立即备份 ocr。

因为 OCR 的内容如此重要，Oracle 每 4 个小时对其做一次备份，并且保留最后的 3 个备份，以及前一天，前一周的最后一个备份。这个备份由 Master Node CRSD 进程完成，备份的默认位置是 `$CRS_HOME/crs/cdata/<cluster_name>` 目录下。每次备份后，备份文件名自动更改，以反应备份时间顺序，最近一次的备份叫作 `backup00.ocr`。这些备份文件除了保存在本地，DBA 还应该在其他存储设备上保留一份，以防止意外的存储故障。

与 Oracle 数据库备份恢复相似，OCR 的备份也有物理备份或逻辑备份的概念，因此有两种备份方式，两种恢复方式。

常用命令：

```
crsctl query css votedisk  
lquerypv -h /dev/rhdisk2  
crsctl stop has -f  
crsctl start has  
crsctl stat res -t
```

1.3.6.1 dd 备份恢复

备份表决磁盘：

```
dd if=/dev/raw/raw3 of=/tmp/votedisk_lhr.bak bs=1024k count=4
```

恢复表决磁盘：

```
dd if=/tmp/votedisk_lhr.bak of=/dev/raw/raw3 bs=1024k count=4
```

注：11g 不推荐使用 dd 来进行备份恢复，盘头一般是前 4K

1.3.6.2 kfed 恢复磁盘头

```
dd if=/dev/rhdisk2 of=/asm_rhdisk2_dd.bak bs=1024 count=4
dd if=/dev/zero of=/dev/rhdisk2 bs=1024 count=4
kfed repair /dev/rhdisk2
```

关于 kfed、kfod、amdu 的更多内容可以参考：<http://blog.itpub.net/26736162/viewspace-1694198/>
<http://blog.itpub.net/26736162/viewspace-1694199/>

1.3.6.3 md_backup 和 md_restore 恢复磁盘头

```
asmcmd md_backup /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/asm_md_backup.bak
asmcmd md_restore /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/asm_md_backup.bak
```

```
dd if=/dev/rhdisk2 of=/asm_rhdisk2_dd.bak bs=1024k count=4
dd if=/dev/zero of=/dev/rhdisk2 bs=1024k count=4
crsctl stop has -f
crsctl start has
ASMCMD [+] > startup force nomount;
ASMCMD [+] > md_restore /asm_rhdisk2_dd.bak
```

```
ASMCMD [+] > md_backup /rman/asm_md.bak
dd if=/dev/zero of=/dev/rhdisk2 bs=1024 count=4
crsctl stop has -f
crsctl start has
ASMCMD [+] > startup force nomount;
ASMCMD [+] > md_restore /rman/asm_md.bak
```

关于 md_backup 和 md_restore 更多内容可以参考：<http://blog.itpub.net/26736162/viewspace-2121309/>

1.3.6.4 物理备份与恢复(自动备份)

缺省情况下，Oracle 每 4 个小时对其做一次备份，并且保留最后的 3 个副本，以及前一天，前一周的最后一个备份副本。用户不能自定义备份频率以及备份文件的副本数。

对于 OCR 的备份是由 Master Node CRSD 进程完成，因此备份的默认位置是

`$CRS_HOME/crs/cdata/<cluster_name>`目录下。

备份的文件会自动更名，以反应备份时间顺序，最近一次的备份叫作 `backup00.ocr`。

由于是在 Master Node 的节点之上进行备份，因此备份文件仅存在于 Master Node 节点。

对于 Master Node 的节点 crash 之后则由剩余节点接管。

备份目录可以通过 `ocrconfig -backuploc <directory_name>` 命令修改。

OCR 磁盘最多只能有两个，一个 Primary OCR 和一个 Mirror OCR。两者互为镜像以避免单点故障。

对于物理备份恢复，不能简单的使用操作系统级别的复制命令（使用 `ocr` 文件时）来完成，该操作将导致 `ocr` 不可用。

对于物理备份，仅仅只能使用 `restore` 方式来进行恢复，而不支持 `import` 方式

1, 查看备份磁盘

```
[zfzhlhrdb2:grid]:/home/grid>ocrconfig -showbackup

zfzhlhrdb1      2016/06/30 15:13:46      /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/backup00.ocr
zfzhlhrdb1      2016/06/30 11:13:45      /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/backup01.ocr
zfzhlhrdb1      2016/06/30 07:13:45      /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/backup02.ocr
zfzhlhrdb1      2016/06/29 03:13:41      /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/day.ocr
zfzhlhrdb1      2016/06/20 03:13:08      /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/week.ocr
PROT-25: Manual backups for the Oracle Cluster Registry are not available
[zfzhlhrdb2:grid]:/home/grid>oerr prot 25
00025, 0, "Manual backups for the Oracle Cluster Registry are not available"
// *Cause: Manual backups for the Oracle Cluster Registry were not yet created.
// *Action: Manual backups can be created using 'ocrconfig -manualbackup'
//          command.
[zfzhlhrdb2:grid]:/home/grid>ocrconfig -manualbackup
PROT-20: Insufficient permission to proceed. Require privileged user
[zfzhlhrdb2:grid]:/home/grid>exit
[zfzhlhrdb2:root]:/>
[zfzhlhrdb2:root]:/>
[zfzhlhrdb2:root]:/>ocrconfig -manualbackup

zfzhlhrdb1      2016/06/30 16:21:34      /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/backup_20160630_162134.ocr
[zfzhlhrdb2:root]:/>ocrconfig -showbackup

zfzhlhrdb1      2016/06/30 15:13:46      /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/backup00.ocr
zfzhlhrdb1      2016/06/30 11:13:45      /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/backup01.ocr
zfzhlhrdb1      2016/06/30 07:13:45      /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/backup02.ocr
zfzhlhrdb1      2016/06/29 03:13:41      /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/day.ocr
zfzhlhrdb1      2016/06/20 03:13:08      /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/week.ocr
```

```
zfzhlhrdb1 2016/06/30 16:21:34 /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/backup_20160630_162134.ocr
```

在节点一执行，可以看到 2 个节点得到的内容一致：

```
[zfzhlhrdb1:root]:> ocrconfig -showbackup
```

```
zfzhlhrdb1 2016/06/30 15:13:46 /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/backup00.ocr
zfzhlhrdb1 2016/06/30 11:13:45 /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/backup01.ocr
zfzhlhrdb1 2016/06/30 07:13:45 /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/backup02.ocr
zfzhlhrdb1 2016/06/29 03:13:41 /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/day.ocr
zfzhlhrdb1 2016/06/20 03:13:08 /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/week.ocr
zfzhlhrdb1 2016/06/30 16:21:34 /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs/backup_20160630_162134.ocr
[zfzhlhrdb1:root]:>
```

2, 恢复

```
ocrconfig -restore /app/crs/product/11.0.6/crs/cdata/racluster/backup01.ocr
```

3, 查看配置

```
[grid@rac1 ~]$ more /etc/oracle/ocr.loc
ocrconfig_loc=+DATA
local_only=FALSE
[grid@rac1 ~]$
```

4, 查看进程

```
[grid@rac1 ~]$ ps -ef | grep d.bin
root      4694      1   0 10:00 ?           00:00:13 /u01/grid/bin/ohasd.bin reboot
grid      4821      1   0 10:00 ?           00:00:28 /u01/grid/bin/oraagent.bin
root      4823      1   0 10:00 ?           00:00:04 /u01/grid/bin/orarootagent.bin
grid      4846      1   0 10:00 ?           00:00:00 /u01/grid/bin/gipcd.bin
grid      4859      1   0 10:00 ?           00:00:00 /u01/grid/bin/mdnsd.bin
grid      4874      1   0 10:00 ?           00:00:01 /u01/grid/bin/gpnpd.bin
root      8645      1   0 10:47 ?           00:00:04 /u01/grid/bin/cssdmonitor
root      8662      1   0 10:48 ?           00:00:05 /u01/grid/bin/cssdagnt
grid      8664      1   0 10:48 ?           00:00:01 /u01/grid/bin/diskmon.bin -d -f
grid      8688      1   0 10:48 ?           00:00:40 /u01/grid/bin/ocssd.bin
root      8754      1   0 10:50 ?           00:00:01 /u01/grid/bin/octssd.bin
grid      8770      1   0 10:50 ?           00:00:02 /u01/grid/bin/evmd.bin
grid      8888      1   0 10:51 ?           00:00:00 /u01/grid/bin/oclskd.bin
root      8920      1   0 10:51 ?           00:00:07 /u01/grid/bin/crsd.bin reboot
root      8966      1   0 10:51 ?           00:00:00 /u01/grid/bin/oclskd.bin
grid      9013    8770   0 10:51 ?           00:00:00 /u01/grid/bin/evmlogger.bin -o
/u01/grid/evm/log/evmlogger.info -l /u01/grid/evm/log/evmlogger.log
grid      9055      1   0 10:51 ?           00:00:06 /u01/grid/bin/oraagent.bin
root      9059      1   0 10:51 ?           00:00:42 /u01/grid/bin/orarootagent.bin
grid      9283      1   0 10:52 ?           00:00:00 /u01/grid/bin/tnslsnr LISTENER -inherit
oracle    9549      1   0 10:58 ?           00:00:26 /u01/grid/bin/oraagent.bin
oracle    9773      1   0 11:00 ?           00:00:00 /u01/grid/bin/oclskd.bin
grid     18618      1   0 13:46 ?           00:00:00 /u01/grid/bin/tnslsnr LISTENER_SCAN1 -inherit
grid     22527  21370   0 14:58 pts/2    00:00:00 grep d.bin
[grid@rac1 ~]$
```

注：

ocssd: 用于管理与协调集群中各个节点的关系，并用于节点通信。该进程非常的重要，如果这个进程异常中止，

会导致系统自动重启。在某些极端的情况下，如果 ocssd 无法正常启动，就会导致操作系统循环重启。

crsd：监控节点各个资源，当某个资源发生异常是，自动重启或者切换该资源。

evmd：是一个基于后台的事件检测程序。

oclskd：该守护进程是 Oracle 11g(11.10.6) 新增的一个后台进程，主要是用于监控 RAC 数据库节点实例，当某个实例挂起时，就重启该节点。

1.3.6.5 逻辑备份与恢复(手动备份)

其实 OCR 也可以通过手动的方式导出、导入、方法如下：

```
ocrconfig -export /tmp/ocr_bak
ocrconfig -import /tmp/ocr_bak
```

使用 ocrconfig -export 方式产生的备份，统称之为逻辑备份。

对于重大的 ocr 配置发生变化前后，如添加删除节点，修改集群资源，创建数据库等，都建议使用逻辑备份。

对于由于错误配置而导致的 ocr 被损坏的情形下，我们可以使用 ocrconfig -import 方式进行恢复。

对于这种逻辑方式也可以还原丢失或损坏的 ocr 磁盘(文件)。

1.3.7 如何修复 11.2 Grid 权限误操作

关于 Oracle GRID HOME 文件目录的权限问题

- ① chown -R 误操作了，将整个/u01/app 的权限修过了如何恢复？
- ② 删除了\$GRID_HOME/log 文件夹下的所有内容，集群不能启动，如何恢复？

使用 chown -R 误操作了，将整个/u01/app 的权限修过了，导致 grid 无法启动。，搜了下 mos 发现了一篇文档：Tips for checking file permissions on GRID environment(ID 1931142.1)



How to check and fix file permissions on Grid Infrastructure environment (文档 ID 1931142.1).mhtml

该文档中描述到，\$GRID_HOME/crs/utl 下面的几个文件中记录了整个 GRID_HOME 下面的文件和目录的相关

权限。

Check the permissions from the following 2 files which are created during Grid Infrastructure installation.

In \$GRID_HOME/crs/utl (for 11.2 and 12.1.0.1) and <GRID_HOME>/crs/utl/<hostname> (for 12.1.0.2) directory:

crsconfig_dirs : which has all directories listed in <GRID_HOME> and their permissions

crsconfig_fileperms : which has list of files and their permissions and locations in <GRID_HOME>.

我们来看下是否是这样的, cd \$ORACLE_HOME/crs/utl :

```
[root@rac2 bin]# cd /home/grid/app/11.2/grid/crs/utl
[root@rac2 utl]# ls -ltr
total 324
-rw-r--r-- 1 root root 1128 Aug 11 09:48 usrvip
-rw-r--r-- 1 root root 8437 Aug 11 09:48 srvctl
.....
-rw-r--r-- 1 root root 12102 Aug 11 09:48 crsconfig_files
-rw-r--r-- 1 root root 13468 Aug 11 09:48 crsconfig_fileperms
-rw-r--r-- 1 root root 8666 Aug 11 09:48 crsconfig_dirs
-rw-r--r-- 1 root root 699 Aug 11 09:48 crfsetenv
-rw-r--r-- 1 root root 1280 Aug 11 09:48 cmdllroot.sh
-rw-r--r-- 1 root root 3680 Aug 11 09:48 cluutil
-rw-r--r-- 1 root root 1648 Aug 11 09:48 clsrwrap
-rw-r--r-- 1 root root 540 Aug 11 09:48 apppipecfg
[zfzhlhrdb1:grid]:/oracle/app/11.2.0/grid/crs/utl>more crsconfig_dirs
# Copyright (c) 2009, 2013, Oracle and/or its affiliates. All rights reserved.
# The values in each line use the following format:
#
# OSLIST DIRNAME OWNER GROUP CLOSED-PERMS OPEN-PERMS
#
# Note:
# 1) OSLIST is a comma-separated list of platforms on which the directory
# needs to be created. 'all' indicates that the directory needs to be
# created on every platform. OSLIST MUST NOT contain whitespace.
# 2) Permissions need to be specified AS OCTAL NUMBERS. If permissions are
# not specified, default (umask) values will be used.
#
# TBD: OPEN-PERMS need to be added for each dir

all /oracle/app/11.2.0/grid/cdata grid dba 0775
all /oracle/app/11.2.0/grid/cdata/zfzhlhrdb-crs grid dba 0775
all /oracle/app/11.2.0/grid/cfgtoollogs grid dba 0775
all /oracle/app/11.2.0/grid/cfgtoollogs/crsconfig grid dba 0775
all /oracle/app/11.2.0/grid/log grid dba 0775
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1 root dba 01755
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/crsd root dba 0750
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/ctssd root dba 0750
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/evmd grid dba 0750
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/cssd grid dba 0750
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/mdnsd grid dba 0750
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/gpnpd grid dba 0750
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/gnsd root dba 0750
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/srvrm grid dba 0750
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/gipcd grid dba 0750
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/diskmon grid dba 0750
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/cvu grid dba 0750
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/cvu/cvulog grid dba 0750
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/cvu/cvutrc grid dba 0750
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/acfssec root dba 0755
```

```
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/acfsrepl grid dba 0750
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/acfslog grid dba 0750
all /oracle/app/11.2.0/grid/cdata/localhost grid dba 0755
all /oracle/app/11.2.0/grid/cdata/zfzhlhrdb1 grid dba 0755
all /oracle/app/11.2.0/grid/cv grid dba 0775
all /oracle/app/11.2.0/grid/cv/log grid dba 0775
all /oracle/app/11.2.0/grid/cv/init grid dba 0775
all /oracle/app/11.2.0/grid/cv/report grid dba 0775
all /oracle/app/11.2.0/grid/cv/report/html grid dba 0775
all /oracle/app/11.2.0/grid/cv/report/text grid dba 0775
all /oracle/app/11.2.0/grid/cv/report/xml grid dba 0775

# These dirs must be owned by crsuser in SIHA, and $SUPERUSER in cluster env.
# 'HAS_USER' is set appropriately in roothas.pl and rootcrs.pl for this
# purpose
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/ohasd root dba 0750
all /oracle/app/11.2.0/grid/lib root dba 0755
all /oracle/app/11.2.0/grid/bin root dba 0755

all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/agent root dba 01775
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/agent/crsd root dba 01777
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/agent/ohasd root dba 01775
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/client grid dba 01777
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/racg grid dba 01775
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/racg/racmain grid dba 01777
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/racg/racgeut grid dba 01777
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/racg/racgevtf grid dba 01777
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/admin grid dba 0750
all /oracle/app/11.2.0/grid/log/diag/clients grid asmadmin 01770
all /oracle/app/11.2.0/grid/evm grid dba 0750
all /oracle/app/11.2.0/grid/evm/init grid dba 0750
all /oracle/app/11.2.0/grid/auth/evm/zfzhlhrdb1 root dba 01777
all /oracle/app/11.2.0/grid/evm/log grid dba 01770
all /oracle/app/11.2.0/grid/eons/init grid dba 0750
all /oracle/app/11.2.0/grid/auth/ohasd/zfzhlhrdb1 root dba 01777
all /oracle/app/11.2.0/grid/mdns grid dba 0750
all /oracle/app/11.2.0/grid/mdns/init grid dba 0750
all /oracle/app/11.2.0/grid/gipc grid dba 0750
all /oracle/app/11.2.0/grid/gipc/init grid dba 0750
all /oracle/app/11.2.0/grid/gnsd root dba 0750
all /oracle/app/11.2.0/grid/gnsd/init root dba 0750
all /oracle/app/11.2.0/grid/gpnp grid dba 0750
all /oracle/app/11.2.0/grid/gpnp/init grid dba 0750
all /oracle/app/11.2.0/grid/ohasd grid dba 0750
all /oracle/app/11.2.0/grid/ohasd/init grid dba 0750
all /oracle/app/11.2.0/grid/gpnp grid dba 0750
all /oracle/app/11.2.0/grid/gpnp/profiles grid dba 0750
all /oracle/app/11.2.0/grid/gpnp/profiles/peer grid dba 0750
all /oracle/app/11.2.0/grid/gpnp/wallets grid dba 01750
all /oracle/app/11.2.0/grid/gpnp/wallets/root grid dba 01700
all /oracle/app/11.2.0/grid/gpnp/wallets/prdr grid dba 01750
all /oracle/app/11.2.0/grid/gpnp/wallets/peer grid dba 01700
all /oracle/app/11.2.0/grid/gpnp/wallets/pa grid dba 01700
all /oracle/app/11.2.0/grid/mdns grid dba 0750
all /oracle/app/11.2.0/grid/gpnp grid dba 0750
all /oracle/app/11.2.0/grid/gpnp/zfzhlhrdb1/profiles grid dba 0750
all /oracle/app/11.2.0/grid/gpnp/zfzhlhrdb1/profiles/peer grid dba 0750
all /oracle/app/11.2.0/grid/gpnp/zfzhlhrdb1/wallets grid dba 01750
all /oracle/app/11.2.0/grid/gpnp/zfzhlhrdb1/wallets/root grid dba 01700
all /oracle/app/11.2.0/grid/gpnp/zfzhlhrdb1/wallets/prdr grid dba 01750
all /oracle/app/11.2.0/grid/gpnp/zfzhlhrdb1/wallets/peer grid dba 01700
all /oracle/app/11.2.0/grid/gpnp/zfzhlhrdb1/wallets/pa grid dba 01700
all /oracle/app/11.2.0/grid/css grid dba 0711
all /oracle/app/11.2.0/grid/css/init grid dba 0711
all /oracle/app/11.2.0/grid/css/log grid dba 0711
all /oracle/app/11.2.0/grid/auth/css/zfzhlhrdb1 root dba 01777
all /oracle/app/11.2.0/grid/crs root dba 0755
all /oracle/app/11.2.0/grid/crs/init root dba 0755
all /oracle/app/11.2.0/grid/crs/profile root dba 0755
all /oracle/app/11.2.0/grid/crs/script root dba 0755
```

```

all /oracle/app/11.2.0/grid/crs/template root dba 0755
all /oracle/app/11.2.0/grid/auth/crs/zfzhlhrdbl root dba 01777
all /oracle/app/11.2.0/grid/crs/log grid dba 01750
all /oracle/app/11.2.0/grid/crs/trace grid dba 01750
all /oracle/app/11.2.0/grid/crs/public grid dba 01777
all /oracle/app/11.2.0/grid/ctss root dba 0755
all /oracle/app/11.2.0/grid/ctss/init root dba 0755
all /oracle/app/11.2.0/grid/racg/usrcr grid dba
all /oracle/app/11.2.0/grid/racg/dump grid dba 0775
all /oracle/app/11.2.0/grid/srvn/admin grid dba 0775
all /oracle/app/11.2.0/grid/srvn/log grid dba 0775
all /oracle/app/11.2.0/grid/evm/admin/conf grid dba 0750
all /oracle/app/11.2.0/grid/evm/admin/logger grid dba 0750
all /oracle/app/11.2.0/grid/crf root dba 0750
all /oracle/app/11.2.0/grid/crf/admin root dba 0750
all /oracle/app/11.2.0/grid/crf/admin/run grid dba 0750
all /oracle/app/11.2.0/grid/crf/admin/run/crfmond root dba 0700
all /oracle/app/11.2.0/grid/crf/admin/run/crflogd root dba 0700
all /oracle/app/11.2.0/grid/crf/db root dba 0750
all /oracle/app/11.2.0/grid/crf/db/zfzhlhrdbl root dba 0750
all /oracle/app/11.2.0/grid/osysmond root dba 0755
all /oracle/app/11.2.0/grid/osysmond/init root dba 0755
all /oracle/app/11.2.0/grid/ologgerd root dba 0755
all /oracle/app/11.2.0/grid/ologgerd/init root dba 0755
all /oracle/app/11.2.0/grid/log/zfzhlhrdbl/crfmond root dba 0750
all /oracle/app/11.2.0/grid/log/zfzhlhrdbl/crflogd root dba 0750

unix /etc/oracle/oproc root dba 0775
unix /etc/oracle/oproc/check root dba 0770
unix /etc/oracle/oproc/stop root dba 0770
unix /etc/oracle/oproc/fatal root dba 0770
unix /etc/oracle/scls_scr root dba 0755
unix /etc/oracle/scls_scr/zfzhlhrdbl root dba 0755
unix /var/tmp/.oracle root dba 01777
unix /tmp/.oracle root dba 01777
unix /oracle/app/11.2.0/grid/log/zfzhlhrdbl/acfsreplroot root dba 0750
# create $ID, if it doesn't exist (applicable only in dev env)
unix /etc root root 0755
unix /oracle/app/11.2.0/grid root dba 0755

# Last Gasp files directory - change "unix" to "all"
# once Windows makes a directory decision.
unix /etc/oracle/lastgasp root dba 0770
unix /etc/rc.d/rc2.d root root 0755
[zfzhlhrdbl:grid]:/oracle/app/11.2.0/grid/crs/utl> more crsconfig_fileperms
# Copyright (c) 2009, 2013, Oracle and/or its affiliates. All rights reserved.
# The values in each line use the following format:
#
# OSLIST FILENAME OWNER GROUP PERMS
#
# Note:
# 1) OSLIST is a comma-separated list of platforms on which the file
#    permissions need to be set. 'all' indicates that the directory needs
#    to be created on every platform. OSLIST MUST NOT contain whitespace.
# 2) Permissions need to be specified AS OCTAL NUMBERS. If permissions
#    are not specified, default (umask) values will be used.
# 3) The fields within each line of this file must be delimited by a single space
#
unix /oracle/app/11.2.0/grid/log/zfzhlhrdbl/alertzfzhlhrdbl.log grid dba 0664
unix /oracle/app/11.2.0/grid/bin/usrvip root dba 0755
unix /oracle/app/11.2.0/grid/bin/appvipcfg root dba 0755
unix /oracle/app/11.2.0/grid/crs/install/preupdate.sh grid dba 0755
unix /oracle/app/11.2.0/grid/crs/install/s_crsconfig_defs grid dba 0755
unix /oracle/app/11.2.0/grid/bin/cluutil grid dba 0755
unix /oracle/app/11.2.0/grid/bin/ocrcheck root dba 0755
unix /oracle/app/11.2.0/grid/bin/ocrcheck.bin root dba 0755
unix /oracle/app/11.2.0/grid/bin/ocrconfig root dba 0755
unix /oracle/app/11.2.0/grid/bin/ocrconfig.bin root dba 0755
unix /oracle/app/11.2.0/grid/bin/ocrdump root dba 0755
unix /oracle/app/11.2.0/grid/bin/ocrdump.bin root dba 0755

```

```
unix /oracle/app/11.2.0/grid/bin/ocrpatch root dba 0755
unix /oracle/app/11.2.0/grid/bin/appagent grid dba 0755
unix /oracle/app/11.2.0/grid/bin/clsproxy grid dba 0755
unix /oracle/app/11.2.0/grid/bin/cssvfupgd root dba 0755
unix /oracle/app/11.2.0/grid/bin/cssvfupgd.bin root dba 0755
unix /oracle/app/11.2.0/grid/bin/racgwrap grid dba 0755
unix /oracle/app/11.2.0/grid/bin/cemutls grid dba 0755
unix /oracle/app/11.2.0/grid/bin/cemutlo grid dba 0755
unix /oracle/app/11.2.0/grid/bin/crs_getperm grid dba 0755
unix /oracle/app/11.2.0/grid/bin/crs_profile grid dba 0755
unix /oracle/app/11.2.0/grid/bin/crs_register grid dba 0755
unix /oracle/app/11.2.0/grid/bin/crs_relocate grid dba 0755
unix /oracle/app/11.2.0/grid/bin/crs_setperm grid dba 0755
unix /oracle/app/11.2.0/grid/bin/crs_start grid dba 0755
unix /oracle/app/11.2.0/grid/bin/crs_stat grid dba 0755
unix /oracle/app/11.2.0/grid/bin/crs_stop grid dba 0755
unix /oracle/app/11.2.0/grid/bin/crs_unregister grid dba 0755
unix /oracle/app/11.2.0/grid/bin/gipcd grid dba 0755
unix /oracle/app/11.2.0/grid/bin/mdnsd grid dba 0755
unix /oracle/app/11.2.0/grid/bin/gpnpd grid dba 0755
unix /oracle/app/11.2.0/grid/bin/gpnptool grid dba 0755
unix /oracle/app/11.2.0/grid/bin/oranetmonitor grid dba 0755
unix /oracle/app/11.2.0/grid/bin/rdtool grid dba 0755
unix /oracle/app/11.2.0/grid/bin/octssd root dba 0741
unix /oracle/app/11.2.0/grid/bin/octssd.bin root dba 0741
unix /oracle/app/11.2.0/grid/bin/ohasd root dba 0741
unix /oracle/app/11.2.0/grid/bin/ohasd.bin root dba 0741
unix /oracle/app/11.2.0/grid/bin/crsd root dba 0741
unix /oracle/app/11.2.0/grid/bin/crsd.bin root dba 0741
unix /oracle/app/11.2.0/grid/bin/evmd grid dba 0755
unix /oracle/app/11.2.0/grid/bin/evminfo grid dba 0755
unix /oracle/app/11.2.0/grid/bin/evmlogger grid dba 0755
unix /oracle/app/11.2.0/grid/bin/evmmkbin grid dba 0755
unix /oracle/app/11.2.0/grid/bin/evmmklib grid dba 0755
unix /oracle/app/11.2.0/grid/bin/evmpost grid dba 0755
unix /oracle/app/11.2.0/grid/bin/evmshow grid dba 0755
unix /oracle/app/11.2.0/grid/bin/evmsort grid dba 0755
unix /oracle/app/11.2.0/grid/bin/evmwatch grid dba 0755
unix /oracle/app/11.2.0/grid/bin/lsnodes grid dba 0755
unix /oracle/app/11.2.0/grid/bin/oifcfg grid dba 0755
unix /oracle/app/11.2.0/grid/bin/olsnodes grid dba 0755
unix /oracle/app/11.2.0/grid/bin/oraagent grid dba 0755
unix /oracle/app/11.2.0/grid/bin/orarootagent root dba 0741
unix /oracle/app/11.2.0/grid/bin/orarootagent.bin root dba 0741
unix /oracle/app/11.2.0/grid/bin/scriptagent grid dba 0755
unix /oracle/app/11.2.0/grid/bin/lsdb grid dba 0755
unix /oracle/app/11.2.0/grid/bin/emcrsp grid dba 0755
unix /oracle/app/11.2.0/grid/bin/onsctl grid dba 0755
unix /oracle/app/11.2.0/grid/crs/install/onsconfig grid dba 0554
unix /oracle/app/11.2.0/grid/bin/gnsd root dba 0741
unix /oracle/app/11.2.0/grid/bin/gnsd.bin root dba 0741
unix /oracle/app/11.2.0/grid/bin/gsd.sh grid dba 0755
unix /oracle/app/11.2.0/grid/bin/gsdctl grid dba 0755
unix /oracle/app/11.2.0/grid/bin/scrctl grid dba 0750
unix /oracle/app/11.2.0/grid/bin/vipca grid dba 0755
unix /oracle/app/11.2.0/grid/bin/oc4jctl grid dba 0755
unix /oracle/app/11.2.0/grid/bin/cvures grid dba 0755
unix /oracle/app/11.2.0/grid/bin/odnsd grid dba 0755
unix /oracle/app/11.2.0/grid/bin/qosctl grid dba 0755
unix /oracle/app/11.2.0/grid/crs/install/cmdllroot.sh grid dba 0755
unix /oracle/app/11.2.0/grid/crs/utl/rootdelete.sh root root 0755
unix /oracle/app/11.2.0/grid/crs/utl/rootdeletenode.sh root root 0755
unix /oracle/app/11.2.0/grid/crs/utl/rootdeinstall.sh root root 0755
unix /oracle/app/11.2.0/grid/crs/utl/rootaddnode.sh root root 0755
unix /oracle/app/11.2.0/grid/lib/libskgxpcompat.so grid dba 0644
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/client/olsnodes.log grid dba 0666
all /oracle/app/11.2.0/grid/log/zfzhlhrdb1/client/oifcfg.log grid dba 0666
unix /oracle/app/11.2.0/grid/bin/srvctl root dba 0755
unix /oracle/app/11.2.0/grid/bin/cluvfy root dba 0755
unix /oracle/app/11.2.0/grid/bin/clsecho root dba 0755
```

```
unix /oracle/app/11.2.0/grid/bin/clsecho.bin root dba 0755
unix /oracle/app/11.2.0/grid/bin/clscfg root dba 0755
unix /oracle/app/11.2.0/grid/bin/clscfg.bin root dba 0755
unix /oracle/app/11.2.0/grid/bin/clsfmt root dba 0755
unix /oracle/app/11.2.0/grid/bin/clsfmt.bin root dba 0755
unix /oracle/app/11.2.0/grid/bin/clsid grid dba 0755
unix /oracle/app/11.2.0/grid/bin/crsctl root dba 0755
unix /oracle/app/11.2.0/grid/bin/crsctl.bin root dba 0755
unix /oracle/app/11.2.0/grid/bin/ndfnceca grid dba 0750
unix /oracle/app/11.2.0/grid/bin/oclskd root dba 0755
unix /oracle/app/11.2.0/grid/bin/oclskd.bin root dba 0751
unix /oracle/app/11.2.0/grid/bin/oclsomon grid dba 0755
unix /oracle/app/11.2.0/grid/bin/oclsvmon grid dba 0755
unix /oracle/app/11.2.0/grid/bin/ocssd grid dba 0755
unix /oracle/app/11.2.0/grid/bin/cssdagent root dba 0741
unix /oracle/app/11.2.0/grid/bin/cssdagent.bin root dba 0741
unix /oracle/app/11.2.0/grid/bin/cssdmonitor root dba 0741
unix /oracle/app/11.2.0/grid/bin/cssdmonitor.bin root dba 0741
unix /oracle/app/11.2.0/grid/bin/diskmon root dba 0741
unix /oracle/app/11.2.0/grid/bin/diskmon.bin root dba 0741
unix /oracle/app/11.2.0/grid/bin/diagcollection.sh root dba 0755
unix /oracle/app/11.2.0/grid/bin/oradnssd grid dba 0755
unix /oracle/app/11.2.0/grid/bin/oradnssd.bin grid dba 0755
unix /oracle/app/11.2.0/grid/bin/setasmgidwrap grid dba 0755
unix /oracle/app/11.2.0/grid/bin/oclumon root dba 0750
unix /oracle/app/11.2.0/grid/bin/oclumon.bin root dba 0750
unix /oracle/app/11.2.0/grid/bin/oclumon.pl grid dba 0750
unix /oracle/app/11.2.0/grid/bin/crswrapexece.pl root dba 0744
unix /oracle/app/11.2.0/grid/bin/crfsetenv root dba 0750
unix /oracle/app/11.2.0/grid/bin/osysmond root dba 0750
unix /oracle/app/11.2.0/grid/bin/osysmond.bin root dba 0750
unix /oracle/app/11.2.0/grid/bin/ologgerd root dba 0750
unix /oracle/app/11.2.0/grid/bin/ologdbg grid dba 0750
unix /oracle/app/11.2.0/grid/bin/ologdbg.pl grid dba 0750
unix /etc/oracle/setasmgid root dba 4710
```

Jars and shared libraries used by the executables invoked by the root script

```
unix /oracle/app/11.2.0/grid/jlib/srvm.jar root dba 0644
unix /oracle/app/11.2.0/grid/jlib/srvmasm.jar root dba 0644
unix /oracle/app/11.2.0/grid/jlib/srvctl.jar root dba 0644
unix /oracle/app/11.2.0/grid/jlib/srvmhas.jar root dba 0644
unix /oracle/app/11.2.0/grid/jlib/gns.jar root dba 0644
unix /oracle/app/11.2.0/grid/jlib/ons.jar root dba 0644
unix /oracle/app/11.2.0/grid/jlib/netcfg.jar root dba 0644
unix /oracle/app/11.2.0/grid/jlib/i18n.jar root dba 0644
unix /oracle/app/11.2.0/grid/jlib/supercluster.jar root dba 0644
unix /oracle/app/11.2.0/grid/jlib/supercluster-common.jar root dba 0644
unix /oracle/app/11.2.0/grid/jlib/antlr-complete.jar root dba 0644
unix /oracle/app/11.2.0/grid/jlib/antlr-3.3-complete.jar root dba 0644
```

```
unix /oracle/app/11.2.0/grid/lib/libhasgen11.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libocr11.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libocrb11.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libocrutl11.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libclntsh.so.11.1 root dba 0644
unix /oracle/app/11.2.0/grid/lib/libclntshcore.so.11.1 root dba 0644
unix /oracle/app/11.2.0/grid/lib/libskgxn2.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libskgxp11.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libasmclntsh11.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libcell11.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libnnz11.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libclsrall1.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libgns11.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libeons.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libonsx.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libeonsserver.so root dba 0644
```

```
unix /oracle/app/11.2.0/grid/lib/libsrvml1.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libsrvmhas11.so root dba 0644
```



```
unix /oracle/app/11.2.0/grid/lib/libsrvocr11.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libuin11.so root dba 0644

unix /oracle/app/11.2.0/grid/lib/libgnsjni11.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/librdjni11.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libgnsjni11.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libclscell.so root dba 0644
unix /oracle/app/11.2.0/grid/lib/libcrf11.so root dba 0644

unix /oracle/app/11.2.0/grid/bin/diagcollection.pl root dba 0755

# crs configuration scripts invoked from rootcrs.pl
unix /oracle/app/11.2.0/grid/crs/install/crsconfig_lib.pm root dba 0755
unix /oracle/app/11.2.0/grid/crs/install/s_crsconfig_lib.pm root dba 0755
unix /oracle/app/11.2.0/grid/crs/install/crsdelete.pm root dba 0755
unix /oracle/app/11.2.0/grid/crs/install/crspatch.pm root dba 0755
unix /oracle/app/11.2.0/grid/crs/install/oracss.pm root dba 0755
unix /oracle/app/11.2.0/grid/crs/install/oraacfs.pm root dba 0755
unix /oracle/app/11.2.0/grid/crs/install/hasdconfig.pl root dba 0755
unix /oracle/app/11.2.0/grid/crs/install/rootcrs.pl root dba 0755
unix /oracle/app/11.2.0/grid/crs/install/roothas.pl root dba 0755
unix /oracle/app/11.2.0/grid/crs/install/preupdate.sh root dba 0755
unix /oracle/app/11.2.0/grid/crs/install/rootofs.sh root dba 0755

# XXX: required only for dev env, where inittab ($IT) is not present already
unix /etc/inittab root root 0644

# USM FILES
# Only files which will be installed with executable permissions need
# to be listed.
unix /oracle/app/11.2.0/grid/bin/acfsdriverstate root dba 0755
unix /oracle/app/11.2.0/grid/bin/acfsload root dba 0755
unix /oracle/app/11.2.0/grid/bin/acfsregistrymount root dba 0755
unix /oracle/app/11.2.0/grid/bin/acfsroot root dba 0755
unix /oracle/app/11.2.0/grid/bin/acfssinglefsmount root dba 0755
unix /oracle/app/11.2.0/grid/bin/acfsrepl_apply root dba 0755
unix /oracle/app/11.2.0/grid/bin/acfsrepl_apply.bin root dba 0755
unix /oracle/app/11.2.0/grid/bin/acfsreplcrs grid dba 0755
unix /oracle/app/11.2.0/grid/bin/acfsreplcrs.pl grid dba 0755
unix /oracle/app/11.2.0/grid/bin/acfsrepl_initializer root dba 0755
unix /oracle/app/11.2.0/grid/bin/acfsrepl_monitor grid dba 0755
unix /oracle/app/11.2.0/grid/bin/acfsrepl_preapply grid dba 0755
unix /oracle/app/11.2.0/grid/bin/acfsrepl_transport grid dba 0755
unix /oracle/app/11.2.0/grid/lib/acfsdriverstate.pl root dba 0644
unix /oracle/app/11.2.0/grid/lib/acfsload.pl root dba 0644
unix /oracle/app/11.2.0/grid/lib/acfsregistrymount.pl root dba 0644
unix /oracle/app/11.2.0/grid/lib/acfsroot.pl root dba 0644
unix /oracle/app/11.2.0/grid/lib/acfssinglefsmount.pl root dba 0644
unix /oracle/app/11.2.0/grid/lib/acfstoolsdriver.sh root dba 0755
unix /oracle/app/11.2.0/grid/lib/libusmacfs11.so grid dba 0644

#EVM config files
unix /oracle/app/11.2.0/grid/evm/admin/conf/evm.auth root dba 0644
unix /oracle/app/11.2.0/grid/evm/admin/conf/evmdaemon.conf root dba 0644
unix /oracle/app/11.2.0/grid/evm/admin/conf/evmlogger.conf root dba 0644

# TFA files
unix /oracle/app/11.2.0/grid/crs/install/tfa_setup.sh root dba 0755
unix /oracle/app/11.2.0/grid/cdata/zfzhlhrdbl.olr root dba 0600
unix /etc/oracle/olr.loc root dba 0644
unix /etc/oracle/ocr.loc root dba 0644
[zfzhlhrdbl:grid]:/oracle/app/11.2.0/grid/crs/utl>
```

我们可以看到，确实是这样，crsconfig_dirs 里面记录所有\$GRID_HOME 相关目录的权限。

crsconfig_fileperms 中记录了文件的权限。

1.3.7.1 校验权限

我们可以通过命令来校验：Validate the <GRID_HOME> by using cluvfy tool.

```
$ cluvfy comp software -n all -verbose
```

```
[zfzhlhrdb1:grid]:/home/grid>cluvfy comp software -n all -verbose

Verifying software

Check: Software

Component: crs

Node Name: zfzhlhrdb2
/oracle/app/11.2.0/grid/bin/racgeut..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/racgeut" did not match the expected value. [Expected = "0755" ;
Found = "0775"]
/oracle/app/11.2.0/grid/bin/racgmain..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/racgmain" did not match the expected value. [Expected = "0755" ;
Found = "0775"]
/oracle/app/11.2.0/grid/bin/asmproxy..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/asmproxy" did not match the expected value. [Expected = "0755" ;
Found = "0775"]
/oracle/app/11.2.0/grid/lib/oc4jctl_common.pm..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/lib/oc4jctl_common.pm" did not match the expected value. [Expected =
"0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/lib/oc4jctl_lib.pm..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/lib/oc4jctl_lib.pm" did not match the expected value. [Expected =
"0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/appagent.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/appagent.bin" did not match the expected value. [Expected = "0755" ;
Found = "0775"]
/oracle/app/11.2.0/grid/bin/clssproxy.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/clssproxy.bin" did not match the expected value. [Expected =
"0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/crs_getperm.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/crs_getperm.bin" did not match the expected value. [Expected =
"0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/crs_profile.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/crs_profile.bin" did not match the expected value. [Expected =
"0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/crs_register.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/crs_register.bin" did not match the expected value. [Expected =
"0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/crs_relocate.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/crs_relocate.bin" did not match the expected value. [Expected =
"0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/crs_setperm.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/crs_setperm.bin" did not match the expected value. [Expected =
"0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/crs_start.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/crs_start.bin" did not match the expected value. [Expected =
"0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/crs_stat.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/crs_stat.bin" did not match the expected value. [Expected = "0755" ;
Found = "0775"]
/oracle/app/11.2.0/grid/bin/crs_stop.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/crs_stop.bin" did not match the expected value. [Expected = "0755" ;
Found = "0775"]
/oracle/app/11.2.0/grid/bin/crs_unregister.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/crs_unregister.bin" did not match the expected value. [Expected
= "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/gipcd.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/gipcd.bin" did not match the expected value. [Expected = "0755" ;
Found = "0775"]
```


[illegible]

```
Permissions of file "/oracle/app/11.2.0/grid/bin/evt.sh" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/cemutls.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/cemutls.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/cemutlo.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/cemutlo.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/lsdb.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/lsdb.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/oifcfg.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/oifcfg.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/olsnodes.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/olsnodes.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/gsd..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/gsd" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/oc4jctl.pl..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/oc4jctl.pl" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/lib/s_oc4jctl_lib.pm..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/lib/s_oc4jctl_lib.pm" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/appvipcfg.pl..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/appvipcfg.pl" did not match the expected value. [Expected = "0750" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/lxinst..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/lxinst" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/clone/rootpre/ORCLcluster/lib/libsgxnr.a...No such file or directory
Node Name: zfzhlhrdb1
/oracle/app/11.2.0/grid/bin/racgeut..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/racgeut" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/racgmain..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/racgmain" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/asmproxy..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/asmproxy" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/lib/oc4jctl_common.pm..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/lib/oc4jctl_common.pm" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/lib/oc4jctl_lib.pm..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/lib/oc4jctl_lib.pm" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/appagent.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/appagent.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/clssproxy.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/clssproxy.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/crs_getperm.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/crs_getperm.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/crs_profile.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/crs_profile.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/crs_register.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/crs_register.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/crs_relocate.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/crs_relocate.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/crs_setperm.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/crs_setperm.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
```

[illegible]

```

Permissions of file "/oracle/app/11.2.0/grid/bin/oproc" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/emcrsp.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/emcrsp.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/clsid.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/clsid.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/ocssd.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/ocssd.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/crstmpl.scr..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/crstmpl.scr" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/evt.sh..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/evt.sh" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/cemutls.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/cemutls.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/cemutlo.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/cemutlo.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/lsdb.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/lsdb.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/oifcfg.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/oifcfg.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/olsnodes.bin..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/olsnodes.bin" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/gsd..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/gsd" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/oc4jctl.pl..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/oc4jctl.pl" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/lib/s_oc4jctl_lib.pm..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/lib/s_oc4jctl_lib.pm" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/appvipcfg.pl..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/appvipcfg.pl" did not match the expected value. [Expected = "0750" ; Found = "0775"]
/oracle/app/11.2.0/grid/bin/lxinst..."Permissions" did not match reference
Permissions of file "/oracle/app/11.2.0/grid/bin/lxinst" did not match the expected value. [Expected = "0755" ; Found = "0775"]
/oracle/app/11.2.0/grid/clone/rootpre/ORCLcluster/lib/libskgxn.a...No such file or directory

1227 files verified

Software check failed

Verification of software was unsuccessful on all the specified nodes.

```

1.3.7.2 解决

所以要解决这个问题其实并不难，我们大致可以通过如下几种方法来解决：

1. 根据前面的几个权限配置脚本自己参考进行修改，实际上并不难，直接 UE 编辑就很快搞定。
2. 根据 Mos 文档提供的建议通过 `$GRID_HOME/crs/install/rootcrs.pl -init` 或 `roothas.pl`

-init 进行解决。 rootcrs.pl -init 是在 PSU>11.2.0.3.6 下执行的，如果 PSU<11.2.0.3.6 可以执行如下

两条命令来实现同样的效果

```
<GRID_HOME>/crs/install/rootcrs.pl -unlock  
<GRID_HOME>/crs/install/rootcrs.pl -patch
```

For 11.2:

For clustered Grid Infrastructure, as root user

```
# cd <GRID_HOME>/crs/install/  
# ./rootcrs.pl -init
```

For Standalone Grid Infrastructure, as root user

```
# cd <GRID_HOME>/crs/install/  
# ./roothas.pl -init
```

For 12c:

For clustered Grid Infrastructure, as root user

```
# cd <GRID_HOME>/crs/install/  
# ./rootcrs.sh -init
```

For Standalone Grid Infrastructure, as root user

```
# cd <GRID_HOME>/crs/install/  
# ./roothas.sh -init
```

3. 采用 MOS1515018.1 文档提供的脚本在正常库上生成脚本，然后将生成的脚本在异常库上执行从而来修复权限问题（应该和方法 2 结合使用）。

4. 11gR2 可以 deconfig crs 的配置，然后重新跑 root.sh 即可。重新跑 root.sh 脚本并不影响数据库，所以无需担心（**个人推荐的一种方式**）。

```
$ORACLE_HOME/crs/install/rootcrs.pl -deconfig -force -verbose  
$ORACLE_HOME/root.sh
```

5. 如果是 rac 的某个节点的误操作，那么还可以通过 delete node 然后 add node 来做，不过这个相对麻烦太多了，但是或许是最保险的一种方式。oracle 也推荐这样，因为你如果人为修改文件权限，很难保证以后运行过程中不会出现什么问题。

补充：

Linux 环境中还可以通过 `getfacl` 和 `setfacl` 来进行操作，如下是例子：

- 1) `getfacl /home/grid/app/11.2/grid > dir_privs.txt`
- 2) `set -restore dir_privs.txt`

总结：

在安装有 GI 的环境下，权限、属主是严格被设定的，任何对于它们的错误修改容易引发一系列的问题，而且这些问题往往都很诡异很难按照常规的思路去诊断。万一权限或属主被修改了可以通过 `rootcrs.pl -init` 及 `permission.pl` 进行修复，`rootcrs.pl -init` 仅修复 GI 的核心目录，所以其修复速度较快，如果遇到 GI 无法启动的问题，建议首选这种方法以使 GI 能够快速启动，但其缺点在于无法全量的进行修复，GI 虽然正常了，并不能保证之后的运行过程中不出现这样那样的问题，这时就需要 `permission.pl` 出场了，`permission.pl` 的运行模式决定了源库（权限正确的库）与目标库（权限错误的库）间的软件版本尽可能的一致，所以源库一定要选好，否则问题会更糟，另外如果源、目标两个库的安装目录不一样还需要对 `permission*` 脚本作调整后再执行。

所以个人建议还是跑 `root.sh` 来的稳妥一点。

1.3.7.3 MOS 1515018.1 permission.pl 脚本的使用



permission.pl



文档 1515018.1 Script to capture and restore file permission in a directory (for eg. ORACLE_HOME) (文档 ID 1515018)

```
chmod 755 permission.pl
```

```
oracle 用户获取 ORACLE_HOME : ./permission.pl $ORACLE_HOME
```

```
root 用户获取 GRID_HOME : ./permission.pl $ORACLE_HOME
```

Script generates two files

- a. **permission-<time stamp>** - This contains file permission in octal value, owner and group information of the files captured
- b. **restore-perm-<time stamp>.cmd** - This contains command to change the permission, owner, and group of the captured files

拷贝到目标主机后分别执行：

```
chmod 755 restore-perm-<timestamp>.cmd
./restore-perm-<timestamp>.cmd
```

1.3.8 如何修复 ASM 实例名和节点名不一致的情况

文档 1419424.1 How to Change 11.2 ASM Configuration to Match ASM Instance Name to the Node Name

文档 1377349.1 How to Deconfigure Reconfigure(Rebuild OCR) or Deinstall Grid Infrastructure (文档 ID 1377349.1)

对于 10g 的情况，我们可以参考 Dave 大神的 blog：[RAC 修改 ASM 实例名的步骤](http://blog.csdn.net/tianlesoftware/article/details/6275827)

步骤：<http://blog.csdn.net/tianlesoftware/article/details/6275827>

对于 11g 的情况，我们只能重新执行 root.sh 脚本来修复这个问题。

1.3.9 如何彻底清除 CRS 信息

文档 942166.1 How to Proceed from Failed 11gR2 Grid Infrastructure (CRS) Installation (文档 ID 942166.1)

```
[ZFTPCDB1:root]:/>$ORACLE_HOME/crs/install/rootcrs.pl -h
Unknown option: h
Usage:
  rootcrs.pl [-verbose] [-upgrade [-force] | -patch]
              [-paramfile <parameter-file>]
              [-deconfig [-deinstall] [-keepdg] | -downgrade] [-force] [-lastnode]
              [-downgrade] [-oldcrshome <old crshome path>] [-version <old crs version>]
              [-unlock [-crshome <path to crs home>] [-nocrsstop]]

Options:
  -verbose      Run this script in verbose mode
  -upgrade      Oracle HA is being upgraded from previous version
  -patch        Oracle HA is being upgraded to a patch version
  -paramfile    Complete path of file specifying HA parameter values
  -lastnode     Force the node this is executing on to be considered the
                last node of the install and perform actions associated
                with configuring the last node
  -downgrade    Downgrade the clusterware
```



```
-version      For use with downgrade; special handling is required if
               downgrading to 9i. This is the old crs version in the format
               A.B.C.D.E (e.g 11.1.0.6.0).
-deconfig     Remove Oracle Clusterware to allow it to be uninstalled or reinstalled.
-force        Force the execution of steps in delete that cannot be verified
               to be safe
-deinstall    Reset the permissions on CRS home during de-configuration
-keepdg       Keep existing diskgroups during de-configuration
-unlock       Unlock CRS home
-crs_home     Complete path of crs home. Use with unlock option.
-olddcrs_home For use with downgrade. Complete path of the old crs home.
-nocrsstop    used with unlock option to reset permissions on an inactive grid home
```

If neither `-upgrade` nor `-patch` is supplied, a new install is performed

To see the full manpage for this program, execute:
`perldoc rootcrs.pl`

[ZFTPCDB1:root]:/>

根据 MOS How to Proceed from Failed 11gR2 Grid Infrastructure (CRS) Installation (文

档 ID 942166.1) 文档，若要重新执行 `root.sh` 脚本，我们可以如下操作：

在除最后一个节点外的所有节点执行：`$ORACLE_HOME/crs/install/rootcrs.pl -deconfig -force`

`-verbose`

在最后一个节点执行：`$ORACLE_HOME/crs/install/rootcrs.pl -deconfig -force -verbose`

`-lastnode`

重启 OS 后再执行：`$ORACLE_HOME/root.sh`

需要注意的一点是，我们在执行完 `$ORACLE_HOME/crs/install/rootcrs.pl -deconfig -force`

`-verbose` 执成之后需要删除如下的文件：

```
ls -l $ORACLE_BASE/Clusterware/ckptGridHA*
find $ORACLE_HOME/gpnp/* -type f
find $ORACLE_HOME/gpnp/* -type f -exec rm -rf {} \;
```

其中 (`find $ORACLE_HOME/gpnp/* -type f`) 中的文件删除后，我们在重新执行 `root.sh` 的时候才会有

如下的提示：

```
root wallet
root wallet cert
root cert export
peer wallet
profile reader wallet
pa wallet
peer wallet keys
pa wallet keys
peer cert request
```



```
pa cert request
peer cert
pa cert
peer root cert TP
profile reader root cert TP
pa root cert TP
peer pa cert TP
pa peer cert TP
profile reader pa cert TP
profile reader peer cert TP
peer user cert
pa user cert
```

第 2 章 实验部分

2.1 实验环境介绍

项目	primary db
db 类型	单实例
db version	11.2.0.2.0
db 存储	ASM

2.2 实验目标

本次我们模拟 6 个实验：

- 1、dd 备份恢复 OCR
- 2、OCR 的物理备份和恢复

3、OCR 的逻辑备份和恢复

4、删除 grid 用户下的 \$ORACLE_HOME/log 下的文件夹，尝试恢复重新执行 root.sh 来恢复数据

5、permission.pl 脚本的使用

6、清除 crs 和更换修复实例名就不实验了，因为都是执行 root.sh 脚本

2.3 实验过程

2.3.1 实验一：dd 备份恢复 OCR

首先关掉集群并且 dd 备份 ocr 磁盘头内容：

```
[zfzhlhrdb1:root]:> crsctl query css votedisk
## STATE      File Universal Id                File Name Disk group
--  -
1. ONLINE    7e59ff6d88ba4fc0bfe5b6ccdd27ba55 (/dev/rhdisk2) [DATA]
Located 1 voting disk(s).
[zfzhlhrdb1:root]:> dd if=/dev/rhdisk2 of=/tmp/votedisk_1hr.bak bs=1024k count=4
4+0 records in.
4+0 records out.
```

关闭集群后，使用 dd 命令模拟 ocr 损坏

```
[zfzhlhrdb1:root]:> dd if=/dev/zero of=/dev/rhdisk2 bs=1024k count=4
4+0 records in.
4+0 records out.
```

```
[zfzhlhrdb2:root]:> sh disk*
```

disk				PVID	no_reserve	size(G)	disktype	disk_storage	
	crw-----	root	system	/dev/rhdisk0	00f60f2b47d4b56f	no_reserve	128	rootvg	EMC, vscsi, 3
	crw-----	root	system	/dev/rhdisk1	00f60f2bd2147554	single_path	128	T_XDESK_APP2_vg	EMC, fscsi, 32
	crw-rw----	grid	asmadmin	/dev/rhdisk2	0000000000000000	no_reserve	128	Not_Used	EMC, fscsi, 32
	crw-rw----	grid	asmadmin	/dev/rhdisk3	0000000000000000	no_reserve	128	ASM:+FRA	EMC, fscsi, 32
	crw-rw----	root	system	/dev/rhdisk4	0000000000000000	no_reserve	128	gpfslnsd	EMC, fscsi, 32
	crw-----	root	system	/dev/rhdisk5	00f60f2b6046c20d	single_path	0	HeadDisk	EMC, fscsi, 32
	crw-----	root	system	/dev/rhdisk6	00f60f2b6046ca7d	single_path	0	HeadDisk	EMC, fscsi, 32
	crw-----	root	system	/dev/rhdisk7	00f60f2b6046d2f8	single_path	0	HeadDisk	EMC, fscsi, 32
	crw-----	root	system	/dev/rhdisk8	00f60f2b6046dae6	single_path	0	HeadDisk	EMC, fscsi, 32
	ASMDISK TOTAL:1		TOTAL SIZE(GB):128						

```
[zfzhlhrdb2:root]:>
```

```
[zfzhlhrdb2:root]:> cat disk*
```

```
if [ 1 = 1 ];then
    sum=0;asmnum=0
    awk 'BEGIN {printf
-----\n"; printf "%-43s %-18s %-14s %-8s %-15s %-14s\n", "
no_reserve ", " size(G)", " disktype ", " disk_storage |"; printf
-----\n";}'
for diskname in `ls -l /dev/r | grep disk | awk '{print $1}'`;do
    mydiskname=`ls -l /dev/r$diskname | grep -w /dev/r$diskname | cut -c 1-12,17-38,59-76`
    mydiskpvid=`lquerypv -H /dev/$diskname | cut -c 1-16`
```

```

if [ "${mydiskpvid}" = "" ];then mydiskpvid="0000000000000000" ; fi 2>/dev/null
mydiskreserve=`lsattr -El $diskname | grep -i reserve_policy | cut -c 17-30`
mydisksize=`bootinfo -s $diskname 2>/dev/null` ; let "mydisksize=${mydisksize}/1024" 2>/dev/null
mydiskvg=`lspv | grep -w $diskname | awk '{print $3}'`
mydiskasmgroup=`lquerypv -h /dev/r$diskname|head -n 7|tail -n 1|awk -F ' ' '{print $NF}' | sed -e 's/\.//g' -e 's/\/\//g'
| awk '{ if ($1 != "") printf "+$1 ; else print \"NULL\"}'`
mydiskflag=`lquerypv -h /dev/r$diskname 2>/dev/null|grep -i orcldisk|wc -l`
if [ ${mydisksize} -lt 1000 ];then mydisktype="HeadDisk" ; elif [ ${mydisksize} -gt 1000 -a ${mydiskflag} -gt
0 ];then mydisktype="ASM:$mydiskasmgroup; elif [ ${mydisksize} -gt 1000 -a ${mydiskflag} -eq 0 -a $mydiskvg !=
"None" ];then mydisktype=$mydiskvg ; else mydisktype="Not_Used"; fi 2>/dev/null
mydiskpath=`lspath -l $diskname 2>/dev/null|head -1|awk '{print $NF}' | sed "s/.$//"`
mydiskstring=`odmget -q attribute="unique_id" CuAt|egrep "name|value"|paste - -|tr ' \t' ' ' |grep -w ${diskname} | sed
's/\/\//g'`
mydiskstorage=`echo ${mydiskstring} 2> /dev/null|awk '{ if($NF ~ /EMC/) {print "EMC"} else if ($NF ~ /NETAPP/) {print
"NETAPP"} else if($NF ~ /HITACHI/) {print "HDS"}}`
mydiskdepth=`lsattr -El ${diskname} |grep queue_depth|awk '{print $2}'`
mydiskstorage1=$mydiskstorage,"$mydiskpath","$mydiskdepth
[ ${mydisksize} -gt 1 -a ${mydiskflag} -gt 0 ] && { (( sum=sum+$mydisksize1 )) ; (( asmnum=$asmnum+1 )) ; }
echo "$mydiskname" "$mydiskpvid" "$mydiskreserve" "${mydisksize1%.*}" "$mydisktype" "$mydiskstorage1" | awk
'printf "%10s %6s %8s %14s | %17s | %12s | %8s | %15s | %14s | \n", $1, $2, $3, $4, $5, $6, $7, $8, $9'
done
awk 'BEGIN {printf
-----
\n";}'
echo "ASMDISK_TOTAL:$asmnum" "TOTAL_SIZE(GB):$sum" |awk '{printf "%20s %101s | \n", $1, $2}'
awk 'BEGIN {printf
-----
\n";}'
fi

```

[zfzhlhrdb2:root]:/>

[zfzhlhrdb1:root]:/>**crsctl start has**

CRS-4123: Oracle High Availability Services has been started.

[zfzhlhrdb1:root]:/>**crsctl stat res -t**

CRS-4535: Cannot communicate with Cluster Ready Services

CRS-4000: Command Status failed, or completed with errors.

[zfzhlhrdb1:root]:/>

[zfzhlhrdb1:root]:/>**crsctl stat res -t -init**

NAME	TARGET	STATE	SERVER	STATE_DETAILS
Cluster Resources				
ora.asm				
1	ONLINE	OFFLINE		Instance Shutdown
ora.cluster_interconnect.haip				
1	ONLINE	OFFLINE		
ora.crf				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.crsd				
1	ONLINE	OFFLINE		
ora.cssd				
1	ONLINE	OFFLINE		STARTING
ora.cssdmonitor				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.ctssd				
1	ONLINE	OFFLINE		
ora.diskmon				
1	OFFLINE	OFFLINE		
ora.drivers.acfs				
1	ONLINE	OFFLINE		
ora.evmd				
1	ONLINE	OFFLINE		
ora.gipcd				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.gpnpd				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.mdnsd				
1	ONLINE	ONLINE	zfzhlhrdb1	

[zfzhlhrdb1:root]:/>

```
[zfzhlhrdb1:grid]:/home/grid>cluvfy comp ocr -n all

Verifying OCR integrity
Unable to retrieve modelist from Oracle Clusterware

Verification cannot proceed

[zfzhlhrdb2:root]:/>ocrcheck
KGFCHECK kgfnStmtExecute01c: ret == OCI_SUCCESS: FAILED at kgfn.c:1563
KGFCHECK kgfpOpen01c: ok: FAILED at kgfp.c:519
-- trace dump on error exit --
Error [kgfoOpen01] in [kgfokge] at kgfo.c:1697
ORA-17503: ksfopn:2 Failed to open file +DATA.255.4294967295
ORA-15001: diskgroup "DATA" does not exist or is not mounted
ORA-06512: at line 4

Category: 8
DepInfo: 15056
ADR is not properly configured
-- trace dump end --
-- trace dump on error exit --
Error [kgfoOpen01] in [kgfokge] at kgfo.c:1546
ORA-17503: ksfopn:2 Failed to open file +DATA.255.4294967295
ORA-15001: diskgroup "DATA" does not exist or is not mounted
ORA-06512: at line 4

Category: 8
DepInfo: 15056
ADR is not properly configured
-- trace dump end --
KGFCHECK kgfnStmtSingle3: ret == OCI_SUCCESS: FAILED at kgfn.c:1770
-- trace dump on error exit --
Error [kgfo] in [kgfoCkMt03] at kgfo.c:2080
diskgroup DATA not mounted ()
Category: 6
DepInfo: 0
ADR is not properly configured
-- trace dump end --
KGFCHECK kgfnStmtSingle3: ret == OCI_SUCCESS: FAILED at kgfn.c:1770
-- trace dump on error exit --
Error [kgfo] in [kgfoCkMt03] at kgfo.c:2080
diskgroup DATA not mounted ()
Category: 6
DepInfo: 0
ADR is not properly configured
-- trace dump end --
PROT-602: Failed to retrieve data from the cluster registry
PROC-26: Error while accessing the physical storage
```

说明集群已经不能启动了，磁盘头也被清掉了，接下来我们恢复集群：

```
[zfzhlhrdb1:root]:/>crsctl stop has -f
CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources on 'zfzhlhrdb1'
. . . . .

[zfzhlhrdb1:root]:/>dd if=/tmp/votedisk_1hr.bak of=/dev/rhdisk2 bs=1024k count=4
4+0 records in.
4+0 records out.
[zfzhlhrdb1:root]:/>sh disk*
```

disk				PVID	no_reserve	size(G)	disktype	disk_storage
crw-----	root	system	/dev/rhdisk0	00f63a6147ced87a	no_reserve	128	rootvg	EMC, vscsi, 3
crw-----	root	system	/dev/rhdisk1	00f63a61d2143e86	single_path	128	T_XDESK_APP1_vg	EMC, fscsi, 32
crw-rw----	grid	asmadmin	/dev/rhdisk2	0000000000000000	no_reserve	128	ASM:+DATA	EMC, fscsi, 32
crw-rw----	grid	asmadmin	/dev/rhdisk3	0000000000000000	no_reserve	128	ASM:+FRA	EMC, fscsi, 32
crw-rw----	root	system	/dev/rhdisk4	0000000000000000	no_reserve	128	gpfslnsd	EMC, fscsi, 32

crw-----	root	system	/dev/rhdisk5	00f63a61c89dbd11	single_path	0	HeadDisk	EMC, fscsi, 32	
crw-----	root	system	/dev/rhdisk6	00f63a6160469425	single_path	0	HeadDisk	EMC, fscsi, 32	
crw-----	root	system	/dev/rhdisk7	00f63a6160469c21	single_path	0	HeadDisk	EMC, fscsi, 32	
crw-----	root	system	/dev/rhdisk8	0000000000000000	single_path	0	HeadDisk	EMC, fscsi, 32	

| ASMDISK_TOTAL:2 TOTAL_SIZE(GB):256

[zfzhlhrdb1:root]:/>

[zfzhlhrdb1:root]:/>**crsctl stat res -t -init**

NAME	TARGET	STATE	SERVER	STATE_DETAILS
Cluster Resources				
ora.asm				
1	ONLINE	ONLINE	zfzhlhrdb1	Started
ora.cluster_interconnect.haip				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.crf				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.crsd				
1	ONLINE	ONLINE	zfzhlhrdb1	STOPPING
ora.cssd				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.cssdmonitor				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.ctssd				
1	ONLINE	ONLINE	zfzhlhrdb1	OBSERVER
ora.diskmon				
1	OFFLINE	OFFLINE		
ora.drivers.acfs				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.evmd				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.gipcd				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.gpnpd				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.mdnsd				
1	ONLINE	ONLINE	zfzhlhrdb1	

[zfzhlhrdb1:root]:/>

[zfzhlhrdb1:root]:/>**crsctl stop has -f**

```
CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.crsd' on 'zfzhlhrdb1'
CRS-2790: Starting shutdown of Cluster Ready Services-managed resources on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.oc4j' on 'zfzhlhrdb1'
CRS-2675: Stop of 'ora.oc4j' on 'zfzhlhrdb1' failed
CRS-2679: Attempting to clean 'ora.oc4j' on 'zfzhlhrdb1'
CRS-2681: Clean of 'ora.oc4j' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.ons' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.ons' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.net1.network' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.net1.network' on 'zfzhlhrdb1' succeeded
CRS-2792: Shutdown of Cluster Ready Services-managed resources on 'zfzhlhrdb1' has completed
CRS-2677: Stop of 'ora.crsd' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.mdnsd' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.crf' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.ctssd' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.evmd' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.asm' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.drivers.acfs' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.mdnsd' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.crf' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.evmd' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.ctssd' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.asm' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.cluster_interconnect.haip' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.cluster_interconnect.haip' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.cssd' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.cssd' on 'zfzhlhrdb1' succeeded
```

```

CRS-2673: Attempting to stop 'ora.gipcd' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.gipcd' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.gnpd' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.gnpd' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.drivers.acfs' on 'zfzhlhrdb1' succeeded
CRS-2793: Shutdown of Oracle High Availability Services-managed resources on 'zfzhlhrdb1' has completed
CRS-4133: Oracle High Availability Services has been stopped.
[zfzhlhrdb1:root]:/>ps -ef|grep d.bin
    root  4718784  7667788    0 19:47:26 pts/2    0:00 grep d.bin
[zfzhlhrdb1:root]:/>crsctl start has
CRS-4123: Oracle High Availability Services has been started.
[zfzhlhrdb1:root]:/>
[zfzhlhrdb2:root]:/>crsctl stat res -t

```

NAME	TARGET	STATE	SERVER	STATE_DETAILS
Local Resources				
ora.DATA.dg				
	ONLINE	ONLINE	zfzhlhrdb1	
	ONLINE	ONLINE	zfzhlhrdb2	
ora.FRA.dg				
	ONLINE	ONLINE	zfzhlhrdb1	
	ONLINE	ONLINE	zfzhlhrdb2	
ora.LISTENER.lsnr				
	ONLINE	ONLINE	zfzhlhrdb1	
	ONLINE	ONLINE	zfzhlhrdb2	
ora.LISTENER_LHRDG.lsnr				
	ONLINE	ONLINE	zfzhlhrdb1	
	ONLINE	ONLINE	zfzhlhrdb2	
ora.asm				
	ONLINE	ONLINE	zfzhlhrdb1	Started
	ONLINE	ONLINE	zfzhlhrdb2	Started
ora.gsd				
	OFFLINE	OFFLINE	zfzhlhrdb1	
	OFFLINE	OFFLINE	zfzhlhrdb2	
ora.net1.network				
	ONLINE	ONLINE	zfzhlhrdb1	
	ONLINE	ONLINE	zfzhlhrdb2	
ora.ons				
	ONLINE	ONLINE	zfzhlhrdb1	
	ONLINE	ONLINE	zfzhlhrdb2	
ora.registry.acfs				
	ONLINE	ONLINE	zfzhlhrdb1	
	ONLINE	ONLINE	zfzhlhrdb2	
Cluster Resources				
ora.LISTENER_SCAN1.lsnr				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.cvu				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.lhrdg.db				
1	ONLINE	OFFLINE		Instance Shutdown
2	ONLINE	OFFLINE		Instance Shutdown
ora.oc4j				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.oraesdb.db				
1	ONLINE	OFFLINE		Corrupted Controlfile
2	ONLINE	OFFLINE		Corrupted Controlfile
ora.oraeskd.db				
1	ONLINE	OFFLINE		Instance Shutdown
2	ONLINE	OFFLINE		Instance Shutdown
ora.rac1hr.db				
1	ONLINE	OFFLINE		Instance Shutdown
2	ONLINE	OFFLINE		Instance Shutdown
ora.scan1.vip				
1	ONLINE	ONLINE	zfzhlhrdb1	

```
ora.zfzhlhrdb1.vip
  1          ONLINE  ONLINE          zfzhlhrdb1
ora.zfzhlhrdb2.vip
  1          ONLINE  ONLINE          zfzhlhrdb2
[zfzhlhrdb2:root]:/>
```

可以看到集群可以正常启动了，接下来修复几个 db 的问题即可。

2.3.2 实验二：通过 kfed 修复磁盘头

备份 ASM 磁盘头部

```
# dd if=/dev/rhdisk2 of=/tmp/asm_dd.bak bs=1024 count=4
```

```
[zfzhlhrdb1:root]:/>dd if=/dev/rhdisk2 of=/tmp/asm_dd.bak bs=1024 count=4
4+0 records in.
4+0 records out.
```

破坏 ASM 磁盘头部

```
# dd if=/dev/zero of=/dev/rhdisk2 bs=1024 count=4
```

```
[zfzhlhrdb1:root]:/>dd if=/dev/zero of=/dev/rhdisk2 bs=1024 count=4
4+0 records in.
4+0 records out.
```

查看 ASM 磁盘头部信息 (空的)

```
# lquerypv -h /dev/rhdisk2
```

```
[zfzhlhrdb1:root]:/>lquerypv -h /dev/rhdisk2
00000000  00000000 00000000 00000000 00000000 |.....|
00000010  00000000 00000000 00000000 00000000 |.....|
00000020  00000000 00000000 00000000 00000000 |.....|
00000030  00000000 00000000 00000000 00000000 |.....|
00000040  00000000 00000000 00000000 00000000 |.....|
00000050  00000000 00000000 00000000 00000000 |.....|
00000060  00000000 00000000 00000000 00000000 |.....|
00000070  00000000 00000000 00000000 00000000 |.....|
00000080  00000000 00000000 00000000 00000000 |.....|
00000090  00000000 00000000 00000000 00000000 |.....|
000000A0  00000000 00000000 00000000 00000000 |.....|
000000B0  00000000 00000000 00000000 00000000 |.....|
000000C0  00000000 00000000 00000000 00000000 |.....|
000000D0  00000000 00000000 00000000 00000000 |.....|
000000E0  00000000 00000000 00000000 00000000 |.....|
000000F0  00000000 00000000 00000000 00000000 |.....|
```

停止 HAS 服务

```
# crsctl stop has -f
```

```
[zfzhlhrdb1:root]:/>crsctl stop has -f
CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.crsd' on 'zfzhlhrdb1'
CRS-2790: Starting shutdown of Cluster Ready Services-managed resources on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.LISTENER_SCAN1.lsnr' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.LISTENER.lsnr' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.LISTENER_LHRDG.lsnr' on 'zfzhlhrdb1'
```

```

CRS-2673: Attempting to stop 'ora.oc4j' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.cvu' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.registry.acfs' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.FRA.dg' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.oralhrq.db' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.cvu' on 'zfzhlhrdb1' succeeded
CRS-2672: Attempting to start 'ora.cvu' on 'zfzhlhrdb2'
CRS-2677: Stop of 'ora.FRA.dg' on 'zfzhlhrdb1' succeeded
CRS-2676: Start of 'ora.cvu' on 'zfzhlhrdb2' succeeded
CRS-2677: Stop of 'ora.oralhrq.db' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.DATA.dg' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.LISTENER_SCAN1.lsnr' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.scan1.vip' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.LISTENER_LHRDG.lsnr' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.registry.acfs' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.LISTENER.lsnr' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.zfzhlhrdb1.vip' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.scan1.vip' on 'zfzhlhrdb1' succeeded
CRS-2672: Attempting to start 'ora.scan1.vip' on 'zfzhlhrdb2'
CRS-2677: Stop of 'ora.zfzhlhrdb1.vip' on 'zfzhlhrdb1' succeeded
CRS-2672: Attempting to start 'ora.zfzhlhrdb1.vip' on 'zfzhlhrdb2'
CRS-2676: Start of 'ora.scan1.vip' on 'zfzhlhrdb2' succeeded
CRS-2672: Attempting to start 'ora.LISTENER_SCAN1.lsnr' on 'zfzhlhrdb2'
CRS-2676: Start of 'ora.zfzhlhrdb1.vip' on 'zfzhlhrdb2' succeeded
CRS-2676: Start of 'ora.LISTENER_SCAN1.lsnr' on 'zfzhlhrdb2' succeeded
CRS-2677: Stop of 'ora.DATA.dg' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.asm' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.asm' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.oc4j' on 'zfzhlhrdb1' succeeded
CRS-2672: Attempting to start 'ora.oc4j' on 'zfzhlhrdb2'
CRS-2676: Start of 'ora.oc4j' on 'zfzhlhrdb2' succeeded
CRS-2673: Attempting to stop 'ora.ons' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.ons' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.net1.network' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.net1.network' on 'zfzhlhrdb1' succeeded
CRS-2792: Shutdown of Cluster Ready Services-managed resources on 'zfzhlhrdb1' has completed
CRS-2677: Stop of 'ora.crsd' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.mdnsd' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.crf' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.ctssd' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.evmd' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.asm' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.drivers.acfs' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.mdnsd' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.ctssd' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.evmd' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.crf' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.asm' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.cluster_interconnect.haip' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.cluster_interconnect.haip' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.cssd' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.cssd' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.gipcd' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.gipcd' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.gpnpd' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.gpnpd' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.drivers.acfs' on 'zfzhlhrdb1' succeeded
CRS-2793: Shutdown of Oracle High Availability Services-managed resources on 'zfzhlhrdb1' has completed
CRS-4133: Oracle High Availability Services has been stopped.
[zfzhlhrdb1:root]:/>crsctl start has
CRS-4123: Oracle High Availability Services has been started.
[zfzhlhrdb1:root]:/>crsctl stat res -t -init

```

NAME	TARGET	STATE	SERVER	STATE_DETAILS
------	--------	-------	--------	---------------

Cluster Resources

ora.asm	1	ONLINE	OFFLINE	Instance Shutdown
ora.cluster_interconnect.haip				


```
1      ONLINE  OFFLINE
ora.crf 1      ONLINE  ONLINE      zfzhlhrdb1
ora.crsd 1      ONLINE  OFFLINE
ora.cssd 1      ONLINE  OFFLINE      STARTING
ora.cssdmonitor 1      ONLINE  ONLINE      zfzhlhrdb1
ora.ctssd 1      ONLINE  OFFLINE
ora.diskmon 1      OFFLINE  OFFLINE
ora.drivers.acfs 1      ONLINE  OFFLINE
ora.evmd 1      ONLINE  OFFLINE
ora.gipcd 1      ONLINE  ONLINE      zfzhlhrdb1
ora.gpnpd 1      ONLINE  ONLINE      zfzhlhrdb1
ora.mdnsd 1      ONLINE  ONLINE      zfzhlhrdb1
[zfzhlhrdb1:root]:/>
```

通过 KFED 命令修复 ASM 磁盘头

```
# kfed repair /dev/rhdisk2
```

```
[zfzhlhrdb1:root]:/>kfed repair /dev/rhdisk2
[zfzhlhrdb1:root]:/>
```

查看 ASM 磁盘头信息

```
[zfzhlhrdb1:root]:/>lquerypv -h /dev/rhdisk2
00000000 00820101 00000000 80000000 9D6A73D5 |.....js.|
00000010 00000000 00000000 00000000 00000000 |.....|
00000020 4F52434C 4449534B 00000000 00000000 |ORCLDISK.....|
00000030 00000000 00000000 00000000 00000000 |.....|
00000040 0B200000 00000103 44415441 5F303030 |. ....DATA_000|
00000050 30000000 00000000 00000000 00000000 |0.....|
00000060 00000000 00000000 44415441 00000000 |.....DATA....|
00000070 00000000 00000000 00000000 00000000 |.....|
00000080 00000000 00000000 44415441 5F303030 |.....DATA_000|
00000090 30000000 00000000 00000000 00000000 |0.....|
000000A0 00000000 00000000 00000000 00000000 |.....|
000000B0 00000000 00000000 00000000 00000000 |.....|
000000C0 00000000 00000000 01F81BD3 40FE1000 |.....@...|
000000D0 01F81BD4 50600800 02001000 00100000 |....P`.....|
000000E0 0001BC80 0002001C 00000003 00000001 |.....|
000000F0 00000002 00000002 00000000 00000000 |.....|
[zfzhlhrdb1:root]:/>
```

启动 HAS 服务

```
# crsctl start has
```

查看服务启动信息

```
# crsctl stat res -t
```

```
[zfzhlhrdb1:root]:/>crsctl stat res -t
```

NAME	TARGET	STATE	SERVER	STATE_DETAILS
Local Resources				
ora.DATA.dg				

```

ora.FRA.dg      ONLINE  ONLINE  zfzhlhrdb1
                 ONLINE  ONLINE  zfzhlhrdb2
ora.LISTENER.lsnr  ONLINE  OFFLINE  zfzhlhrdb1      STARTING
                 ONLINE  ONLINE  zfzhlhrdb2
ora.LISTENER_LHRDG.lsnr  ONLINE  OFFLINE  zfzhlhrdb1      STARTING
                 ONLINE  ONLINE  zfzhlhrdb2
ora.asm         ONLINE  ONLINE  zfzhlhrdb1      Started
                 ONLINE  ONLINE  zfzhlhrdb2      Started
ora.gsd         OFFLINE  OFFLINE  zfzhlhrdb1
                 OFFLINE  OFFLINE  zfzhlhrdb2
ora.net1.network  ONLINE  ONLINE  zfzhlhrdb1
                 ONLINE  ONLINE  zfzhlhrdb2
ora.ons         ONLINE  ONLINE  zfzhlhrdb1
                 ONLINE  ONLINE  zfzhlhrdb2
ora.registry.acfs  ONLINE  ONLINE  zfzhlhrdb1
                 ONLINE  ONLINE  zfzhlhrdb2
-----
Cluster Resources
-----
ora.LISTENER_SCAN1.lsnr
  1      ONLINE  ONLINE  zfzhlhrdb2
ora.cvu   1      ONLINE  ONLINE  zfzhlhrdb2
ora.lhrdg.db
  1      ONLINE  OFFLINE
  2      ONLINE  OFFLINE      Instance Shutdown
ora.oc4j   1      ONLINE  ONLINE  zfzhlhrdb2
ora.oraesdb.db
  1      ONLINE  OFFLINE      Corrupted Controlfile
  2      ONLINE  OFFLINE
ora.oraesddb.db
  1      ONLINE  OFFLINE      Instance Shutdown
  2      ONLINE  OFFLINE
ora.oralhrq.db
  1      ONLINE  ONLINE  zfzhlhrdb2      Open
  2      ONLINE  OFFLINE      Instance Shutdown
ora.rac1hr.db
  1      ONLINE  OFFLINE      Instance Shutdown
  2      ONLINE  OFFLINE
ora.scan1.vip  1      ONLINE  ONLINE  zfzhlhrdb2
ora.zfzhlhrdb1.vip
  1      ONLINE  ONLINE  zfzhlhrdb1
ora.zfzhlhrdb2.vip
  1      ONLINE  ONLINE  zfzhlhrdb2
[zfzhlhrdb1:root]:/>

```

2.3.3 实验三：物理备份与恢复(自动备份)

```

ocrconfig -manualbackup
ocrconfig -showbackup
crsctl query css votedisk

```

```

crsctl stop crs -f
crsctl start crs -excl
crsctl stop resource ora.crsd -init
ocrconfig -restore
/oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/backup_20160701_152358.ocr

```

```

[ZFTPCCDB1:root]:/>su - grid
[ZFTPCCDB1:grid]:/home/grid>cluvfy comp ocr -n all -verbose

Verifying OCR integrity

Checking OCR integrity...

Checking the absence of a non-clustered configuration...
All nodes free of non-clustered, local-only configurations

ASM Running check passed. ASM is running on all specified nodes

Checking OCR config file "/etc/oracle/ocr.loc"...

OCR config file "/etc/oracle/ocr.loc" check successful

Disk group for ocr location "+DATA1" available on all the nodes

NOTE:
This check does not verify the integrity of the OCR contents. Execute 'ocrcheck' as a privileged user to verify the contents
of OCR.

OCR integrity check passed

Verification of OCR integrity was successful.
[ZFTPCCDB1:grid]:/home/grid>
[ZFTPCCDB1:grid]:/home/grid>
[ZFTPCCDB1:grid]:/home/grid>exit
[ZFTPCCDB1:root]:/>ocrconfig -showbackup
PROT-24: Auto backups for the Oracle Cluster Registry are not available

zftpcdb1      2016/07/01 15:23:58      /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/backup_20160701_152358.ocr
[ZFTPCCDB1:root]:/>ocrconfig -manualbackup

zftpcdb2      2016/07/01 16:08:22      /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/backup_20160701_160822.ocr

zftpcdb1      2016/07/01 15:23:58      /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/backup_20160701_152358.ocr
[ZFTPCCDB1:root]:/>ocrconfig -showbackup
PROT-24: Auto backups for the Oracle Cluster Registry are not available

zftpcdb2      2016/07/01 16:08:22      /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/backup_20160701_160822.ocr
zftpcdb1      2016/07/01 15:23:58      /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/backup_20160701_152358.ocr
[ZFTPCCDB1:root]:/>

```

2 个节点都停掉 CRS :

```

[ZFTPCCDB1:root]:/>crsctl query css votedisk
## STATE      File Universal Id                        File Name Disk group
--  -
  1. ONLINE    2da6f80ec3e64f45bfca9dabe0dd65eb (/dev/rhdisk1) [DATA1]
Located 1 voting disk(s).

```

```
[ZFTPCDB1:root]:/>ocrconfig -restore  
/oracle/app/11.2.0/grid/cdata/ZFTPCDB-crs/backup_20160701_152358.ocr  
PROT-19: Cannot proceed while the Cluster Ready Service is running
```

```
[ZFTPCDB1:root]:/>crsctl stop crs -f
```

```
CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources on 'zftpcdb1'  
CRS-2673: Attempting to stop 'ora.crsd' on 'zftpcdb1'  
CRS-2790: Starting shutdown of Cluster Ready Services-managed resources on 'zftpcdb1'  
CRS-2673: Attempting to stop 'ora.zftpcdb2.vip' on 'zftpcdb1'  
CRS-2673: Attempting to stop 'ora.LISTENER_SCAN1.lsnr' on 'zftpcdb1'  
CRS-2673: Attempting to stop 'ora.oc4j' on 'zftpcdb1'  
CRS-2673: Attempting to stop 'ora.cvu' on 'zftpcdb1'  
CRS-2673: Attempting to stop 'ora.registry.acfs' on 'zftpcdb1'  
CRS-2673: Attempting to stop 'ora.oralhr.db' on 'zftpcdb1'  
CRS-2673: Attempting to stop 'ora.LISTENER.lsnr' on 'zftpcdb1'  
CRS-2677: Stop of 'ora.zftpcdb2.vip' on 'zftpcdb1' succeeded  
CRS-2672: Attempting to start 'ora.zftpcdb2.vip' on 'zftpcdb2'  
CRS-2677: Stop of 'ora.cvu' on 'zftpcdb1' succeeded  
CRS-2672: Attempting to start 'ora.cvu' on 'zftpcdb2'  
CRS-2677: Stop of 'ora.LISTENER_SCAN1.lsnr' on 'zftpcdb1' succeeded  
CRS-2673: Attempting to stop 'ora.scan1.vip' on 'zftpcdb1'  
CRS-2677: Stop of 'ora.LISTENER.lsnr' on 'zftpcdb1' succeeded  
CRS-2677: Stop of 'ora.scan1.vip' on 'zftpcdb1' succeeded  
CRS-2672: Attempting to start 'ora.scan1.vip' on 'zftpcdb2'  
CRS-2676: Start of 'ora.cvu' on 'zftpcdb2' succeeded  
CRS-2677: Stop of 'ora.oralhr.db' on 'zftpcdb1' succeeded  
CRS-2673: Attempting to stop 'ora.DATA1.dg' on 'zftpcdb1'  
CRS-2676: Start of 'ora.zftpcdb2.vip' on 'zftpcdb2' succeeded  
CRS-2672: Attempting to start 'ora.LISTENER.lsnr' on 'zftpcdb2'  
CRS-2676: Start of 'ora.scan1.vip' on 'zftpcdb2' succeeded  
CRS-2672: Attempting to start 'ora.LISTENER_SCAN1.lsnr' on 'zftpcdb2'  
CRS-2676: Start of 'ora.LISTENER.lsnr' on 'zftpcdb2' succeeded  
CRS-2673: Attempting to stop 'ora.zftpcdb1.vip' on 'zftpcdb1'  
CRS-2677: Stop of 'ora.zftpcdb1.vip' on 'zftpcdb1' succeeded  
CRS-2672: Attempting to start 'ora.zftpcdb1.vip' on 'zftpcdb2'  
CRS-2676: Start of 'ora.LISTENER_SCAN1.lsnr' on 'zftpcdb2' succeeded  
CRS-2677: Stop of 'ora.registry.acfs' on 'zftpcdb1' succeeded  
CRS-2676: Start of 'ora.zftpcdb1.vip' on 'zftpcdb2' succeeded  
CRS-2677: Stop of 'ora.oc4j' on 'zftpcdb1' succeeded  
CRS-2672: Attempting to start 'ora.oc4j' on 'zftpcdb2'  
CRS-2676: Start of 'ora.oc4j' on 'zftpcdb2' succeeded  
CRS-2677: Stop of 'ora.DATA1.dg' on 'zftpcdb1' succeeded  
CRS-2673: Attempting to stop 'ora.asm' on 'zftpcdb1'  
CRS-2677: Stop of 'ora.asm' on 'zftpcdb1' succeeded  
CRS-2673: Attempting to stop 'ora.ons' on 'zftpcdb1'  
CRS-2677: Stop of 'ora.ons' on 'zftpcdb1' succeeded  
CRS-2673: Attempting to stop 'ora.net1.network' on 'zftpcdb1'  
CRS-2677: Stop of 'ora.net1.network' on 'zftpcdb1' succeeded  
CRS-2792: Shutdown of Cluster Ready Services-managed resources on 'zftpcdb1' has completed  
CRS-2677: Stop of 'ora.crsd' on 'zftpcdb1' succeeded  
CRS-2673: Attempting to stop 'ora.mdnsd' on 'zftpcdb1'  
CRS-2673: Attempting to stop 'ora.crf' on 'zftpcdb1'  
CRS-2673: Attempting to stop 'ora.ctssd' on 'zftpcdb1'  
CRS-2673: Attempting to stop 'ora.evmd' on 'zftpcdb1'  
CRS-2673: Attempting to stop 'ora.asm' on 'zftpcdb1'  
CRS-2673: Attempting to stop 'ora.drivers.acfs' on 'zftpcdb1'  
CRS-2677: Stop of 'ora.mdnsd' on 'zftpcdb1' succeeded  
CRS-2677: Stop of 'ora.evmd' on 'zftpcdb1' succeeded  
CRS-2677: Stop of 'ora.crf' on 'zftpcdb1' succeeded  
CRS-2677: Stop of 'ora.asm' on 'zftpcdb1' succeeded  
CRS-2673: Attempting to stop 'ora.cluster_interconnect.haip' on 'zftpcdb1'  
CRS-2677: Stop of 'ora.ctssd' on 'zftpcdb1' succeeded  
CRS-2677: Stop of 'ora.cluster_interconnect.haip' on 'zftpcdb1' succeeded  
CRS-2673: Attempting to stop 'ora.cssd' on 'zftpcdb1'  
CRS-2677: Stop of 'ora.cssd' on 'zftpcdb1' succeeded  
CRS-2673: Attempting to stop 'ora.gipcd' on 'zftpcdb1'  
CRS-2677: Stop of 'ora.gipcd' on 'zftpcdb1' succeeded  
CRS-2673: Attempting to stop 'ora.gpnpd' on 'zftpcdb1'  
CRS-2677: Stop of 'ora.gpnpd' on 'zftpcdb1' succeeded  
CRS-2677: Stop of 'ora.drivers.acfs' on 'zftpcdb1' succeeded
```

CRS-2793: Shutdown of Oracle High Availability Services-managed resources on 'zftpcdb1' has completed
CRS-4133: Oracle High Availability Services has been stopped.

```
[ZFTPCDB1:root]:/>ps -ef|grep d.bin
    root 4391306 6094924    0 16:31:03 pts/0    0:00 grep d.bin
[ZFTPCDB1:root]:/>
```

```
[ZFTPCDB1:root]:/>ocrconfig -restore
/oracle/app/11.2.0/grid/cdata/ZFTPCDB-crs/backup_20160701_152358.ocr
```

```
-- trace dump on error exit --
Error [kgfoA106] in [kgfokge] at kgfo.c:1529
ORA-29701: unable to connect to Cluster Synchronization Service
```

```
Category: 7
DepInfo: 29701
ADR is not properly configured
-- trace dump end --
-- trace dump on error exit --
Error [kgfoA106] in [kgfokge] at kgfo.c:1255
ORA-29701: unable to connect to Cluster Synchronization Service
```

```
Category: 7
DepInfo: 29701
ADR is not properly configured
-- trace dump end --
-- trace dump on error exit --
Error [kgfoA106] in [kgfokge] at kgfo.c:2063
ORA-29701: unable to connect to Cluster Synchronization Service
```

```
Category: 7
DepInfo: 29701
ADR is not properly configured
-- trace dump end --
```

PROT-35: The configured Oracle Cluster Registry locations are not accessible

```
[ZFTPCDB1:root]:/>crsctl start crs -excl
CRS-4123: Oracle High Availability Services has been started.
CRS-2672: Attempting to start 'ora.mdnsd' on 'zftpcdb1'
CRS-2676: Start of 'ora.mdnsd' on 'zftpcdb1' succeeded
CRS-2672: Attempting to start 'ora.gpnpd' on 'zftpcdb1'
CRS-2676: Start of 'ora.gpnpd' on 'zftpcdb1' succeeded
CRS-2672: Attempting to start 'ora.cssdmonitor' on 'zftpcdb1'
CRS-2672: Attempting to start 'ora.gipcd' on 'zftpcdb1'
CRS-2676: Start of 'ora.cssdmonitor' on 'zftpcdb1' succeeded
CRS-2676: Start of 'ora.gipcd' on 'zftpcdb1' succeeded
CRS-2672: Attempting to start 'ora.cssd' on 'zftpcdb1'
CRS-2672: Attempting to start 'ora.diskmon' on 'zftpcdb1'
CRS-2676: Start of 'ora.diskmon' on 'zftpcdb1' succeeded
CRS-2676: Start of 'ora.cssd' on 'zftpcdb1' succeeded
CRS-2672: Attempting to start 'ora.ctssd' on 'zftpcdb1'
CRS-2672: Attempting to start 'ora.drivers.acfs' on 'zftpcdb1'
CRS-2679: Attempting to clean 'ora.cluster_interconnect.haip' on 'zftpcdb1'
CRS-2681: Clean of 'ora.cluster_interconnect.haip' on 'zftpcdb1' succeeded
CRS-2672: Attempting to start 'ora.cluster_interconnect.haip' on 'zftpcdb1'
CRS-2676: Start of 'ora.ctssd' on 'zftpcdb1' succeeded
CRS-2676: Start of 'ora.drivers.acfs' on 'zftpcdb1' succeeded
CRS-2676: Start of 'ora.cluster_interconnect.haip' on 'zftpcdb1' succeeded
CRS-2672: Attempting to start 'ora.asm' on 'zftpcdb1'
CRS-2674: Start of 'ora.asm' on 'zftpcdb1' failed
CRS-2673: Attempting to stop 'ora.cluster_interconnect.haip' on 'zftpcdb1'
CRS-2677: Stop of 'ora.cluster_interconnect.haip' on 'zftpcdb1' succeeded
CRS-2673: Attempting to stop 'ora.drivers.acfs' on 'zftpcdb1'
tempting to stop 'ora.drivers.acfs' on 'zftpcdb1'
CRS-2677: Stop of 'ora.drivers.acfs' on 'zftpcdb1' succeeded
CRS-2673: Attempting to stop 'ora.ctssd' on 'zftpcdb1'
CRS-2677: Stop of 'ora.ctssd' on 'zftpcdb1' succeeded
CRS-4000: Command Start failed, or completed with errors.
[ZFTPCDB1:root]:/>
```

```
[ZFTPCCDB1:root]:/>crsctl stat res -t -init
```

NAME	TARGET	STATE	SERVER	STATE_DETAILS
Cluster Resources				
ora.asm				
1	ONLINE	ONLINE	zftpccdb1	Started
ora.cluster_interconnect.haip				
1	ONLINE	ONLINE	zftpccdb1	
ora.crf				
1	OFFLINE	OFFLINE		
ora.crsd				
1	ONLINE	INTERMEDIATE	zftpccdb1	EXCLUSIVE
ora.cssd				
1	ONLINE	ONLINE	zftpccdb1	
ora.cssdmonitor				
1	ONLINE	ONLINE	zftpccdb1	
ora.ctssd				
1	ONLINE	ONLINE	zftpccdb1	OBSERVER
ora.diskmon				
1	OFFLINE	OFFLINE		
ora.drivers.acfs				
1	ONLINE	ONLINE	zftpccdb1	
ora.evmd				
1	OFFLINE	OFFLINE		
ora.gipcd				
1	ONLINE	ONLINE	zftpccdb1	
ora.gnpd				
1	ONLINE	ONLINE	zftpccdb1	
ora.mdnsd				
1	ONLINE	ONLINE	zftpccdb1	

```
[ZFTPCCDB1:root]:/>ocrconfig -restore
```

```
/oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/backup_20160701_152358.ocr
```

```
PROT-19: Cannot proceed while the Cluster Ready Service is running
```

```
[ZFTPCCDB1:root]:/>crsctl stop resource ora.crsd -init
```

```
CRS-2673: Attempting to stop 'ora.crsd' on 'zftpccdb1'
```

```
CRS-2677: Stop of 'ora.crsd' on 'zftpccdb1' succeeded
```

```
[ZFTPCCDB1:root]:/>ocrconfig -restore
```

```
/oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/backup_20160701_152358.ocr
```

```
[ZFTPCCDB1:root]:/>
```

```
[ZFTPCCDB1:root]:/>crsctl stop has -f
```

```
CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources on 'zftpccdb1'
```

```
CRS-2673: Attempting to stop 'ora.mdnsd' on 'zftpccdb1'
```

```
CRS-2673: Attempting to stop 'ora.drivers.acfs' on 'zftpccdb1'
```

```
CRS-2677: Stop of 'ora.mdnsd' on 'zftpccdb1' succeeded
```

```
CRS-2677: Stop of 'ora.drivers.acfs' on 'zftpccdb1' succeeded
```

```
CRS-2673: Attempting to stop 'ora.ctssd' on 'zftpccdb1'
```

```
CRS-2673: Attempting to stop 'ora.cluster_interconnect.haip' on 'zftpccdb1'
```

```
CRS-2677: Stop of 'ora.cluster_interconnect.haip' on 'zftpccdb1' succeeded
```

```
CRS-2677: Stop of 'ora.ctssd' on 'zftpccdb1' succeeded
```

```
CRS-2673: Attempting to stop 'ora.cssd' on 'zftpccdb1'
```

```
CRS-2677: Stop of 'ora.cssd' on 'zftpccdb1' succeeded
```

```
CRS-2673: Attempting to stop 'ora.gipcd' on 'zftpccdb1'
```

```
CRS-2677: Stop of 'ora.gipcd' on 'zftpccdb1' succeeded
```

```
CRS-2673: Attempting to stop 'ora.gnpd' on 'zftpccdb1'
```

```
CRS-2677: Stop of 'ora.gnpd' on 'zftpccdb1' succeeded
```

```
CRS-2793: Shutdown of Oracle High Availability Services-managed resources on 'zftpccdb1' has completed
```

```
CRS-4133: Oracle High Availability Services has been stopped.
```

```
[ZFTPCCDB1:root]:/>crsctl start has
```

```
CRS-4123: Oracle High Availability Services has been started.
```

```
[ZFTPCCDB1:root]:/>crsctl stat res -t
```

NAME	TARGET	STATE	SERVER	STATE_DETAILS
------	--------	-------	--------	---------------

Local Resources					

ora.DATA1.dg	ONLINE	ONLINE	zftpccdb1		
	ONLINE	ONLINE	zftpccdb2		
ora.LISTENER.lsnr	ONLINE	ONLINE	zftpccdb1		
	ONLINE	ONLINE	zftpccdb2		
ora.asm	ONLINE	ONLINE	zftpccdb1	Started	
	ONLINE	ONLINE	zftpccdb2	Started	
ora.gsd	OFFLINE	OFFLINE	zftpccdb1		
	OFFLINE	OFFLINE	zftpccdb2		
ora.net1.network	ONLINE	ONLINE	zftpccdb1		
	ONLINE	ONLINE	zftpccdb2		
ora.ons	ONLINE	ONLINE	zftpccdb1		
	ONLINE	ONLINE	zftpccdb2		
ora.registry.acfs	ONLINE	ONLINE	zftpccdb1		
	ONLINE	ONLINE	zftpccdb2		

Cluster Resources					

ora.LISTENER_SCAN1.lsnr					
1	ONLINE	ONLINE	zftpccdb2		
ora.cvu					
1	ONLINE	ONLINE	zftpccdb2		
ora.oc4j					
1	ONLINE	ONLINE	zftpccdb2		
ora.oralhr.db					
1	ONLINE	ONLINE	zftpccdb1	Open	
2	ONLINE	ONLINE	zftpccdb2	Open	
ora.scan1.vip					
1	ONLINE	ONLINE	zftpccdb2		
ora.zftpccdb1.vip					
1	ONLINE	ONLINE	zftpccdb1		
ora.zftpccdb2.vip					
1	ONLINE	ONLINE	zftpccdb2		
[ZFTPCCDB1:root]:/>					

成功恢复。

2.3.4 实验四：逻辑备份与恢复(手动备份)

```
ocrconfig -export /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/export_asm_lhr.bak
ocrconfig -import /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/export_asm_lhr.bak
crsctl stop crs
crsctl start crs -excl -nocrs
ocrconfig -import /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/export_asm_lhr.bak
crsctl start crs
```

```

[ZFTPCCDB1:root]:/>ocrconfig -export /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/export_asm_lhr.bak
[ZFTPCCDB1:root]:/>ocrconfig -import /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/export_asm_lhr.bak
PROT-19: Cannot proceed while the Cluster Ready Service is running
[ZFTPCCDB1:root]:/>crsctl stop crs
CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources on 'zftpccdb1'
CRS-2673: Attempting to stop 'ora.crsd' on 'zftpccdb1'
CRS-2790: Starting shutdown of Cluster Ready Services-managed resources on 'zftpccdb1'
CRS-2673: Attempting to stop 'ora.LISTENER.lsnr' on 'zftpccdb1'
CRS-2673: Attempting to stop 'ora.registry.acfs' on 'zftpccdb1'
CRS-2673: Attempting to stop 'ora.oralhr.db' on 'zftpccdb1'
CRS-2677: Stop of 'ora.LISTENER.lsnr' on 'zftpccdb1' succeeded
CRS-2673: Attempting to stop 'ora.zftpccdb1.vip' on 'zftpccdb1'
CRS-2677: Stop of 'ora.zftpccdb1.vip' on 'zftpccdb1' succeeded
CRS-2672: Attempting to start 'ora.zftpccdb1.vip' on 'zftpccdb2'
CRS-2677: Stop of 'ora.oralhr.db' on 'zftpccdb1' succeeded
CRS-2673: Attempting to stop 'ora.DATA1.dg' on 'zftpccdb1'
CRS-2676: Start of 'ora.zftpccdb1.vip' on 'zftpccdb2' succeeded
CRS-2677: Stop of 'ora.registry.acfs' on 'zftpccdb1' succeeded
CRS-2677: Stop of 'ora.DATA1.dg' on 'zftpccdb1' succeeded
CRS-2673: Attempting to stop 'ora.asm' on 'zftpccdb1'
CRS-2677: Stop of 'ora.asm' on 'zftpccdb1' succeeded
CRS-2673: Attempting to stop 'ora.ons' on 'zftpccdb1'
CRS-2677: Stop of 'ora.ons' on 'zftpccdb1' succeeded
CRS-2673: Attempting to stop 'ora.net1.network' on 'zftpccdb1'
CRS-2677: Stop of 'ora.net1.network' on 'zftpccdb1' succeeded
CRS-2792: Shutdown of Cluster Ready Services-managed resources on 'zftpccdb1' has completed
CRS-2677: Stop of 'ora.crsd' on 'zftpccdb1' succeeded
CRS-2673: Attempting to stop 'ora.mnpsd' on 'zftpccdb1'
CRS-2673: Attempting to stop 'ora.crf' on 'zftpccdb1'
CRS-2673: Attempting to stop 'ora.ctssd' on 'zftpccdb1'
CRS-2673: Attempting to stop 'ora.evmd' on 'zftpccdb1'
CRS-2673: Attempting to stop 'ora.asm' on 'zftpccdb1'
CRS-2673: Attempting to stop 'ora.drivers.acfs' on 'zftpccdb1'
CRS-2677: Stop of 'ora.mnpsd' on 'zftpccdb1' succeeded
CRS-2677: Stop of 'ora.evmd' on 'zftpccdb1' succeeded
CRS-2677: Stop of 'ora.crf' on 'zftpccdb1' succeeded
CRS-2677: Stop of 'ora.asm' on 'zftpccdb1' succeeded
CRS-2673: Attempting to stop 'ora.cluster_interconnect.haip' on 'zftpccdb1'
CRS-2677: Stop of 'ora.ctssd' on 'zftpccdb1' succeeded
CRS-2677: Stop of 'ora.cluster_interconnect.haip' on 'zftpccdb1' succeeded
CRS-2673: Attempting to stop 'ora.cssd' on 'zftpccdb1'
CRS-2677: Stop of 'ora.cssd' on 'zftpccdb1' succeeded
CRS-2673: Attempting to stop 'ora.gipcd' on 'zftpccdb1'
CRS-2677: Stop of 'ora.gipcd' on 'zftpccdb1' succeeded
CRS-2673: Attempting to stop 'ora.gnpdp' on 'zftpccdb1'
CRS-2677: Stop of 'ora.drivers.acfs' on 'zftpccdb1' succeeded
CRS-2677: Stop of 'ora.gnpdp' on 'zftpccdb1' succeeded
CRS-2793: Shutdown of Oracle High Availability Services-managed resources on 'zftpccdb1' has completed
CRS-4133: Oracle High Availability Services has been stopped.
[ZFTPCCDB1:root]:/>
[ZFTPCCDB1:root]:/>ocrconfig -import /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/export_asm_lhr.bak
-- trace dump on error exit --
Error [kgfoA106] in [kgfokge] at kgfo.c:1529
ORA-15077: could not locate ASM instance serving a required diskgroup

Category: 7
DepInfo: 15077
ADR is not properly configured
-- trace dump end --
-- trace dump on error exit --
Error [kgfoA106] in [kgfokge] at kgfo.c:1255
ORA-15077: could not locate ASM instance serving a required diskgroup

Category: 7
DepInfo: 15077
ADR is not properly configured
-- trace dump end --
-- trace dump on error exit --
Error [kgfoA106] in [kgfokge] at kgfo.c:2063

```


ORA-15077: could not locate ASM instance serving a required diskgroup

Category: 7

DepInfo: 15077

ADR is not properly configured

-- trace dump end --

PROT-1: Failed to initialize ocrconfig

PROC-26: Error while accessing the physical storage

ORA-15077: could not locate ASM instance serving a required diskgroup

[ZFTPCDB1:root]:/>

[ZFTPCDB1:root]:/>**crsctl start crs -excl -nocrs**

CRS-4123: Oracle High Availability Services has been started.

CRS-2672: Attempting to start 'ora.mdnsd' on 'zftpccdb1'

CRS-2676: Start of 'ora.mdnsd' on 'zftpccdb1' succeeded

CRS-2672: Attempting to start 'ora.gpnpd' on 'zftpccdb1'

CRS-2676: Start of 'ora.gpnpd' on 'zftpccdb1' succeeded

CRS-2672: Attempting to start 'ora.cssdmonitor' on 'zftpccdb1'

CRS-2672: Attempting to start 'ora.gipcd' on 'zftpccdb1'

CRS-2676: Start of 'ora.cssdmonitor' on 'zftpccdb1' succeeded

CRS-2676: Start of 'ora.gipcd' on 'zftpccdb1' succeeded

CRS-2672: Attempting to start 'ora.cssd' on 'zftpccdb1'

CRS-2672: Attempting to start 'ora.diskmon' on 'zftpccdb1'

CRS-2676: Start of 'ora.diskmon' on 'zftpccdb1' succeeded

CRS-2676: Start of 'ora.cssd' on 'zftpccdb1' succeeded

CRS-2672: Attempting to start 'ora.drivers.acfs' on 'zftpccdb1'

CRS-2679: Attempting to clean 'ora.cluster_interconnect.haip' on 'zftpccdb1'

CRS-2672: Attempting to start 'ora.ctssd' on 'zftpccdb1'

CRS-2681: Clean of 'ora.cluster_interconnect.haip' on 'zftpccdb1' succeeded

CRS-2672: Attempting to start 'ora.cluster_interconnect.haip' on 'zftpccdb1'

CRS-2676: Start of 'ora.ctssd' on 'zftpccdb1' succeeded

CRS-2676: Start of 'ora.drivers.acfs' on 'zftpccdb1' succeeded

CRS-2676: Start of 'ora.cluster_interconnect.haip' on 'zftpccdb1' succeeded

CRS-2672: Attempting to start 'ora.asm' on 'zftpccdb1'

CRS-2676: Start of 'ora.asm' on 'zftpccdb1' succeeded

[ZFTPCDB1:root]:/>**ocrconfig -import /oracle/app/11.2.0/grid/cdata/ZFTPCDB-crs/export_asm_1hr.bak**

[ZFTPCDB1:root]:/>**crsctl stop has -f**

CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources on 'zftpccdb1'

CRS-2673: Attempting to stop 'ora.mdnsd' on 'zftpccdb1'

CRS-2673: Attempting to stop 'ora.ctssd' on 'zftpccdb1'

CRS-2673: Attempting to stop 'ora.asm' on 'zftpccdb1'

CRS-2673: Attempting to stop 'ora.drivers.acfs' on 'zftpccdb1'

CRS-2677: Stop of 'ora.mdnsd' on 'zftpccdb1' succeeded

CRS-2677: Stop of 'ora.asm' on 'zftpccdb1' succeeded

CRS-2673: Attempting to stop 'ora.cluster_interconnect.haip' on 'zftpccdb1'

CRS-2677: Stop of 'ora.cluster_interconnect.haip' on 'zftpccdb1' succeeded

CRS-2677: Stop of 'ora.ctssd' on 'zftpccdb1' succeeded

CRS-2673: Attempting to stop 'ora.cssd' on 'zftpccdb1'

CRS-2677: Stop of 'ora.drivers.acfs' on 'zftpccdb1' succeeded

CRS-2677: Stop of 'ora.cssd' on 'zftpccdb1' succeeded

CRS-2673: Attempting to stop 'ora.gipcd' on 'zftpccdb1'

CRS-2677: Stop of 'ora.gipcd' on 'zftpccdb1' succeeded

CRS-2673: Attempting to stop 'ora.gpnpd' on 'zftpccdb1'

CRS-2677: Stop of 'ora.gpnpd' on 'zftpccdb1' succeeded

CRS-2793: Shutdown of Oracle High Availability Services-managed resources on 'zftpccdb1' has completed

CRS-4133: Oracle High Availability Services has been stopped.

[ZFTPCDB1:root]:/>**crsctl start has**

CRS-4123: Oracle High Availability Services has been started.

[ZFTPCDB1:root]:/>

[ZFTPCDB1:root]:/>**crsctl stat res -t**

NAME	TARGET	STATE	SERVER	STATE_DETAILS
------	--------	-------	--------	---------------

Local Resources

ora.DATA1.dg

ONLINE	ONLINE	zftpccdb1
--------	--------	-----------

ONLINE	ONLINE	zftpccdb2
--------	--------	-----------

ora.LISTENER.lsnr

ONLINE	ONLINE	zftpccdb1
--------	--------	-----------

	ONLINE	ONLINE	zftpccdb2	
ora.asm	ONLINE	ONLINE	zftpccdb1	Started
	ONLINE	ONLINE	zftpccdb2	Started
ora.gsd	OFFLINE	OFFLINE	zftpccdb1	
	OFFLINE	OFFLINE	zftpccdb2	
ora.net1.network	ONLINE	ONLINE	zftpccdb1	
	ONLINE	ONLINE	zftpccdb2	
ora.ons	ONLINE	ONLINE	zftpccdb1	
	ONLINE	ONLINE	zftpccdb2	
ora.registry.acfs	ONLINE	ONLINE	zftpccdb1	
	ONLINE	ONLINE	zftpccdb2	
Cluster Resources				
ora.LISTENER_SCAN1.lsnr				
1	ONLINE	ONLINE	zftpccdb2	
ora.cvu				
1	ONLINE	ONLINE	zftpccdb1	
ora.oc4j				
1	ONLINE	ONLINE	zftpccdb1	
ora.oralhr.db				
1	ONLINE	ONLINE	zftpccdb1	Open
2	ONLINE	ONLINE	zftpccdb2	Open
ora.scan1.vip				
1	ONLINE	ONLINE	zftpccdb2	
ora.zftpccdb1.vip				
1	ONLINE	ONLINE	zftpccdb1	
ora.zftpccdb2.vip				
1	ONLINE	ONLINE	zftpccdb2	
[ZFTPCCDB1:root]:/>				

成功恢复。

2.3.5 实验五：删除\$ORACLE_HOME/log 下的文件夹后的修复

在这个实验中,我们删除 grid 用户下的日志文件 :\$ORACLE_HOME/log ,文件夹内容被删除导致集群不能启动。

[zfzhlhrdb1:root]:/>crsctl stat res -t				
NAME	TARGET	STATE	SERVER	STATE_DETAILS
Local Resources				
ora.DATA.dg	ONLINE	ONLINE	zfzhlhrdb1	
	ONLINE	ONLINE	zfzhlhrdb2	
ora.asm	ONLINE	ONLINE	zfzhlhrdb1	Started
	ONLINE	ONLINE	zfzhlhrdb2	Started
ora.gsd	OFFLINE	OFFLINE	zfzhlhrdb1	
	OFFLINE	OFFLINE	zfzhlhrdb2	
ora.net1.network	ONLINE	ONLINE	zfzhlhrdb1	
	ONLINE	ONLINE	zfzhlhrdb2	
ora.ons	ONLINE	ONLINE	zfzhlhrdb1	
	ONLINE	ONLINE	zfzhlhrdb2	

```
ora.registry.acfs
```

```

      ONLINE  OFFLINE      zfzhlhrdb1
      ONLINE  ONLINE      zfzhlhrdb2

```

Cluster Resources

```
ora.LISTENER_SCAN1.lsnr
```

```
1      ONLINE  ONLINE      zfzhlhrdb1
```

```
ora.cvu
```

```
1      ONLINE  ONLINE      zfzhlhrdb1
```

```
ora.oc4j
```

```
1      ONLINE  ONLINE      zfzhlhrdb1
```

```
ora.oraesdb.db
```

```
1      ONLINE  ONLINE      zfzhlhrdb1      Open
```

```
2      ONLINE  ONLINE      zfzhlhrdb2      Open
```

```
ora.oraeskd.db
```

```
1      ONLINE  ONLINE      zfzhlhrdb1      Open
```

```
2      ONLINE  ONLINE      zfzhlhrdb2      Open
```

```
ora.scan1.vip
```

```
1      ONLINE  ONLINE      zfzhlhrdb1
```

```
ora.zfzhlhrdb1.vip
```

```
1      ONLINE  ONLINE      zfzhlhrdb1
```

```
ora.zfzhlhrdb2.vip
```

```
1      ONLINE  ONLINE      zfzhlhrdb2
```

```
[zfzhlhrdb1:root]:/>cd $ORACLE_HOME/log
```

```
[zfzhlhrdb1:root]:/oracle/app/11.2.0/grid/log>l
```

```
total 32
```

```

drwxr-xr-x  2 grid  dba          256 Nov 05 2014  crs
drwxrwx--T  6 grid  asmadmin    256 Nov 06 2014  diag
drwxr-xr-t 25 root  dba          4096 Nov 19 2014  yjyltest2
drwxr-xr-t 25 root  dba          4096 Jul 15 2015  zfmcisudb5
drwxr-xr-t 25 root  dba          4096 Jul 01 10:51  zfzhlhrdb1
drwxr-xr-t 25 root  dba          4096 Nov 05 2014  ztlnuwb1

```

```
[zfzhlhrdb1:root]:/oracle/app/11.2.0/grid/log>cd ..
```

```
[zfzhlhrdb1:root]:/oracle/app/11.2.0/grid>mv log log_bk
```

```
[zfzhlhrdb1:root]:/oracle/app/11.2.0/grid>crsctl stop has
```

```
CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources on 'zfzhlhrdb1'
```

```
CRS-2673: Attempting to stop 'ora.crsd' on 'zfzhlhrdb1'
```

```
CRS-2790: Starting shutdown of Cluster Ready Services-managed resources on 'zfzhlhrdb1'
```

```
CRS-2673: Attempting to stop 'ora.LISTENER_SCAN1.lsnr' on 'zfzhlhrdb1'
```

```
CRS-2673: Attempting to stop 'ora.zfzhlhrdb1.vip' on 'zfzhlhrdb1'
```

```
CRS-2673: Attempting to stop 'ora.oc4j' on 'zfzhlhrdb1'
```

```
CRS-2673: Attempting to stop 'ora.cvu' on 'zfzhlhrdb1'
```

```
CRS-2673: Attempting to stop 'ora.oraesdb.db' on 'zfzhlhrdb1'
```

```
CRS-2673: Attempting to stop 'ora.oraeskd.db' on 'zfzhlhrdb1'
```

```
CRS-2677: Stop of 'ora.cvu' on 'zfzhlhrdb1' succeeded
```

```
CRS-2672: Attempting to start 'ora.cvu' on 'zfzhlhrdb2'
```

```
CRS-2676: Start of 'ora.cvu' on 'zfzhlhrdb2' succeeded
```

```
CRS-2677: Stop of 'ora.zfzhlhrdb1.vip' on 'zfzhlhrdb1' succeeded
```

```
CRS-2672: Attempting to start 'ora.zfzhlhrdb1.vip' on 'zfzhlhrdb2'
```

```
CRS-2677: Stop of 'ora.LISTENER_SCAN1.lsnr' on 'zfzhlhrdb1' succeeded
```

```
CRS-2673: Attempting to stop 'ora.scan1.vip' on 'zfzhlhrdb1'
```

```
CRS-2677: Stop of 'ora.scan1.vip' on 'zfzhlhrdb1' succeeded
```

```
CRS-2672: Attempting to start 'ora.scan1.vip' on 'zfzhlhrdb2'
```

```
CRS-2677: Stop of 'ora.oraeskd.db' on 'zfzhlhrdb1' succeeded
```

```
CRS-2676: Start of 'ora.zfzhlhrdb1.vip' on 'zfzhlhrdb2' succeeded
```

```
CRS-2676: Start of 'ora.scan1.vip' on 'zfzhlhrdb2' succeeded
```

```
CRS-2672: Attempting to start 'ora.LISTENER_SCAN1.lsnr' on 'zfzhlhrdb2'
```

```
CRS-2677: Stop of 'ora.oraesdb.db' on 'zfzhlhrdb1' succeeded
```

```
CRS-2673: Attempting to stop 'ora.DATA.dg' on 'zfzhlhrdb1'
```

```
CRS-2676: Start of 'ora.LISTENER_SCAN1.lsnr' on 'zfzhlhrdb2' succeeded
```

```
CRS-2677: Stop of 'ora.oc4j' on 'zfzhlhrdb1' succeeded
```

```
CRS-2672: Attempting to start 'ora.oc4j' on 'zfzhlhrdb2'
```

```
CRS-2677: Stop of 'ora.DATA.dg' on 'zfzhlhrdb1' succeeded
```

```
CRS-2673: Attempting to stop 'ora.asm' on 'zfzhlhrdb1'
```

```
CRS-2677: Stop of 'ora.asm' on 'zfzhlhrdb1' succeeded
```

```
CRS-2676: Start of 'ora.oc4j' on 'zfzhlhrdb2' succeeded
```

```
CRS-2673: Attempting to stop 'ora.ons' on 'zfzhlhrdb1'
```

```
CRS-2677: Stop of 'ora.ons' on 'zfzhlhrdb1' succeeded
```

```
CRS-2673: Attempting to stop 'ora.net1.network' on 'zfzhlhrdb1'
```

```

CRS-2677: Stop of 'ora.net1.network' on 'zfzhlhrdb1' succeeded
CRS-2792: Shutdown of Cluster Ready Services-managed resources on 'zfzhlhrdb1' has completed
CRS-2677: Stop of 'ora.crsd' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.mdnsd' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.crf' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.ctssd' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.evmd' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.asm' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.drivers.acfs' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.mdnsd' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.evmd' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.ctssd' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.crf' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.asm' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.cluster_interconnect.haip' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.cluster_interconnect.haip' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.cssd' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.cssd' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.gipcd' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.drivers.acfs' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.gipcd' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.gpnpd' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.gpnpd' on 'zfzhlhrdb1' succeeded
CRS-2793: Shutdown of Oracle High Availability Services-managed resources on 'zfzhlhrdb1' has completed
CRS-4133: Oracle High Availability Services has been stopped.
[zfzhlhrdb1:root]:/oracle/app/11.2.0/grid>crsctl start has

```

《《《《. 这里没有任何输出，我多次回车，只能 ctrl+c 退出。 》》》》》

```

[zfzhlhrdb1:root]:/oracle/app/11.2.0/grid>ls log
total 0
drwxr-xr-x  4 root    system      256 Jul 01 17:35 zfzhlhrdb1
[zfzhlhrdb1:root]:/oracle/app/11.2.0/grid>

```

可以看到 log 文件夹自动创建，但是集群不能启动，log 文件下的其他文件夹也不能自动创建，下边我们根据前边的理论知识来恢复由于权限问题导致的集群不能启动的问题，由于我们的环境是 11.2.0.4，修复起来比较容易，

执行脚本 \$GRID_HOME/crs/install/rootcrs.pl -init。

---执行速度很快。。。

```

[zfzhlhrdb1:root]:/oracle/app/11.2.0/grid>$ORACLE_HOME/crs/install/rootcrs.pl -init
Using configuration parameter file: /oracle/app/11.2.0/grid/crs/install/crsconfig_params
[zfzhlhrdb1:root]:/oracle/app/11.2.0/grid>
[zfzhlhrdb1:root]:/oracle/app/11.2.0/grid>ls log
total 8
drwxrwx--T  3 grid    asmadmin    256 Jul 01 17:40 diag
drwxr-xr-t  24 root    dba          4096 Jul 01 17:40 zfzhlhrdb1
[zfzhlhrdb1:root]:/oracle/app/11.2.0/grid>
[zfzhlhrdb1:root]:/oracle/app/11.2.0/grid>crsctl start has
CRS-4123: Oracle High Availability Services has been started.
[zfzhlhrdb1:root]:/oracle/app/11.2.0/grid>

```

可以看到 crs 可以启动了，等待一会可以看到资源全部启动：

```

[zfzhlhrdb1:root]:/oracle/app/11.2.0/grid>crsctl stat res -t
-----
NAME                TARGET  STATE        SERVER                     STATE_DETAILS
-----
Local Resources

```

```

-----
ora.DATA.dg
      ONLINE  ONLINE      zfzhlhrdb1
      ONLINE  ONLINE      zfzhlhrdb2
ora.asm
      ONLINE  ONLINE      zfzhlhrdb1      Started
      ONLINE  ONLINE      zfzhlhrdb2      Started
ora.gsd
      OFFLINE OFFLINE      zfzhlhrdb1
      OFFLINE OFFLINE      zfzhlhrdb2
ora.net1.network
      ONLINE  ONLINE      zfzhlhrdb1
      ONLINE  ONLINE      zfzhlhrdb2
ora.ons
      ONLINE  ONLINE      zfzhlhrdb1
      ONLINE  ONLINE      zfzhlhrdb2
ora.registry.acfs
      ONLINE  ONLINE      zfzhlhrdb1
      ONLINE  ONLINE      zfzhlhrdb2
-----

```

Cluster Resources

```

-----
ora.LISTENER_SCAN1.lsnr
  1      ONLINE  ONLINE      zfzhlhrdb2
ora.cvu
  1      ONLINE  ONLINE      zfzhlhrdb2
ora.oc4j
  1      ONLINE  ONLINE      zfzhlhrdb2
ora.oraesdb.db
  1      ONLINE  ONLINE      zfzhlhrdb1      Open
  2      ONLINE  ONLINE      zfzhlhrdb2      Open
ora.oraeskd.db
  1      ONLINE  ONLINE      zfzhlhrdb1      Open
  2      ONLINE  ONLINE      zfzhlhrdb2      Open
ora.scan1.vip
  1      ONLINE  ONLINE      zfzhlhrdb2
ora.zfzhlhrdb1.vip
  1      ONLINE  ONLINE      zfzhlhrdb1
ora.zfzhlhrdb2.vip
  1      ONLINE  ONLINE      zfzhlhrdb2
[zfzhlhrdb1:root]:/oracle/app/11.2.0/grid>

```

集群基本已经恢复，且看实验六。

2.3.6 实验六：permission.pl 脚本的使用

根据实验五的操作，执行命令 `$GRID_HOME/crs/install/rootcrs.pl -init`，只是修复了 `$GRID_HOME`

下的为避免留下后遗症，我们需要将 `rootcrs.pl` 弃之不管的目录与文件的权限、属主也修复一下，怎么修复？

MOS1515018.1 提供了现成的 `perl` 脚本，这个脚本使用方法很简单：从一台权限正常的服务器上抓取 `GRID_HOME`、`ORACLE_HOME` 下的所有文件与目录权限，生成 `shell` 脚本，然后在权限错误的主机上执行这个脚本，简单演示一下：

<1> 先把 `permission.pl` 下载下来复制到一台权限正常的服务器上，并赋予执行权限，这台主机上必须要有

`perl` 的执行环境，我们这里直接在另外一台主机 `rac2` 上生成脚本，抓取 `GRID_HOME` 下的所有目录与文件的属主、

权限，必须使用 `root` 用户执行：

```
[zfzhlhrdb2:root]:/>1 /tmp/permission*
-rw-r----- 1 root system 2326 Jul 01 00:05 /tmp/permission.pl
[zfzhlhrdb2:root]:/>chmod 755 /tmp/permission.pl
[zfzhlhrdb2:root]:/>
[zfzhlhrdb2:root]:/>/tmp/permission.pl $ORACLE_HOME
Following log files are generated
logfile      : permission-Fri-Jul-01-18-16-20-2016
Command file : restore-perm-Fri-Jul-01-18-16-20-2016.cmd
Linecount   : 18126
[zfzhlhrdb2:root]:/>1 *18-16-20-2016*
-rw-r--r-- 1 root system 1457428 Jul 01 18:16 permission-Fri-Jul-01-18-16-20-2016
-rw-r--r-- 1 root system 2928380 Jul 01 18:16 restore-perm-Fri-Jul-01-18-16-20-2016.cmd
[zfzhlhrdb2:root]:/>
```

生成了两个文件，其中 permission*开头的是/oracle/app/oracle/product/11.2.0/db_1 目录及其下

的所有子目录与文件列表，例如：

```
[zfzhlhrdb2:root]:/>more permission-Fri-Jul-01-18-16-20-2016
755 root dba /oracle/app/11.2.0/grid
755 grid dba /oracle/app/11.2.0/grid/JRE
640 grid dba /oracle/app/11.2.0/grid/oraInst.loc
750 grid dba /oracle/app/11.2.0/grid/root.sh
755 grid dba /oracle/app/11.2.0/grid/rootupgrade.sh
750 grid dba /oracle/app/11.2.0/grid/.patch_storage
644 grid dba /oracle/app/11.2.0/grid/.patch_storage/LatestOPatchSession.properties
644 grid dba /oracle/app/11.2.0/grid/.patch_storage/interim_inventory.txt
644 grid dba /oracle/app/11.2.0/grid/.patch_storage/patch_free
644 grid dba /oracle/app/11.2.0/grid/.patch_storage/record_inventory.txt
755 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50
710 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/rollback.sh
755 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files
755 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/bin
755 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/bin/lxinst
755 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib
755 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libclient11.a
664 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libclient11.a/knogcap.o
755 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libgeneric11.a
664 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libgeneric11.a/qcd.o
664 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libgeneric11.a/qcs.o
755 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libpls11.a
664 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libpls11.a/pevmexe.o
755 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libpls11_pic.a
664 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libpls11_pic.a/pevmexe_pic.o
755 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libserver11.a
664 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libserver11.a/kcfis.o
664 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libserver11.a/kf.o
664 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libserver11.a/kfds.o
664 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libserver11.a/kfds.o
664 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libserver11.a/kff.o
664 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libserver11.a/kjb.o
664 grid dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libserver11.a/kjbl.o
《《《(. . . . . 篇幅原因，有省略. . . . . )》》》》
```

restore*开头的包含了执行修改权限修复所需的脚本，例如：

```
[zfzhlhrdb2:root]:/>more restore-perm-Fri-Jul-01-18-16-20-2016.cmd
chown root:dba /oracle/app/11.2.0/grid
chmod 755 /oracle/app/11.2.0/grid
chown grid:dba /oracle/app/11.2.0/grid/JRE
chmod 755 /oracle/app/11.2.0/grid/JRE
chown grid:dba /oracle/app/11.2.0/grid/oraInst.loc
chmod 640 /oracle/app/11.2.0/grid/oraInst.loc
```

```

chown grid:dba /oracle/app/11.2.0/grid/root.sh
chmod 750 /oracle/app/11.2.0/grid/root.sh
chown grid:dba /oracle/app/11.2.0/grid/rootupgrade.sh
chmod 755 /oracle/app/11.2.0/grid/rootupgrade.sh
chown grid:dba /oracle/app/11.2.0/grid/.patch_storage
chmod 750 /oracle/app/11.2.0/grid/.patch_storage
chown grid:dba /oracle/app/11.2.0/grid/.patch_storage/LatestOPatchSession.properties
chmod 644 /oracle/app/11.2.0/grid/.patch_storage/LatestOPatchSession.properties
chown grid:dba /oracle/app/11.2.0/grid/.patch_storage/interim_inventory.txt
chmod 644 /oracle/app/11.2.0/grid/.patch_storage/interim_inventory.txt
chown grid:dba /oracle/app/11.2.0/grid/.patch_storage/patch_free
chmod 644 /oracle/app/11.2.0/grid/.patch_storage/patch_free
chown grid:dba /oracle/app/11.2.0/grid/.patch_storage/record_inventory.txt
chmod 644 /oracle/app/11.2.0/grid/.patch_storage/record_inventory.txt
chown grid:dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50
chmod 755 /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50
chown grid:dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/rollback.sh
chmod 710 /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/rollback.sh
chown grid:dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files
chmod 755 /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files
chown grid:dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/bin
chmod 755 /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/bin
chown grid:dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/bin/lxinst
chmod 755 /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/bin/lxinst
chown grid:dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib
chmod 755 /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib
chown grid:dba /oracle/app/11.2.0/grid/.patch_storage/17478514_Dec_30_2013_03_38_50/files/lib/libclient11.a
《《《《.....篇幅原因，有省略.....》》》》

```

<3> 抓取\$ORACLE_HOME 下所有目录与文件的属主、权限，可以使用 oracle 或者 root 用户

```

[zfzhlhrdb2:root]:/>su - oracle
[zfzhlhrdb2:oracle]:/oracle>echo $ORACLE_HOME
/oracle/app/oracle/product/11.2.0/db
[zfzhlhrdb2:oracle]:/oracle>exit
[zfzhlhrdb2:root]:/>/tmp/permission.pl /oracle/app/oracle/product/11.2.0/db
Following log files are generated
logfile      : permission-Fri-Jul-01-18-21-50-2016
Command file : restore-perm-Fri-Jul-01-18-21-50-2016.cmd
Linecount   : 41627
[zfzhlhrdb2:root]:/>

```

<4> 将生成的 4 个文件 copy 到目标主机上，在目标主机上执行 restore*开头的两个脚本，root 用户执行

```

[zfzhlhrdb1:root]:/permissions>l
total 32600
-rw-r----- 1 root system 1457428 Jul 01 18:16 permission-Fri-Jul-01-18-16-20-2016
-rw-r----- 1 root system 4114174 Jul 01 18:22 permission-Fri-Jul-01-18-21-50-2016
-rw-r----- 1 root system 2928380 Jul 01 18:16 restore-perm-Fri-Jul-01-18-16-20-2016.cmd
-rw-r----- 1 root system 8184311 Jul 01 18:22 restore-perm-Fri-Jul-01-18-21-50-2016.cmd
[zfzhlhrdb1:root]:/permissions>chmod 755 *.cmd
[zfzhlhrdb1:root]:/permissions>l
total 32600
-rw-r----- 1 root system 1457428 Jul 01 18:16 permission-Fri-Jul-01-18-16-20-2016
-rw-r----- 1 root system 4114174 Jul 01 18:22 permission-Fri-Jul-01-18-21-50-2016
-rwxr-xr-x 1 root system 2928380 Jul 01 18:16 restore-perm-Fri-Jul-01-18-16-20-2016.cmd
-rwxr-xr-x 1 root system 8184311 Jul 01 18:22 restore-perm-Fri-Jul-01-18-21-50-2016.cmd
[zfzhlhrdb1:root]:/permissions>./restore-perm-Fri-Jul-01-18-16-20-2016.cmd
chown: /oracle/app/11.2.0/grid/auth/crs/zfzhlhrdb2: A file or directory in the path name does not exist.
chmod: /oracle/app/11.2.0/grid/auth/crs/zfzhlhrdb2: A file or directory in the path name does not exist.
chown: /oracle/app/11.2.0/grid/auth/css/zfzhlhrdb2: A file or directory in the path name does not exist.
chmod: /oracle/app/11.2.0/grid/auth/css/zfzhlhrdb2: A file or directory in the path name does not exist.
chown: /oracle/app/11.2.0/grid/auth/evm/zfzhlhrdb2: A file or directory in the path name does not exist.
.....
[zfzhlhrdb1:root]:/permissions>./restore-perm-Fri-Jul-01-18-21-50-2016.cmd

```



```
chown: /oracle/app/oracle/product/11.2.0/db/CCR/state/ORADEDDB-RAC.ccr: A file or directory in the path name does not exist.
chmod: /oracle/app/oracle/product/11.2.0/db/CCR/state/ORADEDDB-RAC.ccr: A file or directory in the path name does not exist.
chown: /oracle/app/oracle/product/11.2.0/db/CCR/state/ORADEDDB-RAC.11: A file or directory in the path name does not exist.
chmod: /oracle/app/oracle/product/11.2.0/db/CCR/state/ORADEDDB-RAC.11: A file or directory in the path name does not exist.
chown: /oracle/app/oracle/product/11.2.0/db/CCR/state/ORADEDDB-RAC.11-stat: A file or directory in the path name does not exist.
chmod: /oracle/app/oracle/product/11.2.0/db/CCR/state/ORADEDDB-RAC.11-stat: A file or directory in the path name does not exist.
chown: /oracle/app/oracle/product/11.2.0/db/cfgtoollogs/opatch/opatch2016-07-01_12-50-49PM_1.log: A file or directory in the path name does not exist.
chmod: /oracle/app/oracle/product/11.2.0/db/cfgtoollogs/opatch/opatch2016-07-01_12-50-49PM_1.log: A file or directory in the path name does not exist.
chown: /oracle/app/oracle/product/11.2.0/db/dbs/hc_oraESDB2.dat: A file or directory in the path name does not exist.

. . . . .
```

启动和关闭集群试试：

```
[zfzhlhrdb1:root]:/>crsctl stop has
CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.crsd' on 'zfzhlhrdb1'
CRS-2790: Starting shutdown of Cluster Ready Services-managed resources on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.LISTENER_LHRDG.lsnr' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.oraesdb.db' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.registry.acfs' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.oraeskd.db' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.LISTENER_LHRDG.lsnr' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.zfzhlhrdb1.vip' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.oraesdb.db' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.zfzhlhrdb1.vip' on 'zfzhlhrdb1' succeeded
CRS-2672: Attempting to start 'ora.zfzhlhrdb1.vip' on 'zfzhlhrdb2'
CRS-2677: Stop of 'ora.registry.acfs' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.oraeskd.db' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.DATA.dg' on 'zfzhlhrdb1'
CRS-2676: Start of 'ora.zfzhlhrdb1.vip' on 'zfzhlhrdb2' succeeded
CRS-2677: Stop of 'ora.DATA.dg' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.asm' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.asm' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.ons' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.ons' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.net1.network' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.net1.network' on 'zfzhlhrdb1' succeeded
CRS-2792: Shutdown of Cluster Ready Services-managed resources on 'zfzhlhrdb1' has completed
CRS-2677: Stop of 'ora.crsd' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.mdnsc' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.crf' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.ctssd' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.evmd' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.asm' on 'zfzhlhrdb1'
CRS-2673: Attempting to stop 'ora.drivers.acfs' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.mdnsc' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.evmd' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.crf' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.ctssd' on 'zfzhlhrdb1' succeeded
crsctl start has
CRS-2677: Stop of 'ora.asm' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.cluster_interconnect.haip' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.cluster_interconnect.haip' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.cssd' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.cssd' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.gipcd' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.gipcd' on 'zfzhlhrdb1' succeeded
CRS-2673: Attempting to stop 'ora.gpnpc' on 'zfzhlhrdb1'
CRS-2677: Stop of 'ora.gpnpc' on 'zfzhlhrdb1' succeeded
CRS-2677: Stop of 'ora.drivers.acfs' on 'zfzhlhrdb1' succeeded
CRS-2793: Shutdown of Oracle High Availability Services-managed resources on 'zfzhlhrdb1' has completed
CRS-4133: Oracle High Availability Services has been stopped.
[zfzhlhrdb1:root]:/>crsctl start has
```



```
CRS-4123: Oracle High Availability Services has been started.
[zfzhlhrdb1:root]:/>crsctl stat res -t
```

NAME	TARGET	STATE	SERVER	STATE_DETAILS
Local Resources				
ora.DATA.dg	ONLINE	ONLINE	zfzhlhrdb1	
	ONLINE	ONLINE	zfzhlhrdb2	
ora.LISTENER_LHRDG.lsnr	ONLINE	ONLINE	zfzhlhrdb1	
	ONLINE	ONLINE	zfzhlhrdb2	
ora.asm	ONLINE	ONLINE	zfzhlhrdb1	Started
	ONLINE	ONLINE	zfzhlhrdb2	Started
ora.gsd	OFFLINE	OFFLINE	zfzhlhrdb1	
	OFFLINE	OFFLINE	zfzhlhrdb2	
ora.net1.network	ONLINE	ONLINE	zfzhlhrdb1	
	ONLINE	ONLINE	zfzhlhrdb2	
ora.ons	ONLINE	ONLINE	zfzhlhrdb1	
	ONLINE	ONLINE	zfzhlhrdb2	
ora.registry.acfs	ONLINE	ONLINE	zfzhlhrdb1	
	ONLINE	ONLINE	zfzhlhrdb2	
Cluster Resources				
ora.LISTENER_SCAN1.lsnr				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.cvu				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.oc4j				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.oraesdb.db				
1	ONLINE	ONLINE	zfzhlhrdb1	Open
2	ONLINE	ONLINE	zfzhlhrdb2	Open
ora.oraeskdbs.db				
1	ONLINE	ONLINE	zfzhlhrdb1	Open
2	ONLINE	ONLINE	zfzhlhrdb2	Open
ora.scan1.vip				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.zfzhlhrdb1.vip				
1	ONLINE	ONLINE	zfzhlhrdb1	
ora.zfzhlhrdb2.vip				
1	ONLINE	ONLINE	zfzhlhrdb2	

```
[zfzhlhrdb1:root]:/>
```

好，搞定，结束，收尾，回家。

2.4 实验总结

本篇 blog 内容较多，主要包括 OCR 的备份恢复及其 GRID_HOME 目录的权限修复 2 大类问题，实验中的 dd 命

令记得一定要在测试库实验，记得多种备份都要有。

第 3 章 实验中用到的 SQL 总结

```
ocrconfig -export /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/export_asm.bak
dd if=/dev/rhdisk1 of=/oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/asm_rhdisk1_dd.bak bs=1024k count=4
asmcmd md_backup /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/asm_md_backup.bak

ocrconfig -manualbackup
ocrconfig -showbackup

ocrconfig -export /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/export_asm.bak
ocrconfig -import /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/export_asm.bak

dd if=/dev/rhdisk1 of=/oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/asm_rhdisk1_dd.bak bs=1024k count=4
dd if=/oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/asm_rhdisk1_dd.bak of=/dev/rhdisk1 bs=1024k count=4
kfed repair /dev/rhdisk1

asmcmd md_backup /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/asm_md_backup.bak
asmcmd md_restore /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/asm_md_backup.bak

ocrconfig -manualbackup
ocrconfig -showbackup
crsctl query css votedisk
crsctl stop crs -f
crsctl start crs -excl
crsctl stop resource ora.crsd -init
ocrconfig -restore /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/backup_20160701_152358.ocr

cluvfy comp ocr -n all -verbose

ocrconfig -export /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/export_asm_1hr.bak
ocrconfig -import /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/export_asm_1hr.bak

crsctl stop crs
crsctl start crs -excl -nocrs
ocrconfig -import /oracle/app/11.2.0/grid/cdata/ZFTPCCDB-crs/export_asm_1hr.bak
crsctl start crs

$ORACLE_HOME/crs/install/rootcrs.pl -init
```

About Me

本文作者：小麦苗，只专注于数据库的技术，更注重技术的运用

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