

11gR2 RAC OCR 磁盘组的换名重建恢复测试

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一、背景

根据文档 1062983.1 中的步骤恢复 OCR 和 replace voting disk 到新的磁盘组后，发现新磁盘组无法通过 `crsctl stat res -t` 查看。由于 11gR2 不支持 `srvctl add diskgroup` 目录，需要用 `crsctl add res ora.OCR.dg -type ora.diskgroup.type -file ocrdg.txt` 添加。

二、测试目的

删除虚拟机 RAC 的 CRS 物理磁盘后，使用 OCR 备份恢复到新的 OCR 磁盘组，看恢复后 `crsctl stat res -t` 是否可以列出新的 OCR 磁盘组，如果没有列出，手工增加磁盘组。

三、ASM 磁盘配置

```
[root@cluster1 ~]# fdisk -l
```

```
Disk /dev/sda: 24.6 GB, 24603262976 bytes
```

```
255 heads, 63 sectors/track, 2991 cylinders
```

```
Units = cylinders of 16065 * 512 = 8225280 bytes
```

Device	Boot	Start	End	Blocks	Id	System
/dev/sda1	*	1	13	104391	83	Linux
/dev/sda2		14	2991	23920785	8e	Linux LVM

```
Disk /dev/sdb: 1153 MB, 1153433600 bytes
```

```
255 heads, 63 sectors/track, 140 cylinders
```

```
Units = cylinders of 16065 * 512 = 8225280 bytes
```

Device	Boot	Start	End	Blocks	Id	System
/dev/sdb1		1	140	1124518+	83	Linux

```
Disk /dev/sdc: 5368 MB, 5368709120 bytes
```

```
255 heads, 63 sectors/track, 652 cylinders
```

```
Units = cylinders of 16065 * 512 = 8225280 bytes
```

Device	Boot	Start	End	Blocks	Id	System
/dev/sdc1		1	652	5237158+	83	Linux

```
Disk /dev/sdd: 5368 MB, 5368709120 bytes
```

```

255 heads, 63 sectors/track, 652 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
  Device Boot      Start         End      Blocks   Id  System
/dev/sdd1          1           652       5237158+   83   Linux
Disk /dev/sde: 5368 MB, 5368709120 bytes
255 heads, 63 sectors/track, 652 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
  Device Boot      Start         End      Blocks   Id  System
/dev/sde1          1           652       5237158+   83   Linux
Disk /dev/sdf: 5368 MB, 5368709120 bytes
255 heads, 63 sectors/track, 652 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
  Device Boot      Start         End      Blocks   Id  System
/dev/sdf1          1           652       5237158+   83   Linux
Disk /dev/dm-0: 18.9 GB, 18991808512 bytes
255 heads, 63 sectors/track, 2308 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Disk /dev/dm-0 doesn't contain a valid partition table
Disk /dev/dm-1: 5469 MB, 5469372416 bytes
255 heads, 63 sectors/track, 664 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Disk /dev/dm-1 doesn't contain a valid partition table
[root@cluster1 ~]# /etc/init.d/oracleasm listdisks
ASM1
ASM2
ASM3
ASM4
OCR

```

四、测试记录

- 1、虚拟机 os 底层加盘/dev/sdg1、用 ASMLIB 标记为 ASM 磁盘/dev/oracleasm/disks/OCR
- 2、以独占和 nocrs 模式启动 crs:

```

[root@cluster1 ~]# /grid/bin/crsctl start crs -excl -nocrs
CRS-4123: Oracle High Availability Services has been started.
...
CRS-2676: Start of 'ora.asm' on 'cluster1' succeeded

```

- 3、修改 ocr.loc

将 ocrconfig_loc 改为+OCR

```

[root@cluster1 ~]# vi /etc/oracle/ocr.loc
ocrconfig_loc=+OCR
local_only=FALSE
~

```

```
~  
"/etc/oracle/ocr.loc" 2L, 36C written
```

4、创建新的 OCR 磁盘组

```
[root@cluster1 ~]# su - grid  
[grid@cluster1 ~]$ export ORACLE_SID=+ASM1  
[grid@cluster1 ~]$ sqlplus / as sysasm
```

```
SQL*Plus: Release 11.2.0.4.0 Production on Sun May 10 13:41:30 2015
```

```
Copyright (c) 1982, 2013, Oracle. All rights reserved.
```

```
Connected to:
```

```
Oracle Database 11g Enterprise Edition Release 11.2.0.4.0 - 64bit Production  
With the Real Application Clusters and Automatic Storage Management options
```

```
SQL> create diskgroup OCR external redundancy disk '/dev/oracleasm/disks/OCR' attribute 'COMPATIBLE.ASM' =  
'11.2';
```

```
Diskgroup created.
```

```
SQL> select name,state from v$asm_diskgroup  
2 ;
```

NAME	STATE
DATA	DISMOUNTED
OCR	MOUNTED

5、用最后的 ocr 备份还原 ocr

```
[root@cluster1 ~]# find / -name backup*  
/grid/cdata/cluster-scan/backup02.ocr  
/grid/cdata/cluster-scan/backup01.ocr  
/grid/cdata/cluster-scan/backup00.ocr  
/grid/cdata/cluster-scan/backup_20150510_132436.ocr  
# /grid/bin/ocrconfig -restore /grid/cdata/cluster-scan/backup_20150510_132436.ocr
```

6、replace voting disk, 由于前面步骤 2 和 3 做反, 这里遇到问题, 重启后手工 mount OCR 磁盘组解决

```
[root@cluster1 ~]# /grid/bin/crsctl replace votedisk +OCR  
CRS-4602: Failed 27 to add voting file 0f3031c2c97f4f4bbfe207c8c83339cf.  
Failed to replace voting disk group with +OCR.
```

```
CRS-4000: Command Replace failed, or completed with errors.<====ocr.loc 是在 start crs -excl noocr 之后改的,  
所以 replace ocr 失败。
```

```
[root@cluster1 ~]# /grid/bin/ocrcheck
```

```
Status of Oracle Cluster Registry is as follows :
```

```
Version          :          3
Total space (kbytes) :    262120
Used space (kbytes) :     3056
Available space (kbytes) :  259064
ID               :   164996100
Device/File Name :      +OCR

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
```

```
[root@cluster1 ~]# /grid/bin/crsctl stop crs -f
```

```
...
```

```
CRS-2793: Shutdown of Oracle High Availability Services-managed resources on 'cluster1' has completed
```

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

```
[root@cluster1 ~]# /etc/init.d/oracleasm scandisks
```

```
Scanning the system for Oracle ASMLib disks: [ OK ]
```

```
[root@cluster1 ~]# /grid/bin/crsctl start crs -excl -nocrs
```

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

```
..
```

```
CRS-2676: Start of 'ora.asm' on 'cluster1' succeeded
```

```
[root@cluster1 ~]# /grid/bin/crsctl stat res -t -init
```

```
-----
NAME                TARGET  STATE        SERVER                     STATE_DETAILS
-----
Cluster Resources
-----
ora.asm
  1                ONLINE  INTERMEDIATE cluster1                   OCR not started  <==
```

```
...
```

```
[root@cluster1 ~]# su - grid
```

```
[grid@cluster1 ~]$ export ORACLE_SID=+ASM1
```

```
[grid@cluster1 ~]$ sqlplus / as sysasm
```

```
SQL*Plus: Release 11.2.0.4.0 Production on Sun May 10 13:54:35 2015
```

```
Copyright (c) 1982, 2013, Oracle. All rights reserved.
```

```
Connected to:
```

```
Oracle Database 11g Enterprise Edition Release 11.2.0.4.0 - 64bit Production
```

```
With the Real Application Clusters and Automatic Storage Management options
```

```
SQL> select name,state from v$asm_diskgroup;
```

```
no rows selected
```

```
SQL> create diskgroup OCR external redundancy disk '/dev/oracleasm/disks/OCR' attribute 'COMPATIBLE.ASM' = '11.2';
```

```
create diskgroup OCR external redundancy disk '/dev/oracleasm/disks/OCR' attribute 'COMPATIBLE.ASM' = '11.2'
*
```

```
ERROR at line 1:
```

```
ORA-15018: diskgroup cannot be created
```

```
ORA-15031: disk specification '/dev/oracleasm/disks/OCR' matches no disks
```

```
ORA-15014: path '/dev/oracleasm/disks/OCR' is not in the discovery set
```

```
SQL> alter system set asm_diskstring='/dev/oracleasm/disks/*';
```

```
System altered.
```

```
SQL> create diskgroup OCR external redundancy disk '/dev/oracleasm/disks/OCR' attribute 'COMPATIBLE.ASM' = '11.2';
```

```
create diskgroup OCR external redundancy disk '/dev/oracleasm/disks/OCR' attribute 'COMPATIBLE.ASM' = '11.2'
*
```

```
ERROR at line 1:
```

```
ORA-15018: diskgroup cannot be created
```

```
ORA-15033: disk '/dev/oracleasm/disks/OCR' belongs to diskgroup "OCR"
```

```
SQL> alter diskgroup ocr mount;
```

```
Diskgroup altered.
```

```
[root@cluster1 ~]# /grid/bin/crsctl replace votedisk +OCR
```

```
Successful addition of voting disk aaed011cd9564ff3bfa1f0710f3f079e.
```

```
Successfully replaced voting disk group with +OCR.
```

```
CRS-4266: Voting file(s) successfully replaced
```

7、以正常模式启动 crs，查看 dg 资源状态，发现只有 CRS 和 DATA 两个磁盘组，没有新做的 OCR 磁盘组。

```
[root@cluster1 ~]# /grid/bin/crsctl stop crs -f
```

```
...
```

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

```
[root@cluster1 ~]# /grid/bin/crsctl start crs
```

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

```
[root@cluster1 ~]# /grid/bin/crsctl stat res -t
```

```
CRS-4535: Cannot communicate with Cluster Ready Services
```

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

```
[root@cluster1 ~]# /grid/bin/crsctl stat res -t
```

NAME	TARGET	STATE	SERVER	STATE_DETAILS

Local Resources				

ora.CRS.dg				
	ONLINE	OFFLINE	cluster1	
ora.DATA.dg				
	ONLINE	ONLINE	cluster1	
ora.LISTENER.lsnr				
	ONLINE	ONLINE	cluster1	
ora.asm				
	ONLINE	ONLINE	cluster1	Started
ora.gsd				
	OFFLINE	OFFLINE	cluster1	
ora.net1.network				
	ONLINE	ONLINE	cluster1	
ora.ons				
	ONLINE	ONLINE	cluster1	
ora.registry.acfs				
	ONLINE	ONLINE	cluster1	

Cluster Resources				

ora.LISTENER_SCAN1.lsnr				
1	ONLINE	ONLINE	cluster1	
ora.cluster1.vip				
1	ONLINE	ONLINE	cluster1	
ora.cluster2.vip				
1	ONLINE	INTERMEDIATE	cluster1	FAILED OVER
ora.cvu				
1	ONLINE	ONLINE	cluster1	
ora.mydb.db				

1	ONLINE	OFFLINE	Instance Shutdown,S
			TARTING
2	ONLINE	OFFLINE	
ora.oc4j			
1	ONLINE	OFFLINE	STARTING
ora.scan1.vip			
1	ONLINE	ONLINE	cluster1

8、使用已有 dg 的模板创建 ocrdg 资源

[grid@cluster1 ~]\$ crsctl stat res ora.CRS.dg -p>ocrdg.txt ←创建模板

[grid@cluster1 ~]\$ vi ocrdg.txt ←更改 NAME 为 ora.OCR.dg

NAME=ora.OCR.dg

TYPE=ora.diskgroup.type

ACL=owner:grid:rwx,pgrp:oinstall:rwx,other::r--

ACTION_FAILURE_TEMPLATE=

ACTION_SCRIPT=

AGENT_FILENAME=%CRS_HOME%/bin/oraagent%CRS_EXE_SUFFIX%

ALIAS_NAME=

AUTO_START=never

CHECK_INTERVAL=300

CHECK_TIMEOUT=30

DEFAULT_TEMPLATE=

DEGREE=1

DESCRIPTION=CRS resource type definition for ASM disk group resource

ENABLED=1

LOAD=1

LOGGING_LEVEL=1

NLS_LANG=

NOT_RESTARTING_TEMPLATE=

OFFLINE_CHECK_INTERVAL=0

PROFILE_CHANGE_TEMPLATE=

RESTART_ATTEMPTS=5

SCRIPT_TIMEOUT=60

START_DEPENDENCIES=hard(ora.asm) pullup(ora.asm)

START_TIMEOUT=900

STATE_CHANGE_TEMPLATE=

STOP_DEPENDENCIES=hard(intermediate:ora.asm)

STOP_TIMEOUT=180

TYPE_VERSION=1.2

UPTIME_THRESHOLD=1d

USR_ORA_ENV=

USR_ORA_OPI=false

USR_ORA_STOP_MODE=

VERSION=11.2.0.4.0

~

"ocrdg.txt" 34L, 758C written

```
[grid@cluster1 ~]$ crsctl add res ora.OCR.dg -type ora.diskgroup.type -file ocrdg.txt
```

重启 crs 之后，ocr.dg 资源 online

```
[grid@cluster1 ~]$ su -
```

Password:

```
[root@cluster1 ~]# /grid/bin/crsctl stop crs
```

CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources on 'cluster1'

...

CRS-2793: Shutdown of Oracle High Availability Services-managed resources on 'cluster1' has completed

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

```
[root@cluster1 ~]# /grid/bin/crsctl start crs
```

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

```
[root@cluster1 ~]# /grid/bin/crsctl delete res ora.CRS.dg
```

 ← 删除旧的 CRS.dg 资源

```
[root@cluster1 ~]# /grid/bin/crsctl stat res -t
```

NAME	TARGET	STATE	SERVER	STATE_DETAILS
Local Resources				
ora.DATA.dg				
	ONLINE	ONLINE	cluster1	
ora.LISTENER.lsnr				
	ONLINE	ONLINE	cluster1	
ora.OCR.dg				
	ONLINE	ONLINE	cluster1	
ora.asm				
	ONLINE	ONLINE	cluster1	Started
ora.gsd				
	OFFLINE	OFFLINE	cluster1	
ora.net1.network				
	ONLINE	ONLINE	cluster1	
ora.ons				
	ONLINE	ONLINE	cluster1	
ora.registry.acfs				
	ONLINE	ONLINE	cluster1	
Cluster Resources				
ora.LISTENER_SCAN1.lsnr				
1	ONLINE	ONLINE	cluster1	
ora.cluster1.vip				
1	ONLINE	ONLINE	cluster1	
ora.cluster2.vip				

1	ONLINE	INTERMEDIATE	cluster1	FAILED OVER
ora.cvu				
1	ONLINE	ONLINE	cluster1	
ora.mydb.db				
1	ONLINE	OFFLINE		Instance Shutdown,S
TARTING				
2	ONLINE	OFFLINE		
ora.oc4j				
1	ONLINE	ONLINE	cluster1	
ora.scan1.vip				
1	ONLINE	ONLINE	cluster1	

结论

=====

本测试证明，以 nocrs 模式启动 crs 创建的磁盘组，不会被自动创建 OCR 资源，需要在之后手工添加。