【OGG】 RAC 环境下管理 OGG 的高可用 (五)

1.1 BLOG 文档结构图

1.2 前言部分

1.2.1 导读

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 环境下管理 OGG 的高可用

注意：本篇 BLOG 中代码部分需要特别关注的地方我都用黄色背景和红色字体来表示，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。

```
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
```

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 实验环境介绍

项目	source db	target db
db 类型	rac	单实例
db version	11.2.0.1	11.2.0.1
db 存储	ASM	FS type
ORACLE_SID	jmrac1/jmrac2	orcl
db_name	jmrac	orcl
主机 IP 地址：	192.168.1.31/192.168.1.32	192.168.1.128
OS 版本及 kernel 版本	RHEL5.7 64 位，2.6.18-274.el5	RHEL6.5 64 位， 2.6.32-504.16.2.el6.x86_64
OGG 版本	11.2.1.0.1 64 位	11.2.1.0.1 64 位
OS hostname	node1/node2	orcltest

1.2.3 相关参考文章链接

【OGG】OGG 的下载和安装篇：http://blog.itpub.net/26736162/viewspace-1693241/

【OGG】OGG 的单向 DML 复制配置(一):http://blog.itpub.net/26736162/viewspace-1696020/

【OGG】OGG 的单向复制配置-支持 DDL(二)：http://blog.itpub.net/26736162/viewspace-1696031/

【OGG】OGG 简单配置双向复制(三)：http://blog.itpub.net/26736162/viewspace-1699516/

【OGG】RAC 环境下配置 OGG 单向同步 (四):http://blog.itpub.net/26736162/viewspace-1699522/

1.2.4 本文简介

本文基于 grid 来管理 OGG 软件，主要参考网址为：http://ylw6006.blog.51cto.com/all/470441/16 ，非常感谢斩月大师。

在本文中将介绍在 oracle 11g r2 rac 环境下使用 grid infrastructure 来管理 ogg 服务，在开始之前，请先按照前文的步骤配置好 rac（source）同单实例(target)数据库之间的 ogg 单向同步，同时确保 rac 数据库各项服务运行正常,同时启动 target 端的数据库实例和 ogg 的 mgr，replicat 进程，source 端 ogg 的 mgr，extract，extract dump 进程可以关闭！

1.3 实验部分

1.3.1 查看 rac 各服务是否 online，这里 3 个 gsd 服务 offline 属于正常情况！

```
[root@node2 ~]# crsstat
Name                           Type                      Target    State     Host
-------------------------------------------------------------------------------
ora.ARCH.dg                    ora.diskgroup.type        ONLINE    ONLINE    node1
ora.DATA.dg                    ora.diskgroup.type        ONLINE    ONLINE    node1
ora.LISTENER.lsnr              ora.listener.type         ONLINE    ONLINE    node1
ora.LISTENER_SCAN1.lsnr        ora.scan_listener.type    ONLINE    ONLINE    node2
ora.OVDISK.dg                  ora.diskgroup.type        ONLINE    ONLINE    node1
ora.TEST.dg                    ora.diskgroup.type        ONLINE    ONLINE    node1
ora.asm                        ora.asm.type              ONLINE    ONLINE    node1
ora.db.db                      ora.database.type         ONLINE    OFFLINE
ora.eons                       ora.eons.type             ONLINE    ONLINE    node1
ora.gsd                        ora.gsd.type              OFFLINE   OFFLINE
ora.jmrac.db                   ora.database.type         ONLINE    ONLINE    node1
ora.jmrac.haha.svc             ora.service.type          ONLINE    ONLINE    node1
ora.net1.network               ora.network.type          ONLINE    ONLINE    node1
ora.node1.ASM1.asm             application               ONLINE    ONLINE    node1
ora.node1.LISTENER_NODE1.lsnr  application               ONLINE    ONLINE    node1
```

```
ora.node1.gsd                  application                OFFLINE    OFFLINE
ora.node1.ons                  application                ONLINE     ONLINE     node1
ora.node1.vip                  ora.cluster_vip_net1.type  ONLINE     ONLINE     node1
ora.node2.ASM2.asm             application                ONLINE     ONLINE     node2
ora.node2.LISTENER_NODE2.lsnr  application                ONLINE     ONLINE     node2
ora.node2.gsd                  application                OFFLINE    OFFLINE
ora.node2.ons                  application                ONLINE     ONLINE     node2
ora.node2.vip                  ora.cluster_vip_net1.type  ONLINE     ONLINE     node2
ora.oc4j                       ora.oc4j.type              OFFLINE    OFFLINE
ora.ons                        ora.ons.type               ONLINE     ONLINE     node1
ora.ora11g.db                  ora.database.type          OFFLINE    OFFLINE
ora.orastrac.db                ora.database.type          OFFLINE    OFFLINE
ora.registry.acfs              ora.registry.acfs.type     ONLINE     ONLINE     node1
ora.scan1.vip                  ora.scan_vip.type          ONLINE     ONLINE     node2
[root@node2 ~]#
[root@node2 ~]# crsstat | grep OFFLINE
ora.db.db                      ora.database.type          ONLINE     OFFLINE
ora.gsd                        ora.gsd.type               OFFLINE    OFFLINE
ora.node1.gsd                  application                OFFLINE    OFFLINE
ora.node2.gsd                  application                OFFLINE    OFFLINE
ora.oc4j                       ora.oc4j.type              OFFLINE    OFFLINE
ora.ora11g.db                  ora.database.type          OFFLINE    OFFLINE
ora.orastrac.db                ora.database.type          OFFLINE    OFFLINE
[root@node2 ~]#
```

1.3.2 在 source 端添加 VIP，并赋权限,检查 vip 是否能正常启动，在本例中运行 grid infrastructure 的操作系统用户为 grid，运行 ogg 的操作系统用户为 oracle

```
[root@node2 ~]# crsctl stat res -p |grep -ie .network -ie subnet |grep -ie name -ie subnet
NAME=ora.net1.network
USR_ORA_SUBNET=192.168.1.0
[root@node2 ~]# appvipcfg create -network=1 \
> -ip=192.168.1.150 \
> -vipname=oggvip \
> -user=root
Production Copyright 2007, 2008, Oracle.All rights reserved
2015-06-11 17:09:18: Creating Resource Type
2015-06-11 17:09:18: Executing cmd: /u01/grid/bin/crsctl add type app.appvip.type -basetype cluster_resource -file /u01/grid/crs/template/appvip.type
2015-06-11 17:09:18: Create the Resource
2015-06-11 17:09:18: Executing cmd: /u01/grid/bin/crsctl add resource oggvip -type app.appvip.type -attr USR_ORA_VIP=192.168.1.150,START_DEPENDENCIES=hard(ora.net1.network)
pullup(ora.net1.network),STOP_DEPENDENCIES=hard(ora.net1.network),ACL='owner:root:rwx,pgrp:root:r-x,other::r--,user:root:r-x'
[root@node2 ~]#
[root@node2 ~]# crsctl setperm resource oggvip -u user:oracle:r-x
[root@node2 ~]# crsctl status resource oggvip
NAME=oggvip
TYPE=app.appvip.type
TARGET=OFFLINE
STATE=OFFLINE

[root@node2 ~]# crsctl start resource oggvip
CRS-2672: Attempting to start 'oggvip' on 'node1'
CRS-2676: Start of 'oggvip' on 'node1' succeeded
[root@node2 ~]# crsctl status resource oggvip
NAME=oggvip
TYPE=app.appvip.type
TARGET=ONLINE
STATE=ONLINE on node1

[root@node2 ~]#
```

```
[root@node2 ~]# crsstat | grep oggvip
oggvip                         app.appvip.type           ONLINE     ONLINE     node1
[root@node2 ~]#
```

1.3.3 配置 action 脚本，该脚本必须包含 start,stop,check,clean,abort 几个函数，才能用于后续的 grid infrastructure 调用，这里把脚本直接放在 acfs 文件系统上，以便节点间共享

```
[oracle@node1 gg11]$  chmod +x $OGG_HOME/11gr2_ogg_action.scr
[oracle@node1 gg11]$ ll $OGG_HOME/11gr2_ogg_action.scr
-rwxr-xr-x 1 oracle oinstall 2695 Jun 11 17:13 /u01/app/acfsmounts/acfsvol1-232/gg11/11gr2_ogg_action.scr
[oracle@node1 gg11]$ cat $OGG_HOME/11gr2_ogg_action.scr
#!/bin/sh
#set the Oracle Goldengate installation directory
export OGG_HOME=/u01/app/acfsmounts/acfsvol1-232/gg11

#set the oracle home to the database to ensure GoldenGate will get the
#right environment settings to be able to connect to the database
export ORACLE_HOME=/u01/app/oracle/product/11.2.0/db1

#specify delay after start before checking for successful start
start_delay_secs=5

#Include the GoldenGate home in the library path to start GGSCI
export LD_LIBRARY_PATH=$ORACLE_HOME/lib:${OGG_HOME}:${LD_LIBRARY_PATH}

#check_process validates that a manager process is running at the PID
#that GoldenGate specifies.

check_process () {
if ( [ -f "${OGG_HOME}/dirpcs/MGR.pcm" ] )
then
  pid=`cut -f8 "${OGG_HOME}/dirpcs/MGR.pcm"`
  if [ ${pid} = `ps -e |grep ${pid} |grep mgr |cut -d " " -f2` ]
  then
    #manager process is running on the PID exit success
    exit 0
  else
  if [ ${pid} = `ps -e |grep ${pid} |grep mgr |cut -d " " -f1` ]
  then
    #manager process is running on the PID exit success
    exit 0
  else
    #manager process is not running on the PID
    exit 1
  fi
fi
else
  #manager is not running because there is no PID file
  exit 1
fi
}

#call_ggsci is a generic routine that executes a ggsci command
call_ggsci () {
  ggsci_command=$1
  ggsci_output=`${OGG_HOME}/ggsci<<EOF
  ${ggsci_command}
```

```
  exit
  EOF`
}

case $1 in
'start')
  #start manager
  call_ggsci 'start manager'
  #there is a small delay between issuing the start manager command
  #and the process being spawned on the OS. wait before checking
  sleep ${start_delay_secs}
  #check whether manager is running and exit accordingly
  check_process
  ;;
'stop')
  #attempt a clean stop for all non-manager processes
  #call_ggsci 'stop er *'
  #ensure everything is stopped
  call_ggsci 'stop er *!'
  #call_ggsci 'kill er *'
  #stop manager without (y/n) confirmation
  call_ggsci 'stop manager!'
  #exit success
  exit 0
  ;;
'check')
  check_process
  ;;
'clean')
  #attempt a clean stop for all non-manager processes
  #call_ggsci 'stop er *'
  #ensure everything is stopped
  #call_ggsci 'stop er *!'
  #in case there are lingering processes
  call_ggsci 'kill er *'
  #stop manager without (y/n) confirmation
  call_ggsci 'stop manager!'
  #exit success
  exit 0
  ;;
'abort')
  #ensure everything is stopped
  call_ggsci 'stop er *!'
  #in case there are lingering processes
  call_ggsci 'kill er *'
  #stop manager without (y/n) confirmation
  call_ggsci 'stop manager!'
  #exit success
  exit 0
  ;;
esac


[oracle@node1 gg11]$
```

1.3.4 使用 oracle 用户添加 oggapp，并授权给 oracle 用户管理

```
[root@node2 ~]# crsctl add resource oggapp -type cluster_resource \
> -attr "ACTION_SCRIPT=/u01/app/acfsmounts/acfsvol1-232/gg11/11gr2_ogg_action.scr, \
```

```
> CHECK_INTERVAL=30, START_DEPENDENCIES='hard(oggvip,ora.asm) \
> pullup(oggvip)', STOP_DEPENDENCIES='hard(oggvip)'"
[root@node2 ~]#
[root@node2 ~]#  crsctl status resource oggapp
NAME=oggapp
TYPE=cluster_resource
TARGET=OFFLINE
STATE=OFFLINE

[root@node2 ~]# crsctl setperm resource oggapp -o oracle
[root@node2 ~]#
```

1.3.5 检查 target 端的数据库是否可以正常连接，ogg 进程是否运行正常

```
[oracle@orcltest ~]$ sqlplus test/test@orcl

SQL*Plus: Release 11.2.0.1.0 Production on Thu Jun 11 17:19:23 2015

Copyright (c) 1982, 2009, Oracle.  All rights reserved.


Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing options

SQL> exit
Disconnected from Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing options
[oracle@orcltest ~]$ cd $OGG_HOME
[oracle@orcltest gg11]$ ggsci

Oracle GoldenGate Command Interpreter for Oracle
Version 11.2.1.0.1 OGGCORE_11.2.1.0.1_PLATFORMS_120423.0230_FBO
Linux, x64, 64bit (optimized), Oracle 11g on Apr 23 2012 08:32:14

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GGSCI (orcltest) 1> info all

Program     Status      Group       Lag at Chkpt  Time Since Chkpt

MANAGER     RUNNING
REPLICAT    RUNNING     TESTRPT     00:00:00      00:00:10


GGSCI (orcltest) 2>
```

1.3.6 检查 source 端的数据库是否可以正常连接，ogg 进程处于未启动状态

```
[oracle@node1 ggl1]$ sqlplus test/test@rac

SQL*Plus: Release 11.2.0.1.0 Production on Thu Jun 11 17:22:08 2015

Copyright (c) 1982, 2009, Oracle.  All rights reserved.


Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - 64bit Production
With the Partitioning, Real Application Clusters, Automatic Storage Management, OLAP,
Data Mining and Real Application Testing options

SQL> select * from tab;

TNAME                          TABTYPE  CLUSTERID
------------------------------ ------- ----------
RAC_TEST                       TABLE
T1                             TABLE

SQL> exit
Disconnected from Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - 64bit Production
With the Partitioning, Real Application Clusters, Automatic Storage Management, OLAP,
Data Mining and Real Application Testing options
[oracle@node1 ggl1]$ cd $OGG_HOME
[oracle@node1 ggl1]$ ggsci

Oracle GoldenGate Command Interpreter for Oracle
Version 11.2.1.0.1 OGGCORE_11.2.1.0.1_PLATFORMS_120423.0230_FBO
Linux, x64, 64bit (optimized), Oracle 11g on Apr 23 2012 08:32:14

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GGSCI (node1) 1> info all

Program     Status      Group       Lag at Chkpt  Time Since Chkpt

MANAGER     RUNNING
EXTRACT     RUNNING     TESTEXT     00:00:00      00:00:01
EXTRACT     RUNNING     TESTPUMP    00:00:00      00:00:03


GGSCI (node1) 2> stop mgr
Manager process is required by other GGS processes.
Are you sure you want to stop it (y/n)? y

Sending STOP request to MANAGER ...
Request processed.
Manager stopped.


GGSCI (node1) 3> info all

Program     Status      Group       Lag at Chkpt  Time Since Chkpt

MANAGER     STOPPED
EXTRACT     RUNNING     TESTEXT     00:00:00      00:00:00
EXTRACT     RUNNING     TESTPUMP    00:00:00      00:00:09


GGSCI (node1) 4> stop *
```

```
Sending STOP request to EXTRACT TESTEXT ...
Request processed.

Sending STOP request to EXTRACT TESTPUMP ...
Request processed.


GGSCI (node1) 5> info all

Program     Status      Group       Lag at Chkpt  Time Since Chkpt

MANAGER     STOPPED
EXTRACT     STOPPED     TESTEXT     00:00:00      00:00:01
EXTRACT     STOPPED     TESTPUMP    00:00:00      00:00:01


GGSCI (node1) 6>
```

1.3.7 启动 oggapp resource,检查 source(rac1)上的 ogg 进程是否成功启动

```
[root@node2 ~]# crsctl status resource oggapp
NAME=oggapp
TYPE=cluster_resource
TARGET=OFFLINE
STATE=OFFLINE

[root@node2 ~]# crsctl start resource oggapp
CRS-2672: Attempting to start 'oggapp' on 'node1'
CRS-2676: Start of 'oggapp' on 'node1' succeeded
[root@node2 ~]#
[oracle@node1 ggl1]$ ggsci

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GGSCI (node1) 1> info all

Program     Status      Group       Lag at Chkpt  Time Since Chkpt

MANAGER     RUNNING
EXTRACT     RUNNING     TESTEXT     00:00:00      00:00:00
EXTRACT     RUNNING     TESTPUMP    00:00:00      00:00:09


GGSCI (node1) 2>


[root@node2 ~]# crs_stat -t -v oggapp
Name           Type           R/RA   F/FT   Target    State     Host
----------------------------------------------------------------------
oggapp         clus...esource 0/1    0/0    ONLINE    ONLINE    node1
[root@node2 ~]#
```

1.3.8 测试 failover

```
[root@node2 ~]# crsctl relocate resource oggapp -f
CRS-2673: Attempting to stop 'oggapp' on 'node1'
CRS-2677: Stop of 'oggapp' on 'node1' succeeded
CRS-2673: Attempting to stop 'oggvip' on 'node1'
CRS-2677: Stop of 'oggvip' on 'node1' succeeded
CRS-2672: Attempting to start 'oggvip' on 'node2'
CRS-2676: Start of 'oggvip' on 'node2' succeeded
CRS-2672: Attempting to start 'oggapp' on 'node2'
CRS-2676: Start of 'oggapp' on 'node2' succeeded
[root@node2 ~]# crs_stat -t -v oggapp
Name           Type           R/RA   F/FT   Target    State     Host
----------------------------------------------------------------------
oggapp         clus...esource 0/1    0/0    ONLINE    ONLINE    node2
[root@node2 ~]# su - oracle
[oracle@node2 ~]$ cd $OGG_HOME
[oracle@node2 ggl1]$ ggsci

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Version 11.2.1.0.1 OGGCORE_11.2.1.0.1_PLATFORMS_120423.0230_FBO
Linux, x64, 64bit (optimized), Oracle 11g on Apr 23 2012 08:32:14

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GGSCI (node2) 1> info all

Program     Status      Group       Lag at Chkpt  Time Since Chkpt

MANAGER     RUNNING
EXTRACT     RUNNING     TESTEXT     00:00:00      00:00:07
EXTRACT     RUNNING     TESTPUMP    00:00:00      00:00:08


GGSCI (node2) 2>
```

可以看到节点到了第二个节点上了。

1.4 About Me

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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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