

【OGG】RAC 环境下配置 OGG 单向同步 (四)

1.1 BLOG 文档结构图

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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 环境下配置 OGG 单向同步

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/>

1.2.4 本文简介

本文基于 RAC 环境下配置 OGG 单向同步，主要参考网址为：<http://ylw6006.blog.51cto.com/all/470441/16>，非常感谢斩月大师。

1.3 实验部分

1.3.1 实验目标

本文配置是：rac (source) 同单实例(target)数据库之间的 ogg 单向同步

1.4 RAC 环境下配置 OGG 单向同步

1.4.1 首先在两个 rac 节点上配置 ASM 动态注册,11g 的监听器引入了 endpoints_listener.ora 文件管理

1.4.1.1 配置 listener

配置监听，加入对 ASM 的动态注册：

```
[oracle@node1 ~]$ srvctl status listener
Listener LISTENER is enabled
Listener LISTENER is running on node(s): node1,node2
[oracle@node1 ~]$ lsnrctl services

LSNRCTL for Linux: Version 11.2.0.1.0 - Production on 11-JUN-2015 16:39:32

Copyright (c) 1991, 2009, Oracle. All rights reserved.

Connecting to (ADDRESS=(PROTOCOL=tcp) (HOST=) (PORT=1521))
Services Summary...
Service "+ASM" has 2 instance(s).
  Instance "+ASM1", status UNKNOWN, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0
        LOCAL SERVER
  Instance "+ASM1", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:3 refused:0 state:ready
        LOCAL SERVER
Service "HAHA" has 2 instance(s).
  Instance "jmrac1", status READY, has 2 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
        REMOTE SERVER
        (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP) (HOST=node1-vip) (PORT=1521)))
      "DEDICATED" established:5 refused:0 state:ready
        LOCAL SERVER
  Instance "jmrac2", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
        REMOTE SERVER
        (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP) (HOST=node2-vip) (PORT=1521)))
The command completed successfully
[oracle@node1 ~]$

[grid@node1 ~]$ cat $TNS_ADMIN/listener.ora
LISTENER=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=IPC) (KEY=LISTENER)))) # line added by Agent
LISTENER_SCAN1=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=IPC) (KEY=LISTENER_SCAN1)))) # line added by Agent
ENABLE_GLOBAL_DYNAMIC_ENDPOINT_LISTENER_SCAN1=ON # line added by Agent
ENABLE_GLOBAL_DYNAMIC_ENDPOINT_LISTENER=ON # line added by Agent

SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (GLOBAL_DBNAME = +ASM)
      (ORACLE_HOME=/u01/grid)
      (SID_NAME = +ASM1)
    )
  )
)

[grid@node1 ~]$ cat $TNS_ADMIN/endpoints_listener.ora
LISTENER_NODE1=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP) (HOST=node1-vip) (PORT=1521)) (ADDRESS=(PROTOCOL=TCP) (HOST=192.168.1.31) (PORT=1521) (IP=FIRST)))) # line added by Agent
[grid@node1 ~]$
```

节点二监听：

```
[grid@node2 ~]$ cat $TNS_ADMIN/listener.ora
LISTENER_SCAN1=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=IPC) (KEY=LISTENER_SCAN1))))          # line added by Agent
LISTENER=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=IPC) (KEY=LISTENER))))                  # line added by Agent
ENABLE_GLOBAL_DYNAMIC_ENDPOINT_LISTENER=ON                                                  # line added by Agent
ENABLE_GLOBAL_DYNAMIC_ENDPOINT_LISTENER_SCAN1=ON                                             # line added by Agent

SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (GLOBAL_DBNAME = +ASM)
      (ORACLE_HOME=/u01/grid)
      (SID_NAME = +ASM2)
    )
  )
)
[grid@node2 ~]$ cat $TNS_ADMIN/endpoints_listener.ora
LISTENER_NODE2=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP) (HOST=node2-vip) (PORT=1521)) (ADDRESS=(PROTOCOL=TCP) (HOST=192.168.1.32) (PORT=1521) (IP=FIRST)))) # line added by Agent
[grid@node2 ~]$
```

检查配置情况：

```
C:\Users\Administrator> sqlplus sys/lhr@192.168.1.31:1521/+ASM as sysdba

SQL*Plus: Release 11.2.0.1.0 Production on Thu Jun 11 11:13:37 2015

Copyright (c) 1982, 2010, Oracle. All rights reserved.

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

SQL> set line 9999
SQL> show parameter name

NAME                                TYPE                                VALUE
-----                                -                                -
db_unique_name                      string                             +ASM
instance_name                       string                             +ASM1
lock_name_space                     string                             +ASM
service_names                       string                             +ASM
SQL> conn sys/lhr@192.168.1.32:1521/+ASM as sysdba
Connected.
SQL> show parameter name

NAME                                TYPE                                VALUE
-----                                -                                -
db_unique_name                      string                             +ASM
instance_name                       string                             +ASM2
lock_name_space                     string                             +ASM
service_names                       string                             +ASM
SQL>
```

1.4.1.2 配置 tnsnames.ora

注意切换到 oracle 用户下，2 个节点均配置：

节点一：

```
[oracle@node1 ~]$ su - oracle
Password:
[oracle@node1 ~]$ cd $TNS_ADMIN
[oracle@node1 admin]$ ll
total 16
drwxr-xr-x 2 oracle oinstall 4096 Feb 27  2012 samples
-rw-r--r-- 1 oracle oinstall  187 May  7  2007 shrept.lst
-rw-r--r-- 1 oracle oinstall 1137 Apr 28 14:41 tnsnames1504282PM4155.bak
-rw-r----- 1 oracle oinstall 1752 May 12 16:17 tnsnames.ora
[oracle@node1 admin]$ more tnsnames.ora
# tnsnames.ora Network Configuration File: /u01/app/oracle/product/11.2.0/dbhome_1/network/admin/tnsnames.ora
# Generated by Oracle configuration tools.

RAC =
(DESCRIPTION =
  (ADDRESS = (PROTOCOL = TCP) (HOST = 192.168.1.32) (PORT = 1521))
  (ADDRESS = (PROTOCOL = TCP) (HOST = 192.168.1.31) (PORT = 1521))
  (CONNECT_DATA =
    (SERVER = DEDICATED)
    (SERVICE_NAME = HAHA)
  )
)

ASM =
(DESCRIPTION =
  (ADDRESS = (PROTOCOL = TCP) (HOST = 192.168.1.31) (PORT = 1521))
  (CONNECT_DATA =
    (SERVER = DEDICATED)
    (SERVICE_NAME = +ASM)
    (SID_NAME = +ASM1)
  )
)

[oracle@node1 admin]$
```

节点二：

```
[oracle@node2 admin]$ more tnsnames.ora
# tnsnames.ora.node2 Network Configuration File: /u01/app/oracle/product/11.2.0/dbhome_1/network/admin/tnsnames.ora.node2
# Generated by Oracle configuration tools.

RAC =
(DESCRIPTION =
  (ADDRESS = (PROTOCOL = TCP) (HOST = 192.168.1.32) (PORT = 1521))
  (ADDRESS = (PROTOCOL = TCP) (HOST = 192.168.1.31) (PORT = 1521))
  (CONNECT_DATA =
    (SERVER = DEDICATED)
    (SERVICE_NAME = HAHA)
  )
)

ASM =
(DESCRIPTION =
  (ADDRESS = (PROTOCOL = TCP) (HOST = 192.168.1.32) (PORT = 1521))
  (CONNECT_DATA =
    (SERVER = DEDICATED)
    (SERVICE_NAME = +ASM)
    (SID_NAME = +ASM2)
  )
)
```

```
[oracle@node2 admin]$
```

检查配置情况：

```
[oracle@node1 admin]$ sqlplus lhr/lhr@rac

SQL*Plus: Release 11.2.0.1.0 Production on Thu Jun 11 16:47:45 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> show parameter name

NAME                                TYPE                                VALUE
-----                                -                                -
db_file_name_convert                string                             jmrac
db_name                             string                             jmrac
db_unique_name                      string                             jmrac
global_names                        boolean                           FALSE
instance_name                       string                             jmrac2
lock_name_space                     string                            
log_file_name_convert               string                            
service_names                       string                             HAHA, jmrac
SQL> conn sys/lhr@ASM as sysasm
Connected.
SQL> show parameter name

NAME                                TYPE                                VALUE
-----                                -                                -
db_unique_name                      string                             +ASM
instance_name                       string                             +ASM1
lock_name_space                     string                            
service_names                       string                             +ASM
SQL>
```

1.4.2 RAC 上安装 OGG 软件

1.4.2.1 安装 ACFS

我们首先来安装 ACFS,即 ASM Cluster File System，相关知识不多解释，而安装 ACFS 也有很多种办法，这里我们采用命令行的方式来安装 ACFS，我们在节点一上操作:

- a、root 用户手工加载驱动：ASM volume driver，acfsload 为 grid 用户下的命令

```
[root@node1 ~]# acfsload -s
```

```
acfsload: ACFS-9228: usage: acfsload {start|stop} [-s]
[root@node1 ~]# acfsload start
ACFS-9327: Verifying ADVN/ACFS devices.
ACFS-9322: done.
[root@node1 ~]#
```

b、创建磁盘组，也可以不用创建磁盘组，后边采用已经存在的磁盘组来创建卷组，我们这里就不再重新创建磁盘组了

c、创建 asm 卷

```
[root@node1 ~]# su - grid
[grid@node1 ~]$ sqlplus / as sysasm

SQL*Plus: Release 11.2.0.1.0 Production on Thu Jun 11 14:16:13 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 Real Application Clusters and Automatic Storage Management options

SQL> alter diskgroup DATA add volume acfsvoll size 1G;

Diskgroup altered.

SQL> exit
Disconnected from Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - 64bit Production
With the Real Application Clusters and Automatic Storage Management options
[grid@node1 ~]$ ll /dev/asm
total 0
brwxrwx--- 1 root asmadmin 252, 118786 Jun 11 14:16 acfsvoll-232
brwxrwx--- 1 root asmadmin 252, 118785 Jun 11 13:45 vol01-232
[grid@node1 ~]$
```

d、创建 acfs 挂载目录，在 rac1 和 rac2 节点都执行

```
[root@node1 ~]# mkdir -p /u01/app/acfsmounts/acfsvoll-232
```

```
[root@node2 ~]# mkdir -p /u01/app/acfsmounts/acfsvoll-232
```

e、用 mkfs 创建文件系统

```
[root@node1 ~]# /sbin/mkfs -t acfs -n acfs01 /dev/asm/acfsvoll-232
mkfs.acfs: version          = 11.2.0.1.0.0
mkfs.acfs: on-disk version  = 39.0
mkfs.acfs: volume          = /dev/asm/acfsvoll-232
mkfs.acfs: volume size     = 1073741824
mkfs.acfs: Format complete.
[root@node1 ~]#
```

f、用 acfsuit 命令注册文件系统

```
[root@node1 ~]# /sbin/acfsutil registry -a -f /dev/asm/acfsvoll-232 /u01/app/acfsmounts/acfsvoll-232
acfsutil registry: mount point /u01/app/acfsmounts/acfsvoll-232 successfully added to Oracle Registry
```


g、用 mount.acfs 命令挂载文件系统

```
[root@node1 ~]# mount.acfs -o all
[root@node1 ~]# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda3        75G   57G   15G   81% /
/dev/sda1        99M   27M   67M   29% /boot
tmpfs           1005M  463M  542M   47% /dev/shm
/dev/asm/vol01-232 1.0G   73M  952M    8% /u01/app/acfsmounts/data_vol01
/dev/asm/acfsvoll-232 1.0G   73M  952M    8% /u01/app/acfsmounts/acfsvoll-232
[root@node1 ~]#
[root@node1 ~]# ssh node2 "df -h"
root@node2's password:
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda3        75G   16G   55G   23% /
/dev/sda1        99M   26M   69M   28% /boot
tmpfs           1005M  463M  542M   47% /dev/shm
/dev/asm/vol01-232 1.0G   73M  952M    8% /u01/app/acfsmounts/data_vol01
/dev/asm/acfsvoll-232 1.0G   73M  952M    8% /u01/app/acfsmounts/acfsvoll-232
[root@node1 ~]#
```

h、改变文件系统属性供 oracle 使用

```
[root@node1 ~]# chown oracle.asmadmin /u01/app/acfsmounts/acfsvoll-232
[root@node1 ~]# ll -d /u01/app/acfsmounts/acfsvoll-232
drwxrwx--- 4 oracle asmadmin 4096 Jun 11 14:24 /u01/app/acfsmounts/acfsvoll-232
[root@node1 ~]# ssh node2 "ls -ld /u01/app/acfsmounts/acfsvoll-232"
root@node2's password:
drwxrwx--- 4 oracle asmadmin 4096 Jun 11 14:24 /u01/app/acfsmounts/acfsvoll-232
[root@node1 ~]#
```

1. 4. 2. 2 acfs 上安装 ogg , acfs 用来存放 ogg 的安装目录，便于集群件的共享，在 10g 上部署可以选择 ocfs2

首先上传 ogg 软件到/TMP 目录下：

传输队列										
文件名	目标	文件大小	已传输字节	% 进度	已用时间	剩余时间	速度	状态	开始时间	完成时间
J:\安装文件\数据库\oracle\OGG\11g\ogg112101_fbo_ggs_linux_x64_ora11g_64bit.zip	/tmp/ogg112101_fbo_ggs_linux_x64_ora11g_64bit.zip	85.06 MB	85.06 MB	100%	00:00:13	00:00:00	7217.12 K...	Finished	2015-06-11 14:36	2015-06-11 14:36

2 个节点均配置环境变量，加入如下参数：

```
export OGG_HOME=/u01/app/acfsmounts/acfsvoll-232/gg11
export PATH=$OGG_HOME:$ORACLE_HOME/bin:$PATH
export LD_LIBRARY_PATH=$OGG_HOME:$ORACLE_HOME/lib:$LD_LIBRARYPATH

alias ggsci='rlwrap ggsci'
```

节点一：

```
[oracle@node1 gg11]$ source ~/.bash_profile
[oracle@node1 gg11]$ echo $OGG_HOME
/u01/app/acfsmounts/acfsvol1-232/gg11
[oracle@node1 gg11]$
```

节点二：

```
[oracle@node2 ~]$ source ~/.bash_profile
[oracle@node2 ~]$ echo $OGG_HOME
/u01/app/acfsmounts/acfsvol1-232/gg11
[oracle@node2 ~]$
```

开始在节点一安装 OGG 软件：

```
[root@node1 tmp]# chown oracle.oinstall ogg112101_fbo_ggs_Linux_x64_orallg_64bit.zip
[root@node1 tmp]# su - oracle
[oracle@node1 tmp]$ unzip ogg112101_fbo_ggs_Linux_x64_orallg_64bit.zip
Archive:  ogg112101_fbo_ggs_Linux_x64_orallg_64bit.zip
  inflating: fbo_ggs_Linux_x64_orallg_64bit.tar

  inflating: OGG_WinUnix_Rel_Notes_11.2.1.0.1.pdf
  inflating: Oracle GoldenGate 11.2.1.0.1 README.txt
  inflating: Oracle GoldenGate 11.2.1.0.1 README.doc
[oracle@node1 tmp]$
[oracle@node1 tmp]$ tar xvf fbo_ggs_Linux_x64_orallg_64bit.tar -C $OGG_HOME
o . . . . . o . . . . . o . . . . .
[oracle@node1 ~]$ cd $OGG_HOME
[oracle@node1 gg11]$ pwd
/u01/app/acfsmounts/acfsvol1-232/gg11
[oracle@node1 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

Copyright (C) 1995, 2012, Oracle and/or its affiliates. All rights reserved.

```
GGSCI (node1) 1>
GGSCI (node1) 1> create subdirs
```

Creating subdirectories under current directory /u01/app/acfsmounts/acfsvol1-232/gg11

Parameter files	/u01/app/acfsmounts/acfsvol1-232/gg11/dirprm: already exists
Report files	/u01/app/acfsmounts/acfsvol1-232/gg11/dirrpt: created
Checkpoint files	/u01/app/acfsmounts/acfsvol1-232/gg11/dirchk: created
Process status files	/u01/app/acfsmounts/acfsvol1-232/gg11/dirpcs: created
SQL script files	/u01/app/acfsmounts/acfsvol1-232/gg11/dirsql: created
Database definitions files	/u01/app/acfsmounts/acfsvol1-232/gg11/dirdef: created
Extract data files	/u01/app/acfsmounts/acfsvol1-232/gg11/dirdat: created
Temporary files	/u01/app/acfsmounts/acfsvol1-232/gg11/dirtmp: created
Stdout files	/u01/app/acfsmounts/acfsvol1-232/gg11/dirout: created

```
GGSCI (node1) 2>
```

节点二测试：

```
[root@node2 ~]# su - oracle
[oracle@node2 ~]$ cd $OGG_HOME
[oracle@node2 gg11]$ 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

Copyright (C) 1995, 2012, Oracle and/or its affiliates. All rights reserved.

GGSCI (node2) 1>
```

1.4.2.3 配置 mgr 进程

节点一上配置 mgr 进程：

```
GGSCI (node1) 2> edit params mgr

GGSCI (node1) 3> view params mgr

port 7809
autostart er *
autorestart er *

GGSCI (node1) 4> start mgr

Manager started.

GGSCI (node1) 5> info mgr

Manager is running (IP port node1.7809).

GGSCI (node1) 6> sh netstat -ntpl |grep 7809

(Not all processes could be identified, non-owned process info
 will not be shown, you would have to be root to see it all.)
tcp        0      0 0.0.0.0:7809          0.0.0.0:*            LISTEN      7561/mgr

GGSCI (node1) 7> sh ps -ef|grep mgr

gdm        5077   5060  0 14:52 ?        00:00:00 /usr/libexec/gdmgreeter
oracle     7561   7424  0 15:11 ?        00:00:00 ./mgr PARAMFILE /u01/app/acfsmounts/acfsvol1-232/gg11/dirprm/mgr.prm REPORTFILE /u01/app/acfsmounts/acfsvol1-232/gg11/dirrpt/MGR.rpt PROCESSID MGR PORT 7809
oracle     7595   7424  0 15:11 pts/2    00:00:00 sh -c ps -ef|grep mgr

GGSCI (node1) 8>
```

1.4.3 target 库安装 OGG 软件

省略安装过程。。。。

1.4.4 rac 数据库上进行配置，创建用户，授权，运行执行序列号和 ddl 复制的相关脚本等

脚本：

```
create user ogg identified by ogg;
grant connect,resource,dba to ogg;
@sequence.sql
alter database add supplemental log data;
alter database add supplemental log data (primary key) columns;
alter database add supplemental log data (foreign key) columns;
alter database add supplemental log data (unique) columns;
alter system archive log current;
grant execute on utl_file to ogg;
@marker_setup.sql
@ddl_setup.sql
@role_setup.sql
grant ggs_ggsuser_role to ogg;
@ddl_enable.sql
@ddl_pin ogg
```

```
[oracle@node1 gg11]$ ORACLE_SID=jmrac1
[oracle@node1 gg11]$ sqlplus / as sysdba

SQL*Plus: Release 11.2.0.1.0 Production on Thu Jun 11 15:17:43 2015

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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 instance_name from v$instance;

INSTANCE_NAME
-----
jmrac1

SQL> create user ogg identified by ogg;

User created.

SQL> grant connect,resource,dba to ogg;

Grant succeeded.

SQL> @sequence.sql
Please enter the name of a schema for the GoldenGate database objects:
ogg
Setting schema name to OGG

UPDATE_SEQUENCE STATUS:
```

```
Line/pos
-----
Error
-----

No errors
No errors


GETSEQFLUSH


Line/pos
-----
Error
-----

No errors
No errors


SEQTRACE


Line/pos
-----
Error
-----

No errors
No errors


REPLICATE_SEQUENCE STATUS:


Line/pos
-----
Error
-----

No errors
No errors


STATUS OF SEQUENCE SUPPORT
-----

SUCCESSFUL installation of Oracle Sequence Replication support
SQL> alter database add supplemental log data;

Database altered.

SQL> alter database add supplemental log data (primary key) columns;

Database altered.

SQL> alter database add supplemental log data (foreign key) columns;

Database altered.

SQL> alter database add supplemental log data (unique) columns;

Database altered.

SQL> alter system archive log current;

System altered.

SQL> grant execute on utl_file to ogg;

Grant succeeded.

SQL> @marker_setup.sql
```

```
Marker setup script

You will be prompted for the name of a schema for the Oracle GoldenGate database objects.
NOTE: The schema must be created prior to running this script.
NOTE: Stop all DDL replication before starting this installation.

Enter Oracle GoldenGate schema name:ogg

Marker setup table script complete, running verification script...
Please enter the name of a schema for the GoldenGate database objects:
Setting schema name to OGG

MARKER TABLE
-----
OK

MARKER SEQUENCE
-----
OK

Script complete.
SQL> @ddl_setup.sql

Oracle GoldenGate DDL Replication setup script

Verifying that current user has privileges to install DDL Replication...

You will be prompted for the name of a schema for the Oracle GoldenGate database objects.
NOTE: For an Oracle 10g source, the system recycle bin must be disabled. For Oracle 11g and later, it can be enabled.
NOTE: The schema must be created prior to running this script.
NOTE: Stop all DDL replication before starting this installation.

Enter Oracle GoldenGate schema name:ogg

Working, please wait ...
Spooling to file ddl_setup_spool.txt

Checking for sessions that are holding locks on Oracle Golden Gate metadata tables ...

Check complete.


Using OGG as a Oracle GoldenGate schema name.

Working, please wait ...

DDL replication setup script complete, running verification script...
Please enter the name of a schema for the GoldenGate database objects:
Setting schema name to OGG

CLEAR_TRACE STATUS:

Line/pos      Error
-----
No errors      No errors

CREATE_TRACE STATUS:

Line/pos      Error
-----
```

No errors	No errors
-----------	-----------

TRACE_PUT_LINE STATUS:

Line/pos	Error

No errors	No errors

INITIAL_SETUP STATUS:

Line/pos	Error

No errors	No errors

DDLVERSIONSPECIFIC PACKAGE STATUS:

Line/pos	Error

No errors	No errors

DDLREPLICATION PACKAGE STATUS:

Line/pos	Error

No errors	No errors

DDLREPLICATION PACKAGE BODY STATUS:

Line/pos	Error

No errors	No errors

DDL IGNORE TABLE

OK

DDL IGNORE LOG TABLE

OK

DDL AUX PACKAGE STATUS:

Line/pos	Error

No errors	No errors

DDL AUX PACKAGE BODY STATUS:

Line/pos	Error

No errors	No errors

SYS.DDLCTXINFO PACKAGE STATUS:

Line/pos	Error

No errors	No errors

SYS.DDLCTXINFO PACKAGE BODY STATUS:

Line/pos	Error

No errors	No errors

DDL HISTORY TABLE

OK

DDL HISTORY TABLE(1)

OK

DDL DUMP TABLES

OK

DDL DUMP COLUMNS

OK

DDL DUMP LOG GROUPS

OK

DDL DUMP PARTITIONS

OK

DDL DUMP PRIMARY KEYS

OK

DDL SEQUENCE

OK

GGS_TEMP_COLS

OK

GGS_TEMP_UK

OK

DDL TRIGGER CODE STATUS:

Line/pos	Error
No errors	No errors

DDL TRIGGER INSTALL STATUS

OK

DDL TRIGGER RUNNING STATUS

ENABLED

STAYMETADATA IN TRIGGER

OFF

DDL TRIGGER SQL TRACING

0

DDL TRIGGER TRACE LEVEL

0

LOCATION OF DDL TRACE FILE

/u01/app/oracle/diag/rdbms/jmrac/jmrac1/trace/ggs_ddl_trace.log

Analyzing installation status...

STATUS OF DDL REPLICATION

SUCCESSFUL installation of DDL Replication software components

Script complete.

SQL> @role_setup.sql

GGS Role setup script

This script will drop and recreate the role GGS_GGSUSER_ROLE

To use a different role name, quit this script and then edit the params.sql script to change the gg_role parameter to the preferred name. (Do not run the script.)

You will be prompted for the name of a schema for the GoldenGate database objects.

NOTE: The schema must be created prior to running this script.

NOTE: Stop all DDL replication before starting this installation.

Enter GoldenGate schema name:ogg

Wrote file role_setup_set.txt

PL/SQL procedure successfully completed.

Role setup script complete

Grant this role to each user assigned to the Extract, GGSCI, and Manager processes, by using the following SQL command:

GRANT GGS_GGSUSER_ROLE TO <loggedUser>

where <loggedUser> is the user assigned to the GoldenGate processes.

SQL> grant ggs_ggsuser_role to ogg;

Grant succeeded.

SQL> @ddl_enable.sql

Trigger altered.

SQL> @ddl_pin ogg

PL/SQL procedure successfully completed.

PL/SQL procedure successfully completed.

PL/SQL procedure successfully completed.

SQL> archive log list;

Database log mode	Archive Mode
Automatic archival	Enabled
Archive destination	USE_DB_RECOVERY_FILE_DEST
Oldest online log sequence	49
Next log sequence to archive	50
Current log sequence	50

SQL>

SQL> create user test identified by test;

User created.

SQL> grant connect,resource to test;

Grant succeeded.

SQL>

1.4.5 在 source 端配置 extract group

```
[oracle@node1 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

Copyright (C) 1995, 2012, Oracle and/or its affiliates. All rights reserved.
```

```
GGSCI (node1) 1> dblogin userid ogg,password ogg
Successfully logged into database.
```

```
GGSCI (node1) 2> add extract testtext,tranlog,begin now,threads 2
EXTRACT added.
```

```
GGSCI (node1) 3> add exttrail ./dirdat/et, extract testtext
EXTTRAIL added.
```

```
GGSCL (node1) 4> edit params testtext  
EXTRACT testtext  
SETENV (ORACLE_HOME = "/u01/app/oracle/product/11.2.0/dbhome_1")  
USERID ogg@rac, PASSWORD ogg  
TRANLOGOPTIONS ASMUER sys@ASM, ASPASSWORD lhr  
THREDOPTIONS MAXCOMMITPROPAGATIONDELAY 20000  
EXTTRAIL ./dirdat/et  
DYNAMICRESOLUTION  
DDL INCLUDE ALL  
TABLE test.*;  
  
~  
~  
~  
  
o o o o o o o o o o o o o o o o  
~  
~
```

"dirprm/testtext.prm" [New] 9L, 289C written

```
GGSCI (node1) 5> view params testtext
```

```
EXTRACT testtext
SETENV (ORACLE_HOME = "/u01/app/oracle/product/11.2.0/dbhome_1")
USERID ogg@rac, PASSWORD ogg
TRANLOGOPTIONS ASMUSER sys@ASM, ASMPASSWORD lhr
THREDOPTIONS MAXCOMMITPROPAGATIONDELAY 20000
EXTTRAIL ./dirdat/et
DYNAMICRESOLUTION
DDL INCLUDE ALL
TABLE test.*;
```

GGSCI (node1) 6>

```
[oracle@node1 gg11]$ sqlplus ogg/ogg@rac
```

SQL*Plus: Release 11.2.0.1.0 Production on Thu Jun 11 15:31:41 2015

SQL*Plus: Release 11.2.0.1.0 Production on Thu Jun 11 15:32:10 2015

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```
Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - 64bit Production
With the Real Application Clusters and Automatic Storage Management options

SQL> exit
Disconnected from Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - 64bit Production
With the Real Application Clusters and Automatic Storage Management options
[oracle@node1 gg11]$
```

1.4.6 在 source 端配置 data pump extract group

```
GGSCI (node1) 2> add rmttrail ./dirdat/rt,extract testpump
RMTTRAIL added.
```

```
GGSCI (node1) 4> view params testpump
```

```
EXTRACT testpump
RMTHOST 192.168.1.128, MGRPORT 7809
RMTRAIL ./dirdat/rt
```

```
PASSTHRU
TABLE test.*;

GGSCI (node1) 5>
GGSCI (node1) 5> info all

Program      Status      Group      Lag at Chkpt  Time Since Chkpt
-----
MANAGER      RUNNING
EXTRACT      STOPPED     TESTTEXT   00:00:00      00:10:18
EXTRACT      STOPPED     TESTPUMP   00:00:00      00:02:19

GGSCI (node1) 6>
```

1.4.7 target 端配置

注意：这里要保证在 tnsnames.ora 文件中配置了 orcl 连接串

```
[oracle@orcltest ~]$ ORACLE_SID=orcl
[oracle@orcltest ~]$ sqlplus / as sysdba

SQL*Plus: Release 11.2.0.1.0 Production on Thu Jun 11 15:38:14 2015

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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> create user ogg identified by ogg;

User created.

SQL> grant connect,resource,dba to ogg;

Grant succeeded.

SQL> create user test identified by test;

User created.

SQL> grant connect,resource to test;

Grant succeeded.

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 ~]$

[oracle@orcltest ~]$ cd $OGG_HOME
[oracle@orcltest ggl1]$ ggsci

Oracle GoldenGate Command Interpreter for Oracle
Version 11.2.1.0.1 OGGCORE_11.2.1.0.1_PLATFORMS_120423.0230_FBO
```

```
GGSCI (orcltest) 1> info all
```

```
GGSCI (orcltest) 2> add replicat testrpt,exttrail ./dirdat/rt,nodbcheckpoint
REPLICAT added.
```

```
GGSCI (orcltest) 4> view params testrpt
```

```
GGSCI (orcltest) 5>  
GGSCI (orcltest) 5> info all
```

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```
GGSCI (orcltest) 6>

[oracle@orcltest ~]$ sqlplus ogg/ogg@orcl

SQL*Plus: Release 11.2.0.1.0 Production on Thu Jun 11 16:04:06 2015

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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>
```

1.4.8 启动各进程

注意进程的启动顺序，先是 source 和 target 端的 mgr 进程，其次是 source 端的 extract 进程，target 端的 replicat 进程，最后是 source 端的 extract pump 进程

进程安排在最后启动，在启动 source 端的 pump 进程之前，如果 target 端的 replicat 进程未启动，则会报如下错误：

2012-07-15 13:56:14 ERROR OGG-01033 There is a problem in network communication, a remote file problem, encryption keys for target and source do not match (if using ENCRYPT) or an unknown error. (Remote file used is /vol2/ogg/dirdat/rt000000, reply received is Could not create /vol2/ogg/dirdat/rt000000).

利用 start group 名称启动各个进程，启动后的情况：

source 端：

```
GGSCI (node1) 1> info all

Program      Status      Group      Lag at Chkpt  Time Since Chkpt
-----
MANAGER      RUNNING
EXTRACT      RUNNING     TESTEXT    00:00:00      00:00:03
EXTRACT      RUNNING     TESTPUMP    00:00:00      00:00:02

GGSCI (node1) 2>
```

target 端：

```
GGSCI (orcltest) 7> info all

Program      Status      Group      Lag at Chkpt  Time Since Chkpt
-----
MANAGER      RUNNING
REPLICAT     RUNNING     TESTRPT    00:00:00      00:00:04
```

确保每个进程都是 running 状态，如果不是的话就 view report 进程名，查看日志解决错误后重新启动进程。

1. 4. 9 测试同步情况

```
C:\Users\Administrator>sqlplus test/test@rac

SQL*Plus: Release 11.2.0.1.0 Production on Thu Jun 11 16:15:59 2015

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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> create table t1 (id number,name char(10));

Table created.

SQL> desc t1;
Name                                Null?    Type
-----
ID                                    NUMBER
NAME                                CHAR(10)

SQL> insert into t1 values (1,'one');

1 row created.

SQL> select * from t1;

   ID NAME
-----
    1 one

SQL> commit;

Commit complete.

SQL> conn test/test@orcl
Connected.
SQL> select * from tab;

TNAME                                TABTYPE  CLUSTERID
-----
T1                                    TABLE

SQL> select * from t1;

   ID NAME
-----
    1 one

SQL>
SQL> conn test/test@rac
Connected.
SQL> create table rac_test as select * from all_objects;

Table created.
```

```
SQL> conn test/test@orcl
Connected.
SQL> select count(1) from rac_test;
```

COUNT(1)
68092

```
SQL> conn test/test@rac
Connected.
SQL> select count(1) from rac_test;
```

COUNT(1)
55664

```
SQL>
```

1.4.10 总结

总结：rac 环境下配置 ogg，基本同单实例无异！重点需要注意的地方有以下几点！

- 1：使用 ASM 存储，需要先配置 ASM 实例的静态注册，同时在 tnsnames.ora 文件中配置连接串
- 2：在配置 extttract 进程中，注意需要配置 TRANLOGOPTIONS 参数，输入连接 asm 实例的凭证
- 3：在配置 extttract 进程中，添加 tranlog 的时候，需要写 thread 2
- 4：注意进程的启动顺序，先是 source 和 target 端的 mgr 进程，其次是 source 端的 extract 进程，target 端的 replicat 进程，最后是 source 端的 extract pump 进程

1.5 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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