

Oracle® Tutor™



Section 7 数据保镖 (Data Guard)

1. Create Physical Standby Database with real-time apply.

GC 建好 DataGuard 之后在 DataGuard 属性页面里面进行修改成 real-time apply

做好之后 show parameter log 查看 DG 日志传输为 **LGWR SYNC AFFIRM**

ORACLE® Enterprise Manager 10g
Grid Control

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Database Instance: PROD > Logged in As SYS

Data Guard

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Overview

Data Guard Status **✓ Normal**
Protection Mode **Maximum Protection**
Fast-Start Failover **Disabled**

Primary Database

Name **PROD**
Host **edu1**
Data Guard Status **✓ Normal**
Current Log **29**
Properties **Edit**

Standby Progress Summary

Transport lag is the time difference between the primary last update and the standby last received redo. Apply lag is the time difference between the primary last update and the standby last applied redo.

seconds

1.0
0.5
0.0

0 0

PROSTD

Transport Lag
Apply Lag

Standby Databases

Add Standby Database

Edit Remove Switchover Failover Convert

Select	Name	Host	Data Guard Status	Role	Real-time Query	Last Received Log	Last Applied Log	Estimated Failover Time
<input checked="" type="radio"/>	PROSTD	edu1	✓ Normal	Physical Standby	Disabled	28	28	< 1 second

Database Instance: PROD > Data Guard >

Edit Standby Database Properties: PRODSTD

General

Standby Role Properties

Common Properties

Status

Normal

Role Physical Standby

Redo Apply Services

Redo apply services automatically apply redo data to standby databases to maintain transactional consistency with the primary database

Apply On

Redo apply is on. Redo data is being applied.

Real-time query allows a physical standby database to be used for real-time reporting, with minimal latency between reporting and production data.

Enable Real-time Query

The database is open read-only and redo apply is on.

Apply Off

Redo apply is off. No redo data will be applied.

Diagnostics

Role	View Alert Log	Open Telnet Session
Primary	PROD	edu1
Physical Standby	PRODSTD	edu1

General

Standby Role Properties

Common Properties

做好的效果:

Data Guard

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View Data

Real Time: Manual Refresh

Overview

Data Guard Status

Normal

Protection Mode

Maximum Availability

Fast-Start Failover

Enabled to PRODSTD

Observer Location

edu1

Primary Database

Name

PROD

Host

edu1

Data Guard Status

Normal

Current Log

60

Properties

Edit

Standby Progress Summary

Transport lag is the time difference between the primary last update and the standby last received redo. Apply lag is the time difference between the primary last update and the standby last applied redo.

1.0

0.5

0.0

No data is currently available.

Standby Databases

Edit

Remove

Switchover

Failover

Convert

Add Standby Database

Select	Name	Host	Data Guard Status	Role	Real-time Query	Last Received Log	Last Applied Log	Estimated Failover Time
<div></div>	PRODSTD	edu1	<div>Normal</div>	Physical Standby	Disabled	59	59	Not available

2. Configure the data guard environment to reduce overheads of fast incremental backups on the primary database

alter database enable block change tracking using file '/ora/oradata/PROD.block.trace';

alter database disable block change tracking;

SELECT * FROM v\$block_change_tracking;

Backup Settings

Device	Backup Set	Policy
Backup Policy		
<input checked="" type="checkbox"/> Automatically backup the control file and server parameter file (SPFILE) with every backup and database structural change		
Autobackup Disk Location <input type="text"/> <small>An existing directory or diskgroup name where the control file and server parameter file will be backed up. If you do not specify a location, the flash recovery area location.</small>		
<input type="checkbox"/> Optimize the whole database backup by skipping unchanged files such as read-only and offline datafiles that have been backed up		
<input type="checkbox"/> Enable block change tracking for faster incremental backups		
Block Change Tracking File <input type="text"/> <small>Specify a location and file, otherwise an Oracle managed file will be created in the database area.</small>		

在实时应用的备库打开块修改跟踪，然后 0 级备份，增量备份，但是由于控制文件和 spfile 文件不能用于主库失败的恢复，在备库做完备份的同时，在主库做控制文件和 spfile 的备份。
每周日

```
connect target sys/oracle@sbdb catalog rman/rman@rman
```

```
BACKUP AS BACKUPSET INCREMENTAL LEVEL 0 DATABASE PLUS ARCHIVELOG;
```

```
connect target sys/oracle@primary catalog rman/rman@rman
```

```
backup current controlfile;
```

```
backup spfile;
```

每天

```
connect target sys/oracle@sbdb catalog rman/rman@rman
```

```
BACKUP AS BACKUPSET INCREMENTAL LEVEL 1 DATABASE PLUS ARCHIVELOG;
```

```
connect target sys/oracle@primary catalog rman/rman@rman
```

```
backup current controlfile
```

```
backup spfile;
```

每周三

```
connect target sys/oracle@sbdb catalog rman/rman@rman
```

```
BACKUP AS BACKUPSET INCREMENTAL LEVEL 1 CUMULATIVE DATABASE PLUS ARCHIVELOG;
```

```
connect target sys/oracle@primary catalog rman/rman@rman
```

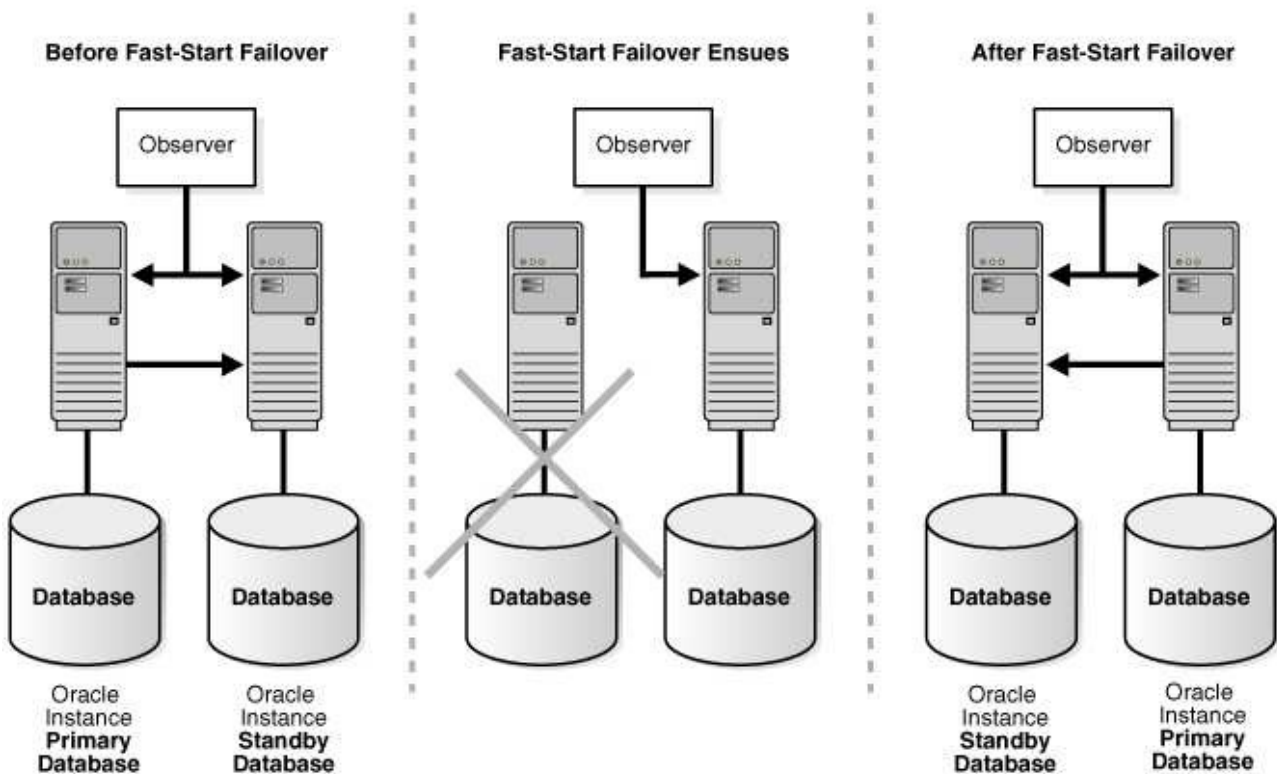
```
backup current controlfile;
```

```
backup spfile;
```

3. Configure the Observer

dataguard 应该像 10g 那样在一台机器上，observer 应该部署在与 dataguard 不同的机器上，就是 oms 机上。配置 observer 就是配置 tnsnames.ora

Figure 5-1 Relationship of Primary and Standby Databases and the Observer



配置 DG#注意：不能在 snapshot standby 上做。在界面里面点 **Fast-Start Failover** 进入配置界面：

Fast-Start Failover: Configure Observer

Cancel OK

Observer Location

There is currently no observer for this configuration. Select the discovered host and Oracle Home where Enterprise Manager will start the observer.

☒ **TIP** Specify an alternate observer location to enhance observer availability. If an unobserved condition is detected, Enterprise Manager will attempt to restart the observer on the original observer host, falling back to the alternate host if necessary.

Observer Host

Observer Oracle Home

Alternate Observer Host

Alternate Observer Oracle Home

Observer Connect Identifiers

Optionally specify alternate connect identifiers for the observer to use to connect to the primary and standby databases. By default, the observer will contact each database using the same connect identifier used for other Data Guard functions.

Primary Database

Standby Database

Alternate connect identifier for the observer to use to connect to the primary database.

指定 OBserver 进行变更记录以达到快速切换的目的。

手工开启 OBserver 进程#我们在主库上面做测试，如果 GC 起不来 OB 的时候再做。

```
$>dgmgrl
DGMGRL>connect sys/oracle@prod
```

```
DGMGRL>start observer file='/ora/observer.dat'
```

#启动后会一直挂在那里进行监听

4.Switchover and switch back

GC 中操作，切换回来之前先在当前主库 switch 几下 logfile 以避免 GC 报错。不会考。

5.Configure connect time failover

6.Convert the standby to a snapshot standby

Data Guard

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View Data Real Time: Manual Refresh

Overview

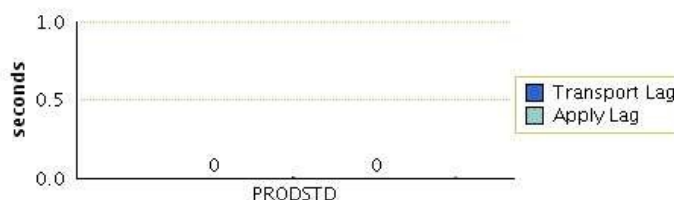
Data Guard Status **Normal**
Protection Mode Maximum Availability
Fast-Start Failover Disabled

Primary Database

Name PROD
Host edu1
Data Guard Status **Normal**
Current Log 49
Properties Edit

Standby Progress Summary

Transport lag is the time difference between the primary last update and the standby last received redo. Apply lag is the time difference between the primary last update and the standby last applied redo.



Standby Databases

Add Standby Database								
Edit Remove Switchover Failover Convert								
Select	Name	Host	Data Guard Status	Role	Real-time Query	Last Received Log	Last Applied Log	Estimated Failover Time
<input checked="" type="radio"/>	PRODSTD	edu1	Normal	Physical Standby	<u>Disabled</u>	48	48	< 1 second

Warning

This operation will convert the last physical standby database to a snapshot standby database. Although a snapshot standby database provides data protection, failover requires additional time compared to a physical standby database. If this is a concern, consider creating an additional physical standby database prior to performing conversion.

Confirmation: Convert Database

Are you sure you want to convert PRODSTD to a snapshot standby database?

No Yes

Processing: Convert Standby Database

After all steps are completed, you will be returned to the Data Guard overview page.



Converting database
Waiting for process to complete

TIP This process cannot be cancelled. It will continue even if the browser window is closed.

中间可能报错，重新刷新一下就好了，最终应该是这个样子的

Data Guard

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View Data Real Time: Manual Refresh



Overview

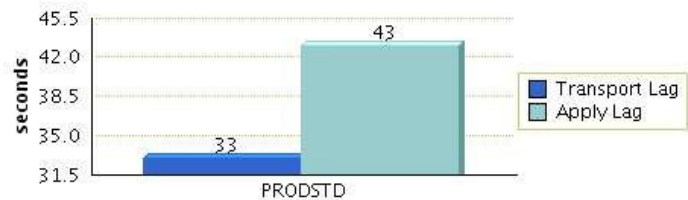
Data Guard Status **✓ Normal**
 Protection Mode Maximum Availability
 Fast-Start Failover Disabled

Primary Database

Name PROD
 Host edu1
 Data Guard Status **✓ Normal**
 Current Log 52
 Properties Edit

Standby Progress Summary

Transport lag is the time difference between the primary last update and the standby last received redo. Apply lag is the time difference between the primary last update and the standby last applied redo.



Standby Databases

Add Standby Database

Edit		Remove	Switchover	Failover	Convert			
Select	Name	Host	Data Guard Status	Role	Real-time Query	Last Received Log	Last Applied Log	Estimated Failover Time
<input checked="" type="radio"/>	PROSTD	edu1	✓ Normal	Snapshot Standby	N/A	<u>51</u>	<u>48</u>	< 1 second

7. Configure archivelog deletion policy for the Dataguard configuration

#PROD RMAN

CONFIGURE ARCHIVELOG DELETION POLICY TO APPLIED ON ALL STANDBY;

#PROSTD RMAN

CONFIGURE ARCHIVELOG DELETION POLICY TO BACKED UP 1 TIMES TO DEVICE TYPE DISK;

#PROD

```
CONFIGURE DB_UNIQUE_NAME
'PROSTD' CONNECT
IDENTIFIER 'PROSTD';

CONFIGURE ARCHIVELOG DELETION
POLICY TO APPLIED ON ALL STANDBY;

CONFIGURE ARCHIVELOG DELETION
POLICY TO shipped to standby;

CONFIGURE ARCHIVELOG DELETION
POLICY TO applied on standby;
```

PROSTD

```
CONFIGURE ARCHIVELOG DELETION
POLICY TO BACKED UP 1 TIMES TO
DISK;
```

还有：Configure archivelog deletion policy for the dataguard configuration 这个问题，我想就用 rman 的 configure 分别在主库上设置

configure archivelog deletion policy to shipped to all standby;

在备库上设置

configure archivelog deletion policy to applied on all standby;

或者

CONFIGURE ARCHIVELOG DELETION POLICY TO BACKED UP 2 TIMES TO SBT;(or DISK)
(oracle dataguard 文档推荐这样设置 P170)

Oracle[®] Tutor[™]



手工 Section7 数据保镖 (Data Guard)

我建议用 SQLPLUS+DGMGRL，你可以用 11g 的 duplicate standby from active database 特性，很方便。感觉 Duplicate standby database from active database 的确是最优的可控的搭建 dataguard 的方法。配合 dgmgrl，让一切变得如此简单！observer 应该部署在与 dataguard 不同的机器上，就是 oms 机上。snapshot-sb 就是一条命令，没有什么说的。

0.主库改归档

主库改闪回

主库改 force logging

log_archive_config='DG_CONFIG=(PROD1,STDBY)'

log_archive_dest_1

log_archive_dest_2='SERVICE=STDBY ASYNC LGWR

VALID_FOR=(ONLINE_LOGFILES,PRIMARY_ROLE) DB_UNIQUE_NAME=STDBY'

fal_server

fal_client

standby_file_management=AUTO

添加 standby logfile group

1.创建 orapwd 加 ignorecase=Y；然后把 orapwPROD1 复制到备库 orapwSTDBY。启动到 nomount

2.DGMGRL_静态注册要配置好，tnsping 要有回应。

验证登陆 sqlplus sys/oracle@station1:1521/PROD1_DGMGRL as sysdba

验证登陆 sqlplus sys/oracle@station2:1521/STDBY_DGMGRL as sysdba

3.在 duplicate 上做，执行 stdby.rcv

该命令可以更加便捷地创建 Data Guard 环境，你甚至不需要将 Primary Database shutdown(整个过程中主库都可以处于打开状态下)，也不需要配置前做一些额外的备份操作，仅需要配置起 auxiliary 辅助实例，同时创建密码文件，并在监听(LISTENER)中加入静态注册信息后就可以开始工作了！

rman target sys/oracle@PROD1 auxiliary sys/oracle@STDBY cmdfile=stdby.rcv

stdby.rcv 内容如下：

```
duplicate target database
for standby
from active database
NOFILENAMECHECK
DORECOVER
spfile
set db_unique_name='STDBY'
set log_archive_dest_1='location=use_db_recovery_file_dest'
set log_archive_dest_2='service=PROD1 async lgwr valid_for=(online_logfiles,primary_role)
db_unique_name=PROD1'
set standby_file_management='AUTO'
set fal_server='PROD1'
set fal_client='STDBY'
set
control_files='/u01/app/oracle/oradata/STDBY/disk1/control01.ctl','/u01/app/oracle/oradata/STDBY/disk2/control02.ctl','/u01/app/oracle/oradata/STDBY/disk3/control03.ctl'
set db_file_name_convert='PROD1','STDBY'
set log_file_name_convert='PROD1','STDBY';
```

NOFILENAMECHECK: Use to prevent RMAN from checking whether target database data files with the same name as duplicate database data files are in use. You must specify this option when the target database and duplicate database data files and redo log files use the same names. You would typically use this when you create a duplicate database on a host that has the same disk configuration, directory structure, and file names as the target

database host. If you do not specify NOFILENAMECHECK in this situation, RMAN returns an error.

对比脚本：

克隆数据库

```
run {
allocate channel c1 type disk;
allocate auxiliary channel cr1 type disk;
duplicate target database to 'prodcl' from active database nofilenamecheck;
}
```

物理备库

```
run {
allocate channel c1 type disk;
allocate auxiliary channel cr1 type disk;
duplicate target database for standby from active database nofilenamecheck;
}
```

4.dgmgrl

两边 dg_broker 要 start

```
DGMGRL> create configuration VRACSB as primary database is VRAC connect identifier is VRAC;
```

```
DGMGRL> add database SBDB as connect identifier is SBDB maintained as physical;
```

```
DGMGRL> enable configuration;
```

```
DGMGRL> show database vrac
```

```
edit database prod set property LogXptMode='sync';
```

```
edit database sbdb set property LogXptMode='sync';
```

```
/* 修改当前 DG 的保护模式为最大可用模式 MaxAvailability */
```

```
DGMGRL> edit CONFIGURATION SET PROTECTION MODE as MaxAvailability;
```

Succeeded.

5、测试 ADG

primary:

```
SQL> create table maclean_test as select * from sh.sales;
```

```
SQL> select count(*) from maclean_test;
```

```
COUNT(*)
```

```
918843
```

standby :

```
alter database open;
```

```
SQL> select count(*) from maclean_test;
```

```
COUNT(*)
```

918843

6、convert standby to snapshot

CONVERT DATABASE MACDBS to SNAPSHOT STANDBY;

snapshot standby :

SQL> truncate table maclean_test;

DGMGRL> CONVERT DATABASE MACDBS to PHYSICAL STANDBY;

7、启动 fast_start failover

standby : shutdown immediate; startup mount; alter database flashback on;

DGMGRL>

Enabled.

ENABLE FAST_START FAILOVER

DGMGRL> start observer

Observer started

DGMGRL> stop observer;

Done.

SHOW FAST_START FAILOVER;

enable fast_start failover condition "Stuck Archiver";

Succeeded.

SHOW FAST_START FAILOVER;

dgmgri sys/oracle@MACDBN

show configuration

8、配置 archivelog delete policy

SQL> alter system set "_log_deletion_policy"=ALL;

System altered.