
Goodus 기술노트 [21회]

Data Guard

Author	최범진
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3			

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1 Data Guard

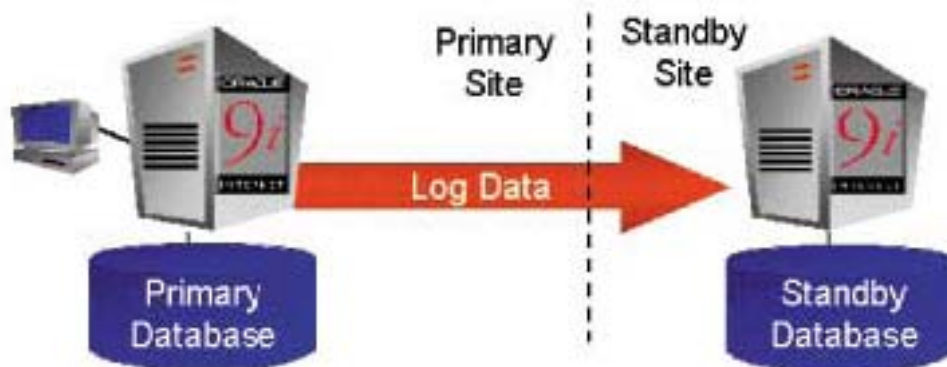
1-1 개요

Oracle9i Data Guard는 기본 생산 데이터베이스와 대기 데이터베이스로 구성된 시스템 모음으로 구현되며, 이 시스템들이 서로 유연하게 연결됨으로써 관리가 용이한 하나의 데이터 보호 솔루션을 제공하게 된다.

Data Guard 구성에서의 각 사이트들은 같은 데이터 센터에 있을 수도 있고 지리적으로 분산되어 있을 수도 있으며, Oracle Network Services를 통해 서로 연결될 수도 있다.

기본 데이터베이스(Primary Database)가 transaction에 의해 수정되면 물리적으로 존재하는 대기 데이터베이스(Standby Database)는 기본 데이터베이스(Primary Database)에서의 변화로 인해 생성된 재실행 데이터를 전송 받으며, 변경 사항은 복구 모드에서 실행되는 대기데이터베이스(Standby-Database)에 적용된다. 기본 데이터베이스(Primary Database)가 개방적이고 활동적인 반면, 대기 데이터베이스(Standby Database)는 복구 역할을 담당하고 리포트 액세스를 위해서만 개방된다. 기본 데이터베이스에 오류가 발생하면 생산 데이터베이스의 작업을 대신하기 위해 대기 데이터베이스를 사용할 수 있다.

아래 그림은 이러한 예를 보여주고 있다.



1-2 Data Guard 의 유용성

Standby Database의 사용이 애플리케이션에 영향을 주지 않으며 이를 위해 애플리케이션 코드를 변경해야 할 필요가 없기 때문에, Standby Database 구성은 거의 모든 데이터베이스에 구축되어 사용될 수 있다. Standby Database는 Primary Database의 성능에 전혀(거의 0%) 영향을 미치지 않으면서 구성될 수 있다. 또한 생산 데이터베이스에 대한 변경 사항만이 대기 데이터베이스로 전송되기 때문에, 모든 데이터베이스 파일 기록을 미러링하는 접근 방식

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과 비교하여 효과적인 트랜잭션 비율을 보장할 수 있습니다.

대기 데이터베이스는 복구 기능을 수행하지 않을 경우에는 읽기 전용으로 절의될 수 있으며, 이와 동시에 생산 데이터베이스는 계속해서 재실행 데이터를 전송하게 됩니다. 대기 데이터베이스는 전통적으로 재난 보호 솔루션으로 인식되어 왔으나, 사용자 오류나 데이터 손상 같은 재난 시 데이터를 보호하기 위해서도 사용될 수 있습니다.

사람의 실수, 파일 시스템 손상, 디스크 볼륨 추가 기록으로 인해 기본 데이터베이스가 손상되었을 경우에, 대기 데이터베이스에 대한 원치 않는 변경 때문에 애플리케이션에 지연이 발생할 수도 있습니다. 또한 대기 데이터베이스는 기본 데이터베이스와 대기 데이터베이스 간의 스위치오버(switchover)라고도 하는 역할 전환 절차를 통해, 운영 체제 및 하드웨어 업그레이드 같은 계획된 정지로 인한 다운타임을 줄이도록 사용될 수 있습니다. 실제로 이러한 기능 때문에, Oracle의 많은 고객들이 고-가용성 솔루션으로서 일반적으로 대기 시스템을 사용하고 있습니다.

2 Data Guard의 특성

2-1 switchover and failover

- 자동실행이 아닌 DBA가 action을 취해야 한다.

- Switchover

O/S 작업 또는 서버 PM작업 시 사용(primary → standby, standby → primary)

- Failover

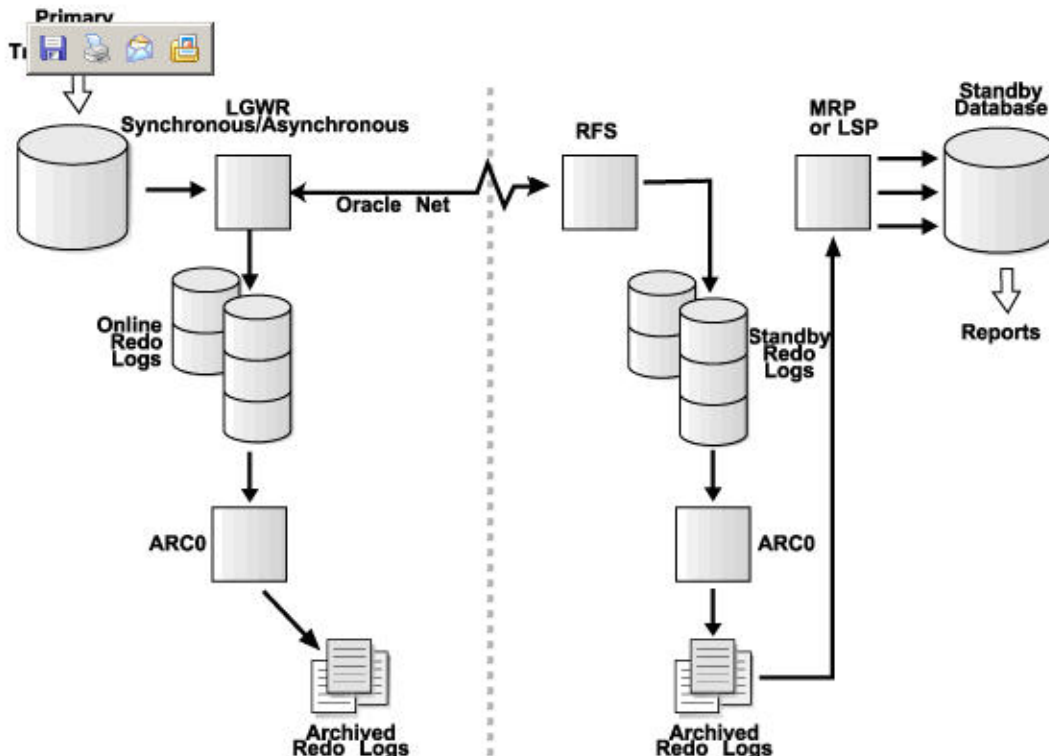
Disk fail 등 긴급상황에서 사용.

Standby database가 main database(Primary database)로 failover 되기 때문에 기존 구성된 Data guard는 사용할 수 없다. 새로운 data guard를 재구성하여 사용하여야 한다.

2-2 Standby Database 종류

2-2-1 Physical standby database

- block 대 block 기반으로 primary DB의 redo log를 적용시켜 standby DB를 동기화

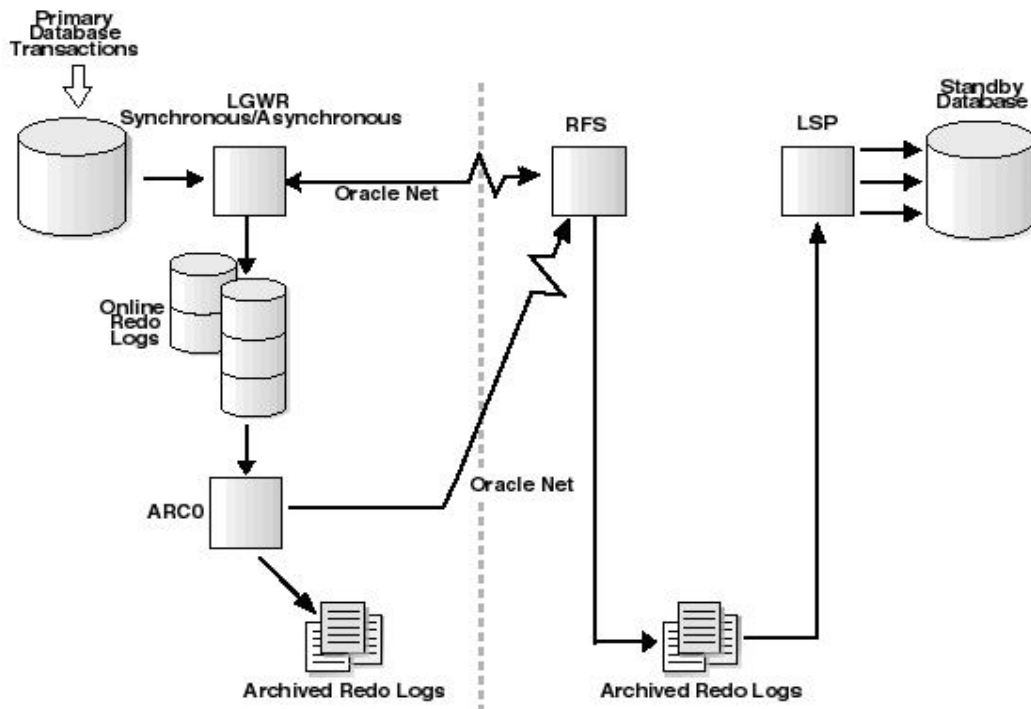


- primary database의 LGWR process가 standby database redo log를 보내고, standby database의 RFS process가 redo log를 standby redo log에 적용시킨다. archiving되면 archived redo logs가 되고 이것을 MRP process가 standby database에 적용시킨다.

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2-2-2 Logical standby database

- 같은 schema 정의로 공유
- Primary database의 sql 문장을 standby database에 적용



- Logical Standby database는 primary database에서 수행된 SQL문장을 LGWR process가 standby database database로 보내고 RFS process가 받아서 Archived redo logs에 쓴다. LSP(Logical standby process)가 standby database에 적용 시킨다.
- Primary database에서 log switch가 일어나게 되면 standby database의 RFS process에 이를 알려주어 log switch가 되도록 한다.

2-3 Protect Mode

2-3-1 Maximum Protection

Primary DB와 Standby DB의 redo log를 동기화 시킨다.

Standby DB가 네트워크 이상 등의 이유로 standby로의 전송이 안될 경우 primary를 halt 시킨다.

Data가 서로 동기화되어 primary DB에서 commit을 하게 되면 standby DB에서 commit이 완료될 때까지 primary DB에서 commit 완료를 하지 않는다.

성능에는 문제를 줄 소지가 있으나 failover 상황이 오더라도 데이터 손실이 없다. Physical standby database에서만 가능하다.

2-3-2 Maximum Availability

Maximum Protection과 마찬가지로 primary DB와 standby DB를 동기화시킨다.

단, standby DB가 네트워크 문제 등의 이유로 전송이 안될지라도 halt되지는 않는다.

Data는 maximum protection과 마찬가지로 primary DB에서 commit을 하게 되면 standby DB에서 commit이 완료될 때까지 primary DB에서 commit 완료를 하지 않는다. 만약 standby DB가 unavailable상태일 경우 임시로 불일치 시킨다. 또 다시 standby DB가 available하면 자동으로 동기화 시킨다. 성능에는 문제를 줄 소지가 있으나 failover상황이 오더라도 data손실은 거의 없다.

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Physical standby, logical standby DB 모두 가능하다.

2-3-3 Maximum Performance

Default protection mode이다. Primary data에 대한 protection이 가장 낮다. Primary database에 transaction이 수행되면 이것을 asynchronous하게 standby DB에 적용한다. 즉 maximum protection, maximum availability의 경우에는 standby DB에 적용(commit)될 때까지 primary DB의 transaction이 적용(commit) 되지 않았으나, 기다리지 않는다. 즉 standby 유의 문제로 인해서 primary DB에 성능영향이 가지 않는다. 단, failover시에는 약간의 데이터 손실을 가져올 수 있다.

3 Data Guard 구축

3-1 Standby Database Configuration

3-1-1 init.ora 설정

(At Primary)

```
*****
# Primary Role
*****
log_archive_start=true
log_archive_format=%t_%s.dbf
log_archive_dest_1="location=/ora9/oradata/GD9A/archive"
log_archive_dest_2='SERVICE=SGD9A MANDATORY LGWR SYNC AFFIRM'
log_archive_dest_state_1 = ENABLE
log_archive_dest_state_2 = ENABLE
remote_archive_enable=TRUE
*****
# Standby Role
*****
#log_archive_start=true
#log_archive_format=%t_%s.dbf
#log_archive_dest_1="location=/ora9/oradata/GD9A/archive"
#log_archive_dest_state_1=enable
#standby_archive_dest=/ora9/oradata/GD9A/archive
#fal_server=GD9A
#fal_client=GD9A
#remote_archive_enable=true
#standby_file_management=auto
*****
# Common
*****
dg_broker_start=TRUE
instance_name='GD9A'
service_names='GD9A'
#lock_name_space=SGD9A
log_archive_trace=127
```

(At Standby)

```
*****
# Primary Role
*****
#log_archive_start=true
#log_archive_format=%t_%s.dbf
#log_archive_dest_1="location=/ora9/oradata/GD9A/archive"
#log_archive_dest_2='SERVICE=GD9A MANDATORY LGWR SYNC AFFIRM'
#log_archive_dest_state_1 = ENABLE
#log_archive_dest_state_2 = ENABLE
#remote_archive_enable=TRUE
*****
# Standby Role
```


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```
*****
log_archive_start=true
log_archive_format=%t_%s.dbf
log_archive_dest_1="location=/ora9/oradata/GD9A/archive"
log_archive_dest_state_1=enable
standby_archive_dest=/ora9/oradata/GD9A/archive
fal_server=GD9A
fal_client=SGD9A
remote_archive_enable=true
standby_file_management=auto
*****
# Common
*****
dg_broker_start=TRUE
instance_name='GD9A'
service_names='SGD9A'
lock_name_space=SGD9A
log_archive_trace=127
```

3-1-2 listener.ora 설정

(At Primary)

```
STANDBY_LISTENER =
(DESCRIPTION_LIST =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS=(PROTOCOL=TCP)(HOST = sf-a)(PORT = 1523))
    )
  )
)
SID_LIST_STANDBY_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (ORACLE_HOME = /ora9/product/920)
      (SID_NAME = GD9A)
    )
  )
)
```

(At Standby)

```
STANDBY_LISTENER =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS_LIST =
        (ADDRESS=(PROTOCOL=TCP)(HOST = sf-b)(PORT = 1523))
      )
    )
  )
)
```

Data Guard

```
SID_LIST_STANDBY_LISTENER =  
  (SID_LIST =  
    (SID_DESC =  
      (ORACLE_HOME = /ora9/product/920)  
      (SID_NAME = GD9A)  
    )  
  )  
)
```

3-1-3 tnsname.ora 설정

```
GD9A =  
  (DESCRIPTION =  
    (ADDRESS_LIST =  
      (ADDRESS=(PROTOCOL=TCP)(HOST=sf-a)(PORT=1523))  
    )  
    (CONNECT_DATA =  
      (SERVER = DEDICATED)  
      (SID = GD9A)  
    )  
  )  
)  
SGD9A =  
  (DESCRIPTION =  
    (ADDRESS_LIST =  
      (ADDRESS=(PROTOCOL=TCP)(HOST=sf-b)(PORT= 1523))  
    )  
    (CONNECT_DATA =  
      (SERVER = DEDICATED)  
      (SID = GD9A)  
    )  
  )  
)
```

3-2 Creating physical standby database

3-2-1 Standby control file 생성 (At Primary)

```
SQL> alter database create standby controlfile as '/ora9/oradata/GD9A_back/standby.ctl';  
SQL> shutdown immediate
```

3-2-2 Standby DB copy

datafile, controlfile, redo file, standby controlfile copy(primary → standby)

v\$log, dba_data_files, v\$controlfile 등을 통해 datafile, controlfile, redo file 위치 파악

```
[sf-a:ora9:/ora9/oradata]$ rcp -r /ora9/oradata/GD9A sf-b:/ora9/oradata/.
```

```
SQL> startup
```

3-2-3 Start and Mount Standby Instance (At Standby DB)

```
SQL> startup nomount
```

Data Guard

```
Tue Mar 27 11:47:52 2007
ARCH: STARTING ARCH PROCESSES COMPLETE
Tue Mar 27 11:47:52 2007
ARC0: Thread not mounted
DMON started with pid=13
Tue Mar 27 11:47:52 2007
ARC1: Archival started
ARC1: Thread not mounted
Tue Mar 27 11:47:55 2007
Starting Data Guard Broker (DMON)
```

SQL> alter database mount standby database;

```
Tue Mar 27 11:48:15 2007
alter database mount standby database
Tue Mar 27 11:48:15 2007
lmon registered with NM - instance id 1 (internal mem no 0)
Tue Mar 27 11:48:16 2007
Reconfiguration started
List of nodes: 0,
  Global Resource Directory frozen
one node partition
  Communication channels reestablished
  Master broadcasted resource hash value bitmaps
  Non-local Process blocks cleaned out
  Resources and enqueues cleaned out
  Resources remastered 0
  0 GCS shadows traversed, 0 cancelled, 0 closed
  0 GCS resources traversed, 0 cancelled
  set master node info
  Submitted all remote-enqueue requests
  Update rdomain variables
  Dwn-cvts replayed, VALBLKs dubious
  All grantable enqueues granted
  0 GCS shadows traversed, 0 replayed, 0 unopened
  Submitted all GCS remote-cache requests
  0 write requests issued in 0 GCS resources
  0 PIs marked suspect, 0 flush PI msgs
Tue Mar 27 11:48:18 2007
Reconfiguration complete
  Post SMON to start 1st pass IR
Tue Mar 27 11:48:22 2007
Successful mount of redo thread 1, with mount id 1805531970.
Tue Mar 27 11:48:22 2007
Standby Database mounted.
Completed: alter database mount standby database
```

■ Standby redo log 생성

```
SQL> alter database add standby logfile '/ora9/oradata/GD9A/standbylog01.log' size 10m;
SQL> alter database add standby logfile '/ora9/oradata/GD9A/standbylog02.log' size 10m;
SQL> alter database add standby logfile '/ora9/oradata/GD9A/standbylog03.log' size 10m;
```

```
Tue Mar 27 11:50:58 2007
alter database add standby logfile '/ora9/oradata/GD9A/standbylog01.log' size 10m
Completed: alter database add standby logfile '/ora9/oradata/
Tue Mar 27 11:51:18 2007
alter database add standby logfile '/ora9/oradata/GD9A/standbylog02.log' size 10m
Completed: alter database add standby logfile '/ora9/oradata/
Tue Mar 27 11:51:26 2007
alter database add standby logfile '/ora9/oradata/GD9A/standbylog03.log' size 10m
Completed: alter database add standby logfile '/ora9/oradata/
```

Data Guard

■ logfile 확인

```
SQL> select group#,status,type from v$logfile;
```

GROUP#	STATUS	TYPE
1	ONLINE	ONLINE
2	ONLINE	ONLINE
3	ONLINE	ONLINE
4	STANDBY	STANDBY
5	STANDBY	STANDBY
6	STANDBY	STANDBY

```
SQL> select group#,thread#,archived,status from v$log;
```

GROUP#	THREAD#	ARCHIV	STATUS
1	1 NO	CURRENT	
2	1 YES	INACTIVE	
3	1 NO	INACTIVE	

```
SQL> select group#, thread#, archived, status from v$standby_log;
```

GROUP#	THREAD#	ARCHIV	STATUS
4	0 YES	UNASSIGNED	
5	0 YES	UNASSIGNED	
6	0 YES	UNASSIGNED	

■ standby database를 managed recovery mode로 설정

```
SQL> recover managed standby database disconnect;
```

```
Tue Mar 27 11:53:06 2007
ALTER DATABASE RECOVER managed standby database disconnect
Attempt to start background Managed Standby Recovery process
MRP0 started with pid=15
MRP0: Background Standby Recovery process started
Starting datafile 1 recovery in thread 1 sequence 25
Datafile 1: '/ora9/oradata/GD9A/system01.dbf'
Starting datafile 2 recovery in thread 1 sequence 25
Datafile 2: '/ora9/oradata/GD9A/undotbs01.dbf'
Starting datafile 3 recovery in thread 1 sequence 25
Datafile 3: '/ora9/oradata/GD9A/indx01.dbf'
Starting datafile 4 recovery in thread 1 sequence 25
Datafile 4: '/ora9/oradata/GD9A/tools01.dbf'
Starting datafile 5 recovery in thread 1 sequence 25
Datafile 5: '/ora9/oradata/GD9A/users01.dbf'
Media Recovery Waiting for thread 1 seq# 46912
Tue Mar 27 11:53:12 2007
Completed: ALTER DATABASE RECOVER managed standby database
```

3-2-4 확인

(At Standby DB)

```
SQL> select database_role, protection_mode from v$database;
```

DATABASE_ROLE	PROTECTION_MODE
-----	-----

Data Guard

PHYSICAL STANDBY

MAXIMUM PERFORMANCE

(At Primary DB)

```
SQL> select database_role, protection_mode from v$database;
```

DATABASE_ROLE	PROTECTION_MODE
PRIMARY	MAXIMUM PERFORMANCE

3-2-5 Archive 전송 TEST

(At Primary DB)

```
SQL> alter system switch logfile;
```

```
SQL> alter system switch logfile;
```

```
SQL> alter system switch logfile;
```

```
SQL> select dest_id,status,error from v$archive_dest where dest_id <=2;
```

DEST_ID	STATUS	ERROR
1	VALID	
2	VALID	

((At Primary DB)

```
Tue Mar 27 14:28:28 2007
LGWR: Completed archiving log 2 thread 1 sequence 29
Creating archive destination LOG_ARCHIVE_DEST_2: 'SGD9A'
LGWR: Transmitting activation ID 6b9d546e
LGWR: Beginning to archive log 3 thread 1 sequence 30
Tue Mar 27 14:28:28 2007
ARC0: Evaluating archive log 2 thread 1 sequence 29
Tue Mar 27 14:28:28 2007
Thread 1 advanced to log sequence 30
Current log# 3 seq# 30 mem# 0: /ora9/oradata/GD9A/redo03.log
Tue Mar 27 14:28:28 2007
ARC0: Archive destination LOG_ARCHIVE_DEST_2: Previously completed
ARC0: Beginning to archive log 2 thread 1 sequence 29
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_29.dbf'
ARC0: Completed archiving log 2 thread 1 sequence 29
Tue Mar 27 14:28:40 2007
LGWR: Completed archiving log 3 thread 1 sequence 30
Creating archive destination LOG_ARCHIVE_DEST_2: 'SGD9A'
LGWR: Transmitting activation ID 6b9d546e
LGWR: Beginning to archive log 1 thread 1 sequence 31
Thread 1 advanced to log sequence 31
Current log# 1 seq# 31 mem# 0: /ora9/oradata/GD9A/redo01.log
Tue Mar 27 14:28:40 2007
ARC1: Evaluating archive log 3 thread 1 sequence 30
Tue Mar 27 14:28:40 2007
ARC0: Transmitting activation ID 6b9d546e
Tue Mar 27 14:28:40 2007
ARC1: Archive destination LOG_ARCHIVE_DEST_2: Previously completed
ARC1: Beginning to archive log 3 thread 1 sequence 30
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_30.dbf'
kccrsz: expanded controlfile section 11 from 13 to 27 records
requested to grow by 13 record(s); added 1 block(s) of records
ARC1: Completed archiving log 3 thread 1 sequence 30
Tue Mar 27 14:28:44 2007
```

Data Guard

```
LGWR: Completed archiving log 1 thread 1 sequence 31
Creating archive destination LOG_ARCHIVE_DEST_2: 'SGD9A'
LGWR: Transmitting activation ID 6b9d546e
LGWR: Beginning to archive log 2 thread 1 sequence 32
Tue Mar 27 14:28:44 2007
ARC0: Evaluating archive log 1 thread 1 sequence 31
Tue Mar 27 14:28:45 2007
Thread 1 advanced to log sequence 32
Current log# 2 seq# 32 mem# 0: /ora9/oradata/GD9A/redo02.log
Tue Mar 27 14:28:45 2007
ARC0: Archive destination LOG_ARCHIVE_DEST_2: Previously completed
ARC0: Beginning to archive log 1 thread 1 sequence 31
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_31.dbf'
ARC0: Completed archiving log 1 thread 1 sequence 31
```

(At Standby DB)

```
ARC1: Evaluating archive log 5 thread 1 sequence 29
ARC1: Beginning to archive log 5 thread 1 sequence 29
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_29.dbf'
Tue Mar 27 14:28:29 2007
RFS: Successfully opened standby logfile 4: '/ora9/oradata/GD9A/standbylog01.log'
Tue Mar 27 14:28:29 2007
ARC1: Completed archiving log 5 thread 1 sequence 29
ARC1: Evaluating archive log 4 thread 1 sequence 30
ARC1: Beginning to archive log 4 thread 1 sequence 30
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_30.dbf'
ARC1: Completed archiving log 4 thread 1 sequence 30
Tue Mar 27 14:28:41 2007
RFS: Successfully opened standby logfile 4: '/ora9/oradata/GD9A/standbylog01.log'
Tue Mar 27 14:28:45 2007
ARC1: Evaluating archive log 4 thread 1 sequence 31
ARC1: Beginning to archive log 4 thread 1 sequence 31
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_31.dbf'
ARC1: Completed archiving log 4 thread 1 sequence 31
Tue Mar 27 14:28:45 2007
RFS: Successfully opened standby logfile 4: '/ora9/oradata/GD9A/standbylog01.log'
```

```
SQL> !ls /ora9/oradata/GD9A/archive
```

```
1_24.dbf 1_25.dbf 1_26.dbf 1_27.dbf 1_28.dbf 1_29.dbf 1_30.dbf 1_31.dbf
```

3-2 Data 전송 TEST

(At Primary DB)

```
SQL> create table twins (a number);
SQL> insert into twins values(407);
SQL> commit;
SQL> alter system switch logfile;
```

(At Standby DB)

```
SQL> recover managed standby database cancel;
```

```
=== standby alert log ===
```

```
Tue Mar 27 14:45:31 2007
Media Recovery Log /ora9/oradata/GD9A/archive/1_32.dbf
```

Data Guard

```
Media Recovery Waiting for thread 1 seq# 33
Tue Mar 27 14:46:23 2007
ALTER DATABASE RECOVER managed standby database cancel
Tue Mar 27 14:46:31 2007
MRP0: Background Media Recovery user canceled with status 16037
MRP0: Background Media Recovery process shutdown
Tue Mar 27 14:46:32 2007
Managed Standby Recovery Cancelled
Completed: ALTER DATABASE RECOVER managed standby database c

=== primay alert log ===

Network asynch I/O wait error 3114 log 3 service 'SGD9A'
Tue Mar 27 14:46:28 2007
Errors in file /ora9/admin/GD9A/bdump/gd9a_lgwr_15429.trc:
ORA-03114: not connected to ORACLE
```

SQL> alter database open read only; → read only mode로 standby DB open

```
alter database open read only
Tue Mar 27 14:51:58 2007
SMON: enabling cache recovery
Tue Mar 27 14:51:58 2007
Database Characterset is KO16MSWIN949
replication_dependency_tracking turned off (no async multimaster replication found)
Completed: alter database open read only
```

SQL> select * from twins;

```

      A
-----
      407
```

3-2-1 Mode 변경

read only → managed recovery mode 로 전환

SQL> shutdown

```
Tue Mar 27 14:55:09 2007
Shutting down instance: further logons disabled
Shutting down instance (normal)
License high water mark = 2
Tue Mar 27 14:56:14 2007
ALTER DATABASE CLOSE NORMAL
Tue Mar 27 14:56:14 2007
SMON: disabling cache recovery
Tue Mar 27 14:56:14 2007
Completed: ALTER DATABASE CLOSE NORMAL
Tue Mar 27 14:56:14 2007
ALTER DATABASE DISMOUNT
Completed: ALTER DATABASE DISMOUNT
ARCH: Archiving is disabled
Shutting down archive processes
Archiving is disabled
ARCH 9 state 3
ARCH 8 state 3
Tue Mar 27 14:56:14 2007
ARCH shutting down
ARC0: Archival stopped
Tue Mar 27 14:56:14 2007
ARCH shutting down
ARC1: Archival stopped
Tue Mar 27 14:56:15 2007
ARCH: Archiving is disabled
```

Data Guard

```
Shutting down archive processes
Archiving is disabled
Archive process shutdown avoided: 0 active
Shutting down Data Guard Broker processes
Tue Mar 27 14:56:15 2007
Completed: Data Guard Broker shutdown
```

SQL> startup nomount

```
=== standby alert log ===

ARC0: Thread not mounted
ARC1 started with pid=12
ARC1: Archival started
ARC1: Thread not mounted
Tue Mar 27 15:00:09 2007
Starting Data Guard Broker (DMON)
Tue Mar 27 15:00:42 2007
destination database instance is 'started' not 'mounted'

=== primary alert log ===

Tue Mar 27 15:00:41 2007
Errors in file /ora9/admin/GD9A/bdump/gd9a_arc1_15459.trc:
ORA-16058: standby database instance is not mounted
```

SQL> alter database mount standby database;

```
Tue Mar 27 15:04:03 2007
alter database mount standby database
Tue Mar 27 15:04:03 2007
lmon registered with NM - instance id 1 (internal mem no 0)
Tue Mar 27 15:04:04 2007
Reconfiguration started
List of nodes: 0,
  Global Resource Directory frozen
one node partition
Communication channels reestablished
Master broadcasted resource hash value bitmaps
Non-local Process blocks cleaned out
Resources and enqueues cleaned out
Resources remastered 0
0 GCS shadows traversed, 0 cancelled, 0 closed
0 GCS resources traversed, 0 cancelled
set master node info
Submitted all remote-enqueue requests
Update rdomain variables
Dwn-cvts replayed, VALBLKs dubious
All grantable enqueues granted
0 GCS shadows traversed, 0 replayed, 0 unopened
Submitted all GCS remote-cache requests
0 write requests issued in 0 GCS resources
0 PIs marked suspect, 0 flush PI msgs
Tue Mar 27 15:04:05 2007
Reconfiguration complete
Post SMON to start 1st pass IR
Tue Mar 27 15:04:09 2007
Successful mount of redo thread 1, with mount id 1805575973.
Tue Mar 27 15:04:09 2007
Standby Database mounted.
Completed: alter database mount standby database
```

SQL> recover managed standby database disconnect;

```
Tue Mar 27 15:05:38 2007
ALTER DATABASE RECOVER managed standby database disconnect
```


Data Guard

```
Attempt to start background Managed Standby Recovery process
MRP0 started with pid=16
MRP0: Background Managed Standby Recovery process started
Starting datafile 1 recovery in thread 1 sequence 33
Datafile 1: '/ora9/oradata/GD9A/system01.dbf'
Starting datafile 2 recovery in thread 1 sequence 33
Datafile 2: '/ora9/oradata/GD9A/undotbs01.dbf'
Starting datafile 3 recovery in thread 1 sequence 33
Datafile 3: '/ora9/oradata/GD9A/indx01.dbf'
Starting datafile 4 recovery in thread 1 sequence 33
Datafile 4: '/ora9/oradata/GD9A/tools01.dbf'
Starting datafile 5 recovery in thread 1 sequence 33
Datafile 5: '/ora9/oradata/GD9A/users01.dbf'
Media Recovery Waiting for thread 1 seq# 33
Tue Mar 27 15:05:44 2007
Completed: ALTER DATABASE RECOVER managed standby database d
Tue Mar 27 15:05:49 2007
RFS: Possible network disconnect with primary database
```

3-3 Standby Database 상태변경

1. shut down => managed recovery mode

```
SQL> startup nomount
SQL> alter database mount standby database;
SQL> recover managed standby database disconnect(from session);
```

2. shutdown => read only Standby

```
SQL> startup nomount
SQL> alter database mount standby database;
SQL> alter database open read only;;
```

3. managed recovery mode => read only Standby

```
SQL> recover managed standby database cancel;
SQL> alter database open read only;
```

4. read only Standby => managed recovery mode(모든 session 종료)

```
SQL> recover managed standby database disconnect(from session);
```

3-4 File Management

➔ standby database 에 MRP process가 떠 있는지 반듯이 확인
(At Standby DB)

```
SQL> select process,status from v$managed_standby;
```

PROCESS	STATUS
ARCH	CONNECTED
ARCH	CONNECTED
RFS	RECEIVING
MRP0	WAIT_FOR_LOG

Data Guard

1. add tablespace or datafile (standby_file_management = auto in STANDBY)

(At Primary DB)

```
SQL> create tablespace twins datafile '/ora9/oradata/GD9A/twins.dbf' size 5m;
```

```
Tue Mar 27 15:55:14 2007
create tablespace twins datafile '/ora9/oradata/GD9A/twins.dbf' size 5m
Tue Mar 27 15:55:14 2007
Completed: create tablespace twins datafile '/ora9/oradata/GD
```

```
SQL> alter system switch logfile;
```

```
=== primary alert log ===

Tue Mar 27 15:55:28 2007
LGWR: Completed archiving log 3 thread 1 sequence 33
LGWR: Error 1010 disconnecting from destination LOG_ARCHIVE_DEST_2 standby host 'SGD9A'
LGWR: RFS network connection re-established at host 'SGD9A'
LGWR: RFS destination opened for reconnect at host 'SGD9A'
Creating archive destination LOG_ARCHIVE_DEST_2: 'SGD9A'
LGWR: Transmitting activation ID 6b9d546e
LGWR: Beginning to archive log 1 thread 1 sequence 34
Tue Mar 27 15:55:48 2007
ARC0: Evaluating archive log 3 thread 1 sequence 33
Tue Mar 27 15:55:48 2007
Thread 1 advanced to log sequence 34
Tue Mar 27 15:55:48 2007
ARC0: LGWR is actively archiving destination LOG_ARCHIVE_DEST_2
Tue Mar 27 15:55:48 2007
Current log# 1 seq# 34 mem# 0: /ora9/oradata/GD9A/redo01.log
Tue Mar 27 15:55:48 2007
ARC0: Beginning to archive log 3 thread 1 sequence 33
Creating archive destination LOG_ARCHIVE_DEST_2: 'SGD9A'
ARC0: Transmitting activation ID 6b9d546e
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_33.dbf'
ARC0: Completed archiving log 3 thread 1 sequence 33


=== standby alert log ===
Tue Mar 27 15:55:46 2007
RFS: Successfully opened standby logfile 4: '/ora9/oradata/GD9A/standbylog01.log'
Tue Mar 27 15:55:46 2007
ARC1: Evaluating archive log 4 thread 1 sequence 33
ARC1: Beginning to archive log 4 thread 1 sequence 33
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_33.dbf'
ARC1: Log corruption near block 6 change 3294239916033 time ?
ARC1: All Archive destinations made inactive due to error 354
Tue Mar 27 15:55:46 2007
Errors in file /ora9/admin/GD9A/bdump/gd9a_arc1_23459.trc:
ORA-00354: corrupt redo log block header
ORA-00353: log corruption near block 6 change 3294239916033 time 03/27/2007 14:41:21
ORA-00312: online log 4 thread 1: '/ora9/oradata/GD9A/standbylog01.log'
ARC1: Archiving not possible: error count exceeded
ARC1: Failed to archive log 4 thread 1 sequence 33
Clearing standby logfile 4 thread 1 sequence 33 due to error 354
ARCH: Archival stopped, error occurred. Will continue retrying
Tue Mar 27 15:55:46 2007
ORACLE Instance GD9A - Archival Error
ARCH: Connecting to console port...
Tue Mar 27 15:55:46 2007
ORA-16038: log 4 sequence# 33 cannot be archived
ORA-00354: corrupt redo log block header
ORA-00312: online log 4 thread 1: '/ora9/oradata/GD9A/standbylog01.log'
ARCH: Connecting to console port...
ARCH:
Tue Mar 27 15:55:46 2007
```

Data Guard

```
ORA-16038: log 4 sequence# 33 cannot be archived
ORA-00354: corrupt redo log block header
ORA-00312: online log 4 thread 1: '/ora9/oradata/GD9A/standbylog01.log'
Tue Mar 27 15:55:46 2007
Errors in file /ora9/admin/GD9A/bdump/gd9a_arc1_23459.trc:
ORA-16038: log 4 sequence# 33 cannot be archived
ORA-00354: corrupt redo log block header
ORA-00312: online log 4 thread 1: '/ora9/oradata/GD9A/standbylog01.log'
Tue Mar 27 15:55:48 2007
RFS: Successfully opened standby logfile 4: '/ora9/oradata/GD9A/standbylog01.log'
Tue Mar 27 15:56:00 2007
Media Recovery Log /ora9/oradata/GD9A/archive/1_33.dbf
Recovery created file /ora9/oradata/GD9A/twins.dbf
Successfully added datafile 6 to media recovery
Datafile #6: '/ora9/oradata/GD9A/twins.dbf'
Media Recovery Waiting for thread 1 seq# 34 (in transit)
Tue Mar 27 15:56:13 2007
Archiver process freed from errors. No longer stopped
```

(At Standby DB)

```
SQL> select name from v$datafile;
```

```
NAME
```

```
-----
/ora9/oradata/GD9A/system01.dbf
/ora9/oradata/GD9A/undotbs01.dbf
/ora9/oradata/GD9A/indx01.dbf
/ora9/oradata/GD9A/tools01.dbf
/ora9/oradata/GD9A/users01.dbf
/ora9/oradata/GD9A/twins. dbf
```

2. rename datafile (statndby_file_manangement=manual/auto in STANDBY)

(At Primary DB)

```
SQL> alter tablespace twins offline;
SQL> ! cp /ora9/oradata/GD9A/twins.dbf /ora9/oradata/GD9A/twins_1.dbf
SQL> select file_name from dba_data_files;
```

```
FILE_NAME
```

```
-----
/ora9/oradata/GD9A/system01.dbf
/ora9/oradata/GD9A/undotbs01.dbf
/ora9/oradata/GD9A/indx01.dbf
/ora9/oradata/GD9A/tools01.dbf
/ora9/oradata/GD9A/users01.dbf
/ora9/oradata/GD9A/twins.dbf
```

```
SQL> alter database rename file '/ora9/oradata/GD9A/twins.dbf' to '/ora9/oradata/GD9A/twins_1.dbf';
```

```
SQL> alter tablespace twins online;
```

```
SQL> select file_name from dba_data_files;
```

```
FILE_NAME
```

Data Guard

```
-----  
/ora9/oradata/GD9A/system01.dbf  
/ora9/oradata/GD9A/undotbs01.dbf  
/ora9/oradata/GD9A/indx01.dbf  
/ora9/oradata/GD9A/tools01.dbf  
/ora9/oradata/GD9A/users01.dbf  
/ora9/oradata/GD9A/twins_1.dbf
```

(At Standby DB)

→ standby 에서 rename을 안해도 redo apply는 정상적으로 된다.

```
SQL> select name,sequence#,archived,applied from v$archived_log;  
      (applied => 모두 YES 인지 확인)
```

NAME	SEQUENCE#	ARCHIV	APPLIE
-----	-----	-----	-----
/ora9/oradata/GD9A/archive/1_24.dbf	24	YES	NO
/ora9/oradata/GD9A/archive/1_25.dbf	25	YES	YES
/ora9/oradata/GD9A/archive/1_26.dbf	26	YES	YES
/ora9/oradata/GD9A/archive/1_27.dbf	27	YES	YES
/ora9/oradata/GD9A/archive/1_28.dbf	28	YES	YES
/ora9/oradata/GD9A/archive/1_29.dbf	29	YES	YES
/ora9/oradata/GD9A/archive/1_30.dbf	30	YES	YES
/ora9/oradata/GD9A/archive/1_31.dbf	31	YES	YES
/ora9/oradata/GD9A/archive/1_32.dbf	32	YES	YES
/ora9/oradata/GD9A/archive/1_33.dbf	33	YES	YES
/ora9/oradata/GD9A/archive/1_34.dbf	34	YES	YES
/ora9/oradata/GD9A/archive/1_35.dbf	35	YES	YES
/ora9/oradata/GD9A/archive/1_36.dbf	36	YES	YES
/ora9/oradata/GD9A/archive/1_37.dbf	37	YES	YES

```
SQL> recover managed standby database cancel;
```

```
SQL> shutdown immediate
```

```
SQL> ! cp /ora9/oradata/GD9A/twins.dbf /ora9/oradata/GD9A/twins_1.dbf
```

```
SQL> startup nomount
```

```
SQL> alter database mount standby database;
```

```
SQL> show parameter standby_file
```

NAME	TYPE
-----	-----
VALUE	
-----	-----
standby_file_management	string
auto	

```
SQL> alter system set standby_file_management=manual;
```

Data Guard

```
SQL> show parameter standby_file
```

NAME	TYPE
------	------

VALUE

standby_file_management	string
MANUAL	

```
SQL> alter database rename file '/ora9/oradata/GD9A/twins.dbf' to '/ora9/oradata/GD9A/twins_1.dbf';
```

```
SQL> recover managed standby database disconnect;
```

```
SQL> select name from v$datafile;
```

NAME

/ora9/oradata/GD9A/system01.dbf
/ora9/oradata/GD9A/undotbs01.dbf
/ora9/oradata/GD9A/indx01.dbf
/ora9/oradata/GD9A/tools01.dbf
/ora9/oradata/GD9A/users01.dbf
/ora9/oradata/GD9A/twins_1.dbf

```
SQL> alter system set standby_file_management=auto;
```

3. drop tablespace (standby_file_management=manual/auto in STANDBY)

(At Primary DB)

```
SQL> drop tablespace twins including contents and datafiles;
```

```
SQL> alter system switch logfile;
```

```
=== primary alert log ===
```

```
Tue Mar 27 17:03:29 2007
drop tablespace twins including contents and datafiles
Tue Mar 27 17:03:30 2007
Deleted file /ora9/oradata/GD9A/twins_1.dbf
Completed: drop tablespace twins including contents and datafiles
Tue Mar 27 17:03:43 2007
LGWR: Completed archiving log 3 thread 1 sequence 39
Creating archive destination LOG_ARCHIVE_DEST_2: 'SGD9A'
LGWR: Transmitting activation ID 6b9d546e
LGWR: Beginning to archive log 1 thread 1 sequence 40
Thread 1 advanced to log sequence 40
Current log# 1 seq# 40 mem# 0: /ora9/oradata/GD9A/redo01.log
Tue Mar 27 17:03:43 2007
ARC0: Evaluating archive log 3 thread 1 sequence 39
ARC0: Archive destination LOG_ARCHIVE_DEST_2: Previously completed
ARC0: Beginning to archive log 3 thread 1 sequence 39
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_39.dbf'
ARC0: Completed archiving log 3 thread 1 sequence 39
```

```
=== standby alert log ===
```

```
Tue Mar 27 17:03:44 2007
ARC1: Evaluating archive log 4 thread 1 sequence 39
ARC1: Beginning to archive log 4 thread 1 sequence 39
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_39.dbf'
```

Data Guard

```
ARC1: Completed archiving log 4 thread 1 sequence 39
Tue Mar 27 17:03:44 2007
RFS: Successfully opened standby logfile 4: '/ora9/oradata/GD9A/standbylog01.log'
Tue Mar 27 17:03:48 2007
Media Recovery Log /ora9/oradata/GD9A/archive/1_39.dbf
Recovery deleting file #6: '/ora9/oradata/GD9A/twins_1.dbf'
Deleted file /ora9/oradata/GD9A/twins_1.dbf
Recovery dropped tablespace 'TWINS'
Media Recovery Waiting for thread 1 seq# 40 (in transit)
```

(At Standby DB)

```
SQL> select name from v$datafile;
```

```
NAME
```

```
-----
/ora9/oradata/GD9A/system01.dbf
/ora9/oradata/GD9A/undotbs01.dbf
/ora9/oradata/GD9A/indx01.dbf
/ora9/oradata/GD9A/tools01.dbf
/ora9/oradata/GD9A/users01.dbf
```

```
SQL> !ls /ora9/oradata/GD9A/twins_1.dbf
/ora9/oradata/GD9A/twins_1.dbf: 해당 파일이나 디렉토리가 없음
```

3-5 Maximum Protection/Availability Mode

→ default value = maximum performance

(At Primary)

```
SQL> select protection_mode from v$database;

PROTECTION_MODE
-----
MAXIMUM PERFORMANCE

-- standby redo log 생성 (for switchover)
SQL> alter database add standby logfile '/ora9/oradata/GD9A/standbylog_11.log' size 10m;
SQL> alter database add standby logfile '/ora9/oradata/GD9A/standbylog_22.log' size 10m;
SQL> alter database add standby logfile '/ora9/oradata/GD9A/standbylog_33.log' size 10m;

SQL> shutdown immediate

SQL> startup mount

SQL> alter database set standby to maximize protection;

SQL> alter database open;

Database altered.

SQL> select protection_mode from v$database;
```

Data Guard

PROTECTION_MODE

MAXIMUM PROTECTION

3-5 SwitchOver

(At Primary)

```
SQL> select switchover_status from v$database;
```

SWITCHOVER_STATUS

TO STANDBY

```
SQL> alter database commit to switchover to physical standby with session shutdown wait;
```

```
=== primary alert log ===
```

```
Tue Mar 27 18:19:24 2007
alter database commit to switchover to physical standby with session shutdown wait
Tue Mar 27 18:19:24 2007
ALTER DATABASE COMMIT TO SWITCHOVER TO PHYSICAL STANDBY
LGWR: Performing log switch to complete LGWR archival of current logfile
Tue Mar 27 18:19:24 2007
LGWR: Completed archiving log 2 thread 1 sequence 41
Thread 1 advanced to log sequence 42
Current log# 3 seq# 42 mem# 0: /ora9/oradata/GD9A/redo03.log
Tue Mar 27 18:19:25 2007
ARCH: Evaluating archive log 2 thread 1 sequence 41
ARCH: Archive destination LOG_ARCHIVE_DEST_2: Previously completed
Tue Mar 27 18:19:25 2007
ARC0: Evaluating archive log 2 thread 1 sequence 41
Tue Mar 27 18:19:25 2007
ARCH: Beginning to archive log 2 thread 1 sequence 41
Tue Mar 27 18:19:25 2007
ARC0: Unable to archive log 2 thread 1 sequence 41
Log actively being archived by another process
Tue Mar 27 18:19:25 2007
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_41.dbf'
ARCH: Completed archiving log 2 thread 1 sequence 41
Tue Mar 27 18:19:25 2007
Thread 1 advanced to log sequence 43
Tue Mar 27 18:19:25 2007
ARCH: Evaluating archive log 3 thread 1 sequence 42
Tue Mar 27 18:19:25 2007
Current log# 1 seq# 43 mem# 0: /ora9/oradata/GD9A/redo01.log
Tue Mar 27 18:19:25 2007
ARC0: Evaluating archive log 3 thread 1 sequence 42
ARC0: Unable to archive log 3 thread 1 sequence 42
Log actively being archived by another process
Tue Mar 27 18:19:25 2007
ARCH: LGWR is actively archiving destination LOG_ARCHIVE_DEST_2
ARCH: Beginning to archive log 3 thread 1 sequence 42
Creating archive destination LOG_ARCHIVE_DEST_2: 'SGD9A'
ARCH: Transmitting activation ID 6b9d546e
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_42.dbf'
ARCH: Completed archiving log 3 thread 1 sequence 42
Tue Mar 27 18:19:26 2007
SMON: disabling tx recovery
SMON: disabling cache recovery
Tue Mar 27 18:19:26 2007
Shutting down archive processes
Archiving is disabled
ARCH 9 state 3
ARCH 8 state 3
Tue Mar 27 18:19:26 2007
```

Data Guard

Errors in file /ora9/admin/GD9A/bdump/gd9a_lgwr_24156.trc:
ORA-00449: background process 'LNS0' unexpectedly terminated with error 448
ORA-00448: normal completion of background process
Tue Mar 27 18:19:26 2007
ARCH shutting down
ARC0: Archival stopped
Tue Mar 27 18:19:26 2007
ARCH shutting down
ARC1: Archival stopped
Tue Mar 27 18:19:26 2007
Thread 1 closed at log sequence 43
Successful close of redo thread 1.
Tue Mar 27 18:19:26 2007
ARCH: noswitch archival of thread 1, sequence 43
ARCH: End-Of-Redo archival of thread 1 sequence 43
ARCH: Evaluating archive log 1 thread 1 sequence 43
ARCH: LGWR is actively archiving destination LOG_ARCHIVE_DEST_2
ARCH: Beginning to archive log 1 thread 1 sequence 43
Creating archive destination LOG_ARCHIVE_DEST_2: 'SGD9A'
ARCH: Transmitting activation ID 6b9d546e
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_43.dbf'
ARCH: Completed archiving log 1 thread 1 sequence 43
ARCH: archiving is disabled due to current logfile archival
Clearing standby activation ID 1805472878 (0x6b9d546e)
The primary database controlfile was created using the
'MAXLOGFILES 20' clause.
There is space for up to 17 standby redo logfiles
Use the following SQL commands on the standby database to create
standby redo logfiles that match the primary database:
ALTER DATABASE ADD STANDBY LOGFILE 'srl1.f' SIZE 10485760;
ALTER DATABASE ADD STANDBY LOGFILE 'srl2.f' SIZE 10485760;
ALTER DATABASE ADD STANDBY LOGFILE 'srl3.f' SIZE 10485760;
ALTER DATABASE ADD STANDBY LOGFILE 'srl4.f' SIZE 10485760;
Archivelog for thread 1 sequence 43 required for standby recovery
MRP0 started with pid=11
MRP0: Background Managed Standby Recovery process started
Starting datafile 1 recovery in thread 1 sequence 43
Datafile 1: '/ora9/oradata/GD9A/system01.dbf'
Starting datafile 2 recovery in thread 1 sequence 43
Datafile 2: '/ora9/oradata/GD9A/undotbs01.dbf'
Starting datafile 3 recovery in thread 1 sequence 43
Datafile 3: '/ora9/oradata/GD9A/indx01.dbf'
Starting datafile 4 recovery in thread 1 sequence 43
Datafile 4: '/ora9/oradata/GD9A/tools01.dbf'
Starting datafile 5 recovery in thread 1 sequence 43
Datafile 5: '/ora9/oradata/GD9A/users01.dbf'
Media Recovery Log /ora9/oradata/GD9A/archive/1_43.dbf
Identified end-of-REDO for thread 1 sequence 43
Identified end-of-REDO for thread 1 sequence 43
Media Recovery End-Of-Redo indicator encountered
Media Recovery Applied until change 59028
MRP0: Media Recovery Complete: End-Of-REDO
Resetting standby activation ID 1805472878 (0x6b9d546e)
MRP0: Background Media Recovery process shutdown
Tue Mar 27 18:19:34 2007
Switchover: Complete - Database shutdown required
Completed: alter database commit to switchover to physical st

=== stadby alert log ===

Tue Mar 27 18:19:25 2007
ARC1: Evaluating archive log 4 thread 1 sequence 41
ARC1: Beginning to archive log 4 thread 1 sequence 41
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_41.dbf'
ARC1: Completed archiving log 4 thread 1 sequence 41
Tue Mar 27 18:19:27 2007
RFS: Possible network disconnect with primary database
RFS: End-Of-Redo archival of thread 1 sequence 43

Data Guard

```
Tue Mar 27 18:19:36 2007
Media Recovery Log /ora9/oradata/GD9A/archive/1_41.dbf
Media Recovery Log /ora9/oradata/GD9A/archive/1_42.dbf
Media Recovery Log /ora9/oradata/GD9A/archive/1_43.dbf
Identified end-of-REDO for thread 1 sequence 43
Identified end-of-REDO for thread 1 sequence 43
Media Recovery End-Of-Redo indicator encountered
Media Recovery Applied until change 59028
MRP0: Media Recovery Complete: End-Of-REDO
Resetting standby activation ID 1805472878 (0x6b9d546e)
MRP0: Background Media Recovery process shutdown
```

SQL> shutdown immediate

```
=== primary alert log ===

Tue Mar 27 18:29:05 2007
Shutting down instance: further logons disabled
Shutting down instance (immediate)
License high water mark = 1
Tue Mar 27 18:29:05 2007
ALTER DATABASE CLOSE NORMAL
ORA-1507 signalled during: ALTER DATABASE CLOSE NORMAL...
ARCH: Archiving is disabled
Shutting down archive processes
Archiving is disabled
Archive process shutdown avoided: 0 active
ARCH: Archiving is disabled
Shutting down archive processes
Archiving is disabled
Archive process shutdown avoided: 0 active
Shutting down Data Guard Broker processes
Tue Mar 27 18:29:08 2007
Completed: Data Guard Broker shutdown
```

(At Standby DB)

```
SQL> select switchover_status from v$database;
SWITCHOVER_STATUS
```

NOT ALLOWED → default 값

```
SQL> select switchover_status from v$database;
SWITCHOVER_STATUS
```

TO PRIMARY → Primary db에서 “alter database commit to switchover to physical standby with session shutdown wait;” 실행후 바뀐 값

SQL> alter database commit to switchover to primary with session shutdown wait;

```
Tue Mar 27 18:36:38 2007
alter database commit to switchover to primary with session shutdown wait
Tue Mar 27 18:36:38 2007
ALTER DATABASE COMMIT TO SWITCHOVER TO PRIMARY
RESETLOGS after incomplete recovery UNTIL CHANGE 59028
Resetting resetlogs activation ID 0 (0x0)
Switchover: Complete - Database shutdown required
Completed: alter database commit to switchover to primary wit
```

SQL> shutdown immediate;

```
Tue Mar 27 18:37:50 2007
Shutting down instance: further logons disabled
Shutting down instance (immediate)
License high water mark = 4
Tue Mar 27 18:37:50 2007
ALTER DATABASE CLOSE NORMAL
```

Data Guard

```
ORA-1507 signalled during: ALTER DATABASE CLOSE NORMAL...
ARCH: Archiving is disabled
Shutting down archive processes
Archiving is disabled
ARCH 9 state 3
ARCH 8 state 3
Tue Mar 27 18:37:50 2007
ARCH shutting down
ARC0: Archival stopped
Tue Mar 27 18:37:50 2007
ARCH shutting down
ARC1: Archival stopped
Tue Mar 27 18:37:53 2007
ARCH: Archiving is disabled
Shutting down archive processes
Archiving is disabled
Archive process shutdown avoided: 0 active
Shutting down Data Guard Broker processes
Tue Mar 27 18:37:53 2007
Completed: Data Guard Broker shutdown
```

(New Standby DB)

```
[sf-a:ora9:/ora9/product/920/dbs]$ vi initGD9A.ora
#log_archive_dest_2='SERVICE=SGD9A MANDATORY LGWR SYNC AFFIRM'
fal_server=SGD9A
fal_client=GD9A
lock_name_space=SGD9A    수정
```

SQL> startup nomount

```
Tue Mar 27 18:53:19 2007
Starting ORACLE instance (normal)
Tue Mar 27 18:53:19 2007
Global Enqueue Service Resources = 64, pool = 2
Tue Mar 27 18:53:19 2007
Global Enqueue Service Enqueues = 128
LICENSE_MAX_SESSION = 0
LICENSE_SESSIONS_WARNING = 0
GES IPC: Receivers 1 Senders 1
GES IPC: Buffers Receive 1000 Send 530 Reserve 300
GES IPC: Msg Size Regular 432 Batch 2048
SCN scheme 3
Using log_archive_dest parameter default value
LICENSE_MAX_USERS = 0
SYS auditing is disabled
Starting up ORACLE RDBMS Version: 9.2.0.1.0.
System parameters with non-default values:
  processes                = 150
  timed_statistics         = TRUE
  shared_pool_size         = 117440512
  large_pool_size          = 16777216
  java_pool_size           = 0
  lock_name_space          = SGD9A
  control_files             = /ora9/oradata/GD9A/control01.ctl, /ora9/oradata/GD9A/control02.ctl
  db_block_size             = 8192
  db_cache_size            = 33554432
  compatible               = 9.2.0.0.0
  remote_archive_enable    = true
  log_archive_start        = TRUE
  log_archive_dest_1       = location=/ora9/oradata/GD9A/archive
  log_archive_dest_state_1 = enable
  standby_archive_dest     = /ora9/oradata/GD9A/archive
  log_archive_trace        = 127
  fal_server               = SGD9A
  fal_client               = GD9A
  log_archive_format       = %t_%s.dbf
```

Data Guard

```
db_file_multiblock_read_count= 16
standby_file_management      = auto
fast_start_mttr_target      = 300
instance_number              = 1
undo_management              = AUTO
undo_tablespace              = UNDOTBS1
undo_retention               = 10800
remote_login_passwordfile= EXCLUSIVE
db_domain                    =
instance_name                = GD9A
service_names                = GD9A
hash_join_enabled            = TRUE
background_dump_dest         = /ora9/admin/GD9A/bdump
user_dump_dest               = /ora9/admin/GD9A/udump
core_dump_dest               = /ora9/admin/GD9A/cdump
sort_area_size               = 324288
db_name                      = GD9A
open_cursors                 = 300
star_transformation_enabled= FALSE
query_rewrite_enabled        = FALSE
pga_aggregate_target         = 25165824
dg_broker_start              = TRUE
```

```
Tue Mar 27 18:53:19 2007
cluster interconnect IPC version:Oracle UDP/IP
IPC Vendor 1 proto 2 Version 1.0
PMON started with pid=2
DIAG started with pid=3
LMON started with pid=4
LMD0 started with pid=5
DBW0 started with pid=6
LGWR started with pid=7
CKPT started with pid=8
SMON started with pid=9
RECO started with pid=10
Tue Mar 27 18:53:23 2007
ARCH: STARTING ARCH PROCESSES
ARC0 started with pid=11
ARC0: Archival started
ARC1 started with pid=12
ARC1: Archival started
Tue Mar 27 18:53:23 2007
ARCH: STARTING ARCH PROCESSES COMPLETE
Tue Mar 27 18:53:23 2007
ARC0: Thread not mounted
Tue Mar 27 18:53:23 2007
ARC1: Thread not mounted
DMON started with pid=13
Starting Data Guard Broker (DMON)
```

SQL> alter database mount standby database;

```
alter database mount standby database
Tue Mar 27 18:54:54 2007
lmon registered with NM - instance id 1 (internal mem no 0)
Tue Mar 27 18:54:54 2007
Reconfiguration started
List of nodes: 0,
Global Resource Directory frozen
one node partition
Communication channels reestablished
Master broadcasted resource hash value bitmaps
Non-local Process blocks cleaned out
Resources and enqueues cleaned out
Resources remastered 0
0 GCS shadows traversed, 0 cancelled, 0 closed
0 GCS resources traversed, 0 cancelled
set master node info
Submitted all remote-enqueue requests
```

Data Guard

```
Update rdomain variables
Dwn-cvts replayed, VALBLKs dubious
All grantable enqueues granted
0 GCS shadows traversed, 0 replayed, 0 unopened
Submitted all GCS remote-cache requests
0 write requests issued in 0 GCS resources
0 PIs marked suspect, 0 flush PI msgs
Tue Mar 27 18:54:56 2007
Reconfiguration complete
Post SMON to start 1st pass IR
Tue Mar 27 18:55:01 2007
Successful mount of redo thread 1, with mount id 1805603392.
Tue Mar 27 18:55:01 2007
Standby Database mounted.
Completed: alter database mount standby database
```

SQL> recover managed standby database disconnect;

```
Tue Mar 27 18:56:19 2007
ALTER DATABASE RECOVER managed standby database disconnect
Attempt to start background Managed Standby Recovery process
MRP0 started with pid=15
MRP0: Background Managed Standby Recovery process started
Starting datafile 1 recovery in thread 1 sequence 44
Datafile 1: '/ora9/oradata/GD9A/system01.dbf'
Starting datafile 2 recovery in thread 1 sequence 44
Datafile 2: '/ora9/oradata/GD9A/undotbs01.dbf'
Starting datafile 3 recovery in thread 1 sequence 44
Datafile 3: '/ora9/oradata/GD9A/indx01.dbf'
Starting datafile 4 recovery in thread 1 sequence 44
Datafile 4: '/ora9/oradata/GD9A/tools01.dbf'
Starting datafile 5 recovery in thread 1 sequence 44
Datafile 5: '/ora9/oradata/GD9A/users01.dbf'
Media Recovery Waiting for thread 1 seq# 44
Tue Mar 27 18:56:25 2007
Completed: ALTER DATABASE RECOVER managed standby database d
```

SQL> select database_role,protection_mode from v\$database;

DATABASE_ROLE	PROTECTION_MODE
PHYSICAL STANDBY	MAXIMUM PROTECTION

(New Primary DB)

```
[sf-b:ora9:/ora9/product/920/dbs]$ vi initGD9A.ora
log_archive_dest_2='SERVICE=GD9A MANDATORY LGWR SYNC AFFIRM'
#fal_server=SGD9A
#fal_client=GD9A
#lock_name_space=SGD9A 수정
```

SQL> startup

```
=== new primary alert log ===

Tue Mar 27 18:59:01 2007
Starting ORACLE instance (normal)
Tue Mar 27 18:59:01 2007
Global Enqueue Service Resources = 64, pool = 2
Tue Mar 27 18:59:01 2007
Global Enqueue Service Enqueues = 128
LICENSE_MAX_SESSION = 0
LICENSE_SESSIONS_WARNING = 0
GES IPC: Receivers 1 Senders 1
```

Data Guard

```
GES IPC: Buffers  Receive 1000  Send 530  Reserve 300
GES IPC: Msg Size  Regular 432  Batch 2048
SCN scheme 3
Using log_archive_dest parameter default value
LICENSE_MAX_USERS = 0
SYS auditing is disabled
Starting up ORACLE RDBMS Version: 9.2.0.1.0.
System parameters with non-default values:
  processes                = 150
  timed_statistics          = TRUE
  shared_pool_size          = 117440512
  large_pool_size           = 16777216
  java_pool_size            = 0
  control_files              = /ora9/oradata/GD9A/standby.ctl
  db_block_size              = 8192
  db_cache_size              = 33554432
  compatible                 = 9.2.0.0.0
  remote_archive_enable      = TRUE
  log_archive_start          = TRUE
  log_archive_dest_1         = location=/ora9/oradata/GD9A/archive
  log_archive_dest_2         = SERVICE=GD9A MANDATORY LGWR SYNC AFFIRM
  log_archive_dest_state_1   = ENABLE
  log_archive_dest_state_2   = ENABLE
  log_archive_trace           = 127
  log_archive_format         = %t_%s.dbf
  db_file_multiblock_read_count = 16
  fast_start_mttr_target     = 300
  undo_management            = AUTO
  undo_tablespace            = UNDOTBS1
  undo_retention              = 10800
  remote_login_passwordfile= EXCLUSIVE
  db_domain                  =
  instance_name              = GD9A
  service_names              = SGD9A
  hash_join_enabled          = TRUE
  background_dump_dest       = /ora9/admin/GD9A/bdump
  user_dump_dest              = /ora9/admin/GD9A/udump
  core_dump_dest              = /ora9/admin/GD9A/cdump
  sort_area_size              = 324288
  db_name                    = GD9A
  open_cursors                = 300
  star_transformation_enabled = FALSE
  query_rewrite_enabled       = FALSE
  pga_aggregate_target        = 25165824
  dg_broker_start             = TRUE
Tue Mar 27 18:59:02 2007
cluster interconnect IPC version:Oracle UDP/IP
IPC Vendor 1 proto 2 Version 1.0
PMON started with pid=2
DIAG started with pid=3
LMON started with pid=4
LMD0 started with pid=5
DBW0 started with pid=6
LGWR started with pid=7
CKPT started with pid=8
SMON started with pid=9
RECO started with pid=10
Tue Mar 27 18:59:05 2007
ARCH: STARTING ARCH PROCESSES
ARC0 started with pid=11
ARC0: Archival started
ARC1 started with pid=12
ARC1: Archival started
Tue Mar 27 18:59:05 2007
ARCH: STARTING ARCH PROCESSES COMPLETE
Tue Mar 27 18:59:05 2007
ARC0: Thread not mounted
Tue Mar 27 18:59:05 2007
```

Data Guard

```
ARC1: Thread not mounted
DMON started with pid=13
Tue Mar 27 18:59:06 2007
ALTER DATABASE MOUNT
Tue Mar 27 18:59:06 2007
lmon registered with NM - instance id 1 (internal mem no 0)
Tue Mar 27 18:59:06 2007
Reconfiguration started
List of nodes: 0,
  Global Resource Directory frozen
one node partition
  Communication channels reestablished
  Master broadcasted resource hash value bitmaps
  Non-local Process blocks cleaned out
  Resources and enqueues cleaned out
  Resources remastered 0
  0 GCS shadows traversed, 0 cancelled, 0 closed
  0 GCS resources traversed, 0 cancelled
  set master node info
  Submitted all remote-enqueue requests
  Update rdomain variables
  Dwn-cvts replayed, VALBLKs dubious
  All grantable enqueues granted
  0 GCS shadows traversed, 0 replayed, 0 unopened
  Submitted all GCS remote-cache requests
  0 write requests issued in 0 GCS resources
  0 PIs marked suspect, 0 flush PI msgs
Tue Mar 27 18:59:08 2007
Reconfiguration complete
  Post SMON to start 1st pass IR
Tue Mar 27 18:59:09 2007
Starting Data Guard Broker (DMON)
Tue Mar 27 18:59:13 2007
Successful mount of redo thread 1, with mount id 1805590844.
Tue Mar 27 18:59:13 2007
Database mounted in Exclusive Mode.
Completed: ALTER DATABASE MOUNT
Tue Mar 27 18:59:13 2007
ALTER DATABASE OPEN
Tue Mar 27 18:59:13 2007
LGWR: Primary database is in CLUSTER CONSISTENT mode
LGWR: Primary database is in MAXIMUM PROTECTION mode
LGWR: Destination LOG_ARCHIVE_DEST_1 is not serviced by LGWR
LNS0 started with pid=15
Tue Mar 27 18:59:17 2007
Assigning activation ID 1805590844 (0x6b9f213c)
*****
LGWR: Setting 'active' archival for destination LOG_ARCHIVE_DEST_2
*****
Creating archive destination LOG_ARCHIVE_DEST_2: 'GD9A'
LGWR: Transmitting activation ID 6b9f213c
LGWR: Standby redo logfile selected to archive thread 1 sequence 45
LGWR: Beginning to archive log 2 thread 1 sequence 45
Thread 1 advanced to log sequence 45
Thread 1 opened at log sequence 45
  Current log# 2 seq# 45 mem# 0: /ora9/oradata/GD9A/redo02.log
Successful open of redo thread 1.
Tue Mar 27 18:59:19 2007
ARC1: Evaluating archive log 1 thread 1 sequence 44
ARC1: LGWR is actively archiving destination LOG_ARCHIVE_DEST_2
ARC1: Beginning to archive log 1 thread 1 sequence 44
Creating archive destination LOG_ARCHIVE_DEST_2: 'GD9A'
ARC1: Transmitting activation ID 6b9f213c
Tue Mar 27 18:59:19 2007
SMON: enabling cache recovery
Tue Mar 27 18:59:20 2007
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_44.dbf'
Tue Mar 27 18:59:20 2007
```

Data Guard

```
Undo Segment 1 Onlined
Undo Segment 2 Onlined
Undo Segment 3 Onlined
Undo Segment 4 Onlined
Undo Segment 5 Onlined
Undo Segment 6 Onlined
Undo Segment 7 Onlined
Undo Segment 8 Onlined
Undo Segment 9 Onlined
Undo Segment 10 Onlined
Successfully onlined Undo Tablespace 1.
Dictionary check beginning
Dictionary check complete
Tue Mar 27 18:59:20 2007
SMON: enabling tx recovery
Tue Mar 27 18:59:20 2007
Database Characterset is KO16MSWIN949
replication_dependency_tracking turned off (no async multimaster replication found)
Completed: ALTER DATABASE OPEN
Tue Mar 27 18:59:21 2007
ARC1: Completed archiving log 1 thread 1 sequence 44

=== new standby alert log ===

Tue Mar 27 18:59:19 2007
RFS: Successfully opened standby logfile 4: '/ora9/oradata/GD9A/standbylog_11.log'
Tue Mar 27 18:59:24 2007
Media Recovery Log /ora9/oradata/GD9A/archive/1_44.dbf
Media Recovery Waiting for thread 1 seq# 45 (in transit)
```

```
SQL> select database_role,protection_mode from v$database;
```

DATABASE_ROLE	PROTECTION_MODE
PRIMARY	MAXIMUM PROTECTION

3-6 SwitchOver 후 Archive 전송

(New Primary DB)

```
SQL> alter system switch logfile;
SQL> alter system switch logfile;
SQL> alter system switch logfile;
```

```
SQL> col error format a20
```

```
SQL> select dest_id,status ,error from v$archive_dest where dest_id <=2;
```

DEST_ID	STATUS	ERROR
1	VALID	
2	VALID	

(New Standby DB)

```
[sf-a:ora9:/ora9/oradata/GD9A/archive]$ ls -ltr
```

-rw-r-----	1	ora9	dba	1024	3월 27일	18:59	1_44.dbf
-rw-r-----	1	ora9	dba	46592	3월 27일	19:24	1_45.dbf
-rw-r-----	1	ora9	dba	1024	3월 27일	19:25	1_46.dbf

3-7 Failover to standby database

(New Primary DB)

SQL> shutdown abort

```
=== new primary alert log ===

Tue Mar 27 19:29:23 2007
Shutting down instance (abort)
License high water mark = 1
Instance terminated by USER, pid = 1205

=== new standby alert log ===

Tue Mar 27 19:29:23 2007
RFS: Possible network disconnect with primary database
Tue Mar 27 19:29:23 2007
RFS: Possible network disconnect with primary database
Tue Mar 27 19:29:23 2007
RFS: Possible network disconnect with primary database
```

(New Standby DB)

SQL> alter database recover managed standby database finish;

```
Tue Mar 27 19:32:25 2007
alter database recover managed standby database finish
Tue Mar 27 19:32:25 2007
Terminal Recovery: request posted
Tue Mar 27 19:32:26 2007
TERMINAL RECOVERY changing datafile format version from 8.0.0.0.0 to 9.0.0.0.0
Switching logfile format version from 8.0.0.0.0 to 9.0.0.0.0
Terminal Recovery: applying standby redo logs.
Terminal Recovery: thread 1 seq# 48 redo required
Terminal Recovery: /ora9/oradata/GD9A/standbylog_22.log
Identified end-of-REDO for thread 1 sequence 48
Incomplete recovery applied all redo ever generated.
Recovery completed through change 59664
MRP0: Media Recovery Complete
Switching logfile format version from 9.0.0.0.0 to 8.0.0.0.0
Terminal Recovery: successful completion
Tue Mar 27 19:32:27 2007
ARC0: Evaluating archive log 5 thread 1 sequence 48
ARC0: Beginning to archive log 5 thread 1 sequence 48
Creating archive destination LOG_ARCHIVE_DEST_1: '/ora9/oradata/GD9A/archive/1_48.dbf'
ARC0: Completed archiving log 5 thread 1 sequence 48
Tue Mar 27 19:32:42 2007
Resetting standby activation ID 1805590844 (0x6b9f213c)
MRP0: Background Media Recovery process shutdown
Tue Mar 27 19:32:42 2007
Terminal Recovery: completion detected
Completed: alter database recover managed standby database fi
```

SQL> alter database commit to switchover to primary;

```
Tue Mar 27 19:33:54 2007
alter database commit to switchover to primary
Tue Mar 27 19:33:54 2007
ALTER DATABASE COMMIT TO SWITCHOVER TO PRIMARY
NORESETLOGS after complete recovery through change 59664
Resetting resetlogs activation ID 0 (0x0)
Online log 6 of thread 0 was previously cleared
Changing control file format version from 8.0.0.0.0 to 9.0.0.0.0
```


Data Guard

```
RESETLOGS changing datafile format version from 9.0.0.0.0 to 8.0.0.0.0
Switchover: Complete - Database shutdown required
Completed: alter database commit to switchover to primary
```

SQL> shutdown

```
Tue Mar 27 19:34:34 2007
Shutting down instance: further logons disabled
Shutting down instance (normal)
License high water mark = 4
Tue Mar 27 19:34:34 2007
ALTER DATABASE CLOSE NORMAL
ORA-1507 signalled during: ALTER DATABASE CLOSE NORMAL...
ARCH: Archiving is disabled
Shutting down archive processes
Archiving is disabled
ARCH 9 state 3
ARCH 8 state 3
Tue Mar 27 19:34:34 2007
ARCH shutting down
Tue Mar 27 19:34:34 2007
ARCH shutting down
Tue Mar 27 19:34:34 2007
ARCO: Archival stopped
Tue Mar 27 19:34:34 2007
ARC1: Archival stopped
Tue Mar 27 19:34:37 2007
ARCH: Archiving is disabled
Shutting down archive processes
Archiving is disabled
Archive process shutdown avoided: 0 active
Shutting down Data Guard Broker processes
Tue Mar 27 19:34:37 2007
Completed: Data Guard Broker shutdown
```

SQL> startup

```
Tue Mar 27 19:35:40 2007
Starting ORACLE instance (normal)
Tue Mar 27 19:35:40 2007
Global Enqueue Service Resources = 64, pool = 2
Tue Mar 27 19:35:40 2007
Global Enqueue Service Enqueues = 128
LICENSE_MAX_SESSION = 0
LICENSE_SESSIONS_WARNING = 0
GES IPC: Receivers 1 Senders 1
GES IPC: Buffers Receive 1000 Send 530 Reserve 300
GES IPC: Msg Size Regular 432 Batch 2048
SCN scheme 3
Using log_archive_dest parameter default value
LICENSE_MAX_USERS = 0
SYS auditing is disabled
Starting up ORACLE RDBMS Version: 9.2.0.1.0.
System parameters with non-default values:
  processes                = 150
  timed_statistics          = TRUE
  shared_pool_size          = 117440512
  large_pool_size           = 16777216
  java_pool_size            = 0
  lock_name_space           = SGD9A
  control_files              = /ora9/oradata/GD9A/control01.ctl, /ora9/oradata/GD9A/control02.ctl
  db_block_size             = 8192
  db_cache_size             = 33554432
  compatible                = 9.2.0.0.0
  remote_archive_enable     = true
  log_archive_start         = TRUE
  log_archive_dest_1        = location=/ora9/oradata/GD9A/archive
  log_archive_dest_state_1  = enable
```

Data Guard

```
standby_archive_dest      = /ora9/oradata/GD9A/archive
log_archive_trace         = 127
fal_server                = SGD9A
fal_client                = GD9A
log_archive_format        = %t_%s.dbf
db_file_multiblock_read_count= 16
standby_file_management   = auto
fast_start_mttr_target    = 300
instance_number           = 1
undo_management           = AUTO
undo_tablespace           = UNDOTBS1
undo_retention            = 10800
remote_login_passwordfile= EXCLUSIVE
db_domain                 =
instance_name             = GD9A
service_names             = GD9A
hash_join_enabled         = TRUE
background_dump_dest      = /ora9/admin/GD9A/bdump
user_dump_dest            = /ora9/admin/GD9A/udump
core_dump_dest            = /ora9/admin/GD9A/cdump
sort_area_size            = 324288
db_name                   = GD9A
open_cursors              = 300
star_transformation_enabled= FALSE
query_rewrite_enabled     = FALSE
pga_aggregate_target      = 25165824
dg_broker_start           = TRUE
Tue Mar 27 19:35:40 2007
cluster interconnect IPC version:Oracle UDP/IP
IPC Vendor 1 proto 2 Version 1.0
PMON started with pid=2
DIAG started with pid=3
LMON started with pid=4
LMD0 started with pid=5
DBW0 started with pid=6
LGWR started with pid=7
CKPT started with pid=8
SMON started with pid=9
RECO started with pid=10
Tue Mar 27 19:35:44 2007
ARCH: STARTING ARCH PROCESSES
ARC0 started with pid=11
ARC0: Archival started
ARC1 started with pid=12
ARC1: Archival started
Tue Mar 27 19:35:44 2007
ARCH: STARTING ARCH PROCESSES COMPLETE
Tue Mar 27 19:35:44 2007
ARC0: Thread not mounted
Tue Mar 27 19:35:44 2007
ARC1: Thread not mounted
DMON started with pid=13
Tue Mar 27 19:35:44 2007
ALTER DATABASE MOUNT
Tue Mar 27 19:35:44 2007
WARNING: Setting LOCK_NAME_SPACE on non-standby database can be very dangerous
It may even cause database corruption. Use it with caution
Tue Mar 27 19:35:44 2007
lmon registered with NM - instance id 1 (internal mem no 0)
Tue Mar 27 19:35:45 2007
Reconfiguration started
List of nodes: 0,
  Global Resource Directory frozen
one node partition
  Communication channels reestablished
  Master broadcasted resource hash value bitmaps
  Non-local Process blocks cleaned out
  Resources and enqueues cleaned out
```

Data Guard

```
Resources remastered 0
0 GCS shadows traversed, 0 cancelled, 0 closed
0 GCS resources traversed, 0 cancelled
set master node info
Submitted all remote-enqueue requests
Update rdomain variables
Dwn-cvts replayed, VALBLKs dubious
All grantable enqueues granted
0 GCS shadows traversed, 0 replayed, 0 unopened
Submitted all GCS remote-cache requests
0 write requests issued in 0 GCS resources
0 PIs marked suspect, 0 flush PI msgs
Tue Mar 27 19:35:46 2007
Reconfiguration complete
Post SMON to start 1st pass IR
Tue Mar 27 19:35:47 2007
Starting Data Guard Broker (DMON)
Tue Mar 27 19:35:50 2007
Successful mount of redo thread 1, with mount id 1805615826.
Tue Mar 27 19:35:50 2007
Database mounted in Exclusive Mode.
Completed: ALTER DATABASE MOUNT
Tue Mar 27 19:35:50 2007
ALTER DATABASE OPEN
Tue Mar 27 19:35:51 2007
LGWR: Primary database is in CLUSTER CONSISTENT mode
Assigning activation ID 1805615826 (0x6b9f82d2)
Thread 1 opened at log sequence 49
Current log# 1 seq# 49 mem# 0: /ora9/oradata/GD9A/redo01.log
Successful open of redo thread 1.
Tue Mar 27 19:35:51 2007
SMON: enabling cache recovery
Tue Mar 27 19:35:51 2007
Undo Segment 1 Onlined
Undo Segment 2 Onlined
Undo Segment 3 Onlined
Undo Segment 4 Onlined
Undo Segment 5 Onlined
Undo Segment 6 Onlined
Undo Segment 7 Onlined
Undo Segment 8 Onlined
Undo Segment 9 Onlined
Undo Segment 10 Onlined
Successfully onlined Undo Tablespace 1.
Dictionary check beginning
Dictionary check complete
Tue Mar 27 19:35:51 2007
SMON: enabling tx recovery
Tue Mar 27 19:35:51 2007
Database Characterset is KO16MSWIN949
replication_dependency_tracking turned off (no async multimaster replication found)
Completed: ALTER DATABASE OPEN
```

SQL> select database_role,protection_mode from v\$database;


DATABASE_ROLE	PROTECTION_MODE
PRIMARY	MAXIMUM PERFORMANCE

Data Guard

참조문서 - http://www.oracle.com/technology/global/kr/pub/columns/oracle_dataguard.html

- oracle database9i: administrators student guide
- oracle 기술문서:oracle 9i data guard

4. 굿어스 Cinema Day 초대



굿어스와 함께 하는 Cinema Day에 초대합니다.

일시 2007년 7월 11일 수요일 오후 2시~6시까지
 장소 : CGV 압구정점 (3호선 압구정역 3번 출구 방향) 악도보기

신청기간 : 6월 27일 까지 신청방법 : 이메일 회신 (chanhee.park@goodus.com 으로 회신)

안녕하세요, 굿어스입니다.
 2007년도 벌써 중반을 향해 가고 있습니다. 연초에 세우신 계획들은 잘 실천하고 계신지요?
 저희 굿어스도 고객 여러분과 함께 성장하기 위해 늘 열심히 뛰고 있습니다.
 이번에 저희 굿어스가 고객 여러분의 관심과 사랑에 보답하고자 조그만 영화 이벤트 행사를 마련하여 안내드리고자 합니다.

Proactive Tuning Service 개요 및 사례를
 간단히 소개해드린 후에, 스필버그 제작 올여름 최고의
 블록버스터로 꼽히는 "트랜스포머"를 함께 감상할
 예정입니다.

영화의 즐거움을 배가(?)시키기 위해
 음료와 팝콘도 제공하고,
 조그만 기념품도 준비중입니다.

바쁘신 와중에 시간 내시어 최신 IT 정보도 얻으시고
 영화 감상도 함께 하실 수 있는 즐거운 시간이
 되었으면 좋겠습니다.

그럼 더운 여름 건강 조심하시기 바랍니다.

감사합니다.

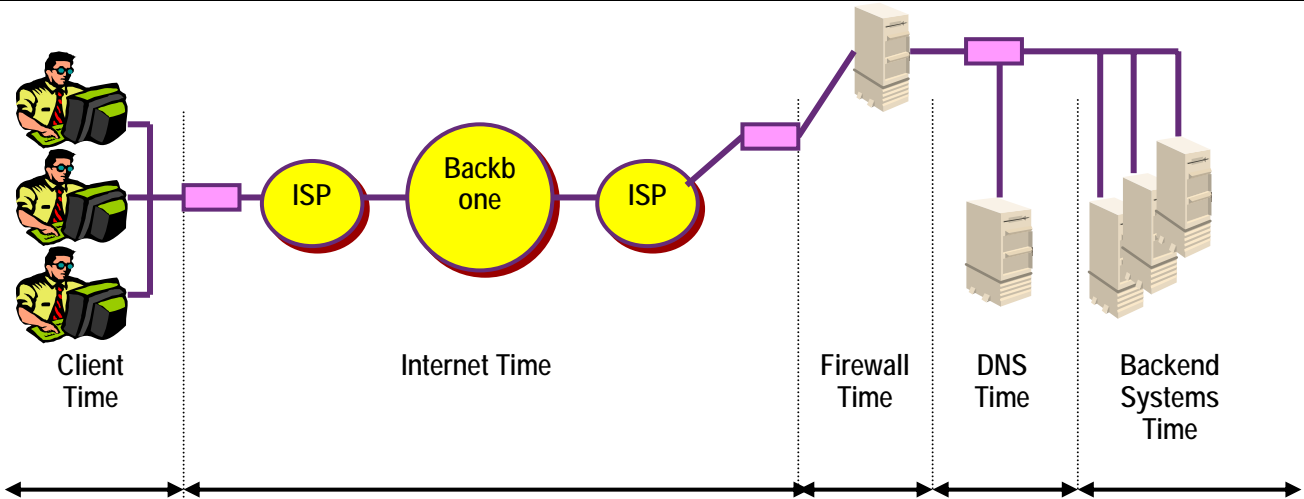


- ※ 박찬희씨 (070-7017-4154, chanhee.park@goodus.com) 에게 연락주세요.
- ※ 2차 신청기간은 7월 4일(수) 까지 입니다.

5. Pro-Active Tuning Service

5.1 실제 사용자(End-User) 관점의 응답시간 튜닝

Pro-active tuning service는 사용자 관점의 모니터링 및 분석을 통하여 실제 End-User가 느끼는 응답시간(Response Time)을 튜닝합니다. APM(Application Performance Management) 툴을 이용하여 End-User의 Request 결과를 반환받기까지의 모든 구간(Client PC, Internet 구간, FireWall, DNS, Web Server, WAS, DBMS) 을 분석하여 가장 Delay Time 이 많이 소요된 구간을 찾아 냅니다.



5.2 최상의 성능 상태로 비즈니스 고가용성을 유지

Pro-Active Tuning Service

- 매 업무 단위 프로젝트 마다 참여하여 업무 적용(Open) 前 문제 요소를 분석하여 튜닝.
- 단위 업무 적용(Open) 후 매 3개월(데이터량 갱신 주기) 마다 튜닝 포인트를 설정, 성능 둔화 요소를 해결.
- 전사적으로 새롭게 추가되는 업무 단위 프로젝트의 모든 SQL 쿼리를 검토 및 튜닝.
- 다양한 대용량 데이터베이스 관리/튜닝 기법을 도입하여 최적의 DB 상태를 1년 내내 상시 유지.
- 전략적 튜닝 Factor 를 분석, 투자 대비 효율이 높은 Targeting 기법 적용. (비중도 높은 SQL 을 튜닝함)



[Pro-Active Tuning Service Schedule]

Performance Drop Point 마다 적절한 튜닝을 실시함으로써 항상 최적의 성능을 유지한다. !!

Data Guard

5.3 Knowledge Transfer

Pro-Active Tuning Service 는 고객의 Business Process 를 이해하고 시스템을 분석한 후 튜닝하는 것으로 완료되지 않습니다. 실제로 고객사 환경에서 튜닝한 내용을 그대로 실무자들에게 전수하여 내부 임직원의 역량을 제고시킵니다. 또한, Oracle RDBMS 신 버전의 New Features 를 교육함으로써, 이용자(관리자 및 개발자)가 스스로 개발 업무의 효율 및 생산성을 향상시킬 수 있도록 지원합니다. 이외에도 DBMS 관리자를 위한 관리 노하우(고급 Trouble-Shooting, 대용량 DB 처리, 병렬 처리 등)를 전수함으로써, 최상의 시스템을 최고의 기술로 유지할 수 있도록 지원합니다.

UAS (User Adapted Seminar) 진행 사례 및 내용 (Contents)

- 개발자를 위한 SQL 튜닝 실무 사례 세미나
G 쇼핑몰 업체 튜닝 후 실제 고객사의 튜닝 사례를 개발자들에게 전수하여 개발자들이 성능을 고려한 SQL 을 작성할 수 있도록 내부 역량을 제고시킴.
- Oracle 10g New Features 세미나
S Global 전자 기업 : Oracle 10g 버전으로 업그레이드 하기 전, 신 버전의 새로운 기능과 주의 사항을 전파함으로써, 업그레이드 후 발생할 수 있는 문제점의 사전 제거와 개발자들이 새로운 기능을 이용함으로써, 개발 생산성을 향상시킴.
- K 국가기관 DBMS 관리 노하우 세미나
내부 관리자 (DBA,SE)들을 대상으로 DBMS 관리자들이 흔히 겪을 수 있는 상황에 대한 Administration Know-How 와 고급 Trouble-Shooting 사례를 소개함으로써, 관리 기술력을 향상시킴.

5.4 Tuning 범위 확대

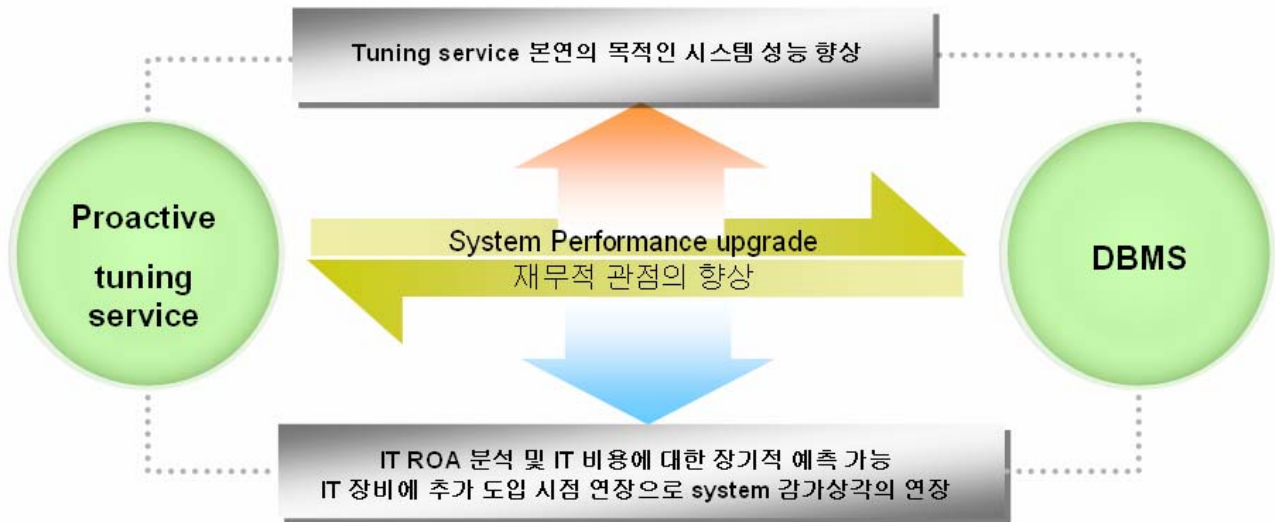
Pro-active tuning service 의 제공 범위는 제한된 Database, 제한된 Server 에 국한 되지 않으며, 고객사 전체의 Server+DB 를 대상으로 그 범위를 확대 함으로써 고객사 전체 Performance 향상에 기여 합니다.



5.5 기대효과

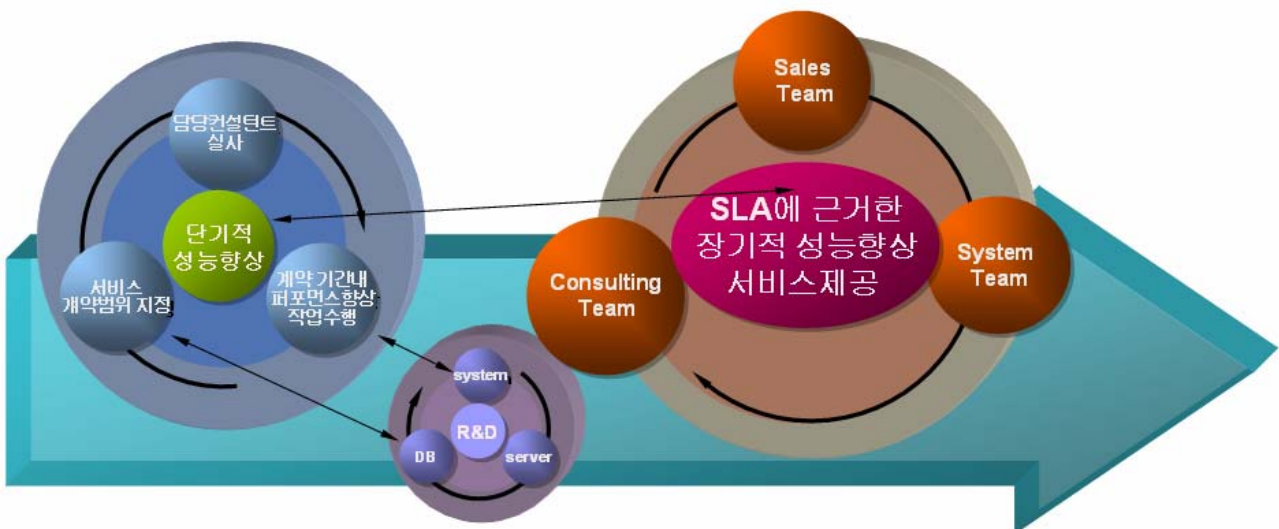
5.5.1 재무적 관점

기존 Tuning Service는 주로 System Performance 향상에 따른 업무 트래픽 감소에 초점이 맞춰져 있었습니다. Pro-active 서비스는 Tuning 작업을 통한 업무 처리 시간 단축 뿐만 아니라, 업무 처리 시간 단축으로 가져 올 수 있는 재무적 성과를 가능하게 합니다.



5.5.2 서비스 관점

단기적 성능 향상에 맞추어진 기존 Tuning 서비스는 계약된 system 및 Database를 서비스 대상으로 하기 때문에 전사적인 차원의 성능 향상을 기대 하기 어려웠습니다. Proactive tuning service는 계약 기간 동안 주요 비즈니스 Factor별로 SLA를 정하여 Tuning consulting을 수행함으로써 서비스 자체의 안정성을 제고 할 수 있습니다.



Data Guard

5.5.3 사용자 관점

Proactive tuning service는 계약 종료 시점 작업한 Tuning 산출물을 통한 기술전수 세미나를 진행 함으로서 고객사의 사용자가 실무에서 바로 적용 가능한 기술을 전수함과 동시에, 계약기간 종료 후에도 Proactive tuning service를 유지 할 수 있는 방향을 제시 합니다.

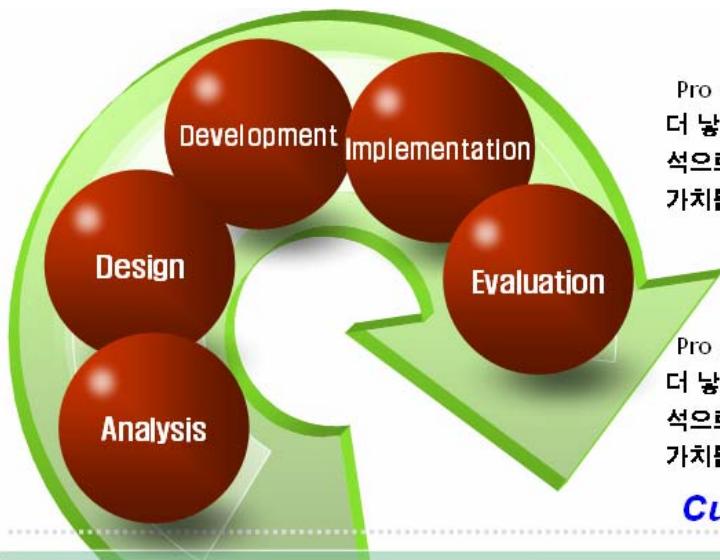
· 사용자 관점의 기술 전수 서비스 제공

계약 종료 시점 일정기간 획일적이고 형식적인 기술 전수 서비스가 아닌 고객사 각각의 사용자들의 특성에 맞추어진 차별화된 기술세미나 진행

- 계약 종료 시점에 고객사 엔지니어 대상 기술 전수 세미나 진행
- 담당 컨설턴트의 고객사 Reporting 자료를 근거로 사례 중심, Case 중심의 기술전수
- 고객사 담당자의 기술 수준에 맞추어, 실무에 적용 가능한 기술 조언
- 단위 추가 업무의 적용 전/후에 대한 지속적인 튜닝을 통한 상시 안정화 상태 제공
- IT 인프라 상황 변화에 능동적으로 대응 할 수 있는 고급 서비스의 “유지”에 초점



5.5.4 혁신적 관점



Pro active tuning service는 단순 Tuning 업무에서 더 나아가 System, Database, server에 대한 포괄적 분석으로 궁극적으로 IT Resource에 대한 전략적 활용을 가치를 향상 시킬 수 있습니다.

Pro active tuning service는 단순 Tuning 업무에서 더 나아가 System, Database, server에 대한 포괄적 분석으로 궁극적으로 IT Resource에 대한 전략적 활용을 가치를 향상 시킬 수 있습니다.

Customer Business Flow





"Breathing Life into Technology"

굿어스㈜는 IT 프로세스 컨설팅 역량과 운영관리 기술을 갖춘 IT 전문 서비스 기업입니다.
다양한 고객들에게 IT 진단부터 운영관리 컨설팅, ITSM 구축 그리고 IT 인프라 매니지먼트 서비스를 제공합니다.
국내 유수의 기업들이 굿어스의 고부가가치 IT 서비스를 통해 비즈니스 성과 향상을 경험하고 있습니다.

