

Oracle Database 11g Data Guard New Features in Action!

**Harald van Breederode
Oracle University
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About Me

- Senior Principal DBA Trainer – Oracle University
- 25 years Unix Experience
- 12 years Oracle DBA Experience
- Oracle8i, 9i, 10g and 11g OCP
- Oracle10g OCM
- DBA Certification Exam Team Reviewer
- DBA Curriculum Development Reviewer
- Enterprise Linux Certification Exam Global Lead
- Blog: prutser.wordpress.com
- Visually Impaired (Legally Blind)



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Agenda

- **Introduction**
- **Data Guard Overview**
- **Major 11gR1 Data Guard New Features**
- **Minor 11gR1 Data Guard New Features**
- **Major 11gR2 Data Guard New Features**
- **Minor 11gR2 Data Guard New Features**
- **Demo's**
- **Questions & Answers**

What is Data Guard

High Availability and DR Solution

- One or more additional databases at remote locations
- These are called Standby Databases
- They may be local for proof of concept

Data Guard == Standby Database plus extra's:

- Data Guard Broker
 - Grid Control Management Interface
 - CLI Management Interface
- Redo Transport Services
- Role Management Services
 - Switchover
 - Failover

Types of Data Guard Databases

There are several types of Data Guard databases:

- **Primary Database**
 - The database that needs protection
 - Transports redo to its Standby databases
- **Physical Standby Database**
 - Exact physical copy of Primary database
 - May be opened read-only
 - Synchronized with Primary using Redo Apply

Types of Data Guard Databases (continued)

- **Logical Standby Database**
 - Logical copy of Primary database
 - Is read/write open for normal usage
 - Synchronized with Primary using SQL Apply
 - Important for Rolling Release Upgrade

Major 11gR1 Data Guard New Features

- **Active Data Guard**
 - Physical Standby database opened read-only while media recovery continues
 - Block Change Tracking file support
- **Snapshot Standby Database**
 - Physical Standby database opened temporarily for read/write operations
 - Used for Real Application Testing (RAT)
- **RMAN Active Database Duplication**

“Minor” 11gR1 Data Guard New Features

- Redo compression
- Heterogeneous Data Guard configurations
- Lost-Write detection
- Fast-start failover improvements
- No restart of Primary database occurs when going from maximum performance to maximum availability
- `V$REDO_DEST_RESP_HISTOGRAM` view

Major 11gR2 New Features

- **Manageability Improvements**
- **Automatic Block Media Recovery**
- **Role Based Services**

Note: These will be explored later in this presentation

“Minor” 11gR2 Data Guard New Features

- **Support for up to 30 Standby databases**
- **The `FAL_CLIENT` parameter is made obsolete**
- **No need to manually shut down RAC instances during Role Management actions**
- **No restart of Primary database occurs when going from maximum availability to maximum protection**
- **`LOG_ARCHIVE_DEST_10` is now `LOG_ARCHIVE_DEST_1`**
- **`ALTER SYSTEM FLUSH REDO` SQL statement**
- **`V$STANDBY_EVENT_HISTOGRAM` view**

Manageability Improvements

- **V\$DATAGUARD_STATS**
 - Reports Transport and Apply lags
 - DGMGRL now reports them as well
- **STANDBY_MAX_DATA_DELAY** session parameter
 - Controls max apply lag for Active Data Guard
- **ALTER SESSION SYNC WITH PRIMARY SQL** statement
 - Waits for Standby to be synchronized with Primary
 - Fails if Redo Transport or Redo Apply is off

Automatic Block Media Recovery

- **Automatically recovers corrupted data blocks using a Physical standby database**
- **The Physical Standby database must :**
 - be open read-only
 - have Real-Time Apply active
- **Requires Active Data Guard**

Role Based Services

- **Services are associated with the role of a database**
 - Primary
 - Physical standby
 - Snapshot standby
 - Logical standby
- **Services are under control of Grid Infrastructure**
 - Oracle Restart
 - Oracle Clusterware
- **Services should be defined on all sites using SRVCTL**

About Oracle Restart

Oracle Restart is:

- part of the Grid Infrastructure
- very similar to Oracle Clusterware
- automatically started by the operating system
- controlled using the `CRSCTL` command
- responsible for keeping its targets available

And:

- uses an Oracle Local Registry (OLR) to store metadata
- receives commands from a DBA via the `SRVCTL` utility

Q U E S T I O N S
&
A N S W E R S

And Finally

Thank you for your kind attention!

For a copy of my demo scripts please email me at:

Harald.van.Breederode@oracle.com