# Oracle Data Guard things

This document is a list of notes relating to Oracle Data Guard.

Oracle Data Guard ensures high availability, data protection, and disaster recovery for enterprise data. Data Guard provides a comprehensive set of services that create, maintain, manage, and monitor one or more standby databases to enable production Oracle databases to survive disasters and data corruptions. Data Guard maintains these standby databases as copies of the production database. Then, if the production database becomes unavailable because of a planned or an unplanned outage, Data Guard can switch any standby database to the production role, minimizing the downtime associated with the outage. Data Guard can be used with traditional backup, restoration, and cluster techniques to provide a high level of data protection and data availability.

A standby database is a transactional consistent copy of the primary database. Using a backup copy of the primary database, you can create up to thirty standby databases and incorporate them in a Data Guard configuration. Once created, Data Guard automatically maintains each standby database by transmitting redo data from the primary database and then applying the redo to the standby database.

Similar to a primary database, a standby database can be either a single-instance Oracle database or an Oracle RAC database.

The types of standby databases are as follows:

Physical standby database  
  
provides a physically identical copy of the primary database, with on disk database structures that are identical to the primary database on a block-for-block basis. The database schema, including indexes, are the same. A physical standby database is kept synchronized with the primary database, through Redo Apply, which recovers the redo data received from the primary database and applies the redo to the physical standby database.  
  
As of Oracle Database 11g release 1 (11.1), a physical standby database can receive and apply redo while it is open for read-only access. A physical standby database can therefore be used concurrently for data protection and reporting.

Logical standby database  
  
contains the same logical information as the production database, although the physical organization and structure of the data can be different. The logical standby database is kept synchronized with the primary database through SQL Apply, which transforms the data in the redo received from the primary database into SQL statements and then executes the SQL statements on the standby database.  
  
A logical standby database can be used for other business purposes in addition to disaster recovery requirements. This allows users to access a logical standby database for queries and reporting purposes at any time. Also, using a logical standby database, you can upgrade Oracle Database software and patch sets with almost no downtime. Thus, a logical standby database can be used concurrently for data protection, reporting, and database upgrades.

Useful Google search term: oracle data guard setup

Oracle Database Online Documentation 11g Release 2 (11.2)

Data Guard Broker

https://docs.oracle.com/cd/E11882\_01/server.112/e40771/toc.htm

# References

Creating a Physical Standby Database (Doc ID 1475344.1)  
This Document shows the various Possibilities to create a Physical Standby Database on Oracle Database 11.2.0.x.

Master Note for Data Guard (Doc ID 1101938.1)  
This Master Note is intended to provide an index and references to the most frequently used My Oracle Support Notes with respect to Data Guard implementations. This Master Note is subdivided into categories to allow for easy access and reference to notes that are applicable to your area of interest, within the Data Guard.

Creating Physical Standby using RMAN Duplicate Without Shutting down The Primary (Doc ID 789370.1)  
The following note describes step-by-step procedure to create physical standby by using RMAN duplicate without shutting down the primary (Production) database.

Using RMAN Effectively In A Dataguard Environment. (Doc ID 848716.1)  
This article basically talks about how RMAN can be used in a dataguard environment effectively.

# References suggested to me

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* Configuring Oracle Data Guard   
  https://docs.oracle.com/cd/E11882\_01/server.112/e10803/config\_dg.htm#HABPT4876
* Oracle Best Practices for High Availability   
  http://www.oracle.com/technetwork/database/features/availability/maa-wp-11gr1-activedataguard-1-128199.pdf
* How to assess SYNC performance with Oracle Database 11.2   
  http://www.oracle.com/technetwork/database/availability/sync-2437177.pdf

Information about the resync:

* Synchronizing tables in a Logical Standby Database (Doc ID 271455.1)
* Best Practices for Corruption Detection, Prevention, and Automatic Repair - in a Data Guard Configuration (Doc ID 1302539.1)

# How to Verify if Active Data Guard is Enabled (Doc ID 2098495.1)

To help identify if Active Data Guard (ADG) is enabled on a Standby database.

The concept of an Active Data Guard, also known as Real-Time Query, is when it allows read-only access on the Physical standby node at the same time as applying archived transactions from the Primary node. For that to happen, Standby database must be opened in READ ONLY mode \*and\* the MRP (Managed Recovery Process) apply process started.

Run the following queries on the Standby database, for example:

SQL> SELECT 'Using Active Data Guard' ADG

FROM v$managed\_standby m,

v$database d

WHERE m.process LIKE 'MRP%';

ADG

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Using Active Data Guard

SQL> select open\_mode, controlfile\_type from v$database;

OPEN\_MODE CONTROLFILE

READ ONLY WITH APPLY STANDBY

Source: How to Verify if Active Data Guard is Enabled (Doc ID 2098495.1)

23 March 2016

# How to resolve MRP stuck issues on a physical standby database? (Doc ID 1221163.1)

This Metalink document contains a list of useful hyperlinks to documents on the subject of Data Guard and standby databases.

23 March 2016

# Database Documentation (High Availability)

The following are two useful links to High Availability in the [Oracle online documentation](https://docs.oracle.com/en/database/).

* Database High Availability Best Practices  
  <https://docs.oracle.com/cd/E11882_01/server.112/e10803/toc.htm>
* Database High Availability Overview  
  <https://docs.oracle.com/cd/E11882_01/server.112/e17157/toc.htm>

23 March 2016

Oracle Support Note:

Using RMAN Effectively In a Data guard Environment. (Doc ID 848716.1)

This article basically talks about how RMAN can be used in a data guard environment effectively.

12 August 2016

Creating a Physical Standby Database (Doc ID 1475344.1)

Consider this document as a way of doing the data guard refresh.

The section *Create the Physical Standby Database* contains two useful subsections:

* Creating a Standby Database using RMAN (Backup based)  
  In this Case we have to create a RMAN Backup of the Primary Database first.
* Creating a Standby Database using RMAN without Backup (from active Database)  
  It's now possible to create a Physical Standby Database from the active Primary Database, i.e. It is not necessary to create a Backup first. This is done using the RMAN duplicate command:  
    
  RMAN> duplicate target database for standby from active database nofilenamecheck;

See also

Creating Physical Standby using RMAN Duplicate Without Shutting down The Primary (Doc ID 789370.1)

The following note describes step-by-step procedure to create physical standby by using RMAN duplicate without shutting down the primary (Production) database.

Step by Step Guide to Create Physical Standby Using RMAN DUPLICATE (non ASM) on different / new host (Doc ID 374069.1)

12 August 2016

Data Guard Broker

There are a number of commands that you can use to change the state of the database.

Primary

DGMGRL> edit database prod1 set state=transport-off;

DGMGRL> edit database prod1 set state=transport-on;

Standby

DGMGRL> edit database prod1dr set state=apply-off;

DGMGRL> edit database prod1dr set state=apply-on;

Change the protection mode as required.

sql> alter database set standby to maximize performance;

sql> alter database set standby to maximize availability;

sql> alter database set standby to maximize protection;

# Display the configuration

DGMGRL> show configuration

Source: <http://www.datadisk.co.uk/html_docs/oracle_dg/cheatsheet.htm>

Database States

When a configuration is enabled, its databases can be in one of several states that direct the behaviour of Data Guard, for example transmitting redo data or applying redo data. Table 4-1 describes the various database states.

See: https://docs.oracle.com/cd/E11882\_01/server.112/e40771/dbresource.htm#DGBKR140

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The article “CREATING PHYSICAL STANDBY DATABASE IN ORACLE 11GR2” is a good guide on creating a physical standby database.

Source: <http://vikaskohlioracledba.blogspot.co.uk/2013/09/creating-physical-standby-database-in.html>

15 August 2016