

Configuring Oracle BI EE Server with Oracle Active Data Guard

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Maximum Availability Architecture

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with Oracle Active Data Guard

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Configuring Oracle BI EE Server with Oracle Active Data Guard

EXECUTIVE OVERVIEW

Oracle Active Data Guard [1] is one of the more important options for Oracle Database 11g Enterprise Edition. It provides a method for customers to actively utilize their disaster recovery configuration for read-only queries and reports while it is in standby role. Additionally, a standby database can be used to offload backups from production databases or for Quality Assurance and other test activities that require read-write access to an exact replica of production. These capabilities are unique to Oracle.

Oracle Business Intelligence Suite Enterprise Edition Plus (Oracle BI EE Plus) [2] is a comprehensive suite of enterprise BI products that delivers a full range of analysis and reporting capabilities. Featuring a unified, highly scalable, modern architecture, Oracle BI EE Plus provides intelligence and analytics from data spanning enterprise sources and applications - empowering the largest communities with complete and relevant insight.

Oracle BI EE 10.1.3.4 has been certified with Oracle Active Data Guard 11g.

Oracle Data Guard is an included feature of Oracle Database 11g that protects enterprise data by automatically maintaining one or more synchronized copies (standby databases) of a production database (primary database). The Active Data Guard Option is a new product for Oracle Database 11g that enables physical standby databases to be accessible to external queries in read-only mode while Data Guard continuously applies changes received from the primary database. This opens the opportunity for applications to off-load read-only workload from the primary database to an Active Data Guard standby database.

Oracle BI EE Server is an almost-read-only (also referred to as read-mostly) application server. With proper configurations, it can successfully run on Active Data Guard standby database, effectively offloading the primary database, and enhancing scalability significantly.

Customers have been asking for a simple solution to offloading read-only queries and reporting. Oracle BI EE with the Oracle Active Data Guard Option using a physical standby database in Oracle Database 11g does just that.

INTRODUCTION

The key difference between an Active Data Guard standby database and a regular database is the standby database is accessible in read-only mode. Oracle BI EE Server must be configured properly to route all database modifications to the primary database. To do this, we must understand how to configure Oracle BI EE repository properly.

Oracle BI EE server modifies data in the database in the following scenarios:

1. Oracle BI EE creates temporary tables to enhance query performance
2. Oracle BI EE Administrator writes information to the database using scripts. These scripts includes: “Execute Physical” scripts, allowing direct modification of database; “POPULATE” scripts, creating statistic information store; “Aggregates” script, creating aggregating results into tables.

The correct way to configure Oracle BI EE is to:

1. Disable Oracle BI EE from creating temporary tables in the database. This prevents Oracle BI EE from issuing DML statements while connecting to the standby database.
2. All scripts that modify database content must specify a primary database connection pool explicitly.

SETUP CONNECTION TO AN ACTIVE STANDBY DATABASE

Step 1. Create database connection, disable temporary table creation

The Oracle BI EE Administrator must create a database connection in the repository using the Admintool. When creating the database, in Database Property dialog box, make sure the “Persist connection pool” is “not assigned”. This will prevent the Oracle BI EE server from creating temporary tables in this database.

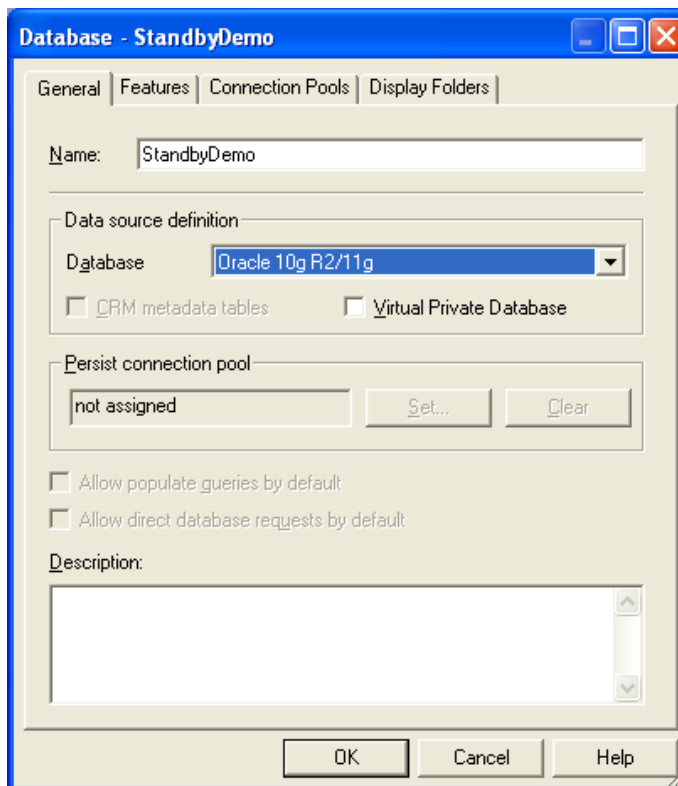


Fig 1. Disable temporary table creation

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After the database is created, create the first connection pool to connect to the standby database. Make sure that this Standby Connection is the first connection pool for this database, since most queries will go through the first connection.

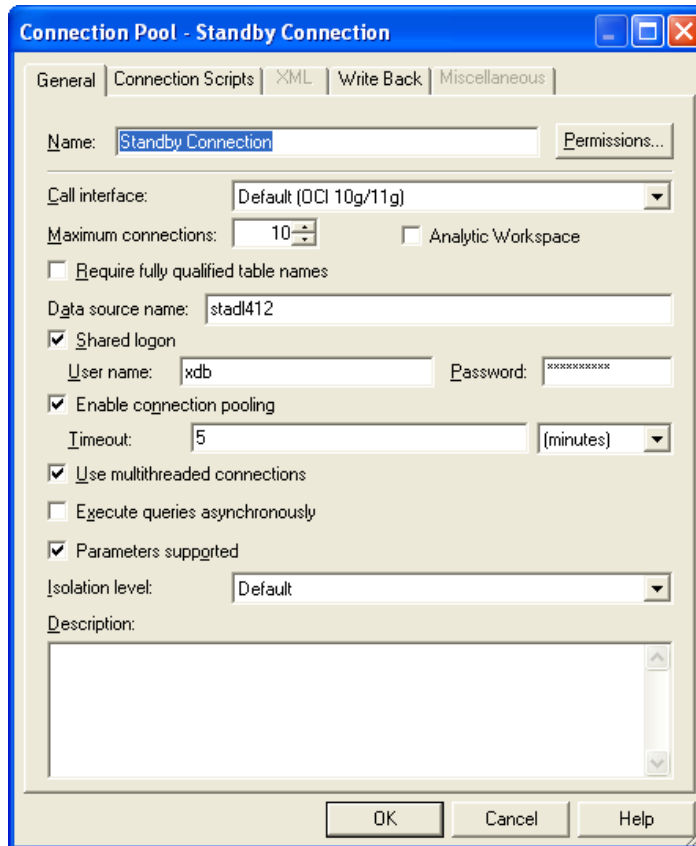


Figure 2. Create connection pool to standby database

Step 2. Create a “Write-back” connection pool

With the Oracle BI Server Admintool, the Oracle BI EE administrator should create a Write-back connection pool, which points to the primary database

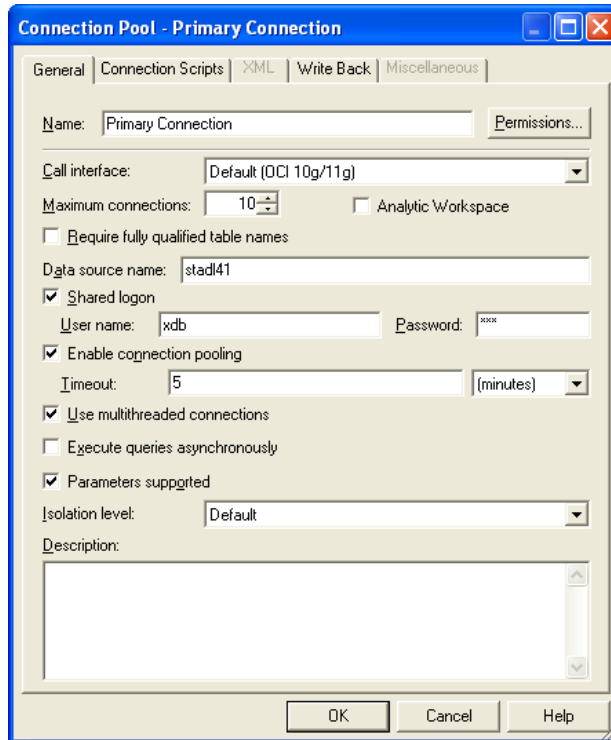


Figure 3. Create connection pool to primary database

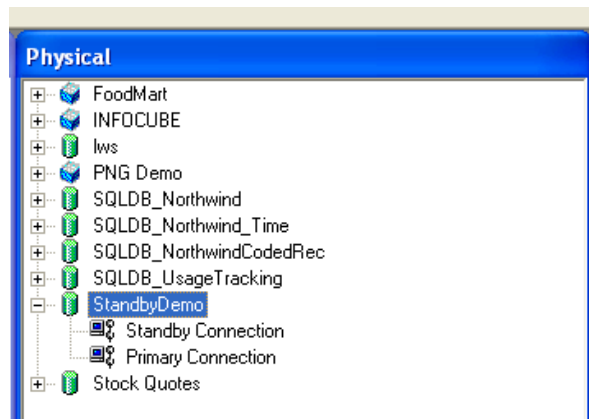


Figure 4. Two connections, Standby and Primary

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“Primary Connection” is created just in case Oracle BI EE administrator needs to write information back to database, using interactive or batch processing client (such as nqCmd.)

After these two steps, the Oracle BI EE administrator can continue the regular configuration steps as usual.

HOW TO WRITE BACK TO THE PRIMARY DATABASE

To write information back to the database, the user must specify “connection pool Primary Connection” explicitly.

An example statement for “create aggregates” write-back:

```
create aggregates sc_rev_qty_yr_cat for
  "DimSnowflakeSales"."SalesFacts" ("Revenue",
  "QtySold") at levels
  ("DimSnowflakeSales"."Time"."Year",
  "DimSnowflakeSales"."Product"."Category") using
  connection pool "StandbyDemo"."Primary Connection"
  in "StandbyDemo"."Northwind"."dbo"
```

An example statement for “POPULATE” write-back:

```
POPULATE "qpProfit$" MODE (CREATE TABLE
  CONNECTION POOL StandbyDemo."Primary Connection")
  AS select employeeid as EID from employee where
  employeeid <> 4
```

An example statement for “Execute Physical” write-back:

```
Execute Physical Connection Pool
  StandbyDemo."Primary Connection" create table
  zz(zz varchar(9))
```

Notice that these statements are using the “Primary Connection” connection pool. Information written through primary connection will be automatically transferred to standby database, and becomes available through “Standby Connection”

USAGE TRACKING

Usage Tracking is a special functionality provided by the Oracle BI EE server. It’s used to track the user’s behavior – including what queries are executed, what is the

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execution time etc. This feature is turned off by default. If you do not plan to enable this feature, you may skip this section.

A special table “S_NQ_ACCT” is used to record usage data. Running Oracle BI EE pre-provided SQL file could create this table.

To enable usage tracking on standby-database, “S_NQ_ACCT” table must be created on primary database. Then, Its schema must be imported into physical database definitions in the repository using the Admintool.

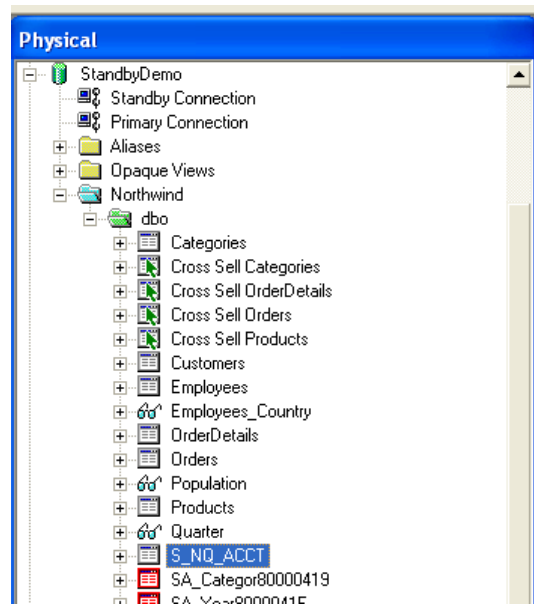


Figure 5. Usage-Tracking table S_NQ_ACCT

To tell the Oracle BI EE server to write into S_NQ_ACCT table using Primary Connection, you must modify the NQSConfig.INI file in your SA_HOME\Config directory.

Follow the example below:

```
[ USAGE_TRACKING ]

ENABLE                               = YES;

// Parameters used for writing data to a flat
// file (i.e. DIRECT_INSERT = NO).
//
STORAGE_DIRECTORY                     = "c:\temp";
CHECKPOINT_INTERVAL_MINUTES           = 5;
FILE_ROLLOVER_INTERVAL_MINUTES       = 30;
CODE_PAGE                              = "ANSI";
```

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```
DIRECT_INSERT = YES;

//=====

PHYSICAL_TABLE_NAME = "Standby
Demo"."Northwind"."dbo"."S_NQ_ACCT";
CONNECTION_POOL = "Standby
Demo"."Primary Connection";
BUFFER_SIZE = 10 MB;
BUFFER_TIME_LIMIT_SECONDS = 5;
NUM_INSERT_THREADS = 5;
MAX_INSERTS_PER_TRANSACTION = 1;

//=====
```

EVENT POLLING

Event Polling is an Oracle BI EE feature, which notifies the cache system to invalidate outdated data cache. Event Polling data are stored in a special table S_NQ_EPT. S_NQ_EPT table can be created using Oracle BI EE pre-provided SQL file.

Oracle BI EE reads and writes Event Polling table from time to time. A dedicated database must be created in Repository using Admintool.

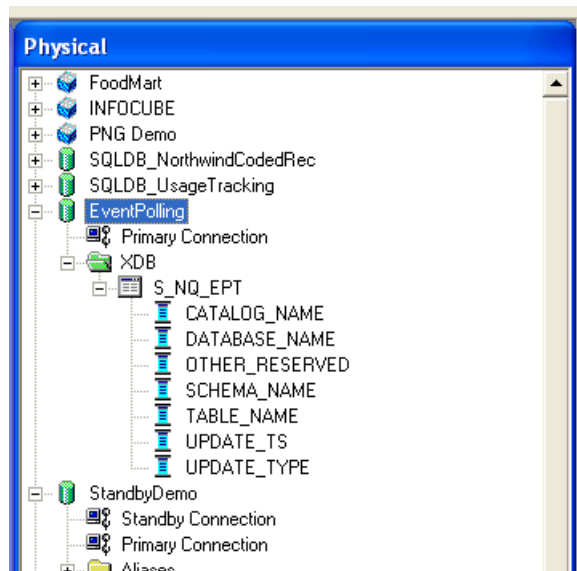


Figure 6. Event Polling requires a dedicated database connection

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After Event Polling Database Connection is setup, you may indicate the S_NQ_EPT table as the event table in the Admintool. This can be done in Tools - > Utilities. Select “Oracle BI Event Tables”, and then click on “Execute...”

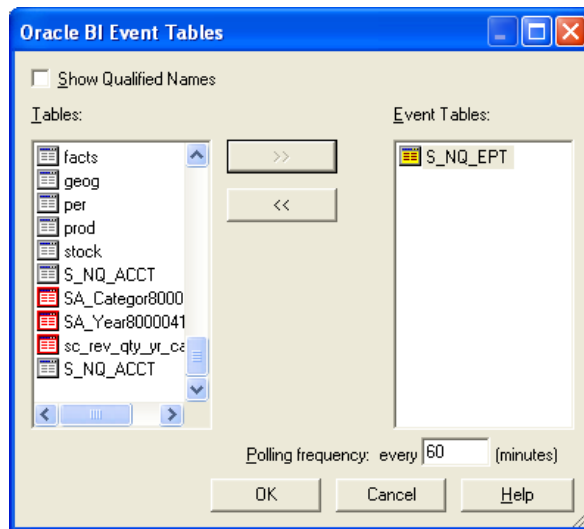


Figure 7. Specify S_NQ_EPT as event table

RESTRICTIONS

- Currently NQQuery.log does not provide any information about the connection pool used in executing the SQL against a physical standby database. This is problematic when multiple connection pools exist.
- There is not an option in the connection pool settings to specify the amount of time Oracle BI Server has to use the same connection pool after a write query.

CONCLUSION

Running Oracle BI EE on an Oracle Database 11g with Active Data Guard provides a highly scalable solution while simultaneously increasing customers' return on investment in standby databases. However, the user must properly configure the Oracle BI EE repository to adapt Oracle BI EE to the read-only requirements of an Active Data Guard standby database.

REFERENCES

1. Oracle Active Data Guard
<http://www.oracle.com/technology/deploy/availability/htdocs/activedataguard.html>
2. Oracle Business Intelligence Suite Enterprise Edition Plus
<http://www.oracle.com/appserver/business-intelligence/enterprise-edition.html>



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