

MetLife[®]'s 11gR2 Active Data Guard Implementation Story



MetLife[®]

**DR Solution and Reporting
Better together**



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Lead DBA, MetLife**

Agenda

MetLife[®]



- Who are We ?
- MetLife's Oracle Footprint.
- Active Data Guard and PeopleSoft
- Active Data Guard and OBIEE
- Active Data Guard and Hyperion
- Summary

Who Are We?



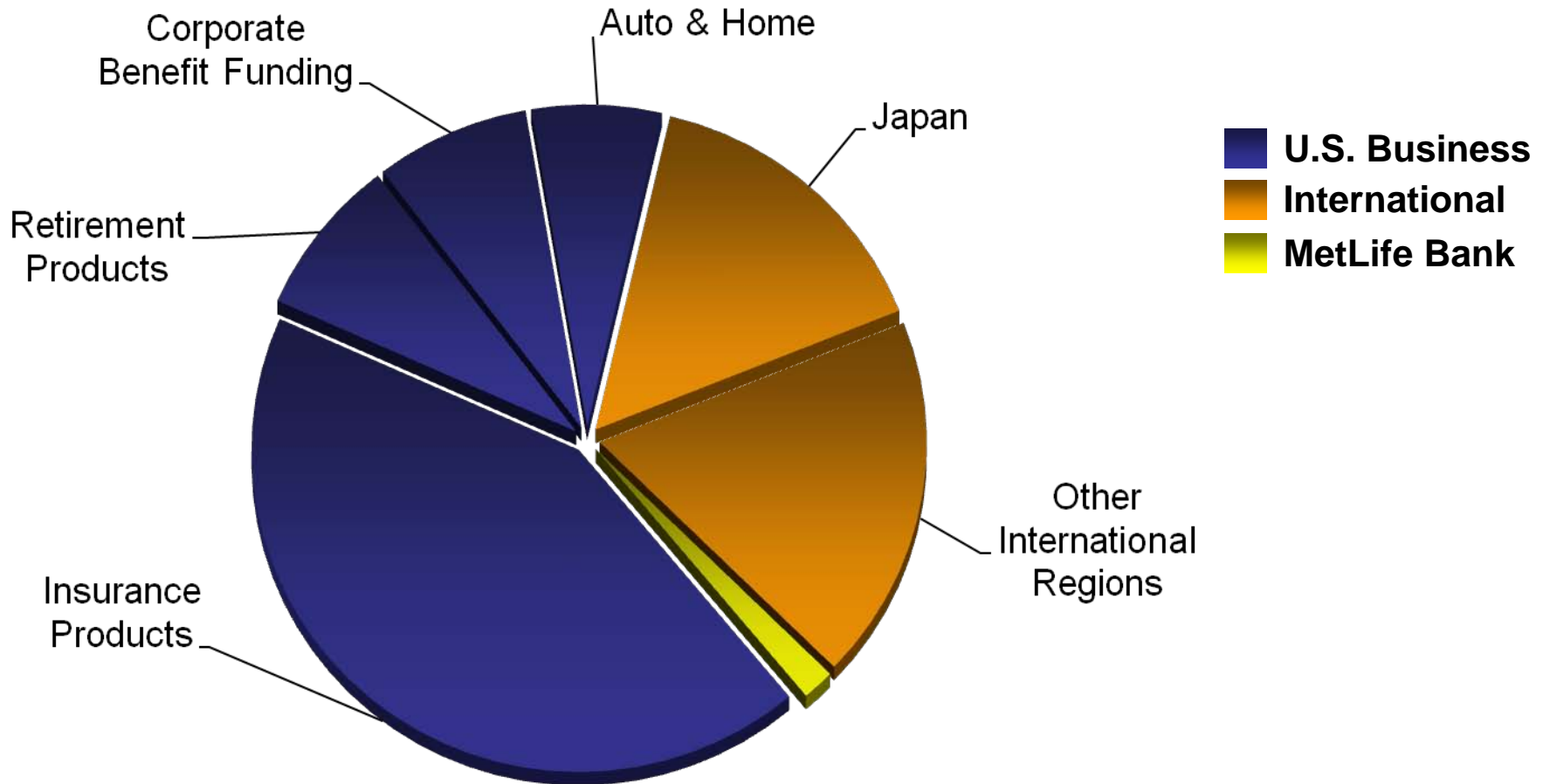
MetLife[®]

- MetLife, Inc. (NYSE: MET) is a leading global provider of insurance, annuities and employee benefit programs
- 90 million customers in more than 60 countries
- 2010 total revenues of \$52.7 billion
- 46th on the FORTUNE 500^{®1}
- Over \$770 billion² in total assets
- 66,800 employees²
- Founded in 1868

A Diverse and Global Company



MetLife 2Q 2011 Premiums, Fees & Other Revenues of \$11.8 Billion*



*Excludes the Corporate & Other component of Banking, Corporate & Other. The non-GAAP measure used above (premiums, fees and other revenues) should not be viewed as a substitute for the most directly comparable GAAP measure (GAAP premiums, fees and other revenues). Premiums, fees and other revenues, as presented, is GAAP premiums, fees and other revenues minus \$59 million in adjustments related to universal life and investment-type product policy fees.

Market Leadership

- Largest life insurer in the United States, Mexico, Russia, Chile and Argentina¹
- Clients include over 90 of the top 100 FORTUNE 500®²
- Largest provider of group employee benefits in the U.S.³
- Leading market positions in Japan, Korea and Brazil⁴
- Top five positions in over 25 markets⁵
- Growing presence in India and China

¹Based on life insurance in force according to A.M. Best (U.S.); Based on direct premium according to EstadisticAMIS (Mexico); Based on premiums according to Federal Board of Insurance Supervision (Russia); Based on combined direct premium according to Superintendencia de Valores y Seguros (Chile); Based on combined direct premium according to Superintendencia de Seguros de la Nacion (Argentina); ²Issue Date: 5/23/2011; ³LIMRA and MetLife Research; ⁴Nikkei (Japan); Financial Supervisory Service (Korea); SUSEP (Brazil); ⁵AXCO

MetLife's Oracle Footprint

- Oracle® RDBMS on AIX and Linux
- PeopleSoft Financial 9.1/8.8
- DR using Oracle Data Guard
 - Traditional and active physical standby
- Reporting using a logically replicated environment
- Advanced compression (Oracle 11g Release 2)
- OBIEE financial and gap analytics
- Hyperion planning and budgeting

MetLife Architecture before ADG

Standbys Only Used for Disaster Recovery

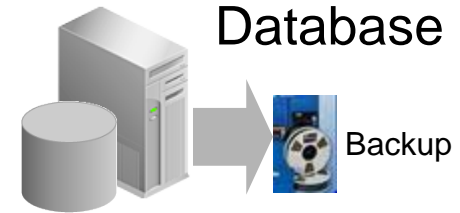
Production Site

PeopleSoft
Financial Online App
Erp Financial



Remote DR Site

Standby Database



Data Guard

Shareplex
Logical replication

PeopleSoft
Near Real-time (NRT)
Financial reporting,
Erp reporting



Data Guard

Standby Database

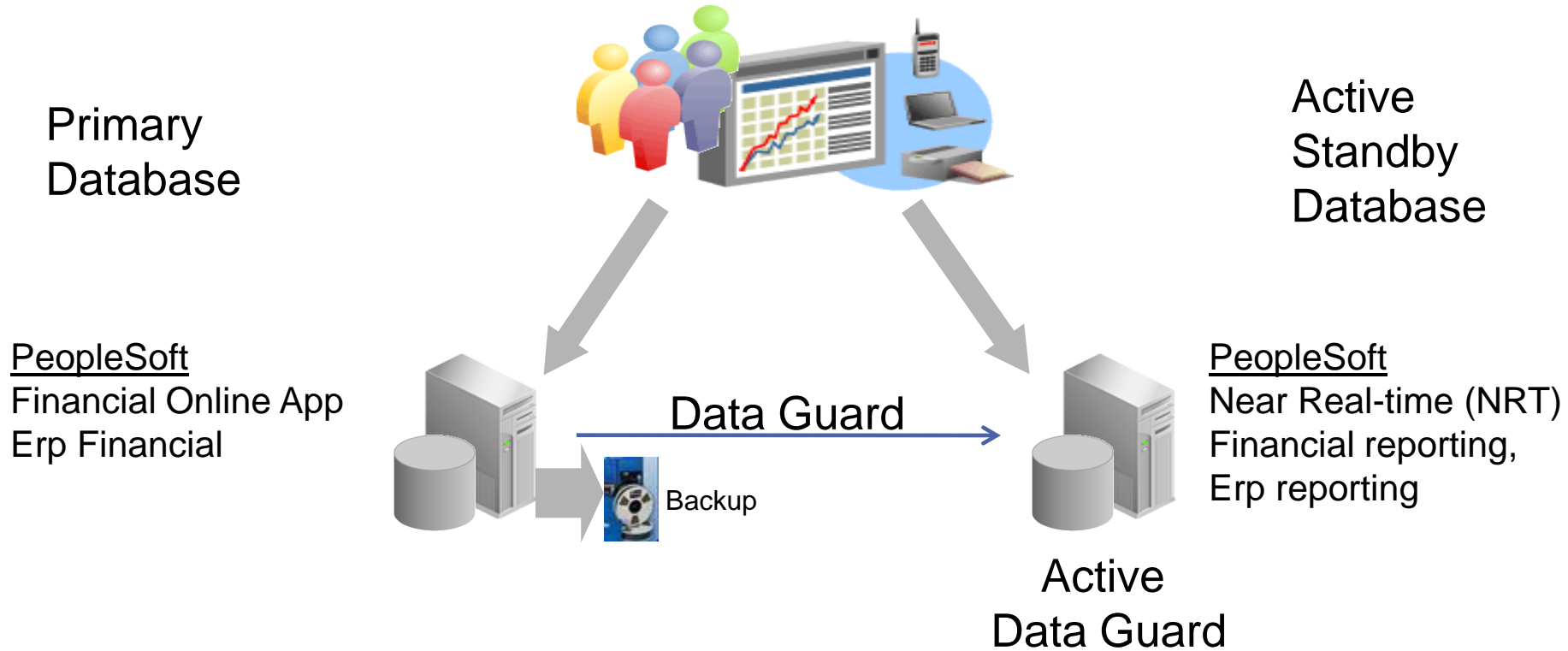


Why Consider Active Data Guard

- Considerable volume of read-only workload
 - PeopleSoft, OBIEE, Hyperion, other applications
- Existing Data Guard standby databases
 - Minimal cost
- Active Data Guard offers an ideal opportunity
 - Harness standby system capacity
 - Eliminate separate reporting instances
 - Low cost, utilizes infrastructure in place for DR
 - Simpler to implement than other replication options

PeopleSoft 8.5.1 with Active Data Guard 11g

Same App server supports both OLTP and reporting user population



PeopleSoft and ADG – Implementation

Three step configuration:

- Configure a standby DB in the App server and Process Scheduler configuration files
- Mark components as R/O so that these components get redirected to the STANDBY DB
- Mark Process Scheduler processes as R/O so that these components get redirected to the STANDBY DB

PeopleSoft / PT 8.51 App Server Configuration

In the app server and process scheduler configuration files – configure as standby DB

Configuring a Standby DB

- In PT8.51 specify an optional STANDBY database in addition to the current PRIMARY database designation in the Application Server configuration file

- PT8.51 Application Server config file

• [Startup]

• ;=====

• ; Database Signon settings

• ;=====

• DBName=F9ADGP

• DBType=ORACLE

• UserId=onlinewrite ←-----Primary Accessid

• UserPswd=sysadm2pass

• ConnectId=people

• ConnectPswd=peop1epass

• ServerName=

• StandbyDBName=F9ADGP_SISC

• StandbyDBType=ORACLE

• StandbyUserId=reporting ←-----Secondary Accessid

• StandbyUserPswd=reportingpass

• *Note: New Standby DB entries*

Marking Each Component as Read-Only

The screenshot shows the Application Designer interface with the Component Properties dialog box open. The dialog box has three tabs: General, Use, and Internet. The Internet tab is selected. In the Actions section, the Read Only checkbox is checked and highlighted with a red arrow. The Component Properties dialog box also shows search record settings and execution location options.

Application Designer - Untitled - [QUERY_VIEWER.GBL (Component)]

File Edit View Insert Build Debug Tools Go Window Help

Definition Structure

	Page Name	Item Name	Hidden	Item Label	Folder Tab Label	Allow Deferred
1	QUERY_MEWER_	QRY_MEWER_SRCH	<input checked="" type="checkbox"/>	Query Viewer		<input checked="" type="checkbox"/>
2	QUERY_MEWER	QUERY_VIEWER	<input type="checkbox"/>	Query Viewer		<input checked="" type="checkbox"/>

Component Properties

General Use Internet

Access:

Search record: NOSEARCH_YW

Add search record:

Force Search Processing

Detail page:

Context search record:

Actions:

Add

Update/Display

Update/Display All

Correction

Disable Saving Page

Include in Navigation

Mandatory Spell Check

Read Only

3-Tier Execution Location:

Component Build:

Client

Application server

Default (application server)

Component Size:

Client

Application server

Application server (with edits)

Default (application server)

Build Upgrade

OK Cancel

Ready

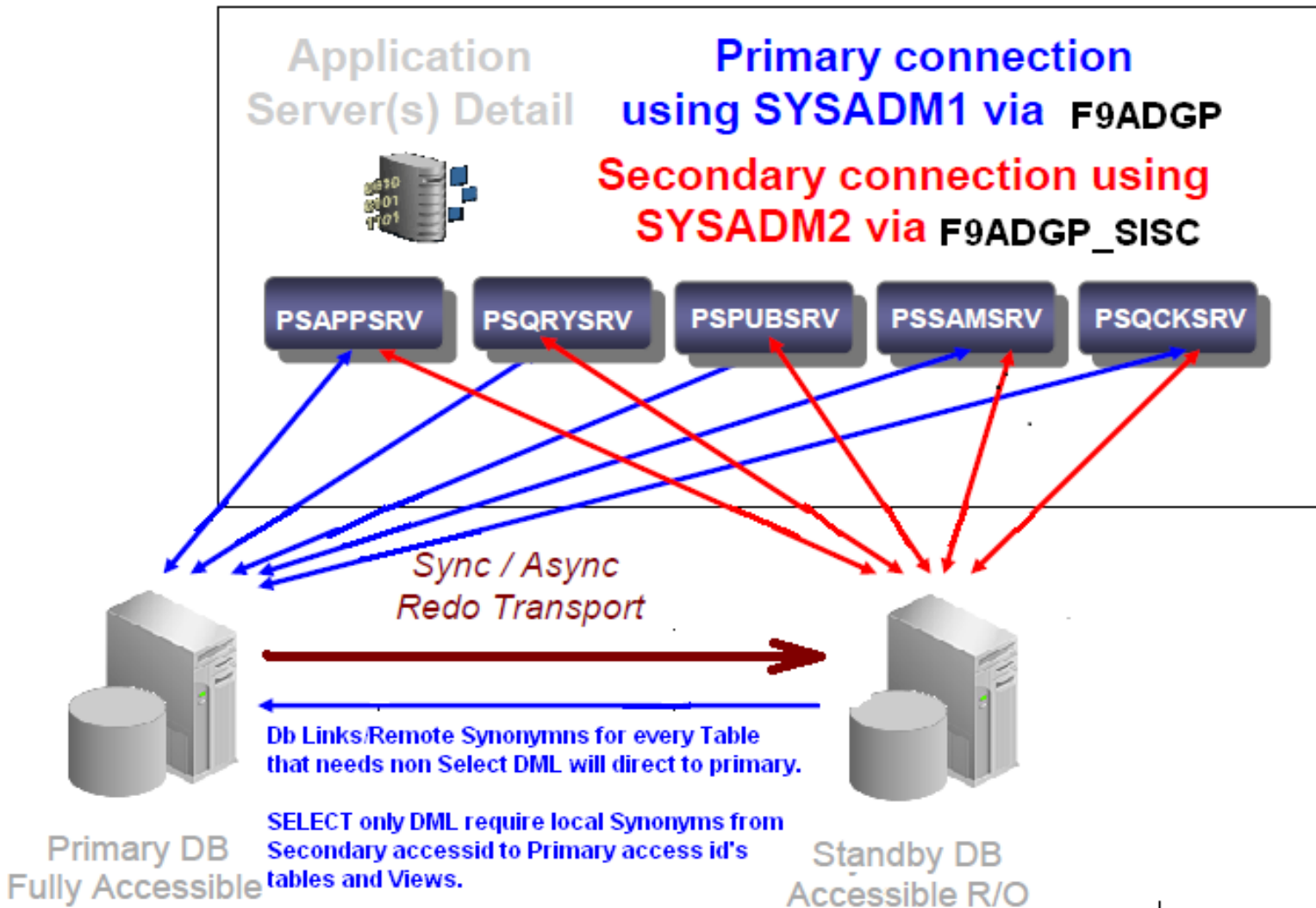
PeopleSoft Database Configuration

Database

- Standby open and ready for read-only connections
- Create a connect string in OID or TNSNAMES dedicated for the active standby DR database
 - F9ADGP - For non PeopleSoft users connecting for writes (connects to Production).
 - F9ADGS - For non PeopleSoft users connecting for reads – (connects to standby) .
 - F9ADGP_RISC (for **PeopleSoft Financial Online App**)
 - F9ADGP_SISC (for **PeopleSoft Financial Reporting App**)

Additional Implementation Details

PeopleSoft Active Data Guard Standby Database Setup



PeopleSoft Workload Moved to Active Data Guard

- Query Viewer - queries were run from Query Viewer component and confirmed through SQL trace and the DB to be running on the standby
- Tree Viewer - trees viewed from Tree Viewer component were confirmed through SQL trace and the DB to be running on the standby
- Query Manager component set to Read Only in AppDesigner. Remote synonyms for PSQRY% tables were created on primary DB
- Materialized view created and exploded on the primary DB and replicated to the standby. Corresponding view created in AppDesigner

Other Applications that also Connect to DR

Other applications that read from the Financial reporting database

- BI publisher
- Nightly ETL data extract for OBIEE
- Hyperion

OBIEE Database Implementation Details

- Standby open and ready for read-only connections
- Create a connect string in OID or TNSNAMES dedicated for the active standby DR database
- Use that connect string to extract the nightly ETL load (Using Informatica and DAC scheduler) to OBIEE
- All BI publisher (part of OBIEE) that used to read from finance production directly now reads from standby using the same connect string to query financial data.

OBIEE and Active Data Guard

Three step configuration:

- Disable temporary table creation. This prevents Oracle BI EE from issuing DML statement while connecting to standby database.
- Create the first connection pool to connect to the standby database as most of the queries go through here.
- All Scripts that modify database content must specify the primary database connection pool explicitly.

OBIEE- Configuration

Disable
temporary table
creation in
standby

Database - StandbyDemo

General | Features | Connection Pools | Display Folders

Name: F9ADGS

Data source definition

Database: Oracle 10g R2/11g

CRM metadata tables Virtual Private Database

Persist connection pool

not assigned Set... Clear

Allow populate queries by default

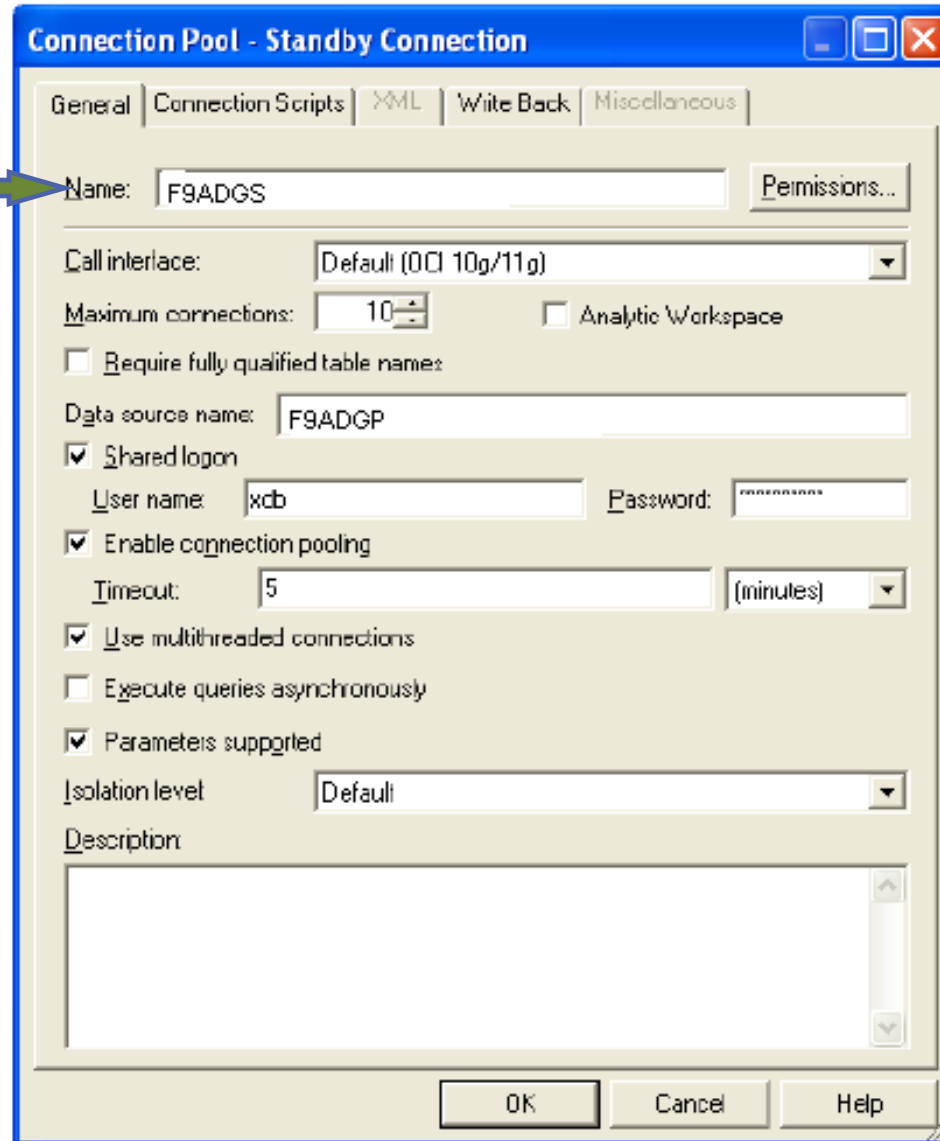
Allow direct database requests by default

Description:

OK Cancel Help

OBIEE- First Connection Pool to Standby

Connection pool
to standby
database



Connection Pool - Standby Connection

General | Connection Scripts | XML | Write Back | Miscellaneous

Name: Permissions...

Call interface:

Maximum connections: Analytic Workspace

Require fully qualified table names:

Data source name:

Shared logon

User name: Password:

Enable connection pooling

Timeout: (minutes)

Use multithreaded connections

Execute queries asynchronously

Parameters supported

Isolation level:

Description:

OK Cancel Help

OBIEE- Connection Pool for Write Back

“Write-Back”
connection pool
points to the
primary

Connection Pool - Primary Connection

General | Connection Scripts | XML | Write Back | Miscellaneous

Name: F9ADGP Permissions...

Cal interface: Default (OCI 10g/11g)

Maximum connections: 10 Analytic Workspace

Require fully qualified table names

Data source name: F9ADGP

Shared login

User name: xclb Password: ***

Enable connection pooling

Timeout: 5 (minutes)

Use multithreaded connections

Execute queries asynchronously

Parameter supported

Isolation level: Default

Description:

OK Cancel Help

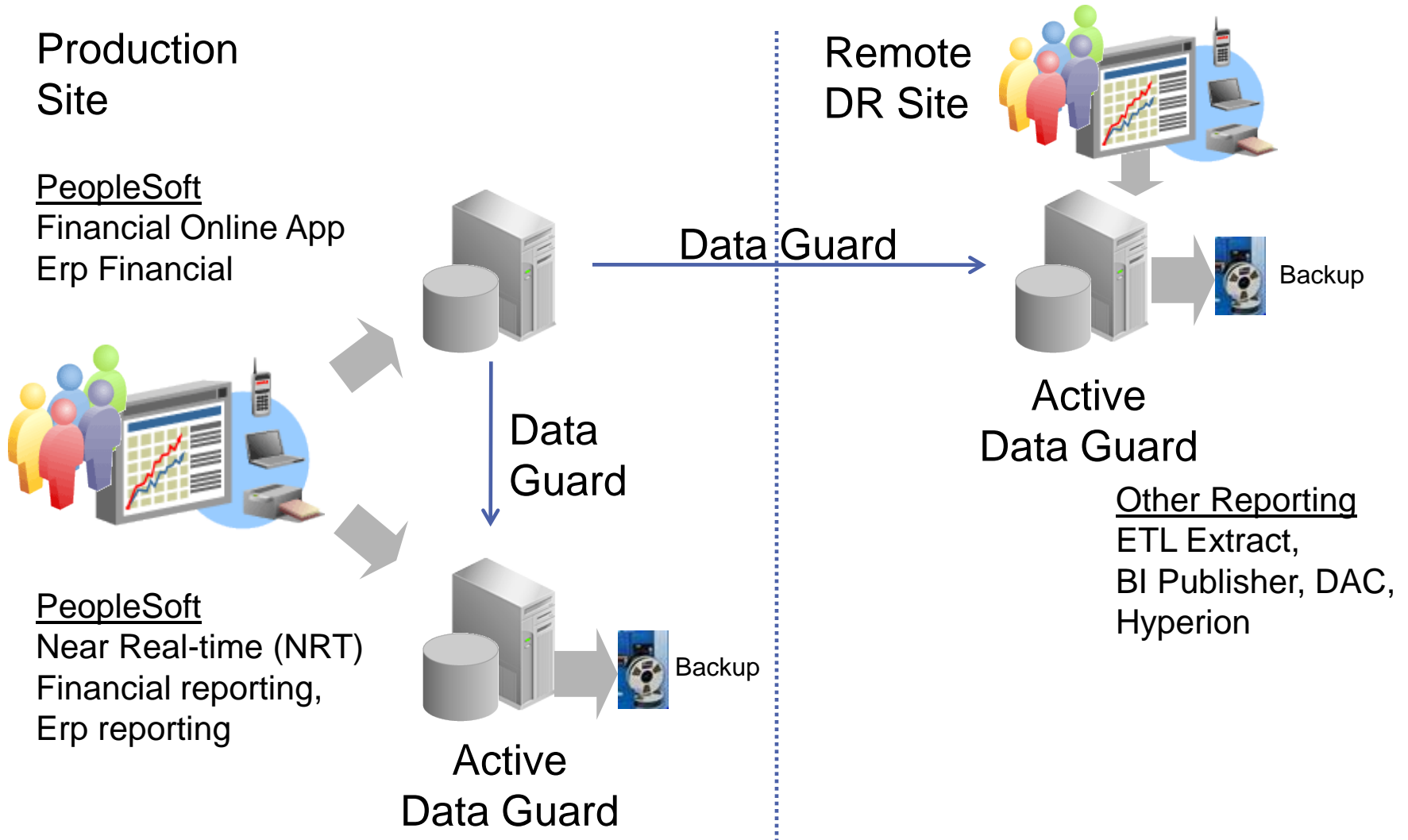
Hyperion Implementation Details

Financial Reporting

- Standby open and ready for read-only connections
- Create a connect string in OID or TNSNAMES dedicated for standby DR database
- Use that connect string to extract the nightly ETL load (Using Hyperion's FDM tool) to Hyperion database.
- All packaged queries that previously read from finance production, now read from active standby using the same connect string to query financial data.

MetLife Active Data Guard Architecture

Dual Active Standbys – Capacity for both Reporting and DR



Compromises with Active Data Guard Compared to Logical Replication

- Access
 - No read-write access to the reporting (standby) environment
- Flexibility
 - Reporting specific trees need to exist in the operational (primary) environment
 - Non-PS schemas need to be relocated to the operational (primary) or another database
- Tuning
 - Reporting specific tuning needs to exist in the operational (primary) environment and must be tested to ensure there is no impact to functionality or performance of either primary or standby

Advantages of Offload to Active Data Guard

- 37% cost reduction due to fewer PS reporting environments (e.g. HW, capacity, software licensing)
- Reduction in maintenance required to support PS environments (e.g. tuning, refreshes, upgrades)
- Reduction in batch trail processing/maintenance
- PeopleSoft reporting can be done from one central URL/environment, additional login/navigation is not required
- Ability long term to off-load additional read only processes to the standby DB to conserve resources on the primary DB
- Continuous validation that DR systems are ready to support production
- Added automatic block corruption repair – a feature of Active Data Guard

References

- Active Data Guard Configuration Reference in PeopleBooks
http://download.oracle.com/docs/cd/E18083_01/pt851pbr0/eng/psbooks/tadm/book.htm?File=tadm/htm/tadm13.htm#H4064
- Configuring Oracle BI EE server with Active Data Guard
<http://www.oracle.com/technetwork/middleware/bi-enterprise-edition/overview/biee-activedataguard-130935.pdf>