



Global Database Services in Oracle Database 12c

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Oracle Open World



Who am I?



- Oracle/Unix DBA since 1996
- Worked with every Oracle version from 7.1 on
- Oracle Certified Master (and more)
 - Oracle Certified Professional 7, 8, 8i, 9i, 11g; Managing Oracle on Linux; Oracle Certified Master
- Specialist in RAC deployments, 24x7 environments, Oracle security
- Member of the Paypal Database Engineering team

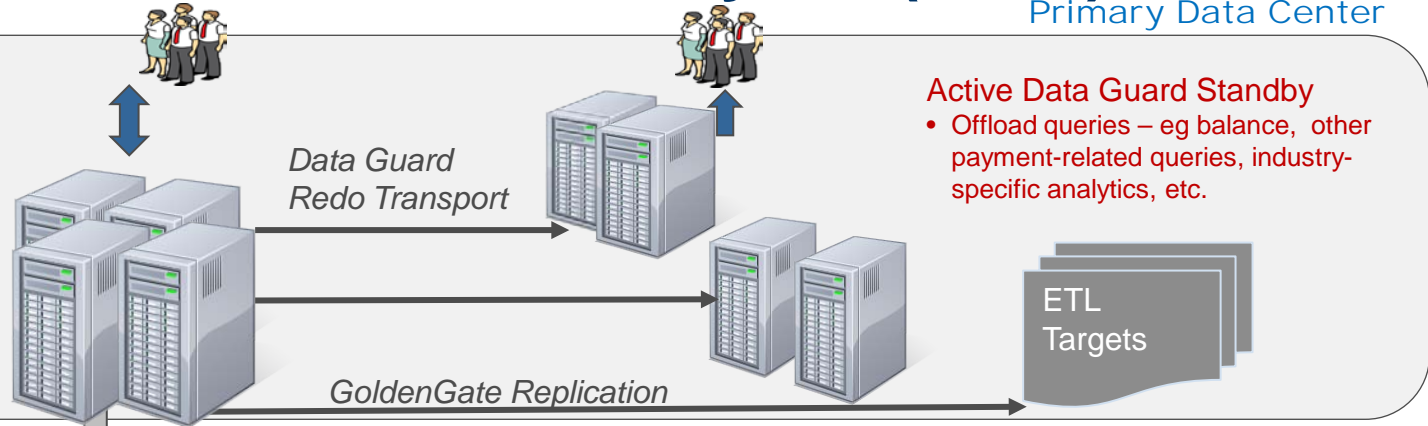
Tier-1 Oracle Database HA at PayPal (2012)

Primary Data Center

Mission-critical Payment Processing Databases Supporting up to 300K SQL executions per sec

Production Databases

- RAC, ASM, FRA
- 10-40 TB



Active Data Guard Standby

- Offload queries – eg balance, other payment-related queries, industry-specific analytics, etc.

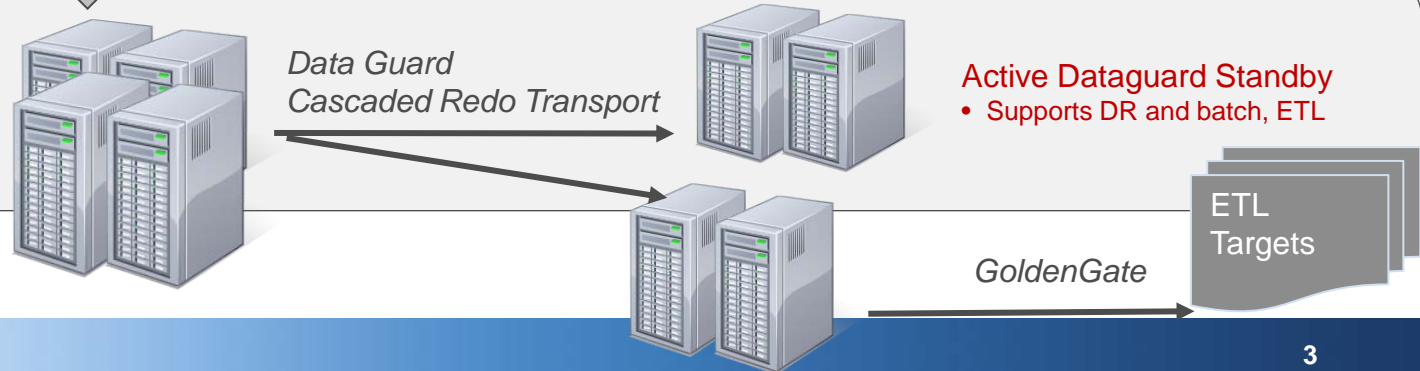
WAN, 650+ miles

Data Guard ASYNC Redo Transport

DR Data Center

Active Data Guard Standby

- Offload queries and reads



Data Guard Cascaded Redo Transport

Active Dataguard Standby

- Supports DR and batch, ETL

GoldenGate

PayPal's Business Challenge

- Support read services on multiple Active Data Guard databases
- Meet defined SLAs for lag on read-only services
- Manage services in multiple data centers
 - Balance load across Active Data Guard copies
 - direct connections to local region
- Service location transparency to clients
 - Manage service availability during planned maintenance
 - Relocate primary database and perform tech refreshes 'in the cloud'

The Case for Global Data Services

- Simple, centralized management of services
 - Define the service once in GDS and specify all preferred and available databases
 - Data Guard Broker integration for role-aware service definitions
- Performance management
 - Specify a maximum lag and the service will automatically be disabled if the lag is exceeded
 - Connection and Runtime Load Balancing options
 - Region affinity for global services with inter-region failover

PayPal Lab setup – Oracle Database 12c Beta

11.2 jdbc clients, no UCP
12.1 jdbc thin clients, UCP
read connections

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Databases

lablnxa
lablnxb
lablnxc

Services

srv_lablag15
srv_labroregion
srv_labrw (primary read-write service)

ADG STANDBY (LABLNXC)



Data Guard
Redo Transport
ASYNC

PRIMARY (LABLNXA)



Region B

ADG STANDBY (LABLNXB)



Simple, centralized management

-- add a service once in GDSCTL and it deploys to every appropriate instance

```
add service -service srv_lablag15 -gdspool lab -preferred lablnxb,lablnxc -available lablnxa -role  
PHYSICAL_STANDBY -lag 15 -loadbalance LONG
```

```
add service -service srv_roregion -gdspool lab -preferred lablnxb,lablnxc -available lablnxa -role  
PHYSICAL_STANDBY -loadbalance LONG -locality LOCAL_ONLY -region_failover
```

```
GDSCTL>services
```

```
...
```

```
Service "srv_lablag15.lab.oradbcloud" has 2 instance(s). Affinity: ANYWHERE
```

```
Instance "lab%17", name: "LABLNXC", db: "lablnxc", region: "scfc", status: ready.
```

```
Instance "lab%9", name: "LABLNXB", db: "lablnxb", region: "scfb", status: ready.
```

```
Service "srv_roregion.lab.oradbcloud" has 2 instance(s). Affinity: LOCALPREF
```

```
Instance "lab%17", name: "LABLNXC", db: "lablnxc", region: "scfc", status: ready.
```

```
Instance "lab%9", name: "LABLNXB", db: "lablnxb", region: "scfb", status: ready.
```

-- location neutral connection strings

```
jdbc:oracle:thin:@<gsm address and failover settings>
```

```
(PORT=1571)))(CONNECT_DATA=(SERVICE_NAME=srv_roregion.lab.oradbcloud)(REGION=scfb)))
```

Summary

- True enterprise-wide management of services
- Manage services in the cloud by abstracting database connection strings
- Region-aware services supports the growing need for management of services across databases that may be physically widely separated
- Smart integration with broker configurations to leverage Active Data Guard databases