Global Database Services in Oracle Database 12c

Sarah Brydon, PayPal Database Engineer

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

Production Databases
- RAC, ASM, FRA
- 10-40 TB

WAN, 650+ miles

Data Guard Redo Transport

GoldenGate Replication

Data Guard ASYNC Redo Transport

Active Data Guard Standby
- Offload queries – eg balance, other payment-related queries, industry-specific analytics, etc.

Active Data Guard Standby
- Offload queries and reads

Active Dataguard Standby
- Supports DR and batch, ETL

ETL Targets
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

Databases
------------------------
lablnxa
lablnxb
lablnxc

Services
------------------------
srv_lablag15
srv_labroregion
srv_labrw (primary read-write service)

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

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ADG STANDBY (LABLNXC)
Region C

GSM
GDSCAT

Data Guard
Redo Transport
SYNC

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

-- location neutral connection strings

dbcaoracle: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