



VOCALINK

VocaLink and BGC Application Failover

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VocaLink: at the heart of the transaction

A specialist provider of payment transaction services

Our history	Driving automated payments for more than 40 years From domestic supplier to large-scale international provider of modern payment services
Our scale	We securely process over 9 billion payments a year, including 15% of all European bank-to-bank payments On a peak day the payment platform processes over 90 million transactions and its switching technology powers the world's busiest network of over 60,000 ATMs
Our customers	The world's top banks, their corporate customers and Government departments
Our services	
2009 awards	 Best payment system deployment (Faster Payments Service) Best outsourcing partnership (BGC) Overall winner (Faster Payments Service)

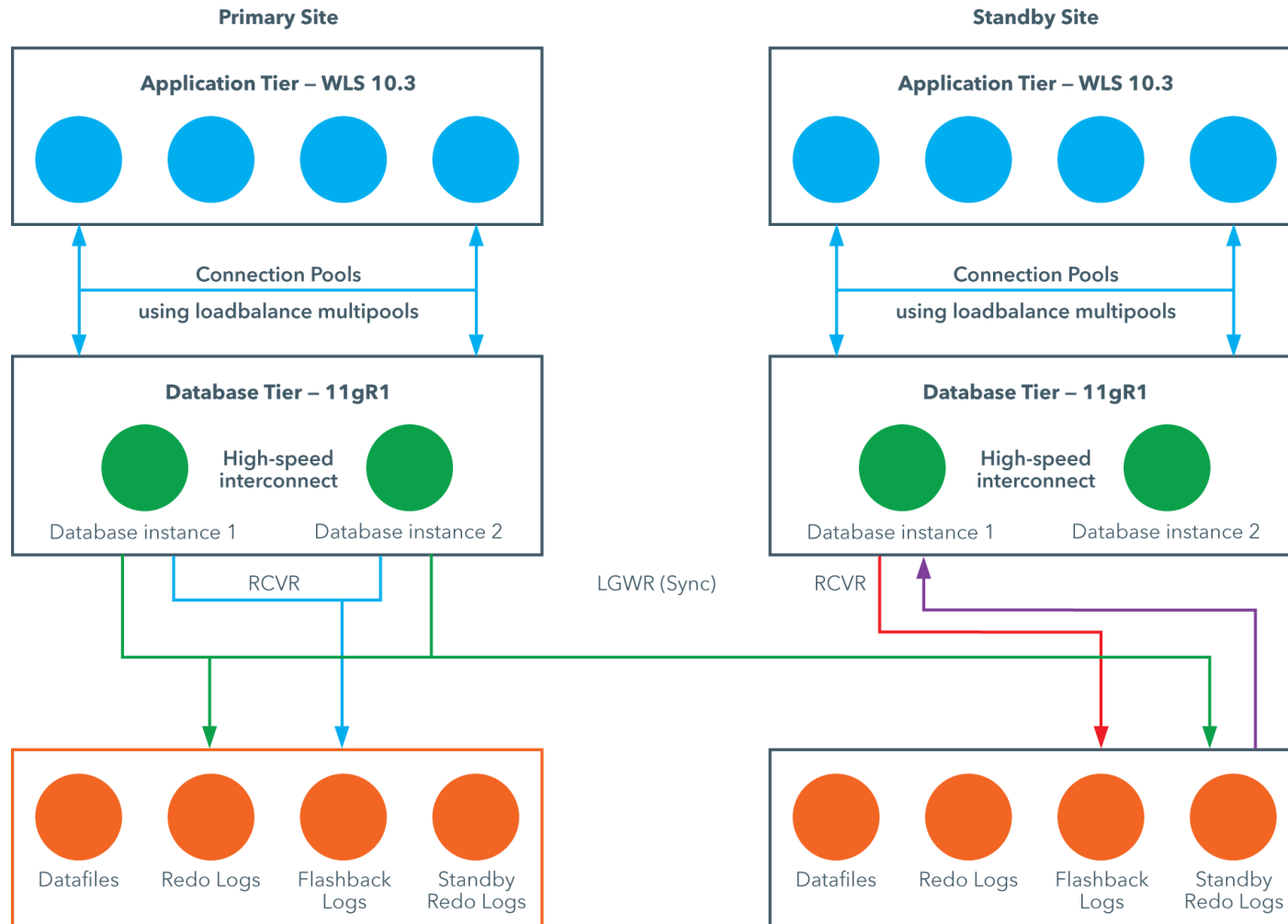
VocaLink's history with Oracle

- In 2007 VocaLink initiated a joint programme with BGC – the Swedish clearing house - to renew the BGC Service – the goal was to replace the heritage mainframe technology with a highly scalable, highly available and modular infrastructure that would reduce costs while simultaneously improving performance.
- Main Architecture requirements
 - High Availability
 - Disaster Recovery
 - Site Failover
 - High Throughput
 - Manageability
 - No single points of failure
 - remote site with zero data loss
 - Site failover SLA is 15 minutes
 - Process payments within very tight SLA's
 - Ability to manage independent payments services

VocaLink's history with Oracle contd.

- Technology
 - WebLogic Server was chosen to provide the Application Server software
 - Sun/Oracle was chosen to provide the hardware.
 - Oracle Database was chosen to provide the Database software using RAC (Real Application Cluster) for a solution that provided high availability and performance and Data Guard + Data Guard Broker provided an easily managed DR solution.
- Oracle's MAA framework promotes and supports VocaLink's Architecture requirements by providing the tools and a tested and supported set of configurations.

BGC Architecture



BGC Architecture – Explained

- The Standby site has two DWDM links the longest is 90Km and the network latency has been measured at just under 3ms, the Data Guard protection level is set to Max Availability – this allows the primary to keep processing even through loss of the standby servers or the inter-site link.

BGC Architecture - Explained

- At present the Active Data Guard standby is not used for anything other than ensuring the Standby application has a warm cache of Reference Data to enable VocaLink to meet the 15 minute SLA, however for a future release of the BGC service it is being considered for providing read-only reporting application. This is reliant on 11gR2 and the automated monitoring of the latency between the primary and standby databases providing a suitable framework.



BGC Architecture - Explained

- Each site is mutually exclusive at present therefore the WLS tiers are only configured to connect to the local database servers. However with the use of the load-balanced multipools configurations has reduced the amount of manual interventions required after the old primary databases are restarted after a Switchover or other failure scenarios i.e. an instance crash or a physical server crash.



VocaLink – BGC Service Site Failover

- Control of the Failover/Switchover process are controlled by a job scheduler (Tivoli Workload Scheduler) due to the external dependencies above the Application and Database tiers – this controls the Data Guard Broker and the application restart processes.
- A failover has been timed at 12 mins whilst a switchover has been timed at just under 15mins (14:45).
- The failover includes network, proxy, application and database tiers. The database failover takes about 5 minutes and the application tier takes about a further 3 minutes. The rest of the time was taken by the network and some ancillary systems switching sites



VocaLink – BGC Service Site Failover

- During a Site Failover of the BGC Service VocaLink use the following Oracle technologies to meet the strict 15 minutes SLA - Data Guard, Data Guard Broker, Flashback and Active Data Guard.
- The Data Guard configuration allows for the data to be replicated to VocaLink's standby site without data loss.
- Data Guard Broker is used to simplify the process of performing a Failover/Switchover – one command to control the whole process.

VocaLink – BGC Service Site Failover

- Active Data Guard is implemented along with a custom caching application to keep the reference data up to date on the standby site – allowing the application to restart very quickly after a failover is initiated.
- Flashback is implemented to allow us to quickly rebuild a failed primary database.
- The WLS multi pool configuration along with Active Data Guard allows the standby site to be maintained and kept up to date with the minimal interaction from the system administrators.