Oracle Database Disaster Recovery Services

BUSINESS CHALLENGES

Businesses and organizations today absolutely depend on continuous access to their data, regardless of the physical location of their databases’ underlying hardware platforms. IT organizations must guarantee zero data loss regardless of the vector for a potential systems outage, and that crucial business data is always available. The only way to insure against this is to implement a robust disaster recovery (DR) plan that anticipates all potential threats. Key factors to consider for a sufficiently robust DR plan include, but are not limited to:

> The implications of complete destruction of a primary data center
> The minimum acceptable service disruption that the business can tolerate while switching to the DR site
> The anticipated volume, volatility and intensity of business transaction volumes
> The relative distances between primary and alternate DR data centers, as well as the distances between primary and alternate application server locations
> The stability of data center locations from multiple perspectives, including geography, tectonics, weather, infrastructure, and political upheaval
> How often DR simulations must be performed to satisfy customer requirements or regulatory compliance
> The need to leverage databases and platforms at the alternate DR site to offload reporting, database backup processes, and application testing

SOLUTION DESCRIPTION

OnX provides a broad range of Oracle solution service offerings that address each client’s unique business challenges. We have developed proven solutions to address the challenges that often arise with providing disaster recovery solutions, such as:

> Planning for the unthinkable – the complete loss of a crucial datacenter
> Determining precise business and IT requirements necessary to guarantee minimum acceptable service levels in case of a disaster
> Evaluating current network, server, and storage hardware, database software, and application server environments for potential vulnerabilities in case an unanticipated production outage should occur
> Boosting efficiency of existing IT resources at the primary data center by offloading non-production / lower-priority production processes to alternate data center(s)
> Implementing recommended Oracle best practices for full database disaster recovery

SOFTWARE ENVIRONMENT EXPERTISE

> Applications – Oracle E-Business Suite, PeopleSoft, Data Warehouse, Custom In-House, etc.
> Databases – Oracle 8i, 9i, 10g, 11g, 12c
> High Availability, Disaster Recovery, and Replication – Real Application Clusters (RAC), Automatic Storage Management (ASM), Oracle (Active) Data Guard, Oracle GoldenGate
KEY ORACLE DISASTER RECOVERY FEATURES

Data Guard (DG). DG is the premier tool recommended for Oracle database disaster recovery:

> It provides an exact duplicate of the primary database - the physical standby database – that is kept synchronized with the primary via shipment and application of online redo log entries.
> In case of disaster scenario, the physical standby database can take the place of the primary database in less than 20 seconds.
> DG’s Fast Start Failover (FSFO) utility also facilitates the ability to automatically fail over to a standby database when a fatal condition is detected.
> If desired, multiple physical standby databases can be created to provide real-time reporting capabilities through Active Data Guard (ADG). ADG also automatically detects and corrects physical corruption of data at the block level via Block Media Recovery (BMR).
> A physical standby database can also be opened in read-write mode as a snapshot standby database, which can then be used as a target for QA testing, and then easily resynchronized with production without a lengthy recreation process.

GoldenGate (GG). While DG provides an exact physical copy of the primary database, GG provides logical replication for all or part of a primary database to one or more destination databases:

> GG provides extremely efficient replication of data between databases. Configuring replication between source and destination databases involves simple configuration of just a few parameter files.
> Application downtime is not needed to synchronize the source and destination databases. Ongoing transactions are captured at the source even while the eventual destination database is being initially loaded initially, and once data loading is completed, transactions captured at the source are easily synchronized at the destination.
> When a single Oracle database cannot provide sufficient throughput for an application workload, GG also supports bidirectional replication between two databases.
> GG can also provide replication in a “daisy chained” fashion so that each database in the chain periodically assumes the role of primary database while the other databases assume a secondary, replicated role.

Recovery Manager (RMAN). Oracle leverages the RMAN backup and recovery utility to create the initial environment for DG physical standby databases. For GG, RMAN can also be used to perform an initial data load of just a subset of a primary database by leveraging its Transportable Tablespace Set (TTS) capabilities.

Hardware-Based Solutions. When very large databases (VLDBs) – especially those in the multi-terabyte range - need a reliable DR plan, other alternatives may be necessary to guarantee recovery in case of disaster. Hardware-based solutions such as array-based replication are just one of several alternatives available when either Oracle’s DG or GG solutions cannot meet the minimum time frame to complete a successful DR failover operation.

Third-Party Tools. When Oracle Standard Edition (SE) is employed, other third-party tools may be needed to provide a similar level of reliable DR. OnX can help identify which tools mesh best with an organization’s DR requirements in these situations.

ORACLE DATABASE DISASTER RECOVERY APPROACH

The OnX team provides a broad range of Oracle solution service offerings for addressing our customer’s business challenges to provide a robust and reliable DR plan for any Oracle Database environment, regardless of database release. These proven solutions consist of well-designed, tested, and documented reference architectures, configurations, and implementation services for varied Oracle environments based on known and recommended DR best practices. As a part of every deployment, the OnX team works with clients and their stakeholders to plan, test, retest, and finally implement an optimal DR plan.
A typical DR implementation scenario using Oracle Data Guard employs the following components depicted below:

Likewise, a DR implementation via Oracle GoldenGate typically leverages the following components. This figure illustrates a complete bidirectional configuration for dual-purpose use of two database environments:

**SOLUTION VALUE**

The mark of success of any DR plan is that should the worst possible scenario materialize (the utter loss of an entire primary database), the database’s application users are completely unaware that disaster recovery actually occurred because there was no noticeable service interruption. A robust DR plan is therefore crucial to the survivability of a business because it insures continuity, reliability, and customer goodwill – especially for public-facing applications. OnX’s proven DR solutions combine Oracle’s recommended best practices for database availability, survivability, and performance. Since they comprise jointly designed, tested, and documented reference architectures, configurations, and implementation services for Oracle application and database environments, they offer the following benefits to any business or organization:

- **Accelerated, simplified implementation** through well-known Oracle best practices and proven configurations
- **Minimized business risk** through guaranteed database recoverability, even in the worst possible circumstance: the complete loss of a datacenter
- **Expanded throughput** for both OLTP and reporting applications by offloading real-time, read-only reporting application workloads to standby / destination databases, thus freeing resources for primary databases that support customer-facing application workloads
> **Improved ROI** by leveraging the full suite of Oracle database recoverability features, with only minimal configuration efforts
> **Increased productivity** by transferring knowledge from OnX’s Oracle experts to your IT staff, thus empowering them to concentrate on more crucial IT activities

### RELATED SERVICES

OnX can assist you in any and every phase of a project’s lifecycle. Whether you need help to design, provision, integrate, upgrade, or optimize your infrastructure, we have the right resources with just the skills and expertise you need. OnX offers a complete portfolio of related services, including assessments, planning and design, implementation, and troubleshooting and support services:

- Database Health Check
- Oracle Cloud Services
- Oracle Database Migration or Upgrade Planning Workshop
- Oracle Database Performance Tuning Services
- Oracle Database Upgrade Services
- Oracle Backup and Recovery Solution Services
- Oracle Database Security Services
- Oracle GoldenGate Services
- Oracle ZFS Services
- Oracle Engineered Systems Services
  - Exadata Configuration Services
  - Exadata Migration Services
  - Exadata Optimization Services
- Application Services
  - Application Testing and Optimization Services
  - Application Lifecycle Management Testing-as-a-Service
  - Enterprise Service Management Assessment

### PROJECT MANAGEMENT

OnX includes project management as part of all projects to manage the overall project team, create and maintain the project plan, communicate status on a recurring basis and facilitate escalations as needed. This helps to minimize risks and ensures timely and successful service delivery. Additionally, OnX maintains a knowledgebase of “lessons learned” comprised of feedback from all service deliveries to help prevent unforeseen delays and other impact on the project.

### WHY ONX?

> We have proven our success by delivering over 1,100 projects annually.
> Our experience designing and integrating enterprise data center solutions gives our clients access to skills and expertise beyond their in-house IT teams and traditional resellers.
> OnX’s industry certifications across a broad selection of best-in-class IT manufacturers and technologies gives us access to information, tools, techniques, and enablement beyond those available to in-house IT teams.
> OnX utilizes its acknowledged industry, OEM, and IT best practices to capture lessons learned during each engagement to reduce client risk.
> OnX applies its professional methodology and project management experience to each and every project.