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a high availability Oracle 10g  
database environment...*

## Success Story: Oracle Database Migration

### Summary:

TerpSys designed and implemented a high availability Oracle 10g database environment to support a 4-tiered architecture for client applications and serve as the migration point for multiple existing Oracle 9i databases.

**Client: National Cancer Institute Center for Bioinformatics (NCICB)**  
NCICB handles the highly specialized area of “bioinformatics” for the National Cancer Institute. Its custom applications aid a global network of doctors and scientists in their united efforts to eradicate disease and alleviate human suffering.

### Objectives:

- Deliver a single, 4-tiered platform to support multiple databases with applications utilizing the Linux operating system and Oracle 10g databases
- Eliminate potential “single points of failure” in the new system
- Ensure that new architecture possesses “automated failover” capability
- Migrate existing Oracle 9i databases to new platform in a timely, low-impact manner

### Challenge

The existing architecture for NCICB’s Oracle databases was based on aging, over-extended Sun Solaris platforms that could not be upgraded cost-effectively. Additionally, the client, in line with agency-wide policies, sought a new platform that would be Open Source compatible.

The antiquated system’s 4-tier structure was not robust, being rife with many potential “single points of failure.” Constant Production tier outages prevented end users from accessing key applications. Outages on the Development, Quality Assurance, and Staging tiers were even worse, bringing the critical work of third party contractors to an abrupt halt and generating greater adverse consequences – both economic and technical - than Production tier outages.

### Solution

TerpSys responded to NCICB’s call by leveraging its considerable in-house expertise to devise a long term, scalable, and fault-tolerant solution. To meet the client’s Open Source compatibility goals, the Red Hat Linux operating system was chosen as the base platform for the new architecture.

A clustered solution was proposed and competing clustering software evaluated by TerpSys. Veritas Cluster was selected, primarily because of its long and successful history of managing Oracle databases in a clustered solution.

TerpSys quickly configured and installed Veritas Cluster using the Oracle 10g 64-bit database product. The solution’s elegant design allowed each individual Oracle database to be moved independently to any node of the cluster to which it belonged. Separate clusters were configured to support the Production, Staging, Quality Assurance, and Development tiers, and the client’s all-important bioinformatics applications.

### Results

- Developed and installed a sturdy, Open Source-compatible solution for Oracle 10g databases and bioinformatics applications using proven Veritas Cluster technology.
- Reduced significantly downtime risks due to hardware failure on all database tiers
- Enhanced scalability, as existing clusters can add new nodes without system downtime
- Migrated multiple applications from old databases to Oracle10g, with ample space remaining for future migrations

