

HP and Oracle deploy unbreakable computing infrastructure at Replacements, Ltd.



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– Jim Meredith, IT Manager, Replacements, Ltd.

Executive summary:

Replacements, Ltd. sells an expansive selection of old and new tableware, including china, stoneware, crystal, glassware, silver, stainless, and collectibles. Its 300,000 square-foot warehouse in Greensboro, North Carolina maintains a vast inventory of 10 million pieces in 200,000 patterns. The company has used Oracle technology since 1994 to power its inventory system. As business picked up and customers began using the Web to find and purchase its products, Replacements, Ltd. began taking as much care developing its information systems as it did packaging its Pfaltzgraff Crystal and Blue Delft china.

In 2005, the retailer deployed an HP Reference Architecture for Oracle on the HP ProLiant and StorageWorks platforms to power inventory, warehouse management, and purchasing applications. Replacements, Ltd. uses an HP Parallel Database Cluster (PDC) – one of the HP Reference Architectures for Oracle. The PDC is a low-cost, yet highly advanced computing infrastructure that has proven to be fast, reliable, and scalable. This helps Replacements, Ltd. efficiently process thousands of orders per day – while keeping its pristine record of outstanding customer service. It also enables the company to scale its information systems to support

escalating business demands, and to maintain a highly available IT environment.

Pattern for a successful deployment

Before deciding on the specific HP Reference Architecture and the specific Oracle software, Replacements, Ltd. invited bids from several leading computer hardware vendors. IT Manager Jim Meredith wanted to ensure that the hardware/software configuration would work with speed, reliability, and precision. That meant testing the Oracle Database 10g and Oracle Real Application Clusters (RAC) software on the target platforms before making a final purchase decision. As Meredith recalls,

- “The other vendors apparently didn’t take us seriously when we told them we needed to evaluate Oracle RAC on the target hardware platform before we made a purchase decision.
- “Only HP supplied the necessary equipment.”
- “Our HP sales consultants were confident in their products and figured out a way to accommodate our needs.”

Replacements, Ltd. deployed a production RAC environment and tested it for three months on an HP PDC that includes four ProLiant DL585 AMD™ Opteron™-based servers and two HP StorageWorks Enterprise Virtual Array systems. Meredith says the equipment worked well under a variety of test scenarios:

- “After extensive testing, we determined that Oracle RAC is a more reliable and robust structure than the single-instance failover database we had been using before.”
- “Also, because we can use ProLiant servers, the equipment costs us less.”





After proving its technical prowess, HP crystallized the deal by offering reasonable financial terms:

- **“HP won again, this time on the basis of price.”**
- **“HP Financial Services offered good leasing terms.”**
- **“HP was less expensive than the other vendors – and certainly more willing to satisfy our specific demands.”**

A platinum configuration that’s cost effective

Replacements, Ltd. determined that Oracle Database and Oracle Real Application Clusters performed well on HP ProLiant hardware, especially due to AMD’s exclusive Direct Connect Architecture, HyperTransport™ technology and PowerNow!™ technology. The economy of this powerful solution was particularly compelling. Consolidating HP ProLiant servers in a RAC configuration delivers comparable performance to symmetric multiprocessing (SMP) clusters that cost much more. Additionally, the Oracle RAC software allows Replacements, Ltd. to “scale out” and add server capacity as their growth needs dictate. As Meredith calculates:

- **“The combined cost of all the new ProLiant servers was only about 20 percent of the cost of the two proprietary SMP servers they replaced. RAC builds intelligence and redundancy into a software layer to coordinate the activities of each ProLiant node in the cluster.”**
- **“In some ways, this architecture is more reliable than a large SMP box since it does not have a single point of failure.”**

Setting the table for outstanding customer service

Replacements, Ltd. purchased and immediately deployed four ProLiant DL385 AMD Opteron-based servers and two StorageWorks Enterprise Virtual Array (EVA) systems to host the Oracle Real Application Clusters software. Replacements, Ltd. also installed two ProLiant DL585 servers to host non-RAC Oracle databases.

HP Services set up the arrays, ran initial diagnostics, and trained Replacements, Ltd.’s system administrators. Replacements, Ltd. hired HP’s Parallel Data Cluster team to certify that the hardware and software worked together flawlessly. This is necessary before Oracle certifies the configuration as “unbreakable,” according to its high standards for availability and reliability. After the hardware was in place, an Oracle consultant configured the RAC environment, working with HP to resolve any technical difficulties.

HP offered to support not only its own hardware and software products, but the associated Linux operating system as well. Says Meredith:

- **“HP provides very strong front-line support for the Red Hat Advanced Server operating system.”**
- **“HP consultants are very competent. We can contact them for help with both hardware and OS issues.”**

Raising a toast to IT efficiency

The first StorageWorks EVA system, which has 3.3 TB of capacity, is dedicated to hosting Replacements, Ltd.’s main production database. This EVA supports applications for CRM, inventory, warehouse management, purchasing, and other core business functions.

With 4.3 TB of capacity, the second EVA hosts JD Edwards Financials, Payroll, and HR; Kronos Time Keeping; and eGain customer communication applications. It supports several non-RAC Oracle databases and includes a two-node Oracle RAC environment for testing and training purposes. Meredith says the HP servers and storage arrays are robust, cost effective, and easy to maintain:

- **“HP has a flexible and efficient storage architecture that is very cost effective for midsize companies. The StorageWorks EVA system had the best price/performance ratio of all the storage solutions we considered.”**

- **“HP has virtualized the storage so completely that very little administrative effort is required.** Our administrators deal with a logical representation of the underlying storage resources. They don’t have to trouble themselves with the individual components of the arrays.”

“HP has a flexible and efficient storage architecture that is very cost effective for midsize companies. In addition, HP support is excellent; they monitor our systems remotely, and will call us if they suspect a potential problem.”

– Jim Meredith, IT manager, Replacements, Ltd.

Meredith also likes the StorageWorks management facilities:

- **“The StorageWorks administration software supplies a user-friendly, point-and-click utility for interfacing with the storage environment.** You can easily change structures on the fly.”
- **“HP support is excellent. They monitor these devices remotely and will call us if they suspect a potential problem.”**
- **“The HP ProLiant systems are very affordable, yet they have high-end capabilities, particularly when used with Oracle RAC software.”**

Replacements, Ltd. particularly likes the AMD Opteron processor, which powers the HP ProLiant computers, hailing it as a processor with the right ratio of cost to performance. Additionally, the IT team relies on HP Integrated Lights-Out (iLO) management capabilities to conduct some maintenance procedures remotely, such as firmware updates.

Just enough capacity for the occasion

When purchasing computing power, many companies overestimate the amount of servers and storage devices they will need, and then pay support and maintenance on the additional capacity. Even if they ultimately end up using all the equipment, it’s an expensive way to do business. Oracle Real Application Clusters changes this scenario, allowing Replacements, Ltd. to scale its information systems incrementally, minimizing capital expenditures by only adding nodes when needed. If a server malfunctions in an Oracle RAC environment, processing continues on the remaining servers in the cluster, ensuring that data remains accessible and applications function without interruption. Explains Meredith:

- **“If a clustered server goes down, the remaining servers continue to function without interruption, automatically picking up the workload.”**
- **“We can add another node quite easily, allowing us to incrementally grow our server capacity.”**
- **“We can perform these upgrades to the cluster with no downtime.”**

The HP Reference Architecture for Oracle Real Application Clusters automatically harnesses the processing power of additional nodes as they are brought into the ProLiant PDC. If any server in a cluster should fail, the remaining servers continue to operate seamlessly, ensuring high availability. This resilient configuration even enables Replacements, Ltd.’s inventory, warehouse management, and other core applications to remain online during routine maintenance. Meredith concludes, “HP and Oracle have proven they can deliver enterprise-caliber computing capabilities to midsize firms at a very reasonable price point.”



About Replacements, Ltd.

Founded in 1981, Replacements, Ltd. (www.replacements.com) advertises the world’s largest selection of old and new tableware, including china, stoneware, crystal, glassware, silver, stainless, and collectibles. Its 300,000 square-foot warehouse in Greensboro, North Carolina maintains an unparalleled inventory of 10 million pieces in 200,000 patterns – some of which are more than 100 years old.

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At a glance

Hardware:

- 2 HP StorageWorks Enterprise Virtual Arrays
- 2 HP ProLiant DL585 servers with AMD Opteron™ processors
- 4 HP ProLiant DL385 servers with AMD Opteron™ processors
- HP Integrated Lights-Out (iLO) remote-management boards

Software:

- HP Integrated Lights-Out (iLO) remote-management software
- Oracle Database 10g
- Oracle Real Application Clusters (RAC)
- Oracle Enterprise Manager 10g Grid Control
- Red Hat Linux Advanced Server v.3

HP Services:

- Implementation services for the HP StorageWorks EVAs
- Parallel Database Cluster support services
- Support Plus 24 hardware and software services

Challenge

- Facilitate continuous processing of core business applications
- Speed up the provisioning of IT resources
- Simplify procurement while reigning in IT costs

Solution

- HP ProLiant servers with AMD Opteron processors and HP StorageWorks Enterprise Virtual Arrays yield powerful and efficient information systems
- HP Reference Architecture for Oracle Real Application Clusters using the PDC for greater performance, reliability, and scalability
- Inherent failover capabilities within the server cluster maintain business continuity
- The HP-Oracle solution powers inventory, warehouse management, purchasing, and other critical applications

Results

- Simpler administration, maintenance and upgrades
- Minimal capital investment and fewer procurement cycles
- Easy capacity planning and hardware upgrades
- Adapts easily to changing business conditions, especially rampant growth
- Choice of channel and purchase options puts Replacements, Ltd. in control
- Flexible infrastructure supports a wide variety of business applications
- Higher storage and server utilization through clustered RAC configuration
- Optimal performance at the right price helps Replacements, Ltd. handle customer orders with precision and efficiency
- Unbreakable infrastructure ensures fast and accurate processing

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