

**Providing a leading database infrastructure
for Oracle customers.**



It's an old story: David challenges Goliath and somehow defeats his adversary and claims victory. If only today's business world were so easy to compete in.

One size does not fit all

Small businesses and even departments within larger firms are asked to compete in markets ruled by large entities and to do so within a limited budget. While IT managers need the freedom to select the specific architecture they desire while investing only in the capacity required to meet their current challenges, they also need one flexible enough to grow as requirements dictate.

The ability to choose

The decision of whom to partner with and what IT solution to choose is defined by the goals of the business itself. These goals may include:
Lowering total cost of ownership (TCO).
Moving off a proprietary environment.
Increasing availability. Connecting to a number of storage area networks.
Setting up a development lab to test new applications before they

go into production. Not being tied to the technology of only one IT vendor. Very often, customers are trying to meet more than one of these goals.

Many IT managers believe the key to success is in selecting partners who are leaders in their field of expertise yet share a common vision of how the IT architecture benefits the end user. Obtaining all these infrastructure elements from one vendor may be the desire of the purchasing department, but Oracle IT customers can enjoy the freedom of choice that Linux and the industry provides.

A shared vision

When Oracle brought Oracle9i with Real Application Clusters (RAC) to market, it offered not only high availability, but also the ability to scale out the architecture as database requirements grew.

Businesses no longer had to invest in expensive headroom for spikes in performance or unforeseen future requirements. Instead, customers can purchase what they need now, then

scale as needs evolve. Low-cost Intel® and AMD® processor-based servers running Linux can be clustered together, allowing them to scale and offer the reliability to replace older SMP-designed servers. This helps provide a far lower TCO. Now, with the release of Oracle Database 10g, cluster middleware, workload management and datacenter automation are bundled into the 10g database product providing a flexible, dynamic, enterprise Grid infrastructure. Again, an environment conducive to low-cost building blocks providing an on demand capability.

IBM @server xSeries systems— providing a choice

The IBM @server® xSeries® systems embrace on demand computing to help businesses quickly respond to market changes. The newest servers utilizing the groundbreaking IBM Enterprise X-Architecture™ technology, provide outstanding advances in performance, scalability and availability.

“We felt that we could get a lot more power for a lot fewer dollars than we could from the proprietary UNIX® vendors. We also felt that Linux was fast, lightweight, powerful and solid.”

— Corey Corrick, Operations Manager for Flamenco Networks

Ensuring that customers have a wide range of servers to choose from, IBM offers servers driven by the Intel Xeon™ Processor MP and Itanium®2 microprocessors ranging from 1–16 CPUs. Two form factors are offered—tower or rack-optimized. In 2003, the first AMD Opteron™-based server was brought to market. With xSeries servers, we understand one size does not fit all, so there is a range of xSeries SMP and cluster configurations to choose from that can meet your exacting requirements. Our goal is to help you select the right one for your business needs.

Delivering value for Oracle customers

Providing proven, world-class technology is great, but the real question is, how does it improve the Oracle IT solution? Cluster solutions provide a reliable technique to help avoid server downtime. However, best practice strategies dictate that the server hardware supporting a database must be equipped with advanced high-availability features including redundant components, fault-resilient memory and predictive failure analysis.

Leading availability

xSeries servers provide component redundancy and hot-plug replacement capabilities of fans, power supplies and disks. The risk of component failure is

further reduced by IBM Predictive Failure Analysis® (PFA) on processors, memory, fans, power supplies and disks, which warn administrators of problems before they occur. PFA is designed to allow corrective action before a hardware failure occurs.

When a server hardware malfunction occurs, Light Path Diagnostics minimizes downtime by isolating the failed component and illuminating an LED light path that leads directly to the part that needs replacing. This minimizes time-consuming diagnostic testing and costly downtime.

Minimized outages

A businesses' success can be dependent on how well their Oracle database application runs. Whether it's supporting a traditional ERP deployment or an integrated e-business solution including CRM, it is critical that the server on which it is running supports proactive tools to manage this IT environment. Without these tools, there can be devastating impacts to the bottom line.

xSeries systems management tools simplify—and in many cases, automate—performance planning, preventive maintenance, diagnostic

monitoring and event responses to help maintain consistent, high levels of server productivity. As a result, xSeries servers help protect customers' businesses from the devastating effects of downtime and help keep overall maintenance costs incredibly low—an important factor for Oracle database environments.

Key IBM Director extensions such as Scalable Systems Manager for flexible partitioning, Capacity Manager, Software Rejuvenation, Real Time Diagnostics and Process Control bring new levels of manageability to an Oracle solution environment, helping to reduce TCO with improved return on investment through increased uptime.

Increased performance

By incorporating proven technology from the other IBM @server brands, xSeries servers can help improve overall system performance. Servers containing IBM Xcel4 Cache memory that provides high-speed communication between memory and processors will realize improved performance (10–15% in IBM laboratory testing).



Performance proof points

At OracleWorld 2003 in San Francisco, IBM, in conjunction with our Technology Partner PolyServe, presented the results of a 16-node IBM @server xSeries 345 cluster running SUSE LINUX Enterprise Server 8 (SLES 8). The application tier consisted of five IBM @server xSeries 330's using Red Hat Enterprise Linux AS 2.1. This study demonstrated that:

- *Oracle9i RAC could scale to run on 16-nodes*
- *The cluster was capable of running an On-Line Transaction Processing (OLTP) and a Decision Support System (DSS) workload running side-by-side*
- *A node easily migrates between the two workloads*

This 16-node configuration is one of the larger proofs of concept for an Oracle database undertaken on Linux.

This proof of concept was extended in April 2004 to a 14-blade IBM @server BladeCenter™ configuration running SLES 8. Working with PolyServe, three

Oracle 9i databases were loaded while running simultaneously. The results demonstrated that a robust BladeCenter platform can easily manage multiple workloads while providing superior scalability and availability.

On November 6, 2003, IBM announced the results of our latest xSeries and Oracle benchmark. A result of 18,368 concurrent users was achieved on a 4-node IBM @server xSeries 445 (Eight 2.0GHz Intel Xeon Processor MP, 32GB memory) running SUSE SLES 8 posted to Oracle's Application Standard Benchmark (OASB) v11.5.6. This remains the highest clustered Linux result ever posted for Version 11.5.6.

Solutions for smaller implementations

When the Oracle solution requirements are limited to the processing power of a 1-CPU server or up to a 4-CPU configuration (one 4-way server for Oracle9i or four CPUs in one cluster for Oracle 10g), customers can license Oracle at a lower price point. These customers can look to xSeries servers to provide options that will help fully

exploit the benefits such a license offers. This joint IBM and Oracle vision helps stretch the value customers can realize from their IT investment.

IBM and Oracle relationship

IBM and Oracle have maintained an extremely strong technology relationship since 1986. Today, Oracle solutions are available across the entire IBM @server product line. IBM engineers are on site at Oracle to work directly with Oracle engineers to test and optimize Oracle products on IBM servers. This association has resulted in a large worldwide install base running mission-critical solutions in leading Fortune 500 corporations. While IBM and Oracle compete in some markets, many customers find value in a joint technology solution.

IBM commitment to solution development

IBM/Oracle International Competency Centers

The IBM commitment to providing accurate solution sizing/configuration assistance is realized through three International Competency Centers (ICC) based in San Mateo, California;

“Two years ago people laughed at us when we said we were going to run Oracle on Linux in a highly available failover environment. Thanks to IBM and Linux, for the past two years the database servers have never come down unless we took one down to do maintenance.”

– Corey Corrick, Operations Manager for Flamenco Networks

Montpellier, France; Tokyo, Japan. These centers provide configuration assistance, sizing tools, education, hands-on workshops, customer briefings and sales-related technical documentation. The scope of these centers covers the range of Oracle products from the database to applications over a number of releases. The continued investment by IBM in these centers demonstrates that running your Oracle products on IBM can provide benefits for years to come.

IBM/Oracle Sizing Lab

In April 2003, IBM opened the IBM/Oracle Sizing Lab in the IBM ICC in San Mateo, California. With equipment donated from Intel Corporation, the purpose of this lab is to test new xSeries servers and technologies with Oracle software to determine variations to the IBM Oracle sizing tools—thus helping ensure accurate configurations estimates for IBM Business Partners and customers.

IBM Linux Technology Center

The IBM Linux Technology Center (LTC) is a worldwide development team inside of IBM working as peers within the Linux community. Our goal is to utilize world-class IBM programming resources and best-of-breed software technology to actively accelerate the growth of Linux as an enterprise

operating system while simultaneously helping IBM server brands exploit Linux to provide additional value to end users.

The aim is not to control the direction of Linux, but to work as peers within the shared vision of the Linux community leadership, and participate in setting Linux design and development direction. Our participation is successful as measured by the rate at which contributions are accepted by Red Hat® and SUSE into their distributions.

Examples of LTC contributions:

- *8- and 16-way SMP support*
- *32GB memory support*
- *Large-page VM support*
- *Large-block raw I/O*
- *NUMA aware scheduler*

IBM Global Services

IBM has a consultancy group dedicated to helping you plan, design and implement systems running on Oracle, including both Oracle and non-Oracle applications based on the Oracle RDBMS. We are committed to maintaining our partnership with Oracle and our unrivalled consulting skills in the Oracle arena. IBM Global Services (IGS) consultants have taken part in numerous Oracle applications upgrades, including one of the largest Release 11 projects in Europe.

We can help you plan, install, configure, tune and test your Oracle systems. Typically, services can be broken into the following four categories.

IBM Business Consulting Services

IBM Business Consulting Services (BCS) and Oracle provide clients with business transformation solutions delivering measurable and sustainable business benefits. The BCS community of Oracle professionals works closely with specialists in industry and business processes to provide a full set of services across Oracle's application and database products in many sectors. When you combine BCS expertise, proven infrastructure and global capabilities with Oracle software, customers realize a flexible, integrated business solution.

- *Nearly 2,800 skilled consultants in applications and databases with over 900 professionals dedicated to the delivery of Oracle-based solutions.*
- *Superior implementation track record for Oracle E-Business Suite and related business intelligence applications at some of the largest Fortune 100 companies.*



Integrated technology services

This infrastructure services line of business offers clients a single, trusted partner to help them design, implement and optimize their technology infrastructures and a solution to manage the complexity of multi-vendor IT environments.

Strategic outsourcing services

Practitioners work closely with clients to evaluate business objectives and identify processes and operations they can outsource for competitive advantage.

IT education services

Using the latest distributed learning technologies, IBM delivers Web-based solutions that enable customers to broaden and maintain the right skill level and reduce the travel and productivity costs associated with traditional classroom training.

Leveraging infrastructure partners

IBM intellectual capital extends to many of the leading applications that utilize Oracle as the RDBMS, including the leading ERP and CRM vendors. IBM is uniquely positioned to help diagnose problems along the entire solution stack. These partnerships extend to lower levels within the stack including Red Hat and SUSE, as well as leading cluster file system/high availability providers such as PolyServe, SteelEye and Veritas.

NetCreations selects xSeries servers

Founded in 1996, NetCreations (www.netcreations.com) is a world leader in opt-in e-mail direct marketing. The company serves three client groups, which include:

- *48 million subscribers that double opt-in to receive e-mail solicitations*
- *500 partners that operate the Web sites where subscribers choose to participate in double opt-in e-mail marketing*
- *2,000 clients that rent the double opt-in lists to market the products, services and information to subscribers*

With 35 employees, the company delivers e-mail list management, list brokerage and e-mail delivery services under its PostMasterDirect brand. Managing a database of customer lists with subscribers grouped by specific categories, NetCreations enables clients to send e-mail solicitations to subscribers who have already expressed an interest in their products, services or market segment.

“As our list database continues to grow—we currently manage 80,000 lists—we are continually looking for attractively priced options to provide additional computing power to support our online direct marketing services,” said Steven Gittleson, former vice president of technology at NetCreations, Inc.

To that end, NetCreations replaced its two existing Compaq Alpha 8-way servers with an IBM @server xSeries 440 running Red Hat Linux Advanced Server.

“By migrating our operations to a single x440 system running Linux, we are saving \$100,000 annually in infrastructure costs and licensing fees—not to mention the initial cash outlay for hardware which was a fraction of what we paid for the Alpha systems.”

— Steven Gittleson, former vice president of technology at NetCreations, Inc.

NetCreations uses Oracle9i running on the x440 as the foundation of its PostMasterDirect service. Since installing the x440, the company is seeing improved server performance and higher application availability—with up to a 78% decrease in processing time for select applications.

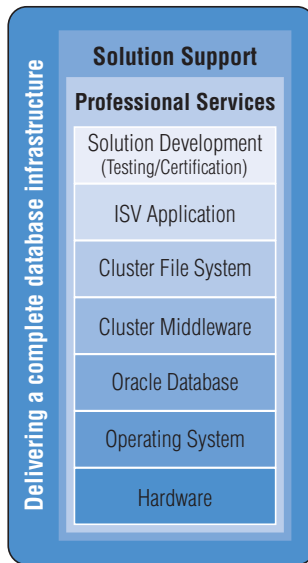
It's been several months since the server consolidation and with the performance advantages of Linux and xSeries servers, NetCreations has a platform to offer the utmost in targeted e-mail campaign management. "The x440 system is a wonderful addition to our IT infrastructure," said Gittleston. "And with IBM, we know that we have a system on which we can rely today and tomorrow."

Why IBM xSeries servers for Oracle?

The short answer is that IBM delivers the complete database infrastructure. By leveraging proven features from the broader IBM @server family, xSeries servers deliver a wide product portfolio providing our customers with choice. Matching these features to Oracle software capabilities has resulted in a number of leading performance benchmarks and proof points.

IBM continues to make significant investments in the Oracle relationship and in each of the infrastructure elements to help provide a total solution that is second to none. These elements are then surrounded with professional and support services to help address any implementation and on-going support issues that may arise.

By partnering with IBM xSeries servers to run Oracle, one can expect the David's in the world to sustain a winning streak against the Goliath's.



For more information

To learn more about Oracle and IBM @server xSeries systems, contact your IBM Marketing Representative, IBM Business Partner, or visit the following Web sites:

www.pc.ibm.com/ww/eserver/xseries/clustering/index.html

www.pc.ibm.com/us/eserver/xseries/scalable_family.html

www.oracle.com/ibm/



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