Solutions on IBM @server xSeries

IBM @server xSeries 345 & Oracle9*i*™ Database with Real Application Clusters

Highlights

- ***Mission-critical performance driven by the latest Intel® Xeon™ Processors.***
- ***Provides Oracle ® customers with exceptional performance for Oracle9i™Real Application Cluster (RAC) solutions.***
- ***Flexibility to easily grow from a single-node to a multi-node configuration***
- ***Compact 2U 2-way server saves space, helps lower costs and packs database-serving power for data centers.***
- ***Predictive and proactive systems management features help increase manageability and availability of servers powering Oracle solutions.***

IBM eServer xSeries 345

The IBM® eServer xSeries model 345 featuring the Intel Xeon Processor DP at up to 3.2GHz packs computing power in a rack-optimized 2U design – ideal for space constrained data centers or small to medium businesses.

The x345 offers great reliability, availability, and performance with its 533MHz front side bus, Chipkill™ memory, and Dual Gigabit Ethernet support. When service is required the design of the x345 allows most components to be replaced without the use of tools. This translates into reduced downtime for access to your critical data

The challenge that Oracle® Database customers are facing today is to build an infrastructure that is highly available, yet scalable enough to meet the demands of a dynamic business environment. The x345 is an ideal answer for customers choosing a 2-way Intel® processor-based platform for their Oracle implementations on Microsoft® Windows® or Linux® operating system environments. Through exceptional performance and numerous OnForever™ availability features, the x345 is helping set a new standard for Intel processor based servers powering Oracle Databases.

IBM and Oracle Relationship

IBM and Oracle have maintained an extremely strong technology relationship since 1986. Oracle solutions today are available across the breath of the IBM eServer product brand. IBM engineers are located on site at Oracle to work directly with Oracle engineers on testing and optimizing Oracle products on IBM. This association has resulted in a large worldwide install base running mission critical solutions in leading Fortune 500 corporations.

IBM's commitment to providing accurate solution sizing/configuration assistance is realized through three International Competency Centers based in San Mateo, California; Montpellier, France; and Tokyo, Japan. These centers provide configuration assistance, sizing tools, education, hands-on workshops, customer briefings, and develop sales related technical documentation. The scope of these centers covers the range of Oracle products from applications to databases over a number of releases. The continued investment by IBM in these centers continues to demonstrate that a decision to run your Oracle products on IBM can provide benefits for years to come.

Oracle9*i* Real Application Clusters

Oracle9*i* Database with Real Application Clusters offers virtually 24X7 availability and the ability to scale out as your company grows.

Businesses no longer have to invest in expensive headroom for spikes in performance or unforeseen future requirements. Instead, customers can purchase what they presently need, then scale as needs evolve.

Oracle's newest version offers many advantages including:

Incremental Scalability
Nodes can be added to a cluster with minimal disruption.

Outstanding Availability
Clustered solutions provide greater availability compared to single-node architectures, without the need for redundant stand-by servers.

Efficient Management
Administration is performed using standard Oracle9*i*™ tools and interfaces, which incorporate a high degree of automation to simplify tuning and improve performance.

Mixed Workload Support
Unlike a large SMP-based platform, a clustered database architecture can be used to run mixed workloads efficiently including both OLTP (Online Transaction Processing) and DSS (Decision Support System) queries.

x345 Performance

Several innovations help to bring excellent performance to Oracle applications. The x345 takes advantage of the newest Intel® Xeon DP Processors that are controlled by ServerWorks GCLE chipset. The chipset contains advanced core logic that is the heart of the computer system.

Oracle and IBM are perfectly aligned to enable you to make a small initial investment then grow as the needs of the business grows.

Oracle 9*i* Real Application Clusters

Performance
- Data shared between nodes
- Workload partitioned across nodes
- Capacity on Demand

Scalability
- Shared Database across servers

Availability
- Precision Database Repair
- More operations running with minimum downtime
- Oracle Data Guard
- Transparent Application Failover
- Automatic Node Discovery

Systems Management
- Centralized Management Console

IBM x345 Server

Performance
- Intell® Xeon™ DP Processors
- 533MHz Front Side Bus

Scalability
- Compact 2U Design
- Up to 8GB Memory

Availability
- Predictive Failure Analysis
- Chipkill™ Memory (Optional)
- Dual Ultra320 SCSI provide RAID 1
- Light Path Diagnostics™
- OnForever™ Initiative

Systems Management
- IBM Director
- Integrated Systems Management Processor

This logic determines how the various key components (microprocessors, main memory, system cache, I/O, etc.) interact. Various industry benchmarks demonstrate how well the x345 performs with various applications.

x345 Scale-up, Scale-out

Scalability is critical to Oracle customers. Regular modifications to the server and storage infrastructure are required to address changing business needs and meet the increased workload requirements driven by database solutions.

Customers who have uncertain growth requirements should consider the x345. Oracle provides two economically priced Oracle9*i* database licenses targeted to the small –medium market. The Standard Edition One license is limited to single node environments where the server capacity is no more the two CPUs. Another option is the Standard Edition License for clusters with a maximum capacity of 4 CPUs. One can start with a 2-way x345, then add additional nodes as their requirements grow - thus maintaining their initial investment.

Numerous adapter slots are important for Oracle implementations because of the external connections required of the database server(s). The Server Backbone Network, Local Area Networks and Storage Area Networks require multiple connections for each network to enable high throughput and help minimize the risk of downtime due to adapter failure. The x345 has up to 5 I/O card slots to easily handle these networking requirements.

.

IBM eServer xSeries 345

x345 Availability

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 that include redundant components, failure sustaining memory and predictive failure analysis.

The x345 brings customers closer to OnForever™ availability through an impressive array of features designed to help minimize the risk of unexpected failures. These high-

availability features are designed to help keep your servers running with outstanding uptime. This is a requirement of many global enterprises whose mission critical environment runs around the clock.

The x345 also provides component redundancy and hot-plug replacement capabilities of fans, power supplies and disks. The risk of component failure is further reduced by 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 can be taken before a hardware failure occurs.

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

The integrated System Management Processor and optional IBM Remote Supervisor Adapter let you monitor critical subsystems, restart and troubleshoot servers, in many cases even if the targeted system is unresponsive. These tools help your IT staff easily deploy and manage servers – Saving time and money.

x345 Easy to Manage

A business' 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 its running on supports proactive tools to manage this IT environment. Without these tools there is a greater chance of devastating impacts on 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.

Oracle customers are able to take advantage of the award winning systems management capabilities of xSeries servers in part through IBM Director. With IBM Director as the core systems management tool, the x345 is easy to administer and manage in a mission-critical environment.

Key IBM Director extensions such as Capacity Manager, Software Rejuvenation, Real Time Diagnostics, Process Control brings new levels of manageability to an Oracle solution environment helping to reduce total cost of ownership with improved return on investment through increased uptime.

Whether you're a small business or a global industry, your mission-critical applications and data must be protected. From a simple application to the most complex solution, the x345 is designed to help protect your data and investment with performance, reliability and availability.

For More Information

To learn more about Oracle and IBM eServer xSeries, contact your IBM Marketing Representative, IBM Business Partner, or visit the following web sites:

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

http://www.pc.ibm.com/us/eserver/xseries/x345.html

IBM Personal Systems Group
3039 Cornwallis Road
Research Triangle Park, NC 27709
Printed in the United States of America
4-04

Visit *www.ibm.com/pc/safecomputing* periodically for the latest information on safe and effective computing. Warranty Information: For a copy of applicable product warranties, write to: Warranty Information, P.O. Box 12195, RTP, NC 27709, Attn: Dept. JDJA/B203. IBM makes no representation or warranty regarding third-party products or services.
IBM reserves the right to change specification or other product information without notice. IBM makes no representation or warranty regarding third-party products or services, including those designated as "ServerProven." This publication could include technical inaccuracies or typographical errors. IBM is not responsible for photographic or typographic errors. References herein to IBM products and services do not imply that IBM intends to make them available in other countries. All information being released concerning future IBM products represents IBM's current intent, is subject to change or withdrawal without notice, and represents goals and objective only.
IBM PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OR CONDITION OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANT ABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SOME JURISDICTIONS DO NOT ALLOW DISCLAIMER OF EXPRESS OR IMPLIED WARRANTIES IN CERTAIN TRANSACTIONS; THEREFORE, THIS DISCLAIMER MAY NOT APPLY TO YOU.
IBM, the IBM logo, the e-business logo, AIX, DB2, OnForever, ServerProven, Tivoli, ViaVoice, WebSphere, X-Architecture and xSeries are trademarks of IBM Corporation in the United States, other countries, or both. For a list of additional IBM trademarks, please see http://www.ibm.com/legal/copytrade.shtml
Intel is a registered trademark of Intel Corporation. Linux is a registered trademark of Linus Torvalds. Lotus and Domino are trademarks or registered trademarks of Lotus Development Corporation and/or IBM Corporation in the United States, other countries, or both. Microsoft and Windows NT are trademarks of Microsoft Corporation in the United States, other countries, or both. Oracle is a registered trademark of Oracle Corporation and/or its affiliates.
UNIX is a registered trademark in the United States and other countries licensed exclusively through The Open Group.

All other company, product or service names may be trademarks or service marks of other companies.