Enterprise Server Solutions from IBM and Microsoft

Spring/Summer 2003
“Three years ago, IBM set out to reinvent the high end of Intel servers. Today we are delivering groundbreaking products that address long-held customer requirements in this Intel server space.”

William Zeitler, Senior Vice President and Group Executive, IBM Server Group

“We’re excited that IBM is responding to customer demand for Windows-based systems in high-end, mission-critical computing environments by extending the scalability of its xSeries line with a 16-way processor. The combination of IBM’s new modular xSeries and Windows Server 2003 Datacenter Edition delivers a solution that grows as customers’ data center requirements change, at an aggressive price/performance ratio.”

Jim Allchin, Group Vice President, Platforms Group, Microsoft Corporation
IBM and Microsoft have been working together for more than 10 years. An example of our cooperative efforts is the IBM Center for Microsoft Technologies, a 50,000-square-foot facility located just 6 miles from Microsoft’s corporate headquarters. Here, more than 130 IBM employees work closely with Microsoft to develop and test new technologies, resolve customer business problems, and deliver customer briefings on IBM xSeries systems running Microsoft® solutions. Another example of the IBM and Microsoft relationship is the performance benchmarks that we have been delivering jointly, such as the 8-and 16-way TPC-C benchmark on the IBM x440 server running Microsoft Windows® Server 2003, Datacenter Edition.¹

Recently, with the introduction of IBM’s new modular xSeries 440, the IBM xSeries and Microsoft teams have escalated levels of cooperation to design solutions to help you increase server performance, reliability, and scalability, while also helping reduce your total cost of ownership. To further that end, IBM has opened an xSeries Solutions and Scalability Center within its Center for Microsoft Technologies and has made a significant investment in the Microsoft Enterprise Engineering Center at the Microsoft Redmond campus. Employees at the xSeries Solution and Scalability Center are working with leading ISVs to optimize applications for both the Microsoft Windows server platform and xSeries servers to deliver high-quality solutions that can help you reduce IT costs.

We invite you to take advantage of our outstanding lab resources to develop and validate your data center environment on the latest xSeries servers running Microsoft Windows server platforms. We’re confident you’ll find that the combination of the xSeries servers and an advanced Windows-based server platform adds up to a robust, flexible system capable of meeting your needs cost-effectively—today and tomorrow.

Discover how the IBM xSeries servers and Windows Server 2003 platforms can help your business operate more efficiently—and learn about the hardware and software products that make up these families of products. We’re looking forward to having you become part of the IBM xSeries and Windows experience. To find out more or to schedule an appointment, please contact your local IBM or Microsoft representative.

Susan Whitney, General Manager, eServer xSeries, IBM Corporation

Bill Veghte, Corporate Vice President, Windows Server Group, Microsoft Corporation

¹ Please see page 6 for more details or visit www.tpc.org.
Critical IT Issues: Optimizing Infrastructure; Controlling Costs

In today’s competitive and challenging business environment, IT departments are focusing on leveraging their existing systems more effectively, making them more secure, and reducing their overhead expenses. Additionally, with the growth of the Internet, e-commerce, and automation, organizations are looking for ways to deliver new services and scale existing ones, while realizing a higher rate of return on their investment.

To achieve these goals, IT departments are making greater use of server consolidation and are increasingly moving to Windows and Intel platforms. In fact, IDC notes that Microsoft has seen its share of new license revenue shipments in overall server operating environments jump from 41.6 percent to 48.9 percent in one year.1

Consolidating Servers

IT departments are focusing on optimizing the use of their IT infrastructure as a key way to control IT costs and enhance manageability—and they’re discovering that server consolidation, or right-sizing, is one of the best ways to achieve this optimization.

The driving force behind server consolidation stems from three common problems experienced by IT organizations today:

• Many organizations have up to 10 times more servers than they had 2 years ago—a situation that adds significant administrative overhead.
• Organizations often have as many as three different server platforms in their IT infrastructure, which results in a significant overhead burden in training alone.
• Many of the servers deployed today are under-utilized—meaning their capital costs represent an ongoing drain on the bottom line.

Server consolidation addresses each of these issues.

To some, server consolidation may imply a return to old methods, where everything resided on a central server. But such a monolithic approach may fail to optimize the use of IT assets and could potentially lead to costly inefficiencies. What server consolidation really means is optimizing your IT infrastructure by:

• Updating to more powerful servers, which results in fewer servers—an approach that may reduce IT management costs, create a smaller data center footprint, and lower facility costs.
• Reducing the number of server platforms, which generally lowers management, maintenance, support, and training costs.
• Increasing interoperability between a variety of server platforms, hardware environments, and applications to help eliminate duplication and under-utilization of resources—a step that can reduce management and administration costs.

Taking these steps can help your organization achieve the degree of scalability, availability, and agility needed to meet your service delivery goals—at the most affordable price.

IT departments can choose from four basic strategies for server consolidation:

• Centralization: Relocating existing servers to fewer sites.
• Physical consolidation: Replacing multiple smaller servers in the same architecture with fewer, more powerful servers.
• Data integration: Physically combining a wide variety of data into a single repository.
• Application integration: Migrating multiple applications to a new platform to take advantage of its technologies and benefits.

Whichever strategies you choose, you’ll find that server consolidation can help deliver:

• Extreme availability for mission-critical applications, such as ERP and CRM, by using failover clustering—an approach that can provide outstanding availability.
• Higher performance, greater scalability, and more capacity, with the IBM x440 scaling up to 16 processors.
• Faster response times, by upgrading servers to higher performance systems with the latest server platforms.
• Improved access to information, by consolidating data on fewer servers.
• Increased efficiency, from the integration of existing data and application architectures.
• Lower maintenance and technical support costs, from replacing servers that are close to the end of their life with newer systems that are under a warranty.
• A lower total cost of ownership, due to centralized systems management and associated space and personnel savings.
• Improved disaster recovery capabilities, because there are fewer servers to restore.

Success Story: Server Consolidation Savings

**Industry:** General manufacturing, wholesale distribution and services  
**Customer:** s.Oliver Bernd Freier GmbH & Co.

**Before:**
- IT infrastructure consisted of 40 stand alone servers
- Servers were scattered around the enterprise at various locations
- Unmanaged distribution resulted in as much as 4-5 hours per week of outages and unplanned downtime

**After:**
- s.Oliver purchased a comprehensive solution consisting of:
  - xSeries clusters running Microsoft Windows 2000 Advanced Server and multiple applications, including Microsoft Exchange Server 2000 and Microsoft SQL Server™ 2000
  - 4 pSeries servers acting as a staging platform
  - 2 iSeries servers at headquarters
- For the first 4 months after consolidation, s.Oliver experienced zero downtime with a savings of approximately $40,000-50,000 per week
- As a result, s.Oliver has been able to provide improved service to business partners and customers

For more information, please visit [www-1.ibm.com/servers/solutions/casestudies/soliver.html](http://www-1.ibm.com/servers/solutions/casestudies/soliver.html)
Moving from UNIX to the Windows and Intel® Platform

Switching from UNIX to the Windows and Intel platform may be another way for your organization to save costs. Over the past several years, businesses increasingly have been moving from UNIX to Windows-and Intel-based servers.

Consider that:

• Microsoft achieved 20.8 percent growth from 2000 to 2001 in new license shipments and upgrade revenues for Windows server operating environments, while combined UNIX shipments showed a negative 16.6 percent growth during the same period—with some individual UNIX vendors seeing declines of as much as 46 percent in unit shipments.¹

• In the fourth calendar quarter of 2002, servers shipped with Windows NT and Windows 2000 Server licenses represented 60 percent of worldwide server shipments, compared to 55 percent during the same quarter of 2000.²

• In the same period, with respect to Intel-based servers, Windows NT and Windows 2000 Server products represented 69 percent of the total shipments, compared to 65 percent 2 years prior.²

Built on the foundation of Windows 2000, Microsoft Windows Server 2003 contains core technologies that deliver a superior and cost-effective server platform. Teamed with the ever-increasing capacity and performance of Intel processors, the Windows and Intel platform easily can handle enterprise-level workloads, while providing several key advantages:

1. **Business value.** The Windows and Intel platform creates business value by lowering the total cost of computing, as demonstrated in a March 2002 analyst study showing that Windows 2000-based server environments in certain configurations had an overall 46 percent cost advantage over UNIX/RISC environments during a 3-year ownership period.³ In addition, the large variety of integrated tools and third-party solutions available for the Windows and Intel platform helps developers achieve faster time to market, which can further boost a company’s bottom line.

2. **Choice of solutions.** The Windows Server 2003 family addresses the full range and complexity of the business problems that enterprises need to solve with an extensive selection of ready-to-use applications. This breadth of readily available Windows-based solutions saves organizations the time and cost of developing their own custom solutions. Microsoft is also leading the charge to XML Web services and next-generation solutions based on the Windows .NET platform, as well as establishing broad relationships to bring standards-based Internet-enabled solutions to market.

3. **Enterprise computing abilities.** The Windows Server 2003 family, together with the Intel-based IBM xSeries, offers all the capabilities organizations need for enterprise computing.

   • **Scalability:** Windows Server 2003 features, such as up to 8-node failover clustering and network load balancing, together with the scalable xSeries 16-way x440, provide flexibility to expand with ease.

   • **Reliability:** For installations of Windows Server 2003 Datacenter Edition, the IBM Datacenter Program offers extra levels of high availability, guaranteed up to 99.99 percent uptime.⁴

   • **Interoperability:** The Windows Server 2003 family delivers interoperability for integration with UNIX workstations and servers, IBM hosts, and other systems.

For more information and resources on migrating from UNIX, and to learn about businesses that have made the move, please visit www.microsoft.com/windows2000/migrate/unix

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**Windows Services for UNIX 3.0**

Windows Services for UNIX 3.0 provide a full range of cross-platform services that help organizations integrate Windows into existing UNIX environments, improve platform interoperability, and simplify application migration. Services range from cross-platform file sharing to network management tools that reduce system administration time. The product also includes the Interix subsystem technology, which allows companies to run both Windows-and UNIX-based applications on a single system. As a result, an organization can reduce development time while leveraging existing employee skill sets.

For more information, please visit www.microsoft.com/windows/sfu/productinfo/overview/default.asp

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² Both sets of numbers refer to unit shipments and are based on the IDC’s Worldwide Quarterly Server Tracker, February 2003.
⁴ www.pc.ibm/ww/eserver/xseries/windows/datacenter.html
IBM and Microsoft: Working Together To Provide World-Class Solutions

IBM and Microsoft understand that superior hardware and great server platforms alone can’t solve your business and technology problems. What IT departments need is combined hardware/software systems that provide complete solutions. That’s why, for more than 10 years, IBM and Microsoft have shared technology and engineering resources to build Microsoft Windows-based solutions that deliver great performance on IBM servers. The two companies have even established labs—such as the IBM Center for Microsoft Technologies (ICMT) and the Microsoft Enterprise Engineering Center (EEC)—in which they collaborate on developing shared solutions.

In response to customer demand for Windows running on larger than 8-way Intel-based systems, IBM recently expanded its xSeries line to include support for the 16-way scalable x440—a step that reaffirms its commitment to the Windows platform. The new IBM x440, coupled with a Windows Server 2003 platform, provides a leading price/performance solution for server consolidation. In addition, this platform can be configured to interoperate with key enterprise applications, such as JD Edwards, Peoplesoft, SAP, SAS, and Siebel.

Moving forward, IBM and Microsoft continue their commitment to work together to develop leading-edge solutions that combine IBM hardware and Microsoft server platform software. Windows Server 2003 is an example of this continued commitment.

IBM Center for Microsoft Technologies (ICMT) in Kirkland, Washington

The ICMT is also home to the xSeries Windows Solutions Lab. This lab addresses scalability, performance and availability aspects of complex solutions running Windows technologies on xSeries EXA systems. Applications and solutions specialists are available to work with customers, Independent Software Vendors, and other IBM partners to help drive their application solutions to new levels of scalability, performance and availability. The Lab is also responsible for the design, testing and publication of xSeries Prescriptive Architecture Guides for the Windows platform.

This dedicated 50,000-sq-ft facility is located 6 miles west of the Microsoft Redmond campus on Lake Washington. Its mission is to develop, integrate, demonstrate, and support superior IBM solutions and platforms for the Windows marketplace.

What does the ICMT do?

• Provides customer support and technical sales support
• Develops superior platform software that differentiates IBM hardware from competitors
• Develops systems software that provides a base for high-end Windows-based solutions
• Delivers top quality Windows support for IBM customers
• Provides worldwide level 3 support, as well as the High Availability Resolution Queue for the IBM Datacenter Solution Program

Microsoft Enterprise Engineering Center (EEC) in Redmond, Washington

Microsoft maintains a number of computing labs with partners to ensure compatibility, enhance interoperability, and provide better service to our mutual customers. One such lab, the Microsoft EEC, assists enterprises migrating to new versions of Microsoft platforms and applications.

The EEC provides lab facilities to simulate migrations and resolve potential issues. IBM supports the EEC’s Enterprise Customer Labs (ECLs) by providing hardware such as xSeries servers and engineering talent. Our mutual enterprise customers can be nominated for visits to the EEC at no charge. The typical ECL test visit last two weeks.

The EEC also can work with you to develop an Enterprise Lifecycle Model (ELM), a scaled representation of your IT infrastructure and business use cases. Together, we anticipate and address issues so you can deploy new solutions faster and more easily.

IBM and Microsoft Relationship Highlights

• IBM established the IBM Center for Microsoft Technologies (ICMT) in 1993. This center collaborates with the Microsoft Executive Briefing Center to present joint server briefings. The ICMT also includes the IBM Solutions and Scalability Center.
• IBM and Microsoft have been setting record-breaking TPC-C performance benchmarks. Please refer to page 6 for the details of these benchmarks.
• As an Authorized Windows Datacenter Partner, IBM offers qualified high-end Datacenter solutions that combine hardware, software, and services, with IBM as the single point of contact for support.
• VeriTest, an independent company used by Microsoft for Windows Server compatibility testing, has tested and approved a number of third-party Windows Server applications running on IBM xSeries servers.
• More than 3,500 professionals worldwide in the IBM Global Services specialize in Microsoft Technologies.
• IBM and Microsoft sponsor many high-level events, including Microsoft Fusion, TechEd, MEC (Microsoft Infrastructure Conference, formerly Microsoft Exchange Conference), IBM SHARE, and Gartner Data Center Conference.
IBM eServer xSeries: Premier Hardware for Microsoft Windows Server Platforms

The IBM Intel-based xSeries server line is ideal hardware for the Microsoft Windows Server platform. The high-end xSeries servers feature Enterprise X-Architecture™ technology, offering revolutionary advances in performance, memory, and I/O capabilities, as well as a “pay as you grow” approach to buying Intel-based 32-bit and 64-bit high-end xSeries systems. With the Enterprise X-Architecture strategy delivering enterprise-class technology to the high-end xSeries servers, the xSeries inspired enhanced availability, scalability, and systems management—all on industry-standard hardware. (For more information on the Enterprise X-Architecture technology, please see Additional Resources on page 17.)

The following tables highlight the performance and price/performance leadership of the IBM xSeries servers with the Microsoft Windows Server family of operating systems.

### IBM x440 Performance and Price/Performance Benchmarks

<table>
<thead>
<tr>
<th>Benchmark Description</th>
<th>Server Configuration</th>
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<tbody>
<tr>
<td>TPC-H (100GB) single-node 8 way</td>
<td>IBM eServer xSeries 440, Microsoft Windows Server 2003 Enterprise Edition, and DB2 Universal Database 8.1 Enterprise Server 3,342.7 QphH@100GB, $131/QphH@100GB available May 15, 2003.¹</td>
</tr>
<tr>
<td>SAP SD (2-tier) 16-way</td>
<td>IBM eServer xSeries 440, Microsoft Windows Server 2003 Datacenter Edition and IBM DB2 UDB 8.1, 1,090 SAP SD benchmark users.²</td>
</tr>
<tr>
<td>SAP SD (2-tier) 8-way</td>
<td>IBM eServer xSeries 440, Microsoft Windows 2000 Advanced Server, and DB2 UDB, 7.2, 520 SD benchmark users.²</td>
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<tr>
<td>Exchange 2000 4-way</td>
<td>IBM eServer xSeries 440 and Microsoft Windows 2000 Advanced Server, 11,300 MMB2s, 4GB RAM.³</td>
</tr>
<tr>
<td>Baan ERP 8-way</td>
<td>IBM eServer xSeries 440, Microsoft Windows 2000 Datacenter Server, and DB2 UDB, 7.2, 2,695 BRUs.³</td>
</tr>
<tr>
<td>Baan ERP 4-way</td>
<td>IBM eServer xSeries 440, Microsoft Windows 2000 Datacenter Server, and DB2 UDB, 7.2, 1,890 BRUs.³</td>
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</table>

### IBM x360 Performance and Price/Performance Benchmarks

<table>
<thead>
<tr>
<th>Benchmark Description</th>
<th>Server Configuration</th>
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<tbody>
<tr>
<td>Exchange 2000 4-way</td>
<td>IBM eServer xSeries 360 and Windows 2000 Advanced Server 13,200 MMB2, 4GB RAM.³</td>
</tr>
<tr>
<td>BaanERP 2-way</td>
<td>IBM eServer xSeries 360, Microsoft Windows 2000 Advanced Server, IBM DB2 Universal Database (UDB) Version 7.2, 1,995 Baan Reference Users (BRUs). (The x360 with DB2 achieved 1,855 BRUs with Oracle 9i; and 1,540 BRUs with SQL Server 2000.)³</td>
</tr>
<tr>
<td>NotesBench iNotes</td>
<td>IBM eServer xSeries 360, Windows 2000 Advanced Server and Lotus® Domino® Server 5.09a, 6,750 iNotes max users, $8.01/users, 3,492 NotesMarks, $15.48/NotesMark.⁴</td>
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</table>

### Blade Center Performance and Price/Performance Benchmarks

<table>
<thead>
<tr>
<th>Benchmark Description</th>
<th>Server Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchange 2000 2-way</td>
<td>IBM eServer xSeries BladeCenter and Windows 2000 Advance Server SP2, 8,700 MMB2, 4GB RAM.³</td>
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¹ Results referenced are current as of April 10, 2003. For a complete list of TPC benchmark results, please visit www.tpc.org
² www.sap.com/benchmark/sd2tier.asp
³ www.pc.ibm.com/ww/eserver/xseries/benchmarks/
⁴ www.notesbench.org
**IBM Director**

IBM Director v4.1, included with every IBM xSeries server, is a comprehensive workgroup manager that can be used in stand-alone mode or with existing enterprise or workgroup management environments. You can even leverage the Internet to access and manage physically dispersed IT assets more efficiently and securely.

IBM Director’s tools provide flexible capabilities to help you achieve maximum system availability and lower IT costs. With IBM Director, IT administrators can view and track the hardware configuration of remote systems in detail and monitor the usage and performance of critical components, such as processors, disks, and memory.

**IBM Director Server Plus Pack**

For even greater management and optimization of IBM xSeries servers, you can extend IBM Director with the IBM Director Server Plus Pack. The Server Plus Pack consists of the following five advanced server-management tools that can help you optimize performance and maximize availability.

- **Capacity Manager**: Tracks resource utilization, identifies multiple levels of existing or potential bottlenecks, and makes recommendations to help improve performance and avoid future server bottlenecks.
- **Software Rejuvenation**: Provides heuristics-based rejuvenation of server platforms, designed to automatically eliminate potential outages before they occur.
- **System Availability**: Tracks system downtime and uptime for an individual system or group of systems.
- **Rack Manager**: Lets you configure, manage, and view the health status of a server rack.
- **Active PCI Manager**: Optimizes server throughput and performance by determining the best placement for PCI cards.

**IBM Autonomic Computing Initiative on IBM eServer xSeries**

Autonomic computing is an ongoing IBM initiative to create servers that respond to unexpected capacity demands and system glitches without human intervention. Its goal is to achieve new highs in reliability, availability, and serviceability—and new lows in downtime and cost of ownership.

IBM xSeries servers include a rich portfolio of smart management tools designed to fulfill the autonomic computing initiative of self-managing systems. These tools have predictive and proactive features that automate IT tasks, requiring little or no human interaction. As a result, they can help deliver significant IT savings—both by avoiding unplanned system downtime and by reducing the time and labor associated with managing complex networked environments. IBM Director is one result of the autonomic computing initiative.

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**OnForever™**

IBM’s OnForever program ties together select technologies and services aimed at providing outstanding availability for its xSeries servers. The program delivers:

- **Predictive Failure Analysis**, consisting of environmental monitoring sensors that are designed to proactively monitor critical server components and warn of impending problems.
- **LightPath Diagnostics™**, reducing downtime by helping service personnel easily identify specific components that are failing (select models).
- **Redundant and hot-plug components**, allowing the replacement of failed subsystems such as power, cooling, and hard disk drives while the server continues to operate.
- **Chipkill® memory**, offering 8-bit memory correction to help reduce downtime related to multi-bit memory errors.
- **Active PCI**, providing increased scalability without downtime by allowing you to hot-add and hot-replace PCI I/O adapters.

**OnForever Program**

Many of the OnForever technologies—such as predictive failure analysis, hot-plug components, and hot-add capabilities—have been integrated into the xSeries server family. Together with the IBM Director systems management software that comes with each IBM xSeries server, this initiative is truly delivering xSeries servers that can remain virtually, “OnForever.”

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“No other vendor in the world is taking as complete an approach to high availability for industry-standard servers as our x-Architecture strategy does.”

—Dr. Tom Bradicich, Chief Technology Officer, xSeries Servers, IBM Corporation
IBM eServer xSeries

IBM eServer xSeries systems provide critical Intel processor-based server solutions. xSeries servers help give you hands-off reliability features through mainframe-inspired technologies and intelligent management tools, available in systems ranging from affordable, edge-of-network servers to enterprise-class servers.

Scalable servers like the x440 continue to revolutionize the industry-standard server platform, with a new breed of Intel-based enterprise server that delivers outstanding levels of availability, upward scalability, and transaction performance.

Rack-optimized servers like the x360 help solve the data center space dilemma by delivering outstanding performance and manageability in a slim chassis.

Blade servers, like the BladeCenter, deliver innovative modular technology that achieves outstanding performance density and affordable availability to create a new e-infrastructure.

xSeries 440—Up to 16-way SMP power for high-end databases, server consolidation, and mission critical business applications

The award-winning IBM x440 was the industry’s first Xeon MP-based 8-way server, blending flexible scalability up to 16-way including Remote I/O, proven performance, and robust manageability for high-performance databases, server consolidation, and mission-critical e-business applications. Powered by Enterprise X-Architecture technology, these 4U rack-optimized, industry-standard servers support up to 16-way processing by interconnecting two xSeries 440 chassis as a single 8U configuration.

2002 Winner:
• PC Expo Overall Best of Show and Enterprise
• PC Magazine Technical Excellence Award for Network and Enterprise

Hardware
• World Class Award from Network World
• Network World Best of the Tests Award as the Highest-rated Enterprise Server

xSeries 360—Space-efficient, rack-dense 4-way server for demanding enterprise applications

The powerful, rack-optimized, IBM x360 server was the first IBM product to incorporate new Enterprise X-Architecture technology, and it was the first server in the industry to offer Intel’s new generation of processors: the Xeon MP.

The xSeries 360, featuring the Intel Xeon Processor MP at up to 2.0GHz, packs computing power in a rack-optimized design ideal for the constrained data center. The x360 is a flexible, 4-way server than can handle diverse applications such as Microsoft Exchange, Lotus Notes, Microsoft SQL Server, DB2, and file-and-print. Its streamlined height and high-performance, high-availability features make the x360 an excellent choice for cutting costs through server consolidation.

eServer BladeCenter Modular computing—delivering reliability, performance, and manageability to your infrastructure

Tackle your server management challenges with the IBM eServer BladeCenter, the latest evolution of the IBM eServer product line. The IBM BladeCenter offering will support Intel processor-based blade servers. A revolutionary new form factor, BladeCenter’s modular design, gathers your computing resources into cost-effective, high-density enclosures that support hot-swappable, high-performance blade servers. BladeCenter offers the full performance and manageability you expect from IBM rack-optimized platforms. Because of its density, BladeCenter is a perfect solution for deploying Windows Server 2003 and Exchange Server: you can have 14 blades with up to 2 processors each in a 7U dense form factor. In addition to its server resources, BladeCenter also integrates other infrastructure functions, such as network and storage connectivity.

The BladeCenter design addresses your most serious issues: space constraints, manageability, scalability, capacity, and performance. BladeCenter servers need less installation time, require fewer people to maintain, and can cost less than a traditional server solution, helping you reduce your IT infrastructure costs. Your enterprise will benefit from simplified management, fast installation and deployment, modular scalability, and high availability. What’s more, BladeCenter delivers improved efficiency in both space and electrical power when compared to most of today’s 1U solutions—without sacrificing performance, while still using Intel’s latest Xeon MP processors.

IBM eServer BladeCenter solutions make adding capacity simpler and more affordable than ever before. BladeCenter’s IBM Enterprise X-Architecture features deliver an effective scale-out architecture that lets you add server modules quickly, using a “pay as you grow” approach.

BladeCenter provides you with:
• Intelligent management tools that deliver on the promise of autonomic server computing, making it easier and more cost-effective to take control of your e-infrastructure.
• Comprehensive, integrated system management from a single graphical console via IBM Director 4.1.

For more information on IBM eServer BladeCenter, please visit www.ibm.com/eserver/bladecenter
Microsoft Server Products Provide Reliable and Scalable Platforms for Mission-Critical Applications

Windows Server 2003 is designed to help customers do more with less. It builds on the strengths of the Windows 2000 Server Family to take application and hardware performance to new heights. With Windows Server 2003 you receive:

- The most secure Windows Server release yet
- Scalability extending up to 64 processors
- Overall enhancements in reliability, availability, and manageability

With Windows Server 2003, customers receive a Windows server environment that supports up to 64 processors and 512 GB of RAM on IA64 platforms (the 64-bit technology is offered on Windows Server 2003, Enterprise and Datacenter Editions), and up to 32 processors and 64 GB of RAM on IA32 platforms. The Windows Server 2003 family is comprised of the following four SKUs: Datacenter, Enterprise, Standard, and Web Editions.

### Microsoft Windows Server 2003 Family

<table>
<thead>
<tr>
<th>Edition</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Windows Server 2003, Enterprise Edition</strong></td>
<td>Windows Server 2003, Enterprise Edition is built for the general-purpose needs of businesses of all sizes. It is the platform of choice for applications, Web services, and infrastructure, delivering high reliability, performance, and superior business value.</td>
</tr>
<tr>
<td><strong>Windows Server 2003, Standard Edition</strong></td>
<td>Windows Server 2003, Standard Edition is the network operating system that delivers business solutions quickly and easily. This flexible server is the ideal choice for small businesses and departmental use.</td>
</tr>
</tbody>
</table>

- The most powerful and functional server operating system Microsoft has ever offered.
- Supports up to 32-way SMP and 64 GB of RAM on 32-bit.
- Provides both 8-node clustering, load balancing services, and Windows System Resource Manager (WSRM) as standard features.
- Available for 64-bit computing platforms and capable of supporting 64 processors and 512 GB of RAM.
- A full-function server operating system that supports up to 8 processors.
- Provides enterprise-class features such as 8-node clustering and support for up to 32 GB of memory on 32-bit platforms.
- Available for Intel Itanium-based computers.
- Available for 64-bit computing platforms capable of supporting 8 processors and 64 GB of RAM.
- Supports file and printer sharing.
- Offers security features for Internet connectivity.
- Allows centralized desktop application deployment.
- Is provided for building and hosting Web applications, Web pages, and XML Web services.
- Designed to be used primarily as an IIS 6.0 Web server.
- Provides a platform for rapidly developing and deploying XML Web services and applications that use ASP.NET technology, a key part of the .NET Framework.
- Is easy to deploy and manage.

### Security

Microsoft has invested heavily in the Secure Windows Initiative to deliver systems that offer enhanced security features, default, and deployment. In addition, Windows Server 2003 is the first Windows operating system to ship under the Trustworthy Computing initiative (launched by Bill Gates in January 2002), which is based on four pillars: security, privacy, reliability, and business integrity.

### Secure by Design

The improved security of Windows Server 2003 reflects Microsoft’s US$200 million investment in 2003 to reduce code vulnerabilities in its platform, modify the development process, and improve accountability at every level for security. Focusing on security improvements, Windows Server 2003 includes a redesigned IIS, strong authentication protocols such as 802.1x and PEAP, and common language runtime (CLR) to create a safer computing environment.
Secure by Default

To improve security features in Windows Server 2003 by default, the attack surface area was reduced by creating stronger default policies (e.g., file system Access Control Lists); redesigning IIS; and reducing the total number of services, number of services running by default, and number of services running as System.

Secure in Deployment

In addition to the architecture design and added security features in Windows Server 2003, Microsoft offers its customers tools, prescriptive guidance, training, and services to help deploy a secure, connected infrastructure.

Tools

- **Software Restriction Policy (SRP)** is a new feature in Windows Server 2003 and Windows XP that gives administrators a policy-driven mechanism to identify software running in their domain and control its ability to execute.
- **Security Configuration Editor (SCE)** is designed to help businesses improved security for Windows systems operating in various roles and deployment scenarios, such as a Web server, that is connected to both the Internet and to an internal network. The goal of SCE is to help customers maximize the security of such systems without sacrificing functionality.
- **Microsoft Audit Collection Services (MACS)** is a tool used to monitor and audit systems. MACS collects security events in a compressed, signed, encrypted manner and loads them into a SQL database for analysis.

Internet Information Services (IIS) 6.0

One of the key highlights of the security enhancements in Windows Server 2003 is the complete redesign of IIS 6.0. This powerful Web server is available in all versions of Windows Server 2003. It provides a highly reliable, manageable, scalable, and secure Web application infrastructure. IIS 6.0 makes it possible for organizations of all sizes to quickly and easily deploy powerful Web sites and applications, and IIS 6.0 provides a high-performance platform for all applications. Because of the integration of the .NET framework into the IIS 6.0 process model, applications built with the Microsoft .NET framework are faster and more reliable.

IIS 6.0 is designed to provide:

- less planned and unplanned system downtime
- increased Web site and application availability
- lower system administration costs
- server consolidation (reduced staffing, hardware, and site management costs)
- a significant increase in Web infrastructure security

Scalability

Windows Server 2003 takes the scalability gains found in the Windows 2000 Server family to new heights. It is designed for both scale-up and scale-out scenarios—with scale-up scenarios enabled by symmetric multi-processing (SMP) and Cache Coherent Non-Uniform Memory Access (CC-NUMA) optimizations, and scale-out by the various types of clustering provided by Microsoft.

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### Windows 2000 Server vs. Windows Server 2003 Features

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<tbody>
<tr>
<td>Maximum CPUs</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>8/8</td>
<td>32</td>
<td>64</td>
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<td>Maximum Memory (32-bit)</td>
<td>4GB</td>
<td>4GB</td>
<td>8GB</td>
<td>32GB</td>
<td>32GB</td>
<td>64GB</td>
</tr>
<tr>
<td>Maximum Memory (64-bit)</td>
<td>8GB</td>
<td>8GB</td>
<td>8GB</td>
<td>32GB</td>
<td>32GB</td>
<td>64GB</td>
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<tr>
<td>File and Print Services</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
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<td>√</td>
</tr>
<tr>
<td>Internet Information Services (IIS)</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Active Directory</td>
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<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Terminal Services Server</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Remote Administrator</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Failover Clustering</td>
<td>2 nodes</td>
<td>8 nodes</td>
<td>8 nodes</td>
<td>4 nodes</td>
<td>8 nodes</td>
<td>8 nodes</td>
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<tr>
<td>Network Load Balancing</td>
<td>32 nodes</td>
<td>32 nodes</td>
<td>32 nodes</td>
<td>32 nodes</td>
<td>32 nodes</td>
<td>32 nodes</td>
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<tr>
<td>Process Control Manager</td>
<td>√</td>
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<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>WinSock Direct</td>
<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
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<td>Memory Mirroring</td>
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<td>New</td>
<td>New</td>
<td>New</td>
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<td>New</td>
</tr>
<tr>
<td>NUMA Enhancements</td>
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<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
</tr>
<tr>
<td>Hot-Add Memory</td>
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<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
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<tr>
<td>Windows System Resource Manager</td>
<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
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<tr>
<td>DFS (Distributed File System)</td>
<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
</tr>
<tr>
<td>Multi-boot</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VPN Connection Limit</td>
<td>1000 concurrent connections</td>
<td>Unlimited</td>
<td>Unlimited</td>
<td>Unlimited</td>
<td>Unlimited</td>
<td>Partial</td>
</tr>
<tr>
<td>Remote Storage Services</td>
<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
</tr>
</tbody>
</table>

1 Limited to 10 SMB connections. For web publishing only.
2 Requires hardware implementation.
Microsoft internal tests indicate that, compared to Windows 2000 Server, Windows Server 2003 delivers up to 140 percent better performance in the file system as well as significantly better performance in various other features, including Microsoft Active Directory service, Web server, Terminal Server components, and networking services.

Key scalability enhancements include:

- **64-Bit Support.** Support for 64-bit architecture with Enterprise and Datacenter Editions.
- **Support for Intel Hyper-Threading.** Allows a single physical processor to execute multiple threads (instruction streams) simultaneously, potentially providing greater throughput and improved performance.
- **Non-Uniform Memory Access (NUMA) Optimization.** Most Windows-based applications will perform optimally without modification on NUMA systems running Windows Server 2003 because of automated NUMA features in the operating system (offered only on 32-bit and 64-bit Enterprise and Datacenter Editions).
- **Hot Add Memory.** Allows ranges of memory to be added to a server platform that supports this feature. This added memory is made available by the operating system to services and applications as part of the normal memory pool—without requiring the downtime of rebooting the operating system or the computer (offered only on Enterprise and Datacenter Editions).

**Reliability and Availability**

Reliability and availability are woven into every aspect of Windows Server 2003 design to provide for a better customer experience. Key highlights include:

- **8-Node Clustering.** Increasing the number of nodes in a server cluster gives administrators more options for deploying applications and providing failover policies that match business expectations and risks. 8-node clustering is supported on the 32-bit and 64-bit Enterprise and Datacenter Editions.
- **Network Load Balancing Manager.** This new utility in Windows Server 2003 provides a single point of configuration and management for NLB clusters.
- **Datacenter High Availability Program.** The Datacenter Program has been expanded to meet the growing customer demand for higher availability on Windows.

**Manageability**

Windows Server 2003 delivers enhanced management capabilities designed to simplify and automate the management of Windows environments, while providing the flexibility and reliability to meet customers' business needs. Key highlights include:

- **Automated Deployment.** New and enhanced capabilities to automate the deployment and redeployment of the operating systems and applications.
- **Policy-Based Management.** Provides fine-grained control over the definition and enforcement of IT policies.
- **Effective User Service Management.** IntelliMirror® gives users consistent access to their applications, roaming user profiles, and user data, from any managed computer (even when they are disconnected from the network). IntelliMirror also gives centralized backup of user data and configuration files department.
- **Enhanced Security Management.** Powerful tools to help establish and manage the security of the Windows environments.
- **Scalable Operations Management.** Remote administration is enabled via Terminal Server, Windows Script Host, and Windows Management Instrumentation (WMI), the management infrastructure that provides access to more than 10,000 system objects in Windows Server 2003 via application, scripting, and command line interfaces.
- **Windows System Resource Manager** (WSRM). WSRM enhances application availability and quality of service by providing control over application CPU and memory utilization, making it easier to consolidate and run mixed application workloads on a single server.
- **Active Directory Enhancements.** Increased flexibility and manageability enhancements, such as secure credential and certificate management, with improved security, provide a consistent single sign-on experience and health monitoring visibility to easily monitor trusts and replication activity.

**Virtual Server**

Virtual Server (acquired from Connectix) addresses customer needs for application migration and server consolidation. Virtual Server enables customers to run multiple operating systems and applications in Virtual Machine (VM) environments (a VM is essentially a computer—implemented in software—running in isolated software partitions on a physical computer). The benefits of VM technology for application migration and server consolidation include:

- **Simplicity:** Virtual Server supports every major x86 Microsoft provided operating system running in the VM environment, leveraging industry-standard device drivers. This capability enables customers to run their Windows NT 4 applications, without change or disruption in usage or management, on more powerful and more resilient hardware that takes advantage of the performance and reliability enhancements of Windows Server 2003.
- **Automation:** Virtual Server is fully extensible through a COM API that enables scripted or programmatic control over the configuration, operation, management, and integration of VM environments.
- **Flexibility:** Virtual Server can be configured on desktop systems and deployed on high-end Intel-based servers. Virtual Hard Drives (VHDS) are highly portable, and system integrators can integrate and enrich XML configuration files for fast, economic deployment.
- **Security:** Virtual Server provides separate security contexts for each Virtual Server, allowing internal and external hosting environments to provide complete control of the VM to ‘owners,’ without compromising the security of other VMs, or the system overall.
Database and Communication Solutions

Microsoft Exchange Server 2003 Enterprise Edition

In today’s business environment, success requires a powerful infrastructure for creating, storing, and sharing information, as well as tools for acting on that information with speed and intelligence. Exchange Server 2003 Enterprise Edition, scheduled to be available in mid-2003, solves these challenges by combining industry-leading reliability and scalability with unmatched ease of management. Together with Windows Server 2003 and the IBM xSeries servers, Exchange Server 2003 Enterprise Edition delivers powerful email-based collaboration services to businesses of all sizes.

For more information, please visit www.microsoft.com/exchange/default.asp

Microsoft SQL Server 2000 Enterprise Edition

Microsoft SQL Server 2000 and Windows Server 2003 provide a lean and agile database infrastructure that allow companies to be more responsive to business challenges by providing superior capabilities to deploy, consolidate, and manage line of business, custom, and business intelligence applications—ultimately supporting the ability to compete more effectively in today’s market.

SQL Server 2000 Enterprise Edition includes a powerful collection of business intelligence solutions to help businesses make sense of and use information. It also provides broad flexibility, delivering data through new capabilities such as notification services and integration to hand-held devices through a SQL CE version. SQL Server 2000 Enterprise Edition (64 Bit) provides the most scalable data platform to take advantage of the Intel Itanium-based class of servers.

Together, IBM xSeries servers and SQL Server 2000 Enterprise Edition provide a complete and highly reliable database and analysis solution. For more information, please visit www.microsoft.com/sql


DB2 has always meant scalability, performance, and high availability. Now, DB2 exploits key capabilities of the Windows Server 2003 operating system, including 64-bit support. As a “Certified for Windows” partner, businesses are assured of maximum integration that sets DB2 apart. So, whether building Web services for the Internet or deploying to smart devices, DB2 makes it easy.

DB2 sets the stage for e-business. The DB2 family of products provides the information-on-demand infrastructure needed to:

IBM DB2 Universal Database

- Connect vast amounts of information for insight and value.
- Access, share, integrate, process, and manage large amounts of information easily, speeding up time to value.

DB2 can help you win the e-business game. For more information, please visit www.ibm.com/db2/udb

1 Planned availability third quarter 2003.
Which IBM and Microsoft Products are Right for You?

With a breadth of server hardware and software offerings available, it’s not always easy to know which combination of products will provide the solution platform that is best suited to your needs. The following table illustrates how you can combine different IBM xSeries servers and Microsoft server platforms to meet varying requirements.

### Mapping Products to Your Requirements

<table>
<thead>
<tr>
<th>64-bit Solutions</th>
<th>Windows Server 2003, Datacenter Edition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>· 512 GB RAM</td>
</tr>
<tr>
<td></td>
<td>· 64 CPU</td>
</tr>
<tr>
<td></td>
<td>xSeries 450</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scale-Up Solutions</th>
<th>Windows Server 2003, Enterprise Edition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>· 64 GB RAM</td>
</tr>
<tr>
<td></td>
<td>· 8 CPU</td>
</tr>
<tr>
<td></td>
<td>xSeries 440</td>
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</table>

<table>
<thead>
<tr>
<th>Scale-Out Solutions</th>
<th>BladeCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>· Up to 14-blades in 7U rack form factor</td>
</tr>
<tr>
<td></td>
<td>· Up to 2 processors per blade</td>
</tr>
<tr>
<td></td>
<td>· Highly manageable</td>
</tr>
<tr>
<td></td>
<td>· Collaboration consolidation</td>
</tr>
<tr>
<td></td>
<td>xSeries 300G</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flexible Solutions</th>
<th>xSeries 360</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>· 3U rack-optimized chassis</td>
</tr>
<tr>
<td></td>
<td>· Up to four Intel Xeon processors, two standard</td>
</tr>
<tr>
<td></td>
<td>· Integrated Remote Supervisor Adaptor</td>
</tr>
<tr>
<td></td>
<td>xSeries 360</td>
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</table>

<table>
<thead>
<tr>
<th>Storage Solutions</th>
<th>NAS 300G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>· Highly scalable, reliable, and easy to manage</td>
</tr>
<tr>
<td></td>
<td>· Preconfigured and tuned for storage-specific tasks</td>
</tr>
<tr>
<td></td>
<td>xSeries 300G</td>
</tr>
</tbody>
</table>
IBM Datacenter Solution Program

The IBM Datacenter Solution Program is a comprehensive set of product and service offerings engineered to deliver true enterprise computing solutions based on the Microsoft Windows 2000 Datacenter Server and Windows Server 2003 Datacenter Edition. IBM Datacenter solutions include Microsoft certified hardware, pre-loaded with the Windows Datacenter Server platform, as well as both standard and optional services.

Microsoft’s overall Datacenter High Availability Program includes a rigorous 14-day configuration stress test, which each hardware/driver/software solution must pass without failure. Any application with kernel-mode components also must take part in the test to achieve certification. The combination of high-availability features from IBM and Microsoft, stringent configuration validation, and high-end services result in extremely high levels of end-to-end availability. In addition, pre-testing of hardware, server platform, and kernel-mode components eliminates problems normally faced when buying components from different vendors. And the new Microsoft High Availability Resolution Queue (HARQ) handles support escalation, which provides the fastest path ever for problem resolution and minimizes unplanned downtime.

The Datacenter Program offers you:

• **Improved Reliability and availability**: The program is improved with more rigorous change control management, mandatory reactive and proactive support and services, driver testing, and the option of direct access to the HARQ.

• **Scalability**: Windows Server 2003 Datacenter Edition on an x440 server provides extensive scalability. With the modularity of the x440, you can start with a 4-way implementation then move up to an 8- or 16-way servers.

• **Broad choice of applications**: Microsoft, working with IBM as a hardware sponsor, provides a broad range of applications that have been tested for reliability, availability, and supportability via the “Certified for Windows (CfW)” Program.

• **Implementation assistance**: A variety of sources are available if you need help implementing your solution, including IBM Global Services; key system integrators such as CGEY, Microsoft Consulting Services, and BearingPoint; and the IBM EXAct network of partners.

• **Value**: The IBM Datacenter Solution Program is a powerful and scalable alternative to costly proprietary solutions.

Datacenter Capabilities from IBM

<table>
<thead>
<tr>
<th>Platforms</th>
<th>Availability</th>
<th>Services</th>
<th>Programs/Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-node x440</td>
<td>OnForever</td>
<td>Factory installation; guaranteed uptimes through optional high-availability services</td>
<td></td>
</tr>
<tr>
<td>Dual-node x440</td>
<td>Software rejuvenation</td>
<td>Testing, planning, and migration services</td>
<td></td>
</tr>
<tr>
<td>Quad-node x440</td>
<td>Service processor</td>
<td>IBM Global Services</td>
<td></td>
</tr>
<tr>
<td>FASiT Fibre family</td>
<td>PFA tools</td>
<td>MAPS (Microsoft Authorized Premier Support) – 10 incidents, each with:</td>
<td></td>
</tr>
<tr>
<td>Shark ESS server</td>
<td>Active PCI</td>
<td>- 24x7x4hr response</td>
<td></td>
</tr>
<tr>
<td>EMC storage</td>
<td>Multinode clustering</td>
<td>- Installation support</td>
<td></td>
</tr>
<tr>
<td>Hitachi (In Plan)</td>
<td></td>
<td>- IBM single point-of-contact solution assurances</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- IBM/Microsoft High Availability Resolution Queue</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Authorized Datacenter partner</strong></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>IBM Center for Microsoft Technologies</strong></td>
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</tr>
<tr>
<td></td>
<td></td>
<td><strong>Microsoft Gold Certified Partner for Support Services</strong></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>IBM Solution Partnership Centers</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>IBM Cluster Proven Program</strong></td>
<td></td>
</tr>
</tbody>
</table>
IBM Enterprise Services for Microsoft Technologies

IBM Enterprise Services for Microsoft Technologies (ESMT) is part of IBM Global Services (IGS). It focuses solely on Microsoft technology related services, helping clients achieve improved reliability, availability, and performance as they integrate Microsoft solutions into existing IT systems.

ESMT is experienced at integrating Microsoft technologies and developing solutions for existing enterprises and mission-critical legacy systems, and it has the capability to design and deliver resilient, end-to-end architectures.

ESMT maintains industry-leading Microsoft product expertise. Its Microsoft Certified Systems Engineers, Microsoft Certified Solutions Developers, and Microsoft Certified Trainers have the skills and capabilities to develop world-class solutions and deliver consulting and operational support services to customers who implement Microsoft technologies. IGS also is a Microsoft Gold Certified Partner for Support and Security Services. Additionally, IBM offers a full range of Microsoft services, from concept through implementation, to help clients create a resilient infrastructure that is resistant to disruption and engineered for rapid recovery, while being flexible, adaptable, and scalable.

Based on specific client needs, ESMT customizes industry-focused solutions, providing analysis, planning, testing, design, and ongoing maintenance, for high availability, business continuity solutions that optimize the IT infrastructure.

Can ESMT provide the right solution for your business needs? The following questions can help you see how:

Are you concerned about helping safeguard your Microsoft environment from internal or external threats?

ESMT can analyze, diagnose, and correct current or potential security issues in your Microsoft environment. From Active Directory access controls to safeguarding your Windows Server 2003 environment, SQL Server databases, and Exchange Server 2003 e-mail service, ESMT can help reduce vulnerabilities and help prevent security exposures with IGS–proven methodology. ESMT offers standardized ISA Server solutions to meet common needs, or can customize solutions for more complex environments—such as creating a security solution that is tightly integrated with Active Directory.

Are you considering moving applications to a new platform such as Windows 2003?

ESMT professionals provide expertise in enterprise computing to help organizations receive the full value from their Microsoft Windows 2003 Server investment. ESMT has helped numerous customers migrate to Windows Server operating platforms, systems software, and middleware products; prioritizing .NET applications, gathering application configuration requirements and installation procedures, determining application certification requirements, and developing deployment and upgrade strategies.

Are you looking to reduce the effort required to manage your servers and lower your total cost of ownership?

ESMT can create customized solutions that help you take advantage of Windows Server 2003 and reduce the complexity of your environment, including file server, Exchange Server, storage, and Web server consolidation.

Do you have mission-critical Windows applications that require comprehensive business processes and technology solutions?

IBM High Availability Services can improve your system availability and lower costs associated with downtime by helping to prevent outages and reduce the impact if outages do occur. IBM Availability Consultants will identify availability inhibitors and exposures and recommend improvements to system reliability, and critical data and application availability (clustering).

Do you want to consolidate storage and improve database service levels?

IGS offers an array of database infrastructure and enablement services that can help you with the design, planning, installation, and performance of SQL Server technology and Microsoft applications. These comprehensive services can reduce the time, cost, and resources required to implement a database solution; increase performance speed; and help you use your databases more effectively.

Are you concerned about disaster recovery?

IGS can help you identify critical business processes that must be preserved in an emergency, rerouting Internet traffic to a recovery center while retaining your Internet address to support continued Internet service and transactions.

For more information, please visit www.ibm.com/services/its/microsoft

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1 Planned availability third quarter 2003.
Frequently Asked Questions

Windows 2000 vs. Windows Server 2003

Q: I am currently on Windows NT and it is running fine. Why should I consider a move to Windows Server 2003?
A: The three top reasons to migrate to Windows Server 2003 are security, stability, and speed. It’s been more than five years since Windows NT first came to market. Since then, the world has changed dramatically. To evolve with the changing times, Microsoft built the new Windows Server 2003 from the foundation up with security as a top priority. Features such as the improved Active Directory add to the security and manageability of the product. Another reason to change is stability. Windows Server 2003 was developed to provide maximum uptime and to reduce reboots, both planned and unplanned. And finally, Windows Server 2003 provides performance improvements over Windows Server 2000, and even more amazing performance over Windows NT.

Scalability and Performance

Q: Why should I use Windows solutions for mission-critical applications?
A: Windows has proven scalability with several record-setting benchmarks, including Microsoft Server 2003 Datacenter Edition on the IBM eServer x440 8-way for TPC-C and Windows 2000 Advanced Server on the x440 8-way for SAP SD 2-tier—both of which set records for Windows-based systems when the benchmarks were first released. In a clustered environment, Windows 2000 Advanced Server and Datacenter Server demonstrated leadership in concert with 4-, 16-, and 32-node xSeries configurations running the TPC-C benchmark. These benchmark results prove that Windows solutions are ready to be deployed in mission-critical scenarios. For more information about these benchmark results, please visit www.pc.ibm.com/ww/eserver/xseries/benchmarks/index.html

UNIX Alternative

Q: If I want to move from the UNIX platform, is the x440 and Windows Server platform really an alternative?
A: Yes. Many companies see benefits in price/performance and lower total cost of ownership benefits on the IBM Intel hardware and Windows Server platform and are taking advantage of Microsoft’s proven migration patterns and practices to migrate their Unix environments. Send an e-mail with your questions to ASKMSIBM@microsoft.com for more details.

Competing Technologies

Q: Why should we deploy a Windows-based xSeries Server rather than a Linux-based xSeries solution? I would pay nothing for the Linux OS and over US $1,000 for a Windows-based server.
A: Leading analysts caution that the initial price of the server platform is only a small part of the total cost of ownership—often less than 10 percent. Labor costs, such as installation, administration, operations, application development, training, support, and software update management usually account for the majority of the 5-year total cost of ownership.

For example, the Giga Information Group’s Stacey Quandt warns, “Due to the low cost of initial acquisition of Linux, users risk not viewing it as an enterprise-class operating system. From this perspective, some of the most harmful mistakes we have witnessed include…targeting cost savings rather than the Total Economic Impact™ (TEI) of a Linux infrastructure.” In addition, Ms. Quandt says that too often, IT managers underestimate the need for service and support agreements and overestimate the support capabilities of Linux and the open-source communities.

The traditional criteria of product features, benefits, manageability, reliability, and scalability are still valid—as is the question of whether the product will continue to advance so that customers can remain competitive. All these are facets of business value.

Security

Q: I am concerned about the number of security issues being made public with Microsoft products. What is Microsoft doing to make their products more secure?
A: Microsoft is working diligently to deliver systems that offer security features backed by industry-leading security communications and training. To execute this plan, Microsoft is investing heavily—more than US$200 million in 2002—in the Secure Windows Initiative. This investment is driving process changes, such as wide-ranging “security pushes” that systematically look for security flaws, and a heightened emphasis on making products secure by design and by default. We are also focusing on more effective communication with customers and industry partners on security-related issues. Refer to the Security Operations Guide for Windows Server 2003 for more information, or visit www.microsoft.com/technet/ treeview/default.asp?url=/technet/security/tools/chklist/wsvsec.asp

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**Additional Resources**

**IBM Resources:**
- IBM BladeCenter: [www.ibm.com/eserver/bladecenter](http://www.ibm.com/eserver/bladecenter)
- IBM DB2: [www.ibm.com/db2/udb](http://www.ibm.com/db2/udb)
- IBM Global Services: [www-1.ibm.com/services/](http://www-1.ibm.com/services/)

**Microsoft Resources:**
- Server Consolidation: [www.microsoft.com/servers/consolidation](http://www.microsoft.com/servers/consolidation)

**Benchmarks:**
- TCP Benchmark: [www.tpc.org](http://www.tpc.org)
- Notesbench: [www.notesbench.org](http://www.notesbench.org)

Interested in a lab engagement? Proof of concept?
Need further information?
Please e-mail askmsibm@microsoft.com