

Outstanding scalability and reliability for business-critical enterprise applications and databases



IBM *@server* xSeries 455



Highlights

- ***The next generation of IBM Enterprise X-Architecture (EXA) technology offers mainframe-inspired performance for enterprise applications***
- ***XpandOnDemand capabilities deliver pay-as-you-grow scalability and investment protection***
- ***Outstanding system reliability helps protect mission-critical data***
- ***Eliminate performance bottlenecks using high-performance, 64-bit Intel® Itanium® 2 Processors***

In today's on demand world, companies must react instantly to dynamic market conditions adding capacity, improving service availability and rebalancing server infrastructures to seize opportunities and counter competitive threats. The IBM *@server*® xSeries® 455 expands the xSeries server family with a 64-bit Intel Itanium 2 Processor-based scalable enterprise node platform providing customers with a new tool for conquering transaction-intensive database and ERP application workloads.

High performance, small package

For applications that demand scale up server performance, the x455 complements existing Windows® and Linux server environments with high performance in a small, scalable package.

Designed to provide extensive flexibility and scalability for high-performance databases such as IBM DB2 Universal Database™, Microsoft® SQL Server and Oracle, the x455 delivers 16-way SMP power to the industry-standard, 64-bit server market.

Built on the proven chipset logic of the 32-bit x445, the x455 helps customers more easily exploit the benefits of 64-bit data addressing. And with standard support for memory mirroring, including hot-swap capability, the x455 helps instill confidence in the deployment of 64-bit Windows and Linux platforms making it ideal for enterprise applications such as SAP and SAS.



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Delivers high performance

Incorporating the next generation of innovative IBM Enterprise X-Architecture™ technology, the x455 offers competitive performance and flexible, modular growth options. From the base 4-way configuration, administrators can expand the system by adding processors, memory and I/O incrementally using XpandOnDemand™ technology. This “building block” approach to server architecture helps reduce the upfront costs of expensive switch-based alternatives and delivers investment protection.

The 64-bit architecture of the x455, powered by Intel® Itanium® 2 Processors, represents the next step in the evolution of xSeries servers. With nearly four times greater memory addressability than the x445 (224GB versus 64GB), the x455 allows administrators to load entire databases into main memory for extremely fast transaction processing and online queries. This allows the application environment, such as enterprise resource planning (ERP) and customer relationship management (CRM) applications to be efficiently utilized, providing a more productive operating environment for these mission-critical applications.

Built on the foundation of EXA, the x455 establishes a new standard for competitive performance. With additional performance enhancements such as XceL4 system cache, the x455 can exploit up to 64MB of Level 4 cache per 4-way SMP configuration. This improves latency to main memory, allowing for more effective use of the front-side bus for other resources such as enhancing network I/O performance.

XpandOnDemand offers growth flexibility

With mainframe-inspired XpandOnDemand scalability for processors, memory and I/O, the x455 can adapt as needs change in the future. Instead of purchasing extra capacity in large 8-way or 16-way systems, businesses deploying the x455 can buy only the performance capacity and I/O that's needed—then use XpandOnDemand to upgrade the system as their workload demands increase. With an extremely rack-dense 16-way configuration, XpandOnDemand makes scaling up simple.

XpandOnDemand provides a simple route to high performance using industry-standard hardware. The x455 can scale from 4-way to 16-way,

helping businesses respond quickly to changing requirements. To increase I/O capacity, the optional RXE-100 Remote Expansion Enclosure provides up to 12 additional Active™ PCI-X slots for triple the I/O slots without the expense of a full system upgrade. In addition, hot-swap and hot-add capabilities for memory and I/O allow administrators to upgrade the system without shutting down—helping maintain high availability and manageability.

Delivering outstanding expandability, the x455 allows customers to rapidly add processing power to 64-bit implementations of existing business-critical solutions. Processing capacity can be doubled or even quadrupled simply by adding new x455 modules to current systems, avoiding downtime associated with unnecessary software reloads. The x455 is the perfect choice for IT administrators seeking a reliable solution when performance levels are variable or unknown—helping prevent costly mistakes and helping protect their investments.

Robust memory, high reliability

The x455 delivers OnForever™ availability features with a memory subsystem that provides remarkable

defenses against downtime. For example, Chipkill™ memory allows multiple single-bit errors to be corrected using off-the-shelf memory—helping to protect critical data and to keep Total Cost of Ownership (TCO) low.

To further enhance the effectiveness of Chipkill technology, a Memory ProteXion™ feature helps contribute to smooth server operation by rerouting data in the event of an on-DIMM chip failure. In addition, memory mirroring helps minimize downtime and lost productivity by writing simultaneously to independent memory cards.

Hot-swap memory enables the replacement of failed dual in-line memory modules (DIMMs) while the system is still running to maximize availability for mission-critical applications. In addition, hot-add memory supported with Microsoft® Windows® Server 2003¹ powers the dynamic addition of main memory to boost performance.

Proactive systems management

The x455 comes standard with the integrated Remote Supervisor Adapter, a “computer within a computer” that monitors system health and enables remote management. In addition, proactive features such as Predictive Failure Analysis® help monitor critical system components and trigger alerts before problems arise. And, light path diagnostics helps expedite repairs by pinpointing problems with components.

Faster data access

For applications with large working sets of data, the x455 can break through I/O bottlenecks associated with 32-bit server platforms, creating new opportunities for analyzing business operations. With data access latencies falling from milliseconds to microseconds, further supply chain optimizations and warehouse inventory analyses become practical even for smaller companies with aggressive plans for growth. When time-to-market is paramount, the x455 can extend server processing capabilities without requiring the adoption of new applications or development of IT skill sets.





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January 2004
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¹ Hot-add memory support requires Microsoft Windows Server 2003, Enterprise Edition or Datacenter Edition.

² When referring to storage capacity, GB = 1,000,000,000 bytes. Accessible capacity is less.

³ All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only. Contact your local IBM office or IBM authorized reseller for the full text of a specific Statement of General Direction.

⁴ **Visit ibm.com/pc/safecomputing periodically for the latest information on safe and effective computing.**

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xSeries 455 at a glance

Form factor	Rack/4U per chassis
Processor	Intel® Itanium® 2 Processor at up to 1.5GHz
Number of processors (min/max)	1/16 (up to 4 processors per x455 unit)
Cache (max)	6MB L3, 64MB XcelL4™ Server Accelerator Cache per 4-way, up to 256MB XcelL4 per 16-way
Memory (max)	56GB Chipkill™ DDR SDRAM per 4-way, up to 224GB Chipkill DDR SDRAM per 16-way
Expansion slots	6/6 Active PCI-X per chassis (2 at 133MHz, 2 at 100MHz and 2 at 66MHz), with optional 12 PCI-X slots via RXE-100 Remote Expansion Enclosure
Disk bays (total/hot-swap)	2/2 Supporting Ultra320 SCSI
Maximum internal storage	293.6GB ²
Network	Integrated dual 10/100/1000 Ethernet
Power supply (std/max)	1050W 2/2 hot-swap
Hot-swap components	Power supplies, cooling fans, hard disk drives, PCI-X adapters and memory DIMMs
RAID support	Integrated RAID-1
Systems management	Remote Supervisor Adapter standard, IBM Director support planned for February 2004 ³
Operating systems supported	Microsoft® Windows® Server 2003 Enterprise Edition, Microsoft Windows Server 2003 Datacenter Edition, SUSE LINUX Enterprise Server and Red Hat Linux Advanced Server
Limited warranty⁴	3-year onsite limited warranty

For more information:

World Wide Web

U.S. ibm.com/pc/us/eserver/xseries/x455.html

Canada ibm.com/pc/ca/eserver/xseries/x455/more_about.shtml

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