

## **IBM delivers leadership performance and price/performance in industry-standard benchmarks with new xSeries 445 server**

June 30, 2003 ... The new IBM® @server™ xSeries® 445 server features the latest Intel® Xeon™ MP processor at 2.8GHz with 2MB L3 cache. (1)

### **Benchmark Leader**

IBM reinforces its leadership in the high-end Intel processor-based server market with new results on leading industry-standard benchmarks:

- Highest performance and best price/performance for an 8-way server on the TPC-C online transaction processing benchmark: outperforming the Unisys ES7000 Aries 520 Enterprise Server by more than 17% and the HP ProLiant DL760-G2 by more than 20% (2)
- Highest performance ever achieved on the 100GB TPC-H business intelligence benchmark: outperforming the HP ProLiant DL760 G2 8-way server by more than 67% (3)
- Leadership performance on the SAP® Standard Application SD Benchmark, R/3® Enterprise Release 4.70 (4)
- Leadership IA-32 8-way performance on SPECjbb2000, which measures a system's ability to run Java applications

### **New record for 8-way performance on TPC-C online transaction processing benchmark**

The x445 set a new TPC-C performance and price/performance record for an 8-way server, achieving performance of 139,153.98 tpmC and price/performance of \$5.07/tpmC.(5) The x445 server used eight Intel 2.8GHz/2MB Xeon MP processors and ran Microsoft® SQL Server 2000 and Microsoft Windows® Server 2003 Datacenter Edition.

### **Highest performance ever achieved on 100GB TPC-H benchmark**

The x445 set a new world record for performance running the 100GB TPC-H benchmark, which models a decision-support system for business intelligence applications. The x445 achieved a Composite Query-per-Hour Metric of 5,602.6 QphH@100GB and price/performance of \$73/QphH@100GB. (5) The xSeries 445 was configured with eight 2.8GHz/2MB Xeon MP processors and ran IBM DB2® Universal Database 8.1 and Microsoft Windows Server 2003 Enterprise Edition. (3)

### **Leadership performance on the latest two-tier SAP Standard Application SD Benchmark**

Teaming up with DB2 Universal Database 8.1, the x445 delivered leading performance on the two-tier SAP Standard Application Sales & Distribution (SD) Benchmark, running SAP R/3 Enterprise Release 4.70. The x445 achieved a leadership number of 525 SAP SD Benchmark users with 1.97 seconds average dialog response time, measured throughput of 158,000 dialog steps per hour (or 52,670 fully business processed order line items per hour), and an average CPU utilization of 95 percent for the central server. (4) The x445 was configured with four 2.8GHz/2MB Xeon MP processors, 8GB of main memory, DB2 UDB 8.1, and ran Microsoft Windows Server 2003 Enterprise Server. (4)

The x445's new result surpasses the hp ProLiant DL560's result of 491 SAP SD Benchmark users with 1.97 seconds average dialog response time and measured throughput of 148,000 dialog steps per hour (or 49,330 fully business processed order line items per hour), achieved on the SAP Standard Application SD Benchmark, SAP R/3 Release 4.70. The hp ProLiant DL560 was configured with four 2.8GHz/2MB Intel Xeon MP processors and 12GB of memory, and ran SuSE Linux Enterprise Server 8, Oracle 9i, and SAP R/3 4.70.

## Leadership IA-32 8-way performance running Java applications

The x445 achieved 128,556 operation per second, demonstrating leadership performance as an 8-way server running SPECjbb2000 (Java Business Benchmark), SPEC's first benchmark for evaluating the performance of server-side Java. SPECjbb2000 gives Java users an objective and representative benchmark for measuring a system's ability to run Java applications. (6) The x445 used eight 2.8GHz/2MB Xeon MP processors and 32GB of memory and ran SuSE Linux 8.0 Professional.

More information on the TPC-C and TPC-H benchmarks, along with all TPC benchmark results, can be found at the Transaction Processing Performance Council Web site at [www.tpc.org](http://www.tpc.org).

For the latest SAP results, visit [www.sap.com/benchmark](http://www.sap.com/benchmark).

The SPECjbb2000 result will complete SPEC review on July 23, 2003. Upon successful review, the result will be posted at [www.spec.org](http://www.spec.org), which contains a complete list of published SPECjbb2000 results.

For information about DB2 products, visit [www.ibm.com/software](http://www.ibm.com/software).

Results referenced are current as of June 30, 2003.

(1) Planned availability for the x445 server is July 15, 2003.

(2) x445: 139,153.98 tpmC, \$5.07/tpmC, available December 31, 2003; Unisys ES7000 Aries 520 Enterprise Server: 118,381.38 tpmC, \$5.56/tpmC, available May 30, 2003; HP ProLiant DL760-G2: 115,025.75 tpmC, \$7.69/tpmC, available May 30, 2003.

(3) x445: 5,602.6 QphH@100GB, \$73/QphH@100GB, available December 31, 2003; HP ProLiant DL760 G2: 3,346.6 QphH@100GB, \$65/QphH@100GB, available April 24, 2003; HP AlphaServer ES45: 5,578.4 QphH@100GB, \$357/QphH@100GB, available July 15, 2002.

(4) This benchmark fully complies with the SAP Benchmark Council regulations and has been audited and certified by SAP AG. Details can be obtained from IBM and SAP. The benchmark was performed at Research Triangle Park, North Carolina, USA, by IBM engineers.

(5) Total solution availability is December 31, 2003.

(6) SPECjbb2000 represents a middleware application written in Java. Hardware vendors can use the benchmark's results to analyze their platforms' scalability when running Java applications. Software vendors can evaluate the efficiency of their JVMs, JITs, garbage collectors and thread implementations.

IBM, the IBM logo, the e-business logo, xSeries, DB2, and DB2 Universal Database are trademarks or registered trademarks of International Business Machines Corporation.

Intel and Xeon are trademarks or registered trademarks of Intel Corporation.

Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and/or other countries.

SAP, R/3 and all other SAP product and service names mentioned herein are trademarks or registered trademarks of SAP AG in Germany and in several other countries.

SPEC and SPECjbb2000 are trademarks of Standard Performance Evaluation Corporation (SPEC).

TPC-C, tpmC, \$/tpmC, TPC-H, QphH, and \$/QphH are trademarks of the Transaction Processing Performance Council.

All other company/product names and service marks may be trademarks or registered trademarks of their respective companies.