

HP ProLiant Quad-Core servers achieve number one, two, and three overall two-processor leadership results on two-tier SAP® SD Standard Application Benchmarks



With features equal to standard 1U rack mount servers, the ProLiant BL460c combines power-efficient compute power and high density with expanded memory and I/O.

The HP ProLiant BL480c server blade is the industry's only two-processor server blade that offers 12 DIMMs, four hot-plug SAS or SATA drives, and three PCI-Express I/O expansion slots.

The HP ProLiant DL380 is the world's largest selling server.

Key results at a glance:

- The ProLiant BL460c and BL480c server blades and the ProLiant DL380 G5 server take the #1, #2, and #3 positions for two-processor performance on the two-tier SAP® Sales and Distribution (SD) Standard Application Benchmarks.
- The results prove ProLiant leadership over all two-processor competitors, including Quad-Core competitor Fujitsu Siemens.
- The results also defeat IBM two-processor Dual-Core competitor results by 43%!
- The benchmarks show a 51% increase in scalability for the ProLiant BL460c, a 48% increase in scalability for the ProLiant BL480c, and an increase of 46% in scalability from the ProLiant DL380 G5 from previous Dual-Core benchmarks.
- The performance results display optimization of the latest HP BladeSystem two-processor server blades with Quad-Core Intel® Xeon® x5355 series processors, HP Smart Array Controllers, and Modular Smart Array Controllers.

With the latest HP ProLiant BL460c [result on the](#) two-tier SAP SD Standard Application Benchmark, HP attained the enviable position of owning the top three spots for two-processor performance leadership.

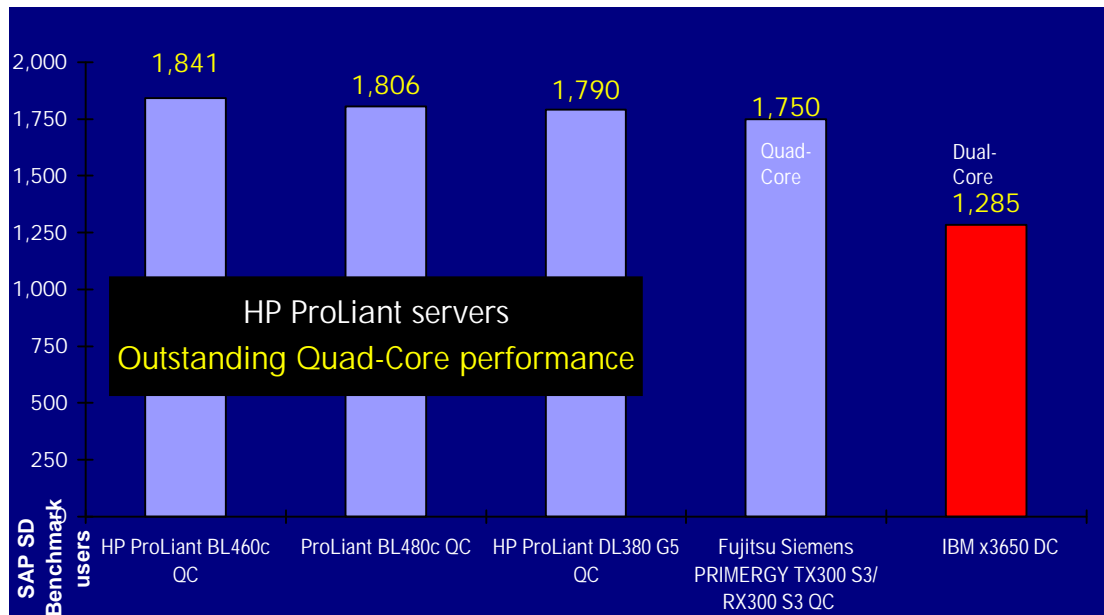


Figure 1. Comparison of performance results of the HP ProLiant BL480c, BL460c, and DL380 G5 Quad-Core two-processor servers vs. Fujitsu Siemens Quad-Core two-processor and IBM x3650 Dual-Core two-processor competitors on the two-tier SAP SD Standard Application Benchmark

More information about all servers can be found at the following Web page: <http://www.sap.com/benchmark>.

ProLiant server configurations

Tests were performed on the ProLiant servers by HP's Houston Solution Alliances SAP Engineering lab in Houston, TX. HP received certification from SAP AG of the ProLiant BL460c result (#2007002) on January 12, 2007 and for the ProLiant BL480c result (#2006080) and the ProLiant DL380 G5 (#2006079) on November 10, 2006. The servers were running Microsoft Windows Server 2003 Enterprise Edition operating system, Microsoft SQL Server 2005 database, and the mySAP™ ERP 2005 application. The servers were configured with 2 x 2.66GHz/1333MHz Quad-Core Intel Xeon x5355 processors (2 processors/8 cores/8 threads), with 2x4MB L2 cache per 2 cores and 32GB main memory.

Excellent results: The ProLiant BL460c earned the number one result with 1,841 SAP SD Benchmark users, equivalent to a throughput of 184,670 fully processed order line items per hour, followed closely by the ProLiant BL480c with 1,806 SAP SD Benchmark users, equivalent to a throughput of 181,000 fully processed order line items per hour. The ProLiant DL380 G5 result completed the HP dominance of the two-processor performance leadership for the two-tier SAP SD Standard Application Benchmark with 1,790 SAP SD Benchmark users, equivalent to a throughput of 179,330 fully processed order line items per hour. These results beat the only other Quad-Core two-processor competitor and all other Dual-Core two-processor competitors.

ProLiant two-processor servers lead competitors

Results as of 12-18-06.

vs. Fujitsu Siemens TX300 S3/ RX300 S3 results on the two-tier SAP SD Standard Application Benchmark. The Fujitsu Siemens PRIMERGY Model TX300 S3/ RX300 S3 (Certification #2006082) was configured as a two-processor server (2 processors/8 cores/8 threads) with Quad-Core Intel Xeon X5355 2.66GHz processors with 64KB L1 cache per core, 4MB L2 cache per 2 cores, and 32GB main memory. The Fujitsu TX300 S3/ RX300 S3 was running mySAP ERP 2005 (64-bit) with Microsoft Windows Server 2003 Enterprise Edition (64-bit) and Microsoft SQL Server 2005 (64-bit) database and achieved 1,750 SAP SD Benchmark users, equivalent to a throughput of 715,330 fully processed order line items per hour.

vs. IBM System x3650 results on the two-tier SAP SD Standard Application Benchmark. The IBM x3650 (Certification #2006043) was configured as a two-processor server (2 processors/4 cores/4 threads) with Dual-Core Intel Xeon x5160 3.0GHz processors with 32KB L1 cache per core, 4MB L2 cache per processor, and 24GB main memory. The IBM x3650 was running mySAP ERP 2004 (64-bit) with Microsoft Windows Server 2003 Enterprise Edition (64-bit) and DB2 UDB 8.2.2 (64-bit) database and achieved 1,285 SAP SD Benchmark users, equivalent to a throughput of 128,670 fully processed order line items per hour.

The ProLiant BL460c Quad-Core two-processor server achieved 43% more SAP SD Benchmark users than the Dual-Core two-processor IBM x3650 server.

Quad-Core processors display superb scalability

ProLiant BL460c: The ProLiant BL460c had a previous benchmark on June 13, 2006 with a two-tier SAP SD Standard Application Benchmark result of 1,216 SAP SD Benchmark users (Certification #2006037). The server was configured with 2 x 3.0GHz Dual-Core Intel Xeon x5160 processors (2 processors/4 cores/4 threads) with 4MB L2 cache per processor and 32GB main memory. The result was equivalent to a throughput of 121,670 fully processed order line items per hour. The server was running Microsoft Windows Server 2003 Enterprise Edition x64 operating system, Microsoft SQL Server 2005 Enterprise Edition x64 database, and mySAP ERP 2004. The ProLiant BL460c earned a 51% increase in scalability utilizing Quad-Core processors.

ProLiant BL480c: The ProLiant BL480c had a previous benchmark on June 3, 2006 with a two-tier SAP SD Standard Application Benchmark result of 1,218 SAP SD Benchmark users (Certification #2006038). The server was configured with 2 x 3.0GHz Dual-Core Intel Xeon x5160 processors (2 processors/4 cores/4 threads), with 4MB L2 cache per processor and 32GB main memory. The result was equivalent to a throughput of 122,000 fully processed order line items per hour. The server was running Microsoft Windows Server 2003 Enterprise Edition x64 operating system, Microsoft SQL Server 2005 Enterprise Edition x64 database, and mySAP ERP 2004 (64-bit). The ProLiant BL480c earned a 48% increase in scalability utilizing Quad-Core processors.

ProLiant DL380 G5: The November 2006 benchmark compares to a June 23, 2006 two-tier SAP SD Standard Application Benchmark result of the ProLiant DL380 G5 (Certification #2006039), configured with 2 x 3.0GHz Dual-Core Intel Xeon x5160 processors (2 processors/4 cores/4 threads), with 4MB L2 cache per processor and 32GB main memory that achieved 1,216 SAP SD Benchmark users, equivalent to a throughput of 121,670 fully processed order line items per hour running Microsoft Windows Server 2003 Enterprise Edition x64 operating system, Microsoft SQL Server 2005 Enterprise Edition x64 database, and mySAP ERP 2004 (64-bit). The ProLiant DL380 G5 earned a 46% increase in scalability utilizing Quad-Core processors.

The HP ProLiant Advantage

HP ProLiant 460c



The latest HP ProLiant BL460c server blade provides enterprise-class features for high performance and reliability without compromising energy efficiency or density. Combining leading Intel Xeon performance with the latest industry technologies, the ProLiant BL460c maximizes efficiency for a dense two-processor Dual-Core or Quad-Core blade server. The BladeSystem c7000 enclosure supports up to 16 BL460c server blades, two more servers than the IBM BladeCenter and each ProLiant BL460c supports double the memory capacity of the IBM HS21 server without their expansion blade. In this small form factor, the ProLiant BL460c includes more features to ensure high-availability such as hot plug hard drives, mirrored-memory, online spare memory, memory interleaving, embedded RAID capability, and enhanced remote Lights-Out management.

HP ProLiant 480c



The HP ProLiant BL480c was introduced as a new category of server blade that delivers an unmatched combination of two processors, Multi-Core performance, and expansion. Designed to keep pace with high computing demands, the HP ProLiant BL480c now offers the latest outstanding Quad-Core Intel Xeon processing power, up to 48GB of PC2-5300 DDR2 Fully Buffered DIMMs, mirrored memory, online spare capability, three PCI-Express I/O expansion slots via mezzanine cards, support for up to 4 hot-plug small form factor (SFF) SAS or SATA hard disk drives, and management tools that make it easy to deploy and maintain. The HP ProLiant BL480c has more than you've come to expect from a two-processor server blade, and can handle your most challenging applications.

HP ProLiant DL380 G5



Once again, the HP ProLiant DL380, the world's server sales leader, distinguishes itself as a high-performing server with its latest benchmark. The ProLiant DL380 G5 is the best server for medium businesses and enterprise customers using SAP® solutions.

The newest Quad-Core Intel Xeon version of the HP ProLiant DL380 G5 model is designed for improved server responsiveness, enhanced multi-tasking capabilities, and improved performance for the most demanding applications and virtualization projects. The ProLiant DL380 G5 is configured with up to two Intel Xeon 5000 series processors with Hyper Threading and Intel VT technology to improve performance in a virtual environment. The server includes up to 32MB of PC2-5300 DDR2 Fully Buffered DIMMs with 4:1 interleaving, mirrored memory, online spare capability, four PCI-Express expansion slots standard, and optional PCI-X.

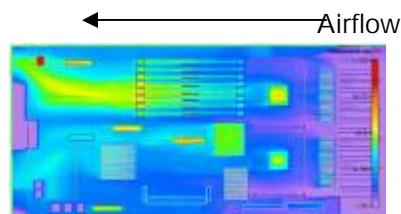
Why We Win in Performance

HP SFF SAS: leading the future of storage

The transition to SFF SAS drives is one of the most significant transitions in the industry's history, fueled by the biggest required leap in storage capacity ever experienced along with the need for faster access to stored data.



- Higher reliability
 - 1.7 million mean time between failures (MTBF) vs. 1.5 million for 3.5" SCSI
- Better performance
 - Serial point-to-point connections
 - More spindles per platform
- Greater efficiency and improved thermals with SFF drives
 - Half the power consumption – 9 Watts
 - SFF enables better airflow



HP Smart Array Controller E200i



The E200i, used in the ProLiant BL460c, is HP's first embedded PCI-Express entry level controller for low cost hardware RAID. Its key features include 4 internal Serial Attached SCSI (SAS) ports, 64MB DDR2-533 memory with upgrade to 128MB, compatibility with SAS or SATA hard disk drives, software consistency among the Smart Array family, PCI-Express slots, and an upgrade path to RAID 5.

HP Smart Array Controller P400



The HP Smart Array P400, also used by the ProLiant DL380 G5 in this benchmark, is HP's first PCI-E SAS RAID controller and provides new levels of performance and reliability for HP servers, through its support of the latest SCSI technology and advanced RAID capabilities. The Smart Array P400 is ideal for SAS-based servers and storage enclosures that require mission-critical reliability and high performance.

HP MSA 1000



The MSA1000, used in the ProLiant BL460c, is the premiere storage system in the HP StorageWorks Modular Smart Array family, delivering industry-leading technology to meet today's demanding and growing storage needs. The performance and scalability of the MSA1000 allows for up to 18 additional ProLiant servers to be connected providing maximum return on investment and minimal storage management costs.

The advantages of the partnership between HP, SAP and Microsoft

Extensive experience and a close relationship are keys to making the partnership between HP, SAP AG, and Microsoft a success. Working together, HP, SAP, and Microsoft deliver design, sizing, and project plans geared to their customers' needs and strategies. SAP, Microsoft, and HP also collaborate very closely in research and development. Tests and benchmarks provide hard facts on our performance and capabilities.

Well over 50,000 successful joint installations reflect HP's deep understanding of the deployment and customer requirements for SAP ERP solutions and the mySAP Business Suite family of applications. No other company has completed more installations of SAP solutions than HP — that's because HP understands how to turn customer demands into business tools using mySAP Business Suite and other SAP solutions. Across all major operating systems, one out of every two SAP solution-based installations runs on HP infrastructure.

HP Virtualized Infrastructure Solutions for mySAP Business Suite

The ability to swiftly adapt to ever-changing business requirements is the key success factor in today's business environments. However, this implies an adaptive SAP solution-based landscape, which is required by many customers today. HP Virtualized Infrastructure Solutions (VIS) for mySAP Business Suite enables customers to increase the flexibility and manageability of their system landscapes that include SAP solutions.

With HP VIS for mySAP Business Suite, customers can overcome the boundaries of yesterday's infrastructure. Instead of working in inefficient silos, a simplified IT will grow in flexibility and scalability, enabling customers to respond to changes in demand more quickly by dynamically allocating computing power, storage, and network resources according to the demand of the SAP application. And better still: Improved overall manageability provides substantial reductions in costs of operation.

For more information

HP ProLiant BL460c: www.hp.com/servers/proliantbl460c

HP ProLiant BL480c: www.hp.com/servers/proliantbl480c

HP ProLiant DL380 G5: www.hp.com/servers/proliantdl380

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