

HP achieves #1 overall performance results for two-processors on two-tier SAP® SD Standard Application Benchmark with ProLiant BL460c server blade AND ProLiant DL380 G5



The HP Difference

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 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.

Key results at a glance:

- ProLiant leadership with the #1 two-processor, overall performance results on the two-tier SAP® Sales and Distribution (SD) Standard Application Benchmark.
- The results also defeated IBM's p 570 Power6 server result.
- The benchmark results show a 71% increase in scalability for the ProLiant BL460c when compared to its previous Dual-Core benchmark result and an increase of up to 164% in scalability from the ProLiant DL380 G5 when compared to its previous Dual-Core benchmark results.
- The performance results display optimization of the latest HP BladeSystem two-processor server blades with Quad-Core Intel® Xeon® x5365 series processors.

HP ProLiant 2P Quad-Core servers, the BL460c server blade and the DL380 G5, once again claim outstanding results, this time with the #1 leading performance on the two-tier SAP SD Standard Application Benchmark for both servers with two-processor performances of 2,080 SAP SD Benchmark users.

HP 2P, Quad-Core ProLiant BL460c and DL380 G5 servers lead again



ProLiant BL460c server blade



ProLiant DL380 G5

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

HP vs. two-processor Quad-Core and Dual-Core competitors

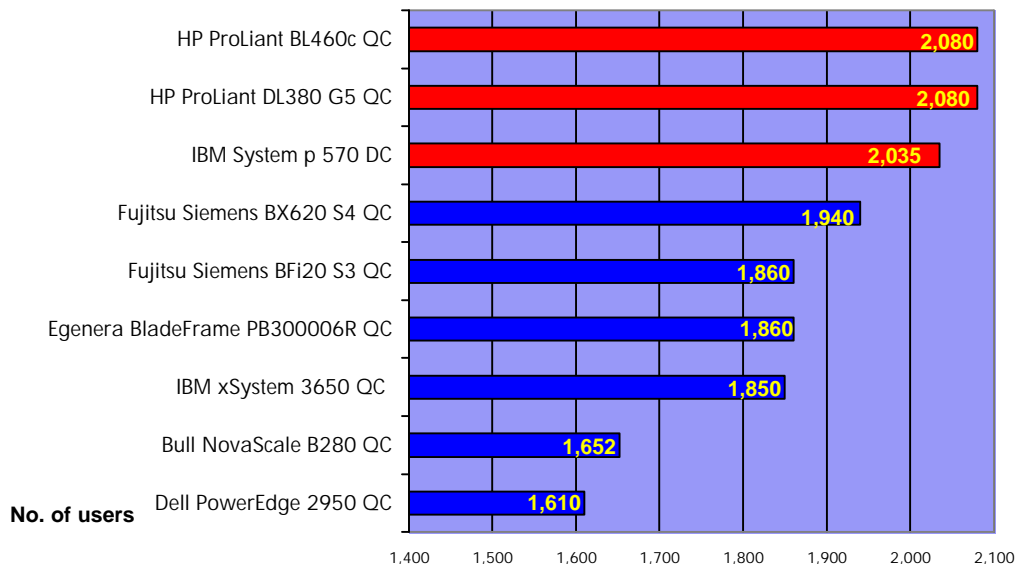


Figure 1. Comparison of performance results of the HP ProLiant BL460c and DL380 G5 two-processor Quad-Core servers vs. two-processor Quad-Core and Dual-Core competitors on the two-tier SAP SD Standard Application Benchmark. (All results as of 9-3-07. Details in Appendix A).

ProLiant server configurations

The ProLiant BL460c server blade delivered on its promise of providing high performance earning the #1 spot for two-processors on the two-tier SAP SD Standard Application Benchmark with 2,080 SAP SD Benchmark users, equivalent to a throughput of 208,000 fully processed order line items per hour and 10,400 total SAPS. In addition, the ProLiant DL380 G5's #1 two-processor result on the two-tier SAP SD Standard Application Benchmark helped validate the reason it is the world's highest volume server. The server earned 2,080 SAP SD Benchmark users, equivalent to a throughput of 208,670 fully processed order line items per hour and 10,430 total SAPS.

Tests were performed on the ProLiant BL460c server blades and the ProLiant DL380 G5 servers by HP's SAP Engineering lab in Houston, TX. HP received certification from SAP AG for the ProLiant BL460c (#2007054) and the ProLiant DL380 G5 (#2007057) on September 3, 2007. The servers were running Microsoft Windows Server 2003 Enterprise Edition x64 SP2 operating system, Microsoft SQL Server 2005 Enterprise Edition x64 SP1 database, and the SAP ERP 6.0 application (formerly known as mySAP™ ERP 2005). Both servers were configured with 2 x 3.0GHz Quad-Core Intel Xeon x5365 processors (2 processors/8 cores/8 threads), with 64 KB L1 cache per core and 4MB L2 cache per 2 cores and 32GB main memory.

The ProLiant BL460c utilized an HP Smart Array E200i battery-backed write cache (BBWC) Smart Array Controller connected to 2 x 72GB, 15K SAS internal drives, a QLogic HBA, and an HP Modular Storage Array 1000 (MSA1000) with 14 x 72GB, 15K SCSI external drives. The ProLiant DL380 G5 used an HP Smart Array P400i Controller connected to 8 x 72GB 15K SAS internal drives, a Smart Array P800 Controller, and an HP MSA70 Controller with 25 x 72GB 15K SAS external drives.

Scalability increases from Dual-Core to Quad-Core

Both the ProLiant BL460c server blade and the DL380 G5 show excellent results when scaling from Dual-Core to Quad-Core configurations on the two-processor, two-tier SAP SD Standard Application Benchmark. The ProLiant BL460c earned 1,216 SAP SD Benchmark users (6,080 SAPS) with its Dual-Core configuration, then scaled to 1,841 SAP SD Benchmark users (9,230 SAPS) and currently has achieved 2,080 SAP SD Benchmark users (10,400 SAPS) for its Quad-Core results.

The ProLiant DL380 G5 scaled to an impressive 164% with its Dual-Core to Quad-Core configuration results on the two-processor, two-tier SAP SD Standard Application Benchmark. Its first Dual-Core benchmark resulted in 788 SAP SD Benchmark users (3,950 SAPS) and then scaled to 1,216 SAP SD Benchmark users (6,080 SAPS). Its Quad-Core results included 1,790 and currently 2,080 SAP SD Benchmark users at 8,970 and 10,400 SAPS respectively.

[All results as of 9-3-07. Details in Appendix A.](#)

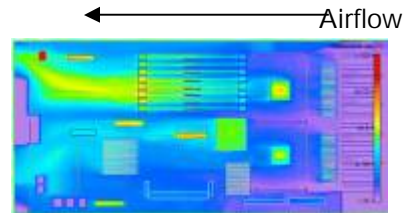
The HP ProLiant Advantage

HP SFF SAS: leading the future of storage



The transition to SFF SAS drives appears as 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 HP Smart Array E200i is HP's first entry level PCI Express (PCI-E) Serial Attached SCSI (SAS) RAID controller. The full-size card has 8 ports and utilizes DDR1-266 memory. The E200 is ideal for RAID 0/1 and can be upgraded with the 128MB battery-backed write cache (BBWC) module for RAID 5.

HP Smart Array Controller P400

The HP Smart Array P400, 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.

QLogic-based Fibre Channel Mezzanine HBA



The QLogic-based Fibre Channel Mezzanine HBA for HP BladeSystems uses the proven QLogic ISP2312 Fibre Channel ASIC. QLogic has successfully packaged a pair of 2Gb Fibre Channel HBAs into a single reliable ASIC including dual RISC processors, dual frame buffers and dual Fibre Channel interfaces with a single PCI interface. The QLogic-based Fibre Channel Mezzanine HBA was connected to the 14 external drives in the MSA1000 for this benchmark.

HP Modular Storage Array 1000 (MSA1000)



The MSA1000 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.

HP StorageWorks 70 Modular Smart Array



The HP StorageWorks 70 Modular Smart Array is an end-to-end flexible storage array, offering data availability, enhanced reliability, enhanced performance, and tiered storage capability with SAS and SATA drives and investment protection. Small and midrange business growing storage needs can be managed by deploying this low cost, flexible tiered storage system with up to 14.4TB capacity supporting SAS or SATA.

SAP and HP Partnership

HP has been partnering with SAP AG for over 20 years. Together, we've created a remarkable legacy providing world-class business solutions to global clients. Our offer is a unique combination of open, flexible technologies and broad expertise. That's why nearly half of the worldwide implementations of SAP applications run on HP infrastructure.

- HP servers host almost 50% of all SAP solution-based installations with more than 55,000+ installations and more than 20,000 customers.
- HP is the global disk storage market leader with 23.6% market share with a No.1 position in Storage Area Networks.
- HP is the leading provider of imaging and printing solutions for SAP applications.
- We integrate, certify, and optimize new solutions by:
 - Six SAP Solutions Centers located in Atlanta & Houston, USA; and in Asia in Singapore, India, China, and Korea.
 - One SAP Competency Center, Walldorf, Germany.
 - 24x7 support through globally connected SAP support centers in more than 15 countries worldwide.
- HP is one of the largest SAP customers in the world. HP uses SAP solutions for Enterprise Resource Planning and Supply Chain Management.
- HP's output management technology is a proven and recommended platform for output management in the context of SAP solutions.
- HP has been awarded SAP's highest level of partnership in 3 out of 4 key areas.¹

For more information

HP ProLiant BL460c: www.hp.com/servers/bl460c

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

HP ProLiant storage solutions: www.hp.com/go/serial and <http://h18004.www1.hp.com/products/servers/platforms/storage.html>

SAP benchmark details: <http://www.sap.com/benchmark>.

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¹<http://h71028.www7.hp.com/enterprise/cache/13419-0-0-0-121.html>

Appendix A

Two-processor Quad-Core and Dual-Core competitor's configurations

vs. IBM System [p 570](#) results on the two-tier SAP SD Standard Application Benchmark. The IBM p5 570 (Certification #2007037) was configured as a two-processor server (2 processors/4 cores/8 threads) with Power6, 4.7GHz processors with 128KB L1 cache and 4MB L2 cache per core; 32MB L3 cache per processor and 32GB main memory. The IBM p570 was running SAP ERP 6.0 with AIX 5L Version 5.3 operating system and Oracle 10g database and achieved 2,035 SAP SD Benchmark users, equivalent to a throughput of 203,670 fully processed order line items per hour and 10,180 total SAPS.

vs. Fujitsu Siemens PRIMERGY Model [BX620 S4](#) results on the two-tier SAP SD Standard Application Benchmark. The Fujitsu Siemens BX620 S4 (Certification #2007049) was configured as a two-processor server (2 processors/8 cores/8 threads) with Intel Xeon Quad-Core X5365, 3.0GHz processors with 64KB L1 cache, 4MB L2 cache per 2 cores, and 32GB main memory. The Fujitsu BX620 S4 was running SAP ERP 6.0 with Microsoft Windows Server 2003 Enterprise Edition operating system and Microsoft SQL Server 2005 database and achieved 1,940 SAP SD Benchmark users, equivalent to a throughput of 194,000 fully processed order line items per hour and 9,700 total SAPS.

vs. Fujitsu Siemens PRIMERGY [Model Ffi20 S3](#) results on the two-tier SAP SD Standard Application Benchmark. The Fujitsu Siemens BF120 S3 (Certification #2007041) was configured as a two-processor server (2 processors/8 cores/8 threads) with Intel Xeon Quad-Core X5355, 2.66GHz processors with 64KB L1 cache, 4MB L2 cache per 2 cores, and 32GB main memory. The Fujitsu Siemens PRIMERGY BF120 S3 was running SAP ERP 6.0 with Microsoft Windows Server 2003 Enterprise Edition operating system and Microsoft SQL Server 2005 database and achieved 1,860 SAP SD Benchmark users, equivalent to a throughput of 188,000 fully processed order line items per hour and 9,400 total SAPS.

vs. Egenera BladeFrame [PB300006R](#) results on the two-tier SAP SD Standard Application Benchmark. The Egenera BladeFrame PB300006R (Certification #2007041) was configured as a two-processor server (2 processors/8 cores/8 threads) with Intel Xeon Quad-Core X5355, 2.66GHz processors with 64KB L1 cache, 4MB L2 cache per 2 cores, and 32GB main memory. The Egenera BladeFrame PB300006R was running SAP ERP 6.0 with Microsoft Windows Server 2003 Enterprise Edition operating system and Microsoft SQL Server 2005 database and achieved 1,860 SAP SD Benchmark users, equivalent to a throughput of 188,000 fully processed order line items per hour and 9,400 total SAPS.

vs. IBM System [X3650](#) results on the two-tier SAP SD Standard Application Benchmark. The IBM X3650 (Certification #2007019) was configured as a two-processor server (2 processors/8 cores/8 threads) with Intel Xeon Quad-Core X5355, 2.66GHz processors with 64KB L1 cache, 4MB L2 cache per 2 cores, and 32GB main memory. The IBM X3650 was running SAP ERP 6.0 with Microsoft Windows Server 2003 Enterprise Edition operating system and IBM DB29 database and achieved 1,850 SAP SD Benchmark users, equivalent to a throughput of 185,330 fully processed order line items per hour and 9,270 total SAPS.

vs. Bull NovaScale [B280](#) results on the two-tier SAP SD Standard Application Benchmark. The Bull NovaScale B280 (Certification #2007015) was configured as a two-processor server (2 processors/8 cores/8 threads) with Intel Xeon Quad-Core X5355, 2.66GHz processors with 64KB L1 cache, 4MB L2 cache per 2 cores, and 32GB main memory. The NovaScale B280 was running SAP ERP 6.0 with Microsoft Windows Server 2003 Enterprise Edition operating system and Microsoft SQL Server 2005 database and achieved 1,652 SAP SD Benchmark users, equivalent to a throughput of 166,670 fully processed order line items per hour and 8,330 total SAPS.

vs. Dell PowerEdge [2950](#) results on the two-tier SAP SD Standard Application Benchmark. The Dell PowerEdge 2950 (Certification #2007008) was configured as a two-processor server (2 processors/8 cores/8 threads) with Intel Xeon Quad-Core X5355, 2.66GHz processors with 64KB L1 cache, 4MB L2 cache per 2 cores, and 32GB main memory. The PowerEdge 2950 was running SAP ERP 6.0 with Microsoft Windows Server 2003 Enterprise Edition operating system and Microsoft SQL Server 2005 database and achieved 1,610 SAP SD Benchmark users, equivalent to a throughput of 163,670 fully processed order line items per hour and 8,180 total SAPS.

Quad-Core and Dual-Core scalability configurations

ProLiant [BL460c](#) results on the two-tier SAP SD Standard Application Benchmark. The ProLiant BL460c server blade (Certification #2007002) was configured as a two-processor server (2 processors/8 cores/8 threads) with Intel Xeon X5355 Quad-Core 2.66GHz processors with 64KB L1 cache per core and 4MB L2 cache per 2 cores, and 32GB main memory. The ProLiant BL460c server blade was running SAP ERP 6.0 with Microsoft Windows Server 2003 Enterprise Edition operating system and Microsoft SQL Server 2005 database and achieved 1,841 SAP SD Benchmark users, equivalent to a throughput of 184,670 fully processed order line items per hour and 9,230 total SAPS.

ProLiant [DL380 G5](#) results on the two-tier SAP SD Standard Application Benchmark. The ProLiant DL380 G5 server blade (Certification #2006039) was configured as a two-processor server (2 processors/4 cores/4 threads) with Intel Xeon Dual-Core 3.0GHz processors with 32KB L1 cache and 4MB L2 cache per processor, and 32GB main memory. The ProLiant DL380 G5 server blade was running the mySAP™ ERP 2004 (64-bit) application with Microsoft Windows Server 2003 Enterprise Edition (64-bit) operating system and Microsoft SQL Server 2005 (64-bit) database and achieved 1,216 SAP SD Benchmark users, equivalent to a throughput of 121,670 fully processed order line items per hour and 6,080 total SAPS.

Appendix A cont'd.

ProLiant [DL380 G5](#) results on the two-tier SAP SD Standard Application Benchmark. The ProLiant DL380 G5 (Certification #2007028) was configured as a two-processor server (2 processors/8 cores/8 threads) with Intel Xeon X5355 Quad-Core 2.66GHz processors with 64KB L1 cache and 4MB L2 cache per 2 cores; and 32GB main memory. The ProLiant DL380 G5 was running SAP ERP 6.0 with SuSE Linux Enterprise Server 10 operating system and Oracle 10g database and achieved 1,795 SAP SD Benchmark users, equivalent to a throughput of 180,000 fully processed order line items per hour and 9,000 total SAPS.

ProLiant [DL380 G5](#) results on the two-tier SAP SD Standard Application Benchmark. The ProLiant DL380 G5 (Certification #2006079) was configured as a two-processor server (2 processors/8 cores/8 threads) with Intel Xeon X5355 Quad-Core 2.66GHz processors with 64KB L1 cache and 4MB L2 cache per 2 cores; and 32GB main memory. The ProLiant DL380 G5 was running SAP ERP 6.0 with Microsoft Windows Server 2003 Enterprise Edition operating system and Microsoft SQL Server 2005 database and achieved 1,790 SAP SD Benchmark users, equivalent to a throughput of 179,330 fully processed order line items per hour and 8,970 total SAPS.

ProLiant [DL380 G4](#) results on the two-tier SAP SD Standard Application Benchmark. The ProLiant DL380 G4 (Certification #2006005) was configured as a two-processor server (2 processors/4 cores/8 threads) with Intel Xeon Dual-Core 2.8GHz processors with 16KB L1 cache and 2MB L2 cache; and 12GB main memory. The ProLiant DL380 G4 was running mySAP ERP 2004 (64-bit) with Microsoft Windows Server 2003 Enterprise Edition (64-bit) operating system and Microsoft SQL Server 2005 (64-bit) database and achieved 788 SAP SD Benchmark users, equivalent to a throughput of 79,000 fully processed order line items per hour and 3,950 total SAPS.

Appendix B

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

Processor	SAP SD Benchmark Users	Fully processed order line items/hour	SAPS
ProLiant BL460c	2,080	208,000	10,400
vs. Dual-Core system			The ProLiant BL460c has:
IBM System p 570	2,035	203,670	10,180 2% more than no. of users than IBM p 570
vs. Blades			The ProLiant BL460c has:
Fujitsu Siemens BX620 S4	1,940	194,000	9,700 7% more than no. of users than Fujitsu Siemens.
Egenera BladeFrame P300006R	1,860	188,000	9,400 11.8% more no. of users than Egenera BladeFrame
Bull NovaScale B280	1,652	166,670	8,330 26% more no. of users than Bull.
ProLiant DL380 G5	2,080	208,670	10,430
vs. Density-optimized rack systems			The ProLiant DL380 G5 has:
IBM x3650	1,850	185,330	9,270 12% more no. of users than IBM x3650
Dell PowerEdge 2950	1610	163,670	8,180 23% more no. of users than Dell PowerEdge.

All results as of 9-3-07