New HP ProLiant BL680c G5 server blade earns excellent performance outcome for four-processor server on two-tier SAP® SD Standard Application Benchmark

The HP Difference

Designed to keep pace with strenuous computing demands, the HP ProLiant BL680c G5 Server Blade is equipped with outstanding 4P processing power and expansion capabilities, enterprise-class availability features, and industry-leading management tools that make it easy to deploy and maintain.

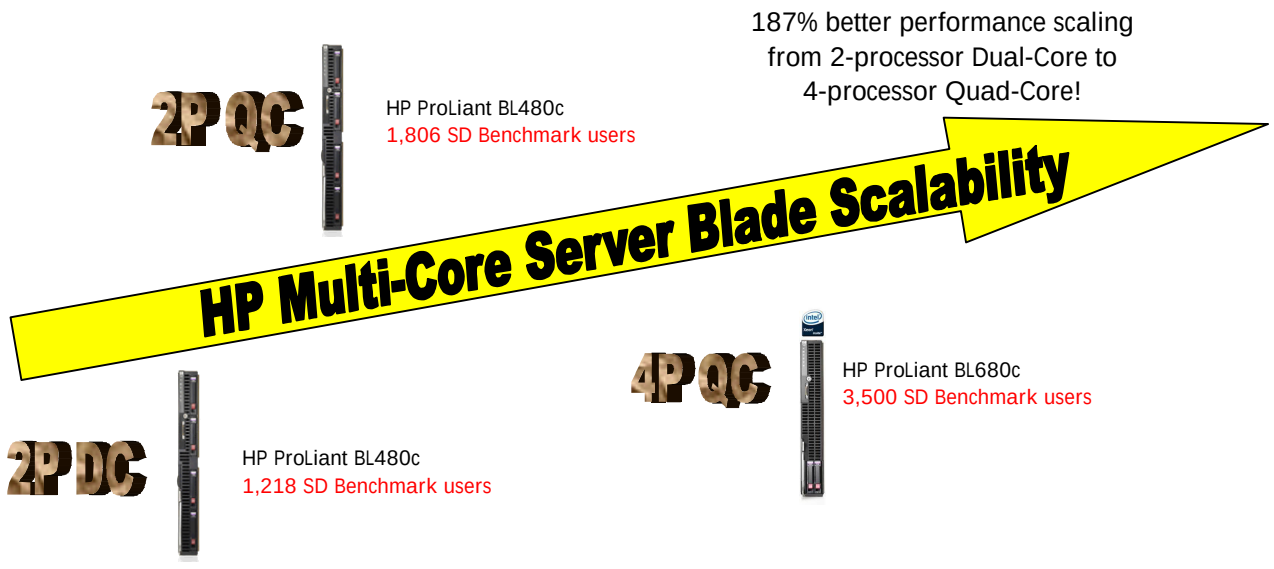
Key results at a glance:

- HP's first four-socket c-Class Intel Xeon® server blade performance result.
- ProLiant leadership with the #2 four-processor, Microsoft Windows performance result on the two-tier SAP® Sales and Distribution (SD) Standard Application Benchmark.[1]
- The ProLiant BL680c G5 also earned the #3 spot overall for four-processor performance on the two-tier SAP SD Standard Application Benchmark.[2]
- The performance results display excellent optimization and scalability of the newest HP BladeSystem four-processor server blade with Quad-Core Intel® Xeon E7340 series processors.

The all new HP ProLiant BL680c G5 Server Blade delivers no-compromise performance and expansion as the first Quad-Core 4P BladeSystem Server. The server blade showed an outstanding first performance on the two-tier SAP SD Standard Application Benchmark with a result of 3,500 SAP SD Benchmark users and 17,550 total SAPS, earning the #2 spot for four-processor, Microsoft Windows performance on the two-tier SAP SD Standard Application Benchmark. (Results as of 9-3-07. Details on following pages).

Performance scalability increases from Dual-Core to Quad-Core

Figure 1. HP ProLiant Server Blades demonstrate excellent performance scalability from two-processor, Dual-Core servers to four-processor, Quad-Core servers on the two-tier SAP SD Standard Application Benchmark. [3]



More information about all servers listed in order of mention can be found at the following Web page: http://www.sap.com/benchmark. Results as of 09/03/07. Configurations and detailed results on last page.

ProLiant BL680c G5 vs. four-processor blade competitors[4]

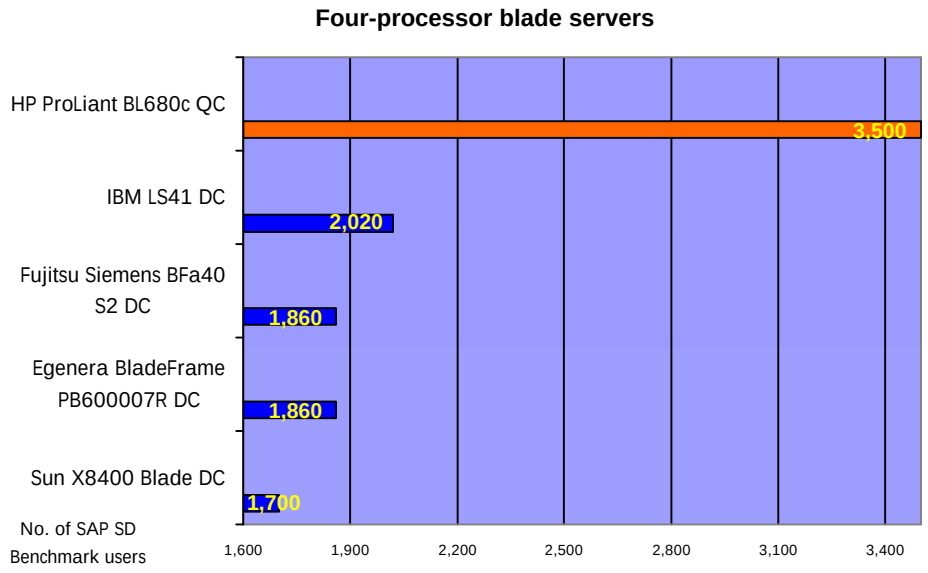


Figure 2. Comparison of performance results of the HP BL680c G5 Quad-Core four-processor server blade vs. Dual-Core, four-processor competitors on the two-tier SAP SD Standard Application Benchmark. (All results as of 9-3-07. Details in Appendix A).

ProLiant server configurations

Tests were performed on the ProLiant BL680c G5 server blades by HP's SAP Engineering lab in Houston, TX. HP received certification from SAP AG for the ProLiant BL680c G5 (#2007055) 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. The servers were configured with 4 x 2.4GHz Quad-Core Intel Xeon E7340 processors (4 processors/16 cores/16 threads), with 64 KB L1 cache per core and 4MB L2 cache per 2 cores and 64GB main memory.

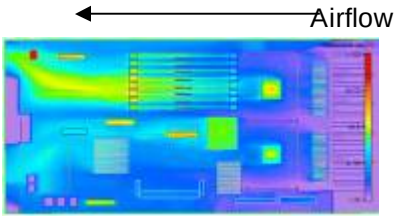
The ProLiant BL680c G5 server blades were also configured with an HP Smart Array 400i battery-backed write cache (BBWC) Smart Array Controller connected to 2 x 72GB, 15K SAS internal drives, a QLogic HBA, and an HP Modular Storage Array 1000 (MSA1000) with 14 x 72GB, 15K SCSI external drives.

The 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 E400i

The HP Smart Array P400i, the embedded version of the Smart Array P400, 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.

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 BL680c G5: www.hp.com/bladeservers

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

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

Appendix A

Four-processor Quad-Core comparison configurations

[1] vs. HP ProLiant DL580 G5 results on the two-tier SAP SD Standard Application Benchmark. The HP ProLiant DL580 G5 (Certification #2007056) was configured as a four-processor server (4 processors/16 cores/16 threads) with Quad-Core Intel Xeon X7350 2.93GHz processors with 2x4MB L2 cache, and 64GB main memory. The ProLiant DL580 G5 was running SAP ERP 6.0 with Microsoft Windows Server 2003 Enterprise Edition operating system and Microsoft SQL Server 2005 database and 3,705 SAP SD Benchmark users, equivalent to a throughput of 370,000 fully processed order line items per hour or 18,530 SAPS.

[2] vs. IBM System p570 results on the two-tier SAP SD Standard Application Benchmark. The IBM p570 (Certification #2007038) was configured as a four-processor server (4 processors/8 cores/16 threads) with POWER6 4.7GHz with 128KB L1 cache, 4MB L2 cache per core, 32MB L3 cache per processor, and 64GB 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 4,010 SAP SD Benchmark users, equivalent to a throughput of 402,330 fully processed order line items per hour and 20,120 SAPS. The IBM p570 was #1 for overall four-processor results, while the HP ProLiant DL580 G5 was #2.

HP Dual-Core and Quad-Core scalability comparison configurations

[3] HP ProLiant BL480c two-processor, Dual-Core results on the two-tier SAP SD Standard Application Benchmark. The ProLiant BL480c (Certification #2006038) 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 server was running the mySAP™ ERP 2004 (64-bit) application with Microsoft Windows Server 2003 Enterprise Edition x64 operating system and Microsoft SQL Server 2005 Enterprise Edition x64 database and achieved 1,218 SAP SD Benchmark users, equivalent to a throughput of 122,000 fully processed order line items per hour and 6,100 SAPS.

HP ProLiant BL480c two-processor, Quad-Core results on the two-tier SAP SD Standard Application Benchmark. The ProLiant BL480c (Certification #2006080) was configured with 2 x 2.66GHz Quad-Core Intel Xeon x5355 processors (2 processors/8 cores/8 threads), with 64KB L1 cache per core and 4MB L2 cache per 2 cores, and 32GB main memory. The server was running SAP ERP 6.0 with Microsoft Windows Server 2003 Enterprise Edition operating system and Microsoft SQL Server 2005 database and achieved 1,806 SAP SD Benchmark users, equivalent to a throughput of 181,000 fully processed order line items per hour and 9,050 SAPS.

Four-processor competitors' configurations

[4]vs. IBM AMD Opteron LS41 for BladeCenter results on the two-tier SAP SD Standard Application Benchmark. The IBM AMD Opteron LS41 for BladeCenter (Certification #2007018) was configured as a four-processor server (4 processors/8 cores/8 threads) with Dual-Core AMD Opteron Processor Model 8220SE 2.8GHz with128KB L1 cache, 1MB L2 cache per core, and 32GB main memory. The IBM LS41 was running SAP ERP 6.0 with Microsoft Windows Server 2003 Enterprise Edition operating system and IBM DB2 9 database and achieved 2,020 SAP SD Benchmark users, equivalent to a throughput of 202,330 fully processed order line items per hour and 10,120 SAPS.

vs. Fujitsu-Siemens Computers PRIMERGY Model BFa40 S2 results on the two-tier SAP SD Standard Application Benchmark. The Fujitsu Siemens Computers PRIMERGY Model BFa40 S2 (Certification #2007043) was configured as a four-processor server (4 processors/8 cores/8 threads) with Dual-Core AMD Opteron Processor Model 8220SE 2.8GHz with 128 KB L1 cache, 1 MB L2 cache per core, and 32GB main memory. The Fujitsu BFa40 S2 was running SAP ERP 6.0 with Microsoft Windows Server 2003 Enterprise Edition operating system and SQL Server 2005 database and achieved 1,860 SAP SD Benchmark users, equivalent to a throughput of 187,330 fully processed order line items per hour and 9,370 SAPS.

vs. Egenera BladeFrame Model PB600007R results on the two-tier SAP SD Standard Application Benchmark. The Egenera BladeFrame Model PB60007R (Certification #2007043) was configured as a four-processor server (4 processors/8 cores/8 threads) with Dual-Core AMD Opteron Processor Model 8220SE 2.8GHz with 128 KB L1 cache, 1MB L2 cache per core and 32GB main memory. The Egenera BladeFrame PB60007R was running SAP ERP 6.0 with Microsoft Windows Server 2003 Enterprise Edition operating system and SQL Server 2005 database and achieved 1,860 SAP SD Benchmark users, equivalent to a throughput of 187,330 fully processed order line items per hour and 9,370 SAPS.

vs. Sun Blade X8400 results on the two-tier SAP SD Standard Application Benchmark. The Sun Blade X8400 (Certification #2006059) was configured as a four-processor server (4 processors/8 cores/8 threads) with Dual-Core AMD Opteron Processor Model 885 2.6GHz with 128KB L1 cach, 1MB L2 cache per core, and 32GB main memory. The Sun Blade X8400 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 1,700 SAP SD Benchmark users, equivalent to a throughput of 170,330 fully processed order line items per hour and 8,520 SAPS.

All results as of 9-03-07