HP ProLiant ML370 G5 with quad-core processors achieves #1 2-socket performance on TPC-H @ 100GB benchmark

The flagship ML370 G5 provides industry-leading management, performance and availability in a dual processor expansion server engineered to excel in a variety of environments.

Key results at a glance:

- **Highest 2-socket and 2-processor outcome**
- **Beats the best 2-socket Dell result by 12% at 20% less price/QphH**
- **Beats the best 4-socket Dell result at 25% less price/QphH**

HP, a market leader for industry-standard servers, announced on April 23, 2007, a new result for the TPC-H @ 100 GB decision support benchmark that demonstrates the ultimate performance leadership of the HP ProLiant ML370 G5 in the 2-socket space. The ProLiant ML370 G5 server achieved top results for a 2-socket server on the TPC-H @ 100GB benchmark with 17,686.7 QphH @ $7.98/QphH USD. The server was running Microsoft® Windows® Server 2003 EE SP2 operating system and Microsoft SQL Server 2005 Enterprise Edition SP2 database.

HP ProLiant ML370 G5: Leading 2-socket Performance

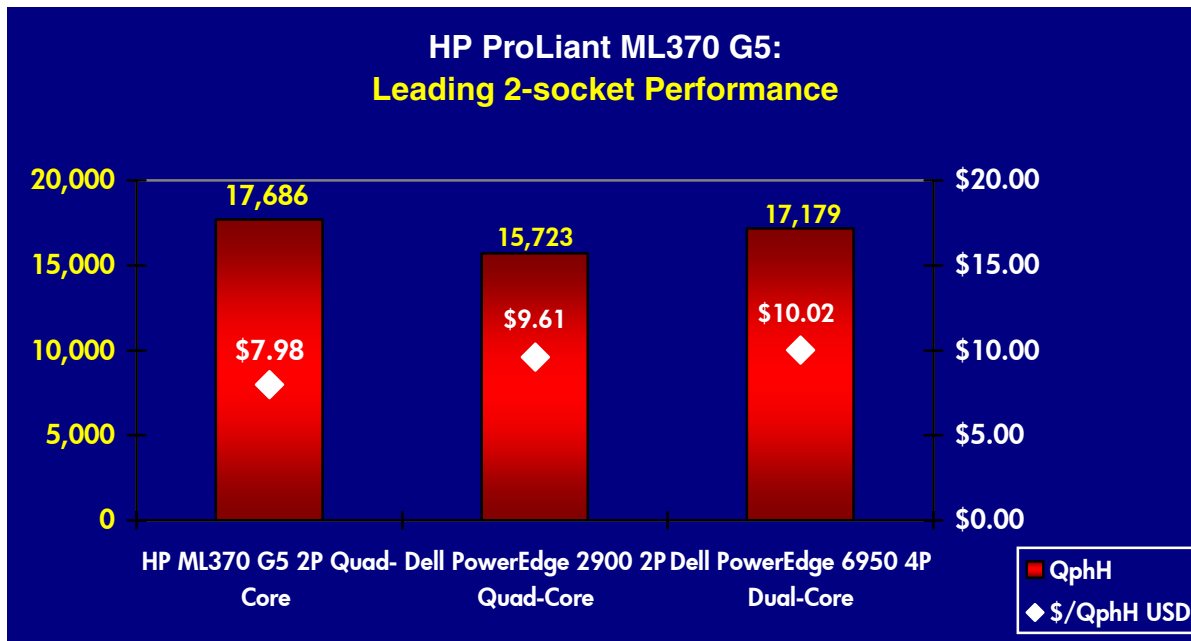|	QphH	$/QphH USD
HP ML370 G5 2P Quad-Core	17,686	$7.98
Dell PowerEdge 2900 2P Quad-Core	15,723	$9.61
Dell PowerEdge 6950 4P Dual-Core	17,179	$10.02

Figure 1. Comparison of performance results of the HP ProLiant ML370 G5 Quad-Core two-socket server vs. Dell 2-socket and 4-socket servers on the TPC-H @ 100 GB benchmark

ProLiant server configuration

The HP ProLiant ML370 G5 was configured with 2 Quad-Core 2.66GHz/1333MHz Intel® X5355 processors (2 processors/8 cores/8 threads), with 4MB L2 cache and 64GB main memory. The servers used 1 x 36GB 15K-rpm HP Small Form Factor SAS internal disk drive for OS. The server was configured with an internal Smart Array P400 controller operating 3 internal 36GB 15K-rpm SFF SAS drives, and was connected to 6 x Smart Array P800 controllers operating a total of 150 x 36GB 15K-rpm SFF SAS drives (external) in 6 HP StorageWorks 70 Modular Smart Array enclosures.

ProLiant ML370 G5 bests 2-socket AND 4-socket Dell server results in 100-GB benchmark

Table 1. Results of HP ML370 G5, Dell PowerEdge 2900, and Dell PowerEdge 6950 on TPC-H @ 100 GB Benchmark

System	QphH	Price/QphH	System Availability	Database	OS
HP ProLiant ML370 G5	17,686	$7.98 USD	04/23/07	Microsoft SQL Server 2005 Enterprise x64 Edition SP2	Microsoft Windows Server 2003 Enterprise x64 Edition SP2
Dell PowerEdge 2900	15,723	$9.61 USD	12/31/06	Microsoft SQL Server 2005 x64 Enterprise Edt. SP1	Microsoft Windows Server 2003 Enterprise x64 Edition SP1
Dell PowerEdge 6950	17,179	$10.02 USD	12/04/06	Microsoft SQL Server 2005 Enterprise x64 Edition	Microsoft Windows Server 2003 Enterprise x64 Edition

Interpreting the results

The ProLiant ML370 G5 accomplished the following superior performance deltas:

• Bested the 2-socket Dell PowerEdge 2900 tower server configured with Quad-Core X5355 Intel 2.66GHz processors, achieving **12% more performance at 20% less price/QphH!**

• Bested the 4-socket Dell PowerEdge 6950 rack server configured with 8220SE DC 2.8GHz (Model 246) processors, achieving **more performance at 25% less price/QphH!**

• **The ML370 G5 result is the #2 overall performance result on the TPC-H @ 100 GB benchmark.**

• **The #1 overall performance result is held by the 4-socket HP ProLiant DL585 G2 server, which achieved 19,323 QphH @ $10.67/QphH USD, running Microsoft SQL Server 2005 Enterprise x64 Edition SP1 database and Microsoft Windows Server 2003 Enterprise x64 Edition SP1 operating system, with a system availability date of 01/16/07.**

Why HP wins in performance

The latest ML370 G5 server

The ML370 G5 utilizes the newest technologies for blazing performance - the best performing Intel Xeon processors with a 1333-MHz front side bus, up to 64GB of PC2-5300 Fully Buffered DIMMs (DDR2-667) with 4:1 interleaving memory, six PCI-Express I/O slots, two PCI-X slots and a Smart Array controller. Tool-free internal serviceability speeds component exchanges. Snap-on quick deploy slide rails included with rack models and tower-to-rack conversion kits enable rapid installs to save valuable time. ProLiant ML370 G5 provides versatility and room for expansion to satisfy a full spectrum of solutions. Intel processors with Extended Memory 64 Technology (EM64T) enable users to migrate from 32-bit to 64-bit operating environments to increase application performance. A mixture of PCI-X and PCI-Express I/O slots allows users to choose the expansion card technology that best fits their application. Up to (16) hot-plug Serial-attached SFF SCSI (SAS) drives are supported.

HP Smart Array Controller P800
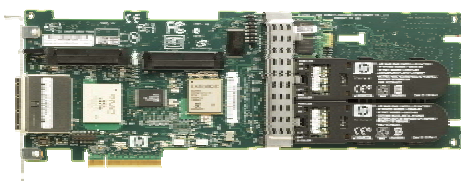
The HP Smart Array P800 is a 16 port, PCIe SAS controller. It ships standard with 512MB cache, dual batteries and RAID 6 (ADG) support. This controller supports up to 108 hard drives and is the highest performing controller in the Smart Array portfolio.

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 los cost, flexible tiered storage system with up to 14.4 TB capacity supporting SAS or SATA. This enclosure is designed to support the 2.5" Universal form factor hard drive in either SAS or SATA. Configuration and setup is easy with HP Array Configuration Utility (ACU). The 2U storage supports direct attach storage to HP ProLiant and HP Integrity Servers. Enclosures can be cascaded in a 1+1 configuration allowing a maximum of 50 drives in a 4U configuration behind each port on the Smart Array P800 or the Smart Array E500 controllers for a total of 100 drives.

HP SFF SAS drives

The transition to SFF SAS drives is the most significant transition 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.

For more information

HP ProLiant ML370: www.hp.com/servers/proliantml370   HP ProLiant storage solutions: www.hp.com/go/serial

TPC: Results valid as of April 23, 2007. Complete results can be found at http://www.tpc.org.

A full disclosure report describing these benchmark results has been filed with the Transaction Processing Performance Council (TPC) and is available upon request. The full disclosure report describes the benchmark hardware and software configuration in detail, provides costs, and lists the code actually used to perform the test. Similar reports from other vendors are the source of the price/performance comparisons provided above. Summaries of all tests are published each month by the TPC. Summaries are also posted on the Internet on the TPC's World Wide Web Server. With these benchmarks, customers can objectively compare the performance of different vendors' servers in specific areas.