HP bests competitors with #1 x86 8-core SPEC CPU2006 benchmark results

New ProLiant DL980 G7 with x86 8-core processors displays highest performance

Executive summary
The HP ProLiant DL980 G7 achieved the following #1 overall 8-processor result for x86 servers on the SPEC CPU2006 benchmark. This result showed increased performance when compared to similarly configured 8-processor x86 competitors.

Key Take Aways:
- #1 8-socket x86_64 SPECint_rate2006 result of 1,470
- #1 8-socket x86_64 SPECfp_rate2006 result of 1,040
- Proof point of increased performance and durability for demanding scale-out applications in a real-world workload environment
- Beats Oracle Sun Fire and Fujitsu PRIMEQUEST with up to 15% greater performance

What this means for customers
Business transformation: Because HP is the only company to offer a full portfolio of standards-based, integrated solutions, and services developed specifically to solve the complexities of the data center, HP is uniquely positioned to build the Converged Infrastructure. HP is also the only company that can deliver a single common, modular architecture across the data center from x86 to Superdome. This means that companies can use the same architecture to run and manage multiple workloads across servers, storage, and networking. This significantly reduces complexity, resource requirements, and costs.

The SPEC CPU2006 benchmark is a comparative measure of compute-intensive performance across the widest practical range of hardware using workloads developed from real user applications. Businesses can adjust to real user workload demands with the benchmark, ProLiant DL980 G7 servers, and HP-pioneered converged infrastructure.

Figure 1: The ProLiant DL980 G7 8-core server holds highest 8P x86_64 SPEC CPU2006 performance.

<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
<th>SPECfp_rate2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP ProLiant DL980 G7 X7560</td>
<td>1,470</td>
</tr>
<tr>
<td>Oracle Sun Fire X4880 X7560</td>
<td>1,378</td>
</tr>
<tr>
<td>Fujitsu PRIMEQUEST 1800E Xeon X7560</td>
<td>1,339</td>
</tr>
</tbody>
</table>

Graph: HP ProLiant DL980 G7 8-core server holds highest 8P x86_64 SPEC CPU2006 performance
The new ProLiant DL980 G7 eight-socket advantage

ProLiant’s newest scale-up x86 workhorse, the HP ProLiant DL980 server with the HP PREMA Architecture, delivers balanced scaling, self-healing resiliency, and breakthrough efficiency. The HP ProLiant DL980 G7 is optimized for the most demanding, data intensive x86 workloads and offers more than twice the performance and a 200% boost in availability, allowing customers to scale up with confidence.

HP PREMA Architecture enhances reliability, scalability, and performance for our 8-socket server, extending the Intel Xeon Processor 7500 and 6500 Series processors to deliver the following key features in the HP ProLiant DL980 G7:

- **Smart CPU Caching**
  ✓ Performance improvements are enabled through an HP node controller which minimizes the inter-processor traffic and enables rapid access to local memory without requiring coordination across all the processors.

- **Redundant System Fabric**
  ✓ Reduces communication errors on overloaded systems.

**Benchmark Configurations**

In order to achieve the world-record performance results of 1,470 SPECint_rate2006 and 1,040 SPECfp_rate2006, the HP ProLiant DL980 G7 was configured with 8 x 2.26GHz 8-core Intel Xeon X7560 processors (64 cores/8 chips/8 cores per chip) and 256GB (128 dual-rank 2GB DIMMS). The system ran on the Red Hat Enterprise Linux 5.5 operating system. The server also ran with an internal Smart Array P410i with 512MB Flash-Backed Write Cache (FBWC) and 4 x 15K RPM 73GB dual-port SAS drives.

**Interpreting the results**

The 8-processor configuration of the HP ProLiant DL980 G7 (64-cores) provides the following superior performance deltas on the SPEC CPU2006 benchmark: For SPECint_rate2006 and SPECfp_rate2006, respectively, the ProLiant DL980 G7 earned:

- 6.6% and 11% better performance than the Oracle Sun Fire X4800 (8-core) ²
- 9.7% and 15% better performance than the Fujitsu PRIMEQUEST 1800E (8-core) ²

**HP ProLiant DL980 G7 with 8-core processors has up to 15% faster performance than its competitors**

<table>
<thead>
<tr>
<th></th>
<th>SPECint_rate2006</th>
<th>SPECfp_rate2006</th>
<th>Cores, chips, cores/chip</th>
<th>Processor</th>
<th>RAM</th>
<th>OS</th>
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<tbody>
<tr>
<td>HP ProLiant DL980 G7 ⁴</td>
<td>1,470</td>
<td>1,040</td>
<td>64/8/8</td>
<td>Intel Xeon X7560 2.26GHz</td>
<td>256GB</td>
<td>Red Hat Enterprise Linux Server 5.5</td>
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<tr>
<td>Oracle Sun Fire X4800</td>
<td>1,378</td>
<td>936</td>
<td>64/8/8</td>
<td>Intel Xeon X7560 2.26GHz</td>
<td>256GB</td>
<td>Oracle Solaris 10 10/09</td>
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<tr>
<td>Fujitsu PRIMEQUEST 1800E</td>
<td>1,339</td>
<td>904</td>
<td>64/8/8</td>
<td>Intel Xeon X7560 2.26GHz</td>
<td>256GB on SPECint_rate2006 512GB on SPECfp_rate 2006</td>
<td>Red Hat Enterprise Linux Server 5.4</td>
</tr>
</tbody>
</table>

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¹ based on HP internal testing comparing the DL980 G7 to the DL785 G5 with similar configurations
² When compared to 8-processor x86_64 competitors
³ All Intel processors were configured with 2 threads per core (Hyper Threaded)
⁴ Results as of August 15, 2010
Bottom Line

The ProLiant Advantage. HP ProLiant extends thought-leading innovation that can give customers’ businesses a technology edge with the new x86 scale-up ProLiant DL980 G7. With our continuous advancements in the science of server computing, combined with new Intel Xeon technology, HP can help you gain an IT advantage over your competitive rivals.

About SPEC CPU2006

CPU2006 is SPEC’s next-generation, industry-standardized, CPU-intensive benchmark suite, stressing a system’s processor, memory subsystem, and compiler. SPEC designed CPU2006 to provide a comparative measure of compute-intensive performance across the widest practical range of hardware using workloads developed from real user applications. These benchmarks are provided as source code and require the user to be comfortable using compiler commands as well as other commands via a command interpreter using a console or command prompt window in order to generate executable binaries. The current version of the benchmark suite is V1.1, released in June 2008.


For more information check out:

HP ProLiant DL980 G7: www.hp.com/servers/dl980
SPEC CPU2006 details: http://www.spec.org/cpu2006/