New HP 8-socket ProLiant DL980 G7 server earns exceptional performance and price performance results on TPC-H @ 3TB benchmark, defeating IBM p595

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Executive summary
HP achieved outstanding non-clustered (single-system) TPC-H @ 3TB results on the new DL980 G7, ProLiant’s newest scale-up x86 workhorse. Designed for superior performance, improved server efficiency, and utilization, the server attained results of 162,601.7QphH@3000GB and the #1 price performance for non-clustered systems at $2.68 USD/QphH@3000GB on the TPC-H benchmark which measures performance for complex data warehouse transactions for business intelligence solutions. This result showed that the ProLiant DL980 server delivers better performance and much better price performance in 1/5th the rack space compared to the IBM POWER6-based POWER 595.

Key Take Aways:
- A powerful and scalable server with eight-core Intel processors and new ProLiant Generation 7 technology, the HP ProLiant DL980 G7 beat the IBM Power 595 POWER6 competitive system in performance and price performance in the TPC-H @ 3TB performance category
- The ProLiant DL980 G7 captured the world record for single system price/performance overall in the TPC-H @ 3TB category
- HP delivers the most comprehensive portfolio of scale-up servers combining mission critical and x86 expertise and technologies from an industry leader in both

HP provides the most comprehensive portfolio of Scale-Up ProLiant servers optimized for the most demanding, data intensive x86 workloads and provides a foundation for a converged infrastructure.

The ProLiant DL980 G7 beats the much larger IBM POWER 595 on the 3TB TPC-H as follows:

Figure 1. Best single system TPC-H @3000GB for each platform

<table>
<thead>
<tr>
<th>Performance – Larger is better</th>
<th>Price Performance – Smaller is better</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP ProLiant DL980 G7</td>
<td>QphH@3000 GB</td>
</tr>
<tr>
<td>8 - Intel Xeon x7560</td>
<td>$/QphH@3000 GB</td>
</tr>
<tr>
<td>IBM p5 595</td>
<td>32 - POWER6</td>
</tr>
<tr>
<td>-</td>
<td>$5.00</td>
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<tr>
<td>50,000</td>
<td>$10.00</td>
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<tr>
<td>100,000</td>
<td>$15.00</td>
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<tr>
<td>150,000</td>
<td>$20.00</td>
</tr>
<tr>
<td>#1 HP</td>
<td>~1/8 price per query</td>
</tr>
<tr>
<td>IBM</td>
<td></td>
</tr>
</tbody>
</table>

#1 refers to the best single system TPC-H@3000GB price performance. Results as of 06/21/10; see: www.tpc.org. TPC-H is a trademark of the Transaction Processing Performance Council. See Table 1 for benchmark details.
HP ProLiant DL980 G7 defeated the IBM POWER6-based POWER 595 by:

- Delivering more performance with ¼ the number of sockets (HP DL 980 - 8 vs. IBM POWER 595 - 32)
- Delivering a much better price performance (~1/8 the price per query)
- Utilizing just 1/5th of the rack space (HP DL980 8U vs. IBM POWER 595 42U)

**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 on the HP key scale-up x86 server value proposition of balanced scaling; self-healing resiliency, and breakthrough efficiency.

It is optimized for the most demanding, data intensive x86 workloads and offers more than twice the performance and a 200% boost in availability ¹ allowing customers to scale up with confidence.

**HP PREMA Architecture** boosts reliability, scalability, and performance for 8-socket systems by leveraging our mission critical computing expertise. It extends the Intel 7500 series processors to deliver the following key features in the HP ProLiant DL980 G7:

- **Smart CPU Caching**
  - Performance improvements are enabled through a node controller, an HP unique hardware, 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.

Other major ProLiant DL980 G7 advantages include:

- Maximized application uptime with a 200% boost in server availability with self-healing resiliency ¹
- Reduced data center footprint and cost with a consolidation ratio of at least 91:1 made possible through performance gains achieved by balanced scaling
- Payback in as little as 30 days with breakthrough efficiencies

The DL980 G7 is ideal for enterprise class database, consolidation, and virtualization environments that need outstanding performance, resiliency, scalability, and efficiency provided by all the familiar industry-leading ProLiant tools.

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**Benchmark configuration**

With its latest TPC-H benchmark, announced in June 2010, the HP ProLiant DL980 G7 Server with eight-core Intel® Xeon® 7560 processors demonstrates a superior level of performance, functionality, and value. The result, 162,601.7 QphH @ 3000GB, at the #1 price performance of $2.68 USD/QphH@3000GB, is the #1 single system x86 result on the QphH @ 3TB benchmark across all operating systems and database environments. The server also was configured with 10 x LSI 9200-8E Controllers connected to 20 x D2700 with 25 x 72GB 15K rpm spindles (Database), 3 x P4111 Controllers connected to 6 x D2700 with 24 x 72GB 15K rpm spindles (Backup), 1 x Emulex LightPulse Dual Channel FC card connected to 1 x MSA2324fc (Log), and 1 x P4111i for OS on 2 x 146GB spindles. The server configuration ran with Microsoft Windows 2008 R2 Enterprise Edition operating system and Microsoft SQL Server 2008 R2 Enterprise Edition database.

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¹ based on HP internal testing comparing the DL980 G7 to the DL785 G5 with similar configurations
Table 1. The HP ProLiant DL980 G7 and competitor configurations and results on QphH database category

<table>
<thead>
<tr>
<th>Platform, Processor (chips/cores/threads), Memory</th>
<th>Availability</th>
<th>OS and Database</th>
<th>QphH@3TB</th>
<th>USD $/QphH</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP ProLiant DL980 G7, 8 processors, 8 cores; Intel Xeon X7560 2.27GHz, (8/64/128), 512GB RAM</td>
<td>10/13/2010</td>
<td>Microsoft Windows Server 2008 R2 Data center x64, SQL Server 2008 Ent. Edition x64</td>
<td>162,601.7 QphH @ 3000GB</td>
<td>$2.68 USD/QphH @ 3000GB</td>
</tr>
<tr>
<td>IBM POWER 595 @ 5GHz, 32 processors, POWER6 – 5GHz (32/64/128) 512GB RAM</td>
<td>11/24/09</td>
<td>AIX V6.1, Sybase IQ Single Application Server Edition v.15.1 ESD #1,2</td>
<td>156,537 QphH @ 3000GB</td>
<td>$20.60 USD/QphH @ 3000GB</td>
</tr>
</tbody>
</table>

ProLiant G7 server management advantages

Breakthrough efficiency. Customers can achieve ROI of two months with HP-only innovations such as Thermal Logic which includes power capping, iLO3 remote management, and Insight Control.

Only HP ProLiant servers give customers the freedom to unlock their full potential with the help of HP Insight Control. ProLiant G7 servers introduce next-generation Insight Control remote management functionality, powered by iLO. The 3rd generation of iLO brings new levels of remote server management performance, user experience, and standards support to ProLiant customers. HP Insight Control enables customers to deploy and migrate ProLiant servers quickly and reliably, proactively manage ProLiant server health – be it physical or virtual, control ProLiant servers from anywhere, and optimize power confidently. The net result is the ability to get work done faster whether your server is across the hall or across the globe. Users can take advantage of these next-generation remote management features by purchasing HP Insight Control or a ProLiant G7 Performance Model.

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. 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.

For more information, check out: