HP ProLiant ML350 G6 holds world record for overall price/performance on TPC-C benchmark

Less cost than Dell and IBM competitors

August 2010

Executive summary
The HP ProLiant ML350 G6, the DP Tower server that delivers excellence with performance, expandability, and availability has earned another price/performance world record. With 290,040 tpmC @ $.39USD/tpmC, the HP ProLiant ML350 G6 holds the leading price/performance result, thus earning TWO spots on the overall TOP TEN for price/performance on the TPC-C benchmark.

Key Take Aways:
- #1 overall TPC-C price/performance record across all operating systems and database environments
- HP dominates with SIX of the top TEN for overall price/performance
- Over 46% less cost compared to its previous Quad-Core, Generation 5 result
- Up to 43% less cost than the IBM Power 780 Model 9179-MHB and the Dell PowerEdge T710

HP uses less energy
Utilizing the new TPC-Energy parameters, the HP ProLiant ML350 G6 achieved an impressive energy/performance result of 4.22Watts/KtpmC on the TPC-C benchmark. Neither IBM nor Dell has published TPC-Energy results.

Figure 1. Best overall price/performance results for each vendor.

This benchmark result proves the ProLiant ML350 server’s scaling and reliability combined with features in the latest Intel processor technology make it a repeated winning choice for customers with growing businesses and mid-market and entry enterprise.

Results as of 08/16/10; see: www.tpc.org. Price/performance improvement as compared to IBM Power 780 Model 9179-MHB and Dell PowerEdge T710 results. #1 claim refers to the top overall price/performance result on TPC-C benchmark.
Business transformation with HP Converged Infrastructure and ProLiant servers: HP is uniquely positioned to build the Converged Infrastructure 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 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.

Price/performance scalability shows lesser cost with 6-core processors
In addition to achieving leading price/performance results on the TPC-C benchmark, the ProLiant ML350 G6 server showed excellent 6-core price/performance scalability when compared to its previous server results:

- Over 27% less cost compared to its previous Quad-Core, Generation 6 result
- Over 46% less cost compared to its previous Quad-Core, Generation 5 result

Figure 2: Scaled price/performance derived from comparing HP ProLiant ML350 G6 6-core processor to HP ProLiant ML350 G6 Quad-core processor and HP ProLiant ML350 G5 Quad-core processor.

Benchmark Configurations
The HP ProLiant ML350 G6 was set up as a system with one Intel Xeon X5650 processor configured as 2.67GHz 6-Core (1 processors/6 cores/12 threads), with 12MB L2 cache, and 96GB main memory (6x16GB) DDR3 DIMMs. The server ran with two MSA70 controllers, one MSA2324FC controller, one HP P410i integrated FBWC disk controller, three HP P410 FBWC disk controllers, and two HP P411 FBWC disk controllers. The server also held 24 x 120GB SSDs, 24 x 500GB 7.2k rpm SFF SAS drives, and 1 x 72GB 10k rpm SFF SAS drive. The server was running Oracle Enterprise Linux operating system and Oracle Database 11g Release 2 Standard Edition One database. Total storage was 13,928.3GB. System availability date is 08/16/10.
HP takes SIX of the OVERALL TOP TEN results for price/performance.

Table 1. HP ProLiant servers dominate overall price/performance results for the TPC-C benchmark.

<table>
<thead>
<tr>
<th>Sponsor</th>
<th>System</th>
<th>tpmC</th>
<th>$Price/tpmC</th>
<th>System Availability</th>
<th>Database</th>
<th>Date Submitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP</td>
<td>HP ProLiant ML350 G6</td>
<td>290,040</td>
<td>$0.39 USD</td>
<td>9/1/2010</td>
<td>Oracle Database</td>
<td>08/16/2010</td>
</tr>
<tr>
<td>DELL</td>
<td>Dell PowerEdge T710</td>
<td>239,392</td>
<td>$0.50 USD</td>
<td>11/18/2009</td>
<td>Oracle Database</td>
<td>11/18/2009</td>
</tr>
<tr>
<td>HP</td>
<td>HP ProLiant ML350 G6</td>
<td>232,002</td>
<td>$0.54 USD</td>
<td>05/21/2009</td>
<td>Oracle Database</td>
<td>05/21/2009</td>
</tr>
<tr>
<td>HP</td>
<td>HP ProLiant DL385 G7</td>
<td>705,652</td>
<td>$0.60 USD</td>
<td>09/01/2010</td>
<td>Microsoft SQL Server 2005 Enterprise x64 Edition SP3</td>
<td>04/08/2010</td>
</tr>
<tr>
<td>DELL</td>
<td>Dell PowerEdge 2900</td>
<td>104,492</td>
<td>$0.60 USD</td>
<td>02/20/2009</td>
<td>Oracle Database</td>
<td>02/20/2009</td>
</tr>
<tr>
<td>DELL</td>
<td>Dell PowerEdge 2900</td>
<td>97,083</td>
<td>$0.68 USD</td>
<td>06/16/2008</td>
<td>Oracle Database</td>
<td>06/16/2008</td>
</tr>
<tr>
<td>HP</td>
<td>HP ProLiant DL380 G7</td>
<td>803,068</td>
<td>$0.68 USD</td>
<td>09/01/2010</td>
<td>Microsoft SQL Server 2005 Enterprise x64 Edition SP3</td>
<td>05/11/2010</td>
</tr>
<tr>
<td>HP</td>
<td>HP ProLiant DL585 G7</td>
<td>1,193,472</td>
<td>$0.68 USD</td>
<td>09/01/2010</td>
<td>MS SQL Server 2005 Ent. Itanium Ed.</td>
<td>06/21/2010</td>
</tr>
<tr>
<td>IBM</td>
<td>IBM Power 780 Model 9179-MHB</td>
<td>1,200,011</td>
<td>$0.69 USD</td>
<td>10/13/2010</td>
<td>IBM DB2 9.5</td>
<td>04/13/2010</td>
</tr>
<tr>
<td>HP</td>
<td>HP ProLiant ML350 G5</td>
<td>102,454</td>
<td>$0.73 USD</td>
<td>12/31/2007</td>
<td>Oracle Database</td>
<td>09/12/2007</td>
</tr>
</tbody>
</table>

http://www.tpc.org/tpcc/results/tpcc_price_perf_results.asp  As of 8-16-2010

Bottom Line

This latest result is one of many historical world record results that have been achieved by ProLiant servers on the TPC-C benchmark. HP posts a very large number of results on the TPC-C benchmark, regularly updating benchmark standings on top-selling rack, tower, and blade servers. This latest result shows the HP commitment to providing information that customers need for sizing decisions.

About the TPC-C benchmark

The TPC-C benchmark simulates an Online Transaction Processing (OLTP) database environment. The performance of a system is measured when the system is tasked with processing numerous short business transactions concurrently. The TPC-C workload simulates a tiered environment wherein users interact with web pages to enter business transactions. Transactions are entered by simulated users, business logic and queueing of the transactions are handled by a middle tier server, and then the transactions are passed to the TPC-C database server for processing. For more details, see http://ftp.hp.com/pub/c-products/servers/benchmarks/HP_ProLiant_tpcc_Overview.pdf.
About the TPC-Energy benchmark

TPC-Energy is a new TPC specification which augments the existing TPC Benchmarks with Energy Metrics developed by the TPC. The Energy Specification is a continuation of ongoing efforts to meet the needs of a rapidly changing industry. Customers will be able to go to the TPC Web site to identify systems that meet their price, performance, and energy requirements. Systems that use less energy also have reduced cooling requirements. The reporting of energy metrics are optional to not restrict TPC benchmark publications and allow time for implementers to invest in required infrastructure. Competitive demands will encourage test sponsors to include energy metrics as soon as possible.

TPC Disclosure

A full disclosure report describing these benchmark results has been filed with the Transaction Processing Performance Council (TPC) and is available upon request. This report describes the benchmark HW and SW 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 and 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. Results as of 8-16-10.

For more information check out:

HP ProLiant ML350 G6: hp.com/servers/proliant/ml350g6
TPC-C details: http://www.tpc.org