**Hewlett Packard Enterprise**

**ProLiant DL for Big Data**

<table>
<thead>
<tr>
<th>Total System Cost</th>
<th>TPCx-BB Performance Metric</th>
<th>Price/Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>719,290 USD</strong></td>
<td><strong>830.67 BBQpm@10000</strong></td>
<td><strong>865.92 USD</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Framework</th>
<th>Operating System</th>
<th>Other Software</th>
<th>Availability Date</th>
<th>Scale Factor</th>
<th>Streams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloudera for Apache Hadoop (CDH) 5.8.0</td>
<td>Red Hat Enterprise Linux Server 7.2</td>
<td>OpenJDK 1.8.0_65</td>
<td>July 9, 2017</td>
<td>10000</td>
<td>2</td>
</tr>
</tbody>
</table>

**System Configuration**

- **Physical Storage/Scale Factor:** 32.03
- **Scale Factor/Physical Memory:** 1.86

**Servers:**
- 18x HPE ProLiant DL380 Gen9
- 3x HPE ProLiant DL360 Gen9

**Total Processors/Cores/Threads:** 42/636/1,272

**Server Configuration:**
- **Processors:**
- **Memory:**
- **Storage Controller:**
- **Storage Device:**
- **Network:**

**Per HPE ProLiant DL380 Gen9:**
- 2x Intel Xeon E5-2697A v4 @ 2.60GHz
- 256GB
- HPE Smart Array P840/4G
- 1x HPE 480GB 6G SATA SSD
- 1x HPE 1.2TB 6G SATA SSD
- 16x HPE 1TB 6G SATA 7.2K HDD
- HPE Ethernet 10G 2P Adapter

**Per HPE ProLiant DL360 Gen9:**
- 2x Intel Xeon E5-2640 @ 2.40GHz
- 256GB
- HPE Smart Array P440ar Controller
- 1x HPE 480GB 6G SATA SSD (1 node)
- 1x HPE 800GB 6G SATA SSD (2 nodes)
- HPE Ethernet 10G 2P Adapter

**Connectivity:**
- HPE 1620-24G Switch (ILO connection)
- HPE 5900AF-48XG-4QSFP+ Switch (main connection)
## Hewlett Packard Enterprise
### ProLiant DL for Big Data

**TPCx-BB Rev.** v1.2.0  
**TPC-Pricing Rev.** v2.1.1  
**Report Date:**  
July 9, 2017

### Description | Price Key | Part Number | Unit Price | Qty | Extended Price | 3 Yr Maint Price
---|---|---|---|---|---|---
**Server Hardware**
HPE DL360 Gen9 8SFF CTO Server | 1 | 755258-B21 | $1,797 | 3 | $5,391 |
HPE DL360 Gen9 E5-2640v4 Kit | 1 | 842978-B21 | $1,359 | 3 | $4,077 |
HPE DL360 Gen9 E5-2640v4 FIO Kit | 1 | 842978-L21 | $1,359 | 3 | $4,077 |
HPE 32GB 2Rx4 PC4-2400T-R Kit | 1 | 805351-B21 | $1,059 | 24 | $25,416 |
HPE H240ar 12Gb 2-ports Int FIO Smart Host Bus Adapter | 1 | 749976-B21 | $249 | 3 | $747 |
HPE 500W FS Plat Ht Plg Pwr Supply Kit | 1 | 720478-B21 | $309 | 6 | $1,854 |
HPE 480GB 6G SATA RI-2 SFF SC SSD | 1 | 804593-B21 | $609 | 1 | $609 |
HPE 800GB 6G SATA MU-2 SFF SC SSD | 1 | 804671-B21 | $1,389 | 2 | $2,778 |
HPE Ethernet 10Gb 2P 560FLR-SFP+ Adptr | 1 | 665243-B21 | $679 | 3 | $2,037 |
HPE 3Y FC 24x7 DL360 Gen9 SVC | 1 | U7A9E | $1,404 | 3 | $4,212 |
HPE iLO Adv incl 3yr TS U E-LTU | 1 | E6U64ABE | $469 | 3 | $1,407 |
HP W1972a 18.5-In LED Monitor (1 + 2 spare) | 1 | B7M13A8#ABA | $80 | 3 | $240 |
HP PS/2 Keyboard And Mouse Bundle (1 + 2 spare) | 1 | B1T13AA#ABA | $28 | 3 | $84 |
**Subtotal** |  |  |  |  | **$47,310** | **$5,619**

HPE DL380 Gen9 24SFF CTO Server | 1 | 767032-B21 | $2,107 | 18 | $37,926 |
HPE DL380 Gen9 High Perf Fan Kit | 1 | 719079-B21 | $239 | 18 | $4,302 |
HPE DL380 Gen9 2SFF Bay Kit | 1 | 724864-B21 | $179 | 18 | $3,222 |
HPE DL380 Gen9 Secondary Riser | 1 | 719073-B21 | $99 | 18 | $1,782 |
HPE XL2x0 Gen9 E5-2697Av4 Kit | 1 | 841179-B21 | $4,359 | 18 | $78,462 |
HPE XL2x0 Gen9 E5-2697Av4 FIO Kit | 1 | 841179-L21 | $4,359 | 18 | $78,462 |
HPE 32GB 2Rx4 PC4-2400T-R Kit | 1 | 805351-B21 | $1,059 | 144 | $152,496 |
HPE 1TB 6G SATA 7.2k 2.5in SC MDL HDD | 1 | 655710-B21 | $499 | 288 | $143,712 |
HPE 480GB 6G SATA RI-2 SFF SC SSD | 1 | 804593-B21 | $609 | 18 | $10,962 |
HPE 1.2TB 6G SATA WI-2 SFF SC SSD | 1 | 804677-B21 | $2,365 | 18 | $42,570 |
HPE Smart Array P840/4G Controller | 1 | 726897-B21 | $1,249 | 18 | $22,482 |
HPE 12Gb DL380 Gen9 SAS Expander Card | 1 | 727250-B21 | $699 | 18 | $12,582 |
HPE 800W FS Ti Ht Plg Pwr Supply Kit | 1 | 720482-B21 | $409 | 36 | $14,724 |
HPE Ethernet 10Gb 2P 560FLR-SFP+ Adptr | 1 | 665243-B21 | $679 | 18 | $12,222 |
HPE 3Y FC 24x7 DL380 Gen9 SVC | 1 | U7A9E | $1,872 | 18 | $33,696 |
HPE iLO Adv incl 3yr TS U E-LTU | 1 | E6U64ABE | $469 | 18 | $8,442 |
**Subtotal** |  |  |  |  | **$615,906** | **$42,138**
### Network

<table>
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<tr>
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<th>Price Key</th>
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<th>Unit Price</th>
<th>Qty</th>
<th>Extended Price</th>
<th>3 Yr Maint Price</th>
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</thead>
<tbody>
<tr>
<td>HPE 1620-24G Switch</td>
<td>1</td>
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<td>1</td>
<td>$299</td>
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<td>HPE 5900AF-48XG-4QSFP+ Switch</td>
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<td>JC772A</td>
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<td>1</td>
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<tr>
<td>HPE 1m Multi-mode OM3 LC/LC FC Cable</td>
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<td>AJ834A</td>
<td>$70</td>
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<tr>
<td>CAT6 UTP 1G Ethernet Network Cable 7ft (42 cables)</td>
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<td>C6-UTP SMPV CYL-2M</td>
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<td>HPE A58x0AF 650W AC Power Supply</td>
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<td>HPE 58x0AF Bck(pwr)-Fr(t) Fan Tray</td>
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### Rack

<table>
<thead>
<tr>
<th>Description</th>
<th>Price Key</th>
<th>Part Number</th>
<th>Unit Price</th>
<th>Qty</th>
<th>Extended Price</th>
<th>3 Yr Maint Price</th>
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<tbody>
<tr>
<td>HPE 42U 600x1075mm Adv G2 Kit Plt Rack</td>
<td>1</td>
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<td>HPE 24A High Voltage Core Only Corded PDU</td>
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### Server Software

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<th>Description</th>
<th>Price Key</th>
<th>Part Number</th>
<th>Unit Price</th>
<th>Qty</th>
<th>Extended Price</th>
<th>3 Yr Maint Price</th>
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</thead>
<tbody>
<tr>
<td>Cloudera Ent Basic Ed 1yr 24x7</td>
<td>1</td>
<td>G7M27A</td>
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<td>$144,000</td>
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<td>RHEL Svr 2 Sckt/2 Gst 3yr 24x7 E-LTU</td>
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<td>G3J30AAE</td>
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<td>$77,742</td>
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<td><strong>Subtotal</strong></td>
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<td><strong>$221,742</strong></td>
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**Total Extended Price** $913,728

**Total Discounts (35%)** $47,757

**Grand Total** $671,533

Pricing: 1 = (Source 1); 2 = (Source 2)

(1) All discounts are based on US list prices and for similar quantities and configurations. The discounts are based on the overall specific components pricing from respective vendors in this single quotation. Discounts for similarly sized configurations will be similar to those quoted here, but may vary based on the components in the configuration.

**Audited by Doug Johnson of InfoSizing**

Prices used in TPC benchmarks reflect the actual prices a customer would pay for a one-time purchase of the stated components. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchases are not permitted. All discounts reflect standard pricing policies for the listed components. For complete details, see the pricing sections of the TPC benchmark specifications. If you find that the stated prices are not available according to these terms, please inform at pricing@tpc.org. Thank you.

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**Three-Year Cost of Ownership** $719,290

BBQ pm@10000 $830.67

$/BBQ pm@10000 $865.92
Numerical Quantities

| Scale Factor | 10000 |
| Streams      | 2     |
| SUT Validation Test | PASS |

Performance Run (Run 2)

| Overall Run Start Time | 2017-06-27 00:05:50.957 |
| Overall Run End Time   | 2017-06-27 21:38:50.865 |
| Overall Run Elapsed Time | 77,579.908 |
| Load Test Start Time   | 2017-06-27 00:05:50.958 |
| Load Test End Time     | 2017-06-27 00:55:30.300 |
| Load Test Elapsed Time | 2,979.342 |
| Power Test Start Time  | 2017-06-27 00:55:30.302 |
| Power Test End Time    | 2017-06-27 09:11:59.406 |
| Power Test Elapsed Time | 29,789.104 |
| Throughput Test Start Time | 2017-06-27 09:11:59.408 |
| Throughput Test End Time | 2017-06-27 21:38:50.864 |
| Throughput Test Elapsed Time | 44,811.456 |
| Performance Metric (BBQpm®@ 10000) | 830.67 |

Repeatability Run (Run 1)

| Overall Run Start Time | 2017-06-26 01:51:21.978 |
| Overall Run End Time   | 2017-06-26 22:58:06.590 |
| Overall Run Elapsed Time | 76,004.612 |
| Load Test Start Time   | 2017-06-26 01:51:21.979 |
| Load Test End Time     | 2017-06-26 02:40:31.683 |
| Load Test Elapsed Time | 2,949.704 |
| Power Test Start Time  | 2017-06-26 02:40:31.685 |
| Power Test End Time    | 2017-06-26 10:55:37.091 |
| Power Test Elapsed Time | 29,705.406 |
| Throughput Test Start Time | 2017-06-26 10:55:37.093 |
| Throughput Test End Time | 2017-06-26 22:58:06.589 |
| Throughput Test Elapsed Time | 43,349.496 |
| Performance Metric (BBQpm®@ 10000) | 844.88 |
Hewlett Packard Enterprise
ProLiant DL for Big Data

Performance Run Report (Run 2)

************
TPCx-BB
Result
v1.2
************
INFO: T_LOAD = 2979.342
INFO: T_LD = 0.1 * T_LOAD: 297.9342
INFO: T_PT = 20384.212
INFO: T_T_PUT = 44811.456
INFO: T_TT = 22405.728
INFO: === Checking validity of the final result ===
INFO: OK: All required BigBench phases were performed.
INFO: OK: All 30 queries were running in the power test.
INFO: OK: All 30 queries were running in the first throughput test.
INFO: OK: Pretend mode was inactive. All commands were executed.
INFO: === Final result ===
INFO: VALID BBQpm@10000 = 830.679180114096

Repeatability Run Report (Run 1)

************
TPCx-BB
Result
v1.2
************
INFO: T_LOAD = 2949.704
INFO: T_LD = 0.1 * T_LOAD: 294.9704
INFO: T_PT = 20365.008
INFO: T_T_PUT = 43349.496
INFO: T_TT = 21674.748
INFO: === Checking validity of the final result ===
INFO: OK: All required BigBench phases were performed.
INFO: OK: All 30 queries were running in the power test.
INFO: OK: All 30 queries were running in the first throughput test.
INFO: OK: Pretend mode was inactive. All commands were executed.
INFO: === Final result ===
INFO: VALID BBQpm@10000 = 844.886181932719

Summary details of the run reports are shown above. For the complete run reports, see the Support Files Archive.