
 Hewlett Packard Enterprise		Hewlett Packard Enterprise ProLiant DL for Big Data			TPCx-BB Rev. 1.0.1 TPC-Pricing Rev. 1.7.0	
Total System Cost		TPCx-BB Performance Metric			Report Date: March 31, 2016	
371,977 USD		337.26 BBQpm@3000			1,102.94 USD \$/BBQpm@3000	
Framework	Operating System	Other Software	Availability Date	Scale Factor	Streams	
Cloudera for Apache Hadoop (CDH) 5.6	Red Hat Enterprise Linux Server 6.7	None	March 31, 2016	3000	2	
System Configuration						
<p>Ethernet Switch: HPE 1620-24G Switch (ILO connection) HP5900AF-48XGT-4QSFP+ (main connection)</p>					<p>3 Management Nodes Each: HPE ProLiant DL360 Gen9 2x Intel E5-2640 v4 2.40GHz 1x HPE 800GB SSD 256GB Memory</p>	
<p>9 Worker Nodes Each: HPE ProLiant DL380 Gen9 2x Intel E5-2697A v4 2.60GHz 1x HPE 480GB SSD 16x HPE 1TB HDD 1x HPE 1.2TB SDD 192GB Memory</p>					<p>Software: Red Hat Enterprise Linux 6.7 Cloudera Enterprise 5.6</p>	
Physical Storage/Scale Factor: 53.84			Scale Factor/Physical Memory: 1.20			
Servers:		9x HPE ProLiant DL 380 Gen 9, 3x HPE ProLiant DL360 Gen9				
Total Processors/Cores/Threads		24/348/696				
Server Configuration:	Per HPE ProLiant DL 380 Gen 9:		Per HPE ProLiant DL360 Gen9:			
Processors	2x Intel Xeon E5-2697A v4 @ 2.60GHz		2x Intel Xeon E5-2640 v4 @ 2.40GHz			
Memory	192GB		256GB			
Storage Controller	HPE Smart Array P840/4G		Smart HBA H240ar			
Storage Device	1x HPE 480GB SSD 16x HPE 1 TB HDD 1x HPE 1.2 TB SSD		1x HPE 800GB SSD			
Network	HPE Ethernet 10Gb 2P 560FLR-SFP+ Adptr		HPE Ethernet 10Gb 2P 560FLR-SFP+ Adptr			
Connectivity:	HPE 1620-24G Switch, HPE 5900AF-48XG-4QSFP+ Switch					



**Hewlett Packard
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ProLiant DL for Big Data**

TPCx-BB Rev. 1.0.1
TPC-Pricing Rev. 1.7.0

Report Date:
March 31, 2016

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	\$759	24	\$18,216	
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 800GB 6G SATA MU-2 SFF SC SSD	1	804671-B21	\$3,038	3	\$9,114	
HPE Ethernet 10Gb 2P 560FLR-SFP+ Adptr	1	665243-B21	\$679	3	\$2,037	
HPE 3Y FC 24x7 DL360 Gen9 SVC	1	U7AL9E	\$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#	\$79	3	\$238	
HP PS/2 Keyboard And Mouse Bundle (1 + 2 spare)	1	B1T13AA#	\$27	3	\$82	
			Subtotal		\$45,832	\$5,619
HPE DL380 Gen9 24SFF CTO Server	1	767032-B21	\$2,107	9	\$18,963	
HPE DL380 Gen9 High Perf Fan Kit	1	719079-B21	\$239	9	\$2,151	
HPE DL380 Gen9 2SFF Bay Kit	1	724864-B21	\$149	9	\$1,341	
HPE DL380 Gen9 Secondary Riser	1	719073-B21	\$99	9	\$891	
HPE XL2x0 Gen9 E5-2697Av4 Kit	1	841179-B21	\$4,359	9	\$39,231	
HPE XL2x0 Gen9 E5-2697Av4 FIO Kit	1	841179-L21	\$4,359	9	\$39,231	
HPE 32GB 2Rx4 PC4-2400T-R Kit	1	805351-B21	\$759	54	\$40,986	
HPE 1TB 6G SATA 7.2k 2.5in SC MDL HDD	1	655710-B21	\$499	144	\$71,856	
HPE 480GB 6G SATA RI-2 SFF SC SSD	1	804593-B21	\$1,039	9	\$9,351	
HPE 1.2TB 6G SATA WI-2 SFF SC SSD	1	804677-B21	\$4,557	9	\$41,013	
HPE Smart Array P840/4G Controller	1	726897-B21	\$1,249	9	\$11,241	
HPE 12Gb DL380 Gen9 SAS Expander Card	1	727250-B21	\$699	9	\$6,291	
HPE 800W FS Ti Ht Plg Pwr Supply Kit	1	720482-B21	\$409	18	\$7,362	
HPE Ethernet 10Gb 2P 560FLR-SFP+ Adptr	1	665243-B21	\$679	9	\$6,111	
HPE 3Y FC 24x7 DL380 Gen9 SVC	1	U7AE5E	\$1,821	9		\$16,389
HPE iLO Adv incl 3yr TS U E-LTU	1	E6U64ABE	\$469	9		\$4,221
			Subtotal		\$296,019	\$20,610
Network						
HPE 1620-24G Switch	1	JG913A	\$299	1	\$299	
HPE 5900AF-48XG-4QSFP+ Switch	1	JC772A	\$20,990	1	\$20,990	
HPE 1m Multi-mode OM3 LC/LC FC Cable	1	AJ834A	\$70	12	\$840	
HPE A58x0AF 650W AC Power Supply	1	JC680A	\$749	4	\$2,996	
HPE 58x0AF Bck(pwr)-Frt(ports) Fan Tray	1	JC682A	\$179	4	\$716	
			Subtotal		\$25,841	\$0
Rack						
HPE Universal Rack 11642 1075mm Shock Rack	1	H6J66A	\$1,699	1	\$1,699	
HPE 24A High Voltage Core Only Corded PDU	1	252663-D74	\$259	2	\$518	
			Subtotal		\$2,217	\$0



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TPCx-BB Rev. 1.0.1
TPC-Pricing Rev. 1.7.0

Report Date:
March 31, 2016

Description	Price Key	Part Number	Unit Price	Qty	Extended Price	3 Yr Maint Price
Server Software						
Cloudera Ent Basic Ed 1yr 24x7	1	G7M27A	\$2,304	36	\$82,944	
RHEL Svr 2 Sckt/2 Gst 3yr 24x7 E-LTU	1	G3J30AAE	\$3,889	12	\$46,668	
		Subtotal			\$129,612	\$0
		Total Extended Price			\$499,521	\$26,229
		Total Discounts			\$152,171	\$1,603
Sales contact: HPE WW Headquarters, 3000 Hanover St., Palo Alto, CA 94304-1185 (650) 857-1501 or H-P direct: 800-203-6748					Grand Total	\$347,350
						\$24,626
Pricing:1 = HPE					Three-Year Cost of Ownership	\$371,977
⁽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.					BBQpm@3000	337.26
Audited by Doug Johnson of InfoSizing, Inc.					\$/BBQpm@3000	\$1,102.94
<p>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.</p>						



Numerical Quantities

Scale Factor	3000
Streams	2
SUT Validation Status	PASS

Performance Run

Overall Run Start Time	2016-03-22 16:10:23.675
Overall Run End Time	2016-03-23 08:06:00.543
Overall Run Elapsed Time	57,336.868

Load Test Start Time	2016-03-22 16:10:23.675
Load Test End Time	2016-03-22 16:46:01.997
Load Test Elapsed Time	2,138.322

Power Test Start Time	2016-03-22 16:46:01.999
Power Test End Time	2016-03-22 23:22:44.273
Power Test Elapsed Time	23,802.274

Throughput Test Start Time	2016-03-22 23:22:44.275
Throughput Test End Time	2016-03-23 08:06:00.542
Throughput Test Elapsed Time	31,396.267

Performance Metric (BBQpm@3000) 337.26

Repeatability Run

Overall Run Start Time	2016-03-23 08:27:54.443
Overall Run End Time	2016-03-24 00:21:31.933
Overall Run Elapsed Time	57,217.490

Load Test Start Time	2016-03-23 08:27:54.444
Load Test End Time	2016-03-23 09:03:43.324
Load Test Elapsed Time	2,148.880

Power Test Start Time	2016-03-23 09:03:43.326
Power Test End Time	2016-03-23 15:36:38.693
Power Test Elapsed Time	23,575.367

Throughput Test Start Time	2016-03-23 15:36:38.694
Throughput Test End Time	2016-03-24 00:21:31.933
Throughput Test Elapsed Time	31,493.239

Performance Metric (BBQpm@3000) 337.52



Run Report – Run 1

```
*****  
TPCx-BB  
Result  
v1.0.1  
*****  
INFO: T_LOAD = 2138.322  
INFO: T_LD = 0.1 * T_LOAD: 213.83220000000003  
INFO: T_PT = 15897.004100627742  
INFO: T_T_PUT = 31396.267  
INFO: T_TT = 15698.1335  
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@3000 = 337.26627326432424
```

Run Report – Run 2

```
*****  
TPCx-BB  
Result  
v1.0.1  
*****  
INFO: T_LOAD = 2148.88  
INFO: T_LD = 0.1 * T_LOAD: 214.88800000000003  
INFO: T_PT = 15821.423876979647  
INFO: T_T_PUT = 31493.239  
INFO: T_TT = 15746.6195  
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@3000 = 337.5239352171591
```

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