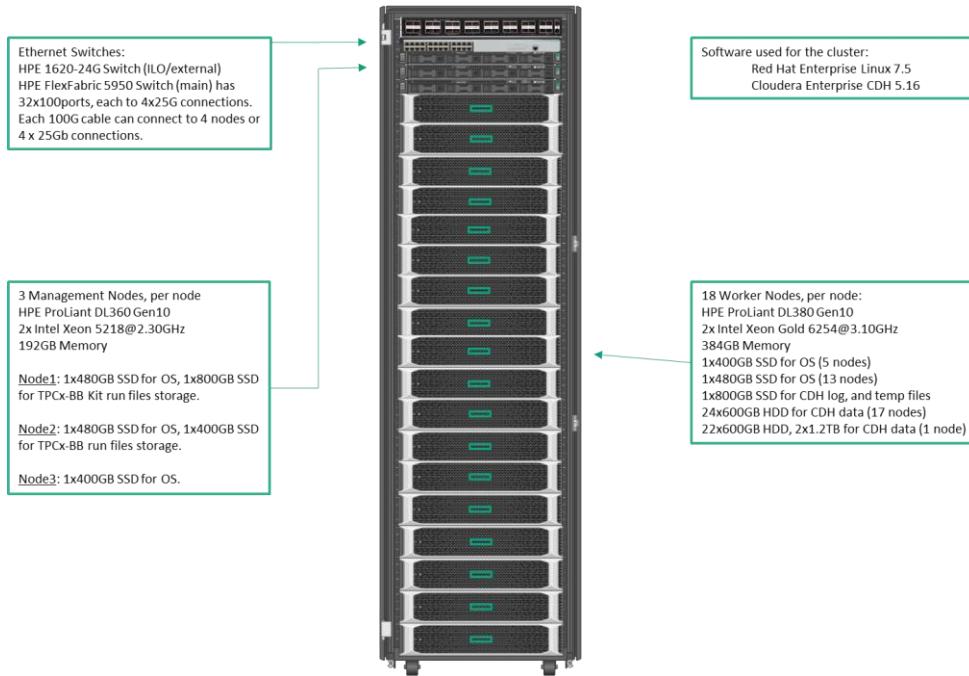
 Hewlett Packard Enterprise	Hewlett Packard Enterprise ProLiant DL for Big Data	TPCx-BB Rev. v1.2.0 TPC-Pricing Rev. v2.4.0
		Report Date: April 2, 2019
Total System Cost	TPCx-BB Performance Metric	Price/Performance
917,360 USD	1,759.64 BBQpm@10000	521.34 USD \$/BBQpm@10000

Framework	Operating System	Other Software	Availability Date	Scale Factor	Streams
Cloudera for Apache Hadoop (CDH) 5.16.1	Red Hat Enterprise Linux Server 7.5	None	April 2, 2019	10000	10

System Configuration



Physical Storage/Scale Factor: 28.56	Scale Factor/Physical Memory: 1.34
--------------------------------------	------------------------------------

Servers:	18x HPE ProLiant DL380 Gen10, 3x HPE ProLiant DL360 Gen10
Total Processors/Cores/Threads	42/744/1,488

Server Configuration:	Per HPE ProLiant DL380 Gen10:	Per HPE ProLiant DL360 Gen10:
Processors	2x Intel Xeon Gold 6254 @ 3.10GHz	2x Intel Xeon Gold 5218 @ 2.30GHz
Memory	384GB	192GB
Storage Controller	HPE Smart Array P408i-a SR	HPE Smart Array E208i-a SR
Storage Device	1x HPE 800GB (all nodes) 1x HPE 400GB, 24x HPE 600GB (5 nodes) 1x HPE 480GB, 24x HPE 600GB (12 nodes) 1x HPE 480GB, 24x HPE 600GB, 2x HPE 1.2TB (1 node)	1x HPE 480GB, 1x HPE 800GB Node1 1x HPE 400GB, 1x HPE 480GB Node2 1x HPE 400GB Node3
Network	HPE Eth 10/25Gb 2P 640SFP28	HPE Eth 10/25Gb 2P 640SFP28

Connectivity:	HPE 1620-24G Switch (ILO connection) HPE FlexFabric 5950 100/25G (main connection)
---------------	---



**Hewlett Packard
Enterprise**

**Hewlett Packard Enterprise
ProLiant DL for Big Data**

TPCx-BB Rev. v1.2.0
TPC-Pricing Rev. v2.4.0

Report Date:
April 2, 2019

Description	Price Key	Part Number	Unit Price	Qty	Extended Price	3 Yr Maint Price
Server Hardware						
HPE DL360 Gen10 8SFF CTO Server	1	867959-B21	\$2,099	3	\$6,297	
HPE DL360 Gen10 Xeon-G 5218 Kit	1	P02592-B21	\$2,019	3	\$6,057	
HPE DL360 Gen10 Xeon-G 5218 FIO	1	P02592-L21	\$2,019	3	\$6,057	
HPE 16GB 1Rx4 PC4-2666V-R Smart Kit	1	835955-B21	\$630	36	\$22,680	
HPE 480GB 6G SATA RI-2 SFF SC SSD	1	804593-B21	\$609	2	\$1,218	
HPE 400GB 6G SATA WI-2 SFF SC SSD	1	804665-B21	\$719	2	\$1,438	
HPE 800GB 6G SATA WI-2 SFF SC SSD	1	804671-B21	\$1,389	1	\$1,389	
HPE 800W CS Platinum Plus AC Power Supply	1	865414-B21	\$379	6	\$2,274	
HPE 96W Smart Storage Battery 145mm Cbl	1	875241-B21	\$99	3	\$297	
HPE Eth 10/25Gb 2P 640SFP28	1	817753-B21	\$779	3	\$2,337	
HPE 3Y FC 24x7 DL360 Gen10 SVC	1	H8QF0E	\$1,811	3		\$5,433
HPE iLO Adv incl 3yr TS U E-LTU	1	E6U64ABE	\$469	3		\$1,407
HP W2082a 20-inch LED Monitor (1 + 2 spare)	2	#L8K84AA	\$85	3	\$255	
HPE USB US Keyboard/Mouse Kit	1	631341-B21	\$29	3	\$87	
			Subtotal		\$50,386	\$6,840
HPE DL380 Gen10 24SFF CTO Server	1	868704-B21	\$2,759	18	\$49,662	
HPE DL380 Gen10 High Perf Fan Kit	1	867810-B21	\$239	18	\$4,302	
HPE DL380 Gen10 2SFF Bay Kit	1	826687-B21	\$249	18	\$4,482	
HPE DL380 Gen10 Xeon-G 6254 Kit	1	P02517-B21	\$6,065	18	\$109,170	
HPE DL380 Gen10 Xeon-G 6254 Kit	1	P02517-L21	\$6,065	18	\$109,170	
HPE 32GB 2Rx4 PC4-2666T-R Kit	1	815100-B21	\$1,170	216	\$252,720	
HPE 1.2TB SAS 10K SFF SC HDD	1	718162-B21	\$909	2	\$1,818	
HPE 600GB SAS 6G 10K SFF SC DS HDD	1	872477-B21	\$525	430	\$225,750	
HPE 480GB 6G SATA RI-2 SFF SC SSD	1	804593-B21	\$609	13	\$7,917	
HPE 400GB 6G SATA WI-2 SFF SC SSD	1	804665-B21	\$719	5	\$3,595	
HPE 800GB 6G SATA WI-2 SFF SC SSD	1	804671-B21	\$1,389	18	\$25,002	
HPE Smart Array P408i-a SR	1	804331-B21	\$599	18	\$10,782	
HPE 12Gb DL380 Gen10 SAS Expander Card	1	870549-B21	\$699	18	\$12,582	
HPE 1600W FS Plat Ht Plg LH Pwr Sply Kit	1	830272-B21	\$479	36	\$17,244	
HPE Eth 10/25Gb 2P 640SFP28	1	817753-B21	\$779	18	\$14,022	
HPE 3Y FC 24x7 DL380 Gen10 SVC	1	H8QP7E	\$2,448	18		\$44,064
HPE iLO Adv incl 3yr TS U E-LTU	1	E6U64ABE	\$469	18		\$8,442
			Subtotal		\$848,218	\$52,506

(continued on next page)



**Hewlett Packard
Enterprise**

**Hewlett Packard Enterprise
ProLiant DL for Big Data**

TPCx-BB Rev. v1.2.0
TPC-Pricing Rev. v2.4.0

Report Date:
April 2, 2019

(continued from previous page)

Description	Price Key	Part Number	Unit Price	Qty	Extended Price	3 Yr Maint Price	
Network							
HPE 1620-24G Switch	1	JG913A	\$315	3	\$299		
HPE FlexFabric 5950 32QSFP28 Switch	1	JH321A	\$27,290	1	\$27,290		
HPE 3Y FC 24x7 FF 5950 32Q28 Swch SVC	1	H2HK7E	\$8,003	1		\$8,003	
HPE 58x0AF 650W AC Power Supply	1	JC680A	\$785	2	\$1,570		
HPE X712 Fan Tray	1	JH389A	\$160	6	\$960		
CAT6 UTP Ethernet Network Cable 7ft (42 + 5 spare)	3	2302	\$2	47	\$94		
HPE 100Gb QSFP28 to 4x25Gb SFP28 3m DAC (6 + 2 spare)	1	845416-B21	\$699	8	\$5,592		
			Subtotal		\$35,805	\$8,003	
Rack							
HPE 42U 600x1075mm Adv G2 Kit Plt Rack	1	P9K07A	\$1,179	1	\$1,179		
HPE 24A High Voltage Core Only Corded PDU	1	252663-D74	\$259	2	\$518		
			Subtotal		\$1,697	\$0	
Server Software							
Cloudera Ent Data Eng Ed	1	P9V18AAE	\$12,000	21	\$252,000		
RHEL Svr 2 Sckt/2 Gst 3yr 24x7 E-LTU	1	G3J30AAE	\$3,702	21	\$77,742		
			Subtotal		\$329,742	\$0	
			Total Extended Price		\$1,265,848	\$67,349	
			Total Discounts		\$415,837	\$0	
Sales contact: HPE WW Headquarters, 3000 Hanover St., Palo Alto, CA 94304-1185 (650) 857-1501 or HPE: 855-472-5233					Grand Total	\$850,011	\$67,349

Pricing: 1 = HPE; 2 = store.hp.com; 3 = monoprice.com

⁽¹⁾ All discounts are based on US list prices and for similar quantities and configurations. A 35% discount was based on the overall specific components pricing from vendor 1 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

Three-Year Cost of Ownership	\$917,360
BBQpm@10000	1,759.64
\$/BBQpm@10000	\$ 521.34

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.



Numerical Quantities

Scale Factor	10000
Streams	10
SUT Validation Test	PASS

Performance Run (Run 2)

Overall Run Start Time	2019-03-30 07:25:31.362
Overall Run End Time	2019-03-31 13:54:22.487
Overall Run Elapsed Time	109,731.125
Load Test Start Time	2019-03-30 07:25:31.363
Load Test End Time	2019-03-30 08:05:21.473
Load Test Elapsed Time	2,390.110
Power Test Start Time	2019-03-30 08:05:21.475
Power Test End Time	2019-03-30 12:41:46.982
Power Test Elapsed Time	16,585.507
Throughput Test Start Time	2019-03-30 12:41:46.984
Throughput Test End Time	2019-03-31 13:54:22.486
Throughput Test Elapsed Time	90,755.502
Performance Metric (BBQpm@ 10000)	1,759.64

Repeatability Run (Run 1)

Overall Run Start Time	2019-03-29 00:04:27.737
Overall Run End Time	2019-03-30 06:23:02.071
Overall Run Elapsed Time	109,114.334
Load Test Start Time	2019-03-29 00:04:27.737
Load Test End Time	2019-03-29 00:43:36.735
Load Test Elapsed Time	2,348.998
Power Test Start Time	2019-03-29 00:43:36.737
Power Test End Time	2019-03-29 05:20:44.390
Power Test Elapsed Time	16,627.653
Throughput Test Start Time	2019-03-29 05:20:44.391
Throughput Test End Time	2019-03-30 06:23:02.070
Throughput Test Elapsed Time	90,137.679
Performance Metric (BBQpm@ 10000)	1,764.71



Performance Run Report (Run 2)

TPCx-BB

Result

v1.2

INFO: T_LOAD = 2390.11

INFO: T_LD = 0.1 * T_LOAD: 239.011

INFO: T_PT = 10997.2657832701

INFO: T_T_PUT = 90755.502

INFO: T_TT = 9075.5502

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 = 1759.64806959625

Repeatability Run Report (Run 1)

TPCx-BB

Result

v1.2

INFO: T_LOAD = 2348.998

INFO: T_LD = 0.1 * T_LOAD: 234.8998

INFO: T_PT = 11016.7330817479

INFO: T_T_PUT = 90137.679

INFO: T_TT = 9013.7679

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 = 1764.71410297685

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