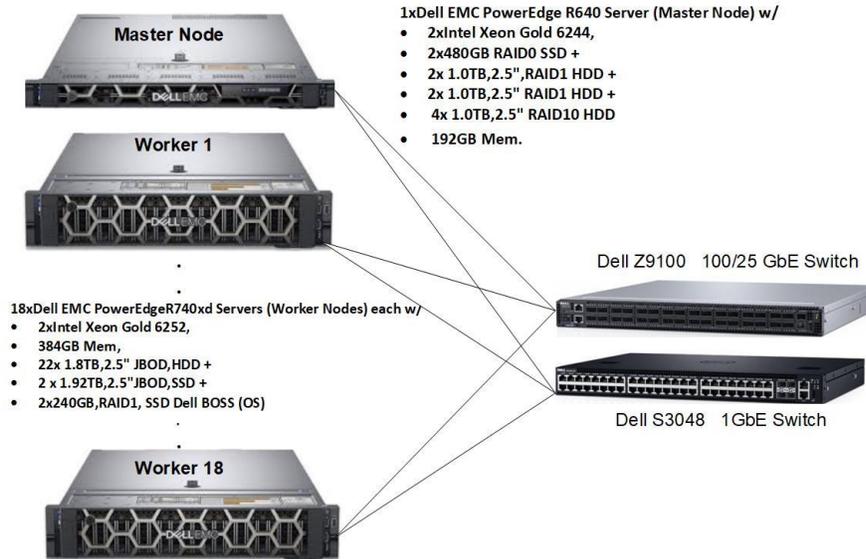


	<b>Dell PowerEdge 14G R640/R740xd</b>	TPCx-BB Rev. v1.3.1 TPC-Pricing Rev. v2.4.0
		Report Date: October 11, 2019
Total System Cost	TPCx-BB Performance Metric	Price/Performance
<b>1,166,306 USD</b>	<b>3,089.93</b> BBQpm@10000	<b>377.46 USD</b> \$/BBQpm@10000

Framework	Operating System	Other Software	Availability Date	Scale Factor	Streams
Horton Works HDP 3.0.1	Red Hat Enterprise Linux Server 7.6	None	October 11, 2019	10000	8

### System Configuration

#### System Configuration



Physical Storage/Scale Factor: 79.95	Scale Factor/Physical Memory: 1.41
--------------------------------------	------------------------------------

Servers:	19x PowerEdge R640 / PowerEdge R740xd	
Total Processors/Cores/Threads	38/880/1,760	
Server Configuration:	<b>1x PowerEdge R640 (Master):</b> 2x Intel(R) Xeon(R) Gold 6244 CPU @ 3.60GHz 192 GiB PERC H730P RAID Controller 2x 480 GB SSD SAS 8x 1 TB 7.2K RPM HDD	<b>18x PowerEdge R740xd (Worker):</b> 2x Intel(R) Xeon(R) Gold 6252 CPU @ 2.10GHz 384 GiB HBA330 Controller Adapter 2x 240 GB RAID1, SSD Dell BOSS 2x 1.92 TB SSD SAS 22x 1.8 TB 10K RPM SAS HDD Mellanox ConnectX-4 LX Dual Port 10/25GbE
Processors		
Memory		
Storage Controller		
Storage Device		
Network Controller		
Connectivity:	1x Dell Z9100 100/25 GbE Switch, 1x Dell S3048 1 GbE Switch	



## Dell PowerEdge 14G R640/R740xd

TPCx-BB Rev. v1.3.1  
TPC-Pricing Rev. v2.4.0

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Description	Part Number	Key	Unit Price	Qty	Extended Price	3 yr. Maint. Price
<b>HARDWARE COMPONENTS</b>						
<b>PowerEdge R740XD Server</b>	210-AKZR		1 \$59,137.51	18	\$1,064,475.18	
PowerEdge R740/R740XD Motherboard	329-BEIK		1 \$0.00	18		
No Trusted Platform Module	461-AADZ		1 \$0.00	18		
Chassis with Up to 24 x 2.5" Hard Drives for 2CPU	321-BCPY		1 \$0.00	18		
PowerEdge R740XD Shipping	340-BLBE		1 \$0.00	18		
PowerEdge R740 Shipping Material	343-BBFU		1 \$0.00	18		
Intel Xeon Gold 6252 2.1G, 24C/48T, 10.4GT/s, 35.75M Cache, Turbo, HT (150W) DDR4-2933	338-BSGU		1 \$0.00	18		
Intel Xeon Gold 6252 2.1G, 24C/48T, 10.4GT/s, 35.75M Cache, Turbo HT (150W) DDR4-2933	338-BSGU		1 \$0.00	18		
Additional Processor Selected	379-BDCO		1 \$0.00	18		
Standard 2U Heatsink	412-AAIR		1 \$0.00	18		
Standard 2U Heatsink	412-AAIR		1 \$0.00	18		
2933MT/s RDIMMs	370-AEPP		1 \$0.00	18		
Performance Optimized	370-AAIP		1 \$0.00	18		
No RAID	780-BCDI		1 \$0.00	18		
HBA330 Controller Adapter, Low Profile	405-AANK		1 \$0.00	18		
BOSS controller card + with 2 M.2 Sticks 240G (RAID 1),FH	403-BBPT		1 \$0.00	18		
Red Hat Enterprise Linux Non Factory Install, x64,Reqs Subscription Selection	421-4727		1 \$0.00	18		
Red Hat Linux Registration Document, No Subscription	340-AVFG		1 \$0.00	18		
iDRAC9,Enterprise	385-BBKT		1 \$0.00	18		
iDRAC Group Manager, Enabled	379-BCQV		1 \$0.00	18		
iDRAC,Legacy Password	379-BCSG		1 \$0.00	18		
Riser Config 2, 3 x8, 1 x16 slots	330-BBHB		1 \$0.00	18		
Mellanox ConnectX-4 LX Dual Port 10/25GbE SFP28, rNDC	406-BBLG		1 \$0.00	18		
6 Performance Fans forR740/740XD	384-BBPZ		1 \$0.00	18		
Dual, Hot-plug, Redundant Power Supply (1+1), 1100W	450-ADWM		1 \$0.00	18		
PowerEdge 2U Standard Bezel	325-BCHU		1 \$0.00	18		
PE R740XD Luggage Tag	389-BTTO		1 \$0.00	18		
Quick Sync 2 (At-the-box mgmt)	350-BBJU		1 \$0.00	18		
Power Saving Dell Active Power Controller	750-AABF		1 \$0.00	18		
UEFI BIOS Boot Mode with GPT Partition	800-BBDM		1 \$0.00	18		
ReadyRails Sliding Rails Without Cable Management Arm	770-BBBQ		1 \$0.00	18		
No Systems Documentation, No OpenManage DVD Kit	631-AACK		1 \$0.00	18		
US Order	332-1286		1 \$0.00	18		
On-Site Installation Declined	900-9997		1 \$0.00	18		
ProSupport 4Hr onSite and Mission Critical 24x7, 36 Month(s)	813-6068, 813-9295, 813-9296, 951-2015		1 \$2,677.44	18		\$48,193.92
Declined Remote Consulting Service	973-2426		1 \$0.00	18		
32GB RDIMM, 2933MT/s, Dual Rank	370-AEQH		1 \$0.00	216		
1.8TB 10K RPM SAS 12Gbps 512e 2.5in Hot-plug Hard Drive	400-ARXC		1 \$0.00	396		
1.92TB SSD SAS Read Intensive 12Gbps 512e 2.5in	400-BBQQ		1 \$0.00	36		
Red Hat Enterprise Linux,2SKT,1 Physical OR 2Guest,3Yr PREMIUM SUB,No Media	634-BJBO		1 \$0.00	18		
NEMA 5-15P to C13 Wall Plug, 125 Volt, 15 AMP, 10 Feet (3m), Power Cord, North America	450-AALV		1 \$0.00	36		
INFO QS, DATA ANALYTICS BUNDLE	379-BBWM		1 \$0.00	18		

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## Dell PowerEdge 14G R640/R740xd

TPCx-BB Rev. v1.3.1  
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<b>PowerEdge R640 Server</b>	210-AKWU	1	\$32,108.64	1	\$32,108.64
PowerEdge R640 MLK Motherboard	329-BEIJ	1	\$0.00	1	
No Trusted Platform Module	461-AADZ	1	\$0.00	1	
2.5 Chassis with up to 10 Hard Drives and 3PCIe slots	321-BCQL	1	\$0.00	1	
PowerEdge R640 Shipping	340-BKNE	1	\$0.00	1	
PowerEdge R640 x4 and x10 Drive Shipping Material	340-BLUC	1	\$0.00	1	
Intel Xeon Gold 6244 3.6G, 8C/16T, 10.4GT/s, 24.75M Cache, Turbo, HT (150W) DDR4-2933	338-BSHH	1	\$0.00	1	
Intel Xeon Gold 6244 3.6G, 8C/16T, 10.4GT/s, 24.75M Cache, Turbo, HT (150W) DDR4-2933	338-BSHH	1	\$0.00	1	
Additional Processor Selected	379-BDCO	1	\$0.00	1	
DIMM Blanks for System with 2 Processors	370-ABWE	1	\$0.00	1	
1U Pipe Low Profile Heatsink	412-AAIP	1	\$0.00	1	
1U Pipe Low Profile Heatsink	412-AAIP	1	\$0.00	1	
2933MT/s RDIMMs	370-AEPP	1	\$0.00	1	
Performance Optimized	370-AAIP	1	\$0.00	1	
Unconfigured RAID	780-BCDS	1	\$0.00	1	
PERC H730P RAID Controller, 2GB NV Cache, Mini card	405-AANT	1	\$0.00	1	
Red Hat Enterprise Linux Non Factory Install, x64,Reqs Subscription Selection	421-4727	1	\$0.00	1	
Red Hat Linux Registration Document, No Subscription	340-AVFG	1	\$0.00	1	
iDRAC9,Enterprise	385-BBKT	1	\$0.00	1	
OpenManage Enterprise Advanced	528-BIYY	1	\$0.00	1	
iDRAC Group Manager, Enabled	379-BCQV	1	\$0.00	1	
iDRAC,Legacy Password	379-BCSG	1	\$0.00	1	
Riser Config 4, 2x16 LP	330-BBGY	1	\$0.00	1	
Mellanox ConnectX-4 LX Dual Port 10/25GbE SFP28, rNDC	406-BBLG	1	\$0.00	1	
No Internal Optical Drive	429-AAIQ	1	\$0.00	1	
8 Performance Fans for R640	384-BBQI	1	\$0.00	1	
Dual, Hot-plug, Redundant Power Supply (1+1), 750W	450-ADWS	1	\$0.00	1	
No Bezel	350-BBBW	1	\$0.00	1	
Dell EMC Luggage Tag for x10	350-BBJT	1	\$0.00	1	
Quick Sync 2 (At-the-box mgmt)	350-BBKC	1	\$0.00	1	
Power Saving Dell Active Power Controller	750-AABF	1	\$0.00	1	
UEFI BIOS Boot Mode with GPT Partition	800-BBDM	1	\$0.00	1	
Energy Star	387-BBMK	1	\$0.00	1	
ReadyRails Sliding Rails Without Cable Management Arm	770-BBBC	1	\$0.00	1	
No Systems Documentation, No OpenManage DVD Kit	631-AACK	1	\$0.00	1	
US Order	332-1286	1	\$0.00	1	
Basic Next Business Day 36 Months	709-BBFM	1	\$0.00	1	
On-Site Installation Declined	900-9997	1	\$0.00	1	
ProSupport 4Hr onSite and Mission Critical 24x7, 36 Month(s)	813-9255,813-9259,813-9265,989-3439	1	\$2,505.31	1	\$2,505.31
16GB RDIMM, 2933MT/s, Dual Rank	370-AEQF	1	\$0.00	12	
1TB 7.2K RPM NLSAS 12Gbps 512n 2.5in Hot-plug Hard Drive	400-ASHE	1	\$0.00	8	
480GB SSD SAS Mixed use 12Gbps 512e 2.5in Hot-Plug PMS-V Drive, 3 DWPD, 2628 TBW	400-BCQG	1	\$0.00	2	
Red Hat Enterprise Linux,2SKT,1 Physical OR 2Guest,3Yr PREMIUM SUB,No Media	634-BJBO	1	\$0.00	1	
NEMA 5-15P to C13 Wall Plug, 125 Volt, 15 AMP, 10 Feet (3m), Power Cord, North America	450-AALV	1	\$0.00	2	
INFO QS, DATA ANALYTICS BUNDLE	379-BBWM	1	\$0.00	1	

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# Dell PowerEdge 14G R640/R740xd

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TPC-Pricing Rev. v2.4.0

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<b>Dell Networking Z9100-ON Pod Switch</b>		1	\$52,477.00	1	\$52,477.00
Dell Networking Z9100-ON, 32x QSFP28 and 2x SFP+ fixed ports, PSU to IO airflow, 2x AC PSUs, OS9	210-AETC	1	\$0.00	1	
OS9 installed on Z9100-ON, with entitlement to OS10 Enterprise	634-BPDD	1	\$0.00	1	
Dell Networking Z9100-ON User Guide	631-AAPO	1	\$0.00	1	
Software, Rights to use L3 on OS9, Z9100-ON	634-BEBM	1	\$0.00	1	
US Order	332-1286	1	\$0.00	1	
ProSupport Plus: Mission Critical 4-Hour 7x24 On-Site Service with Emergency Dispatch, 3 Year	803-9483,803-9474,803-9323,	1	\$9,820.00	1	\$9,820.00
ProSupport Plus: 7x24 HW/SW Tech Support and Assistance, 3 Year	803-9503	1	\$0.00	1	
Thank you for choosing Dell ProSupport Plus. For tech support, visit //www.dell.com/contactdell	951-2015	1	\$0.00	1	
Dell Limited Hardware Warranty Extended Year(s)	975-3461	1	\$0.00	1	
Info 3rd Party Software Warranty provided by Vendor	997-6306	1	\$0.00	1	
On-Site Installation Declined	900-9997	1	\$0.00	1	
Dell Networking Cable,100GbE QSFP28 to 4 x SFP28 Passive Copper Breakout Cable, 2 Mete	470-ABOS	1	\$0.00	5	
Dell Networking, Jumper Cord, 250V, 12A, 2 Meters, C13/C14, US	450-AASX	1	\$0.00	1	
Dell Networking, Jumper Cord, 250V, 12A, 2 Meters, C13/C14, US	450-AASX	1	\$0.00	1	
INFO QS, DATA ANALYTICS BUNDLE	379-BBWM	1	\$0.00	1	

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## Dell PowerEdge 14G R640/R740xd

TPCx-BB Rev. v1.3.1  
TPC-Pricing Rev. v2.4.0

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<b>Dell Networking S3048-ON iDRAC Switch</b>		1	\$11,750.37	1	\$11,750.37	
Dell Networking S3048-ON, 48x 1GbE, 4x SFP+ 10GbE ports, Stacking, IO to PSU air, 1x AC PSU, DNOS 9	210-AEDM	1	\$0.00	1		
Software, Rights to use L3 on OS9, S3048-ON	634-BDXE	1	\$0.00	1		
OS9 installed on S3048-ON, with entitlement to OS10 Enterprise	528-BBSY	1	\$0.00	1		
Dell Networking S3048-ON User Guide	634-BCXR	1	\$0.00	1		
C2G 10ft Cat6 Ethernet Network Patch Cable	A5361988	1	\$0.00	19		
US Order	332-1286	1	\$0.00	1		
3 year ProSupport 4hr response, 24x7	802-7403, 802-7389,802-7394,802-7400	1	\$1,495.33	1		\$1,495.33
ProSupport: 7x24 HW / SW Tech Support and Assistance, 3 Years	802-7404	1	\$0.00	1		
Thank you choosing Dell ProSupport. For tech support, visit //www.dell.com/support or call 1-800- 945-3355	989-3439	1	\$0.00	1		
Info 3rd Party Software Warranty provided by Vendor	997-6306	1	\$0.00	1		
ProDeploy Dell Networking S Series 3XXX Switch - Deployment Verification	805-2399	1	\$0.00	1		
ProDeploy Dell Networking S Series 3XXX Switch - Deployment	821-5792	1	\$0.00	1		
Declined Remote Consulting Service	973-2426	1	\$0.00	1		
Dell Networking, Jumper Cord, 250V, 12A, 2 Meters, C13/C14, US	450-AASX	1	\$0.00	1		
INFO QS, DATA ANALYTICS BUNDLE	379-BBWM	1	\$0.00	1		
Desktop MK120 Keyboard and Mouse	A6999510	1	\$19.99	1	\$19.99	
Dell 24 Monitor	210-AIWG	1	\$169.99	1	\$169.99	
Dell Netshelter SX 42U Rack - 600mm Wide x 1070mm Deep	A7545497	1	\$1,299.99	1	\$1,299.99	
<b>HARDWARE COMPONENTS</b>				<b>Subtotal</b>	\$1,162,301.16	\$62,014.54
<b>SOFTWARE COMPONENTS</b>						
Horton Works HDP Enterprise Plus, 24x7 1yr	HDP-ENT-1Y	1	10,000	57	\$570,000.00	
<b>SOFTWARE COMPONENTS</b>				<b>Subtotal</b>	\$570,000.00	\$0.00
<b>Total</b>					<b>\$1,732,301.16</b>	<b>\$62,014.54</b>
Large Purchase Discount (35%)*					-\$606,305.41	-\$21,705.10

Pricing: 1 = Dell

<sup>(1)</sup> 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**

**Three-Year Cost of Ownership \$1,166,306**

**BBQpm@10000 3,089.93**

**\$/BBQpm@10000 \$ 377.46**

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](mailto:pricing@tpc.org). Thank you.



### Numerical Quantities

Scale Factor	10000
Streams	8
SUT Validation Test	PASS

### Performance Run (Run 2)

Overall Run Start Time	2019-09-24 05:58:54.356
Overall Run End Time	2019-09-24 22:33:57.344
Overall Run Elapsed Time	59,702.988
Load Test Start Time	2019-09-24 05:58:54.357
Load Test End Time	2019-09-24 06:43:26.019
Load Test Elapsed Time	2,671.662
Power Test Start Time	2019-09-24 06:43:26.020
Power Test End Time	2019-09-24 11:25:42.931
Power Test Elapsed Time	16,936.911
Throughput Test Start Time	2019-09-24 11:25:42.932
Throughput Test End Time	2019-09-24 22:33:57.343
Throughput Test Elapsed Time	40,094.411
Performance Metric (BBQpm@ 10000)	3,089.93

### Repeatability Run (Run 1)

Overall Run Start Time	2019-09-23 13:02:17.656
Overall Run End Time	2019-09-24 05:25:10.734
Overall Run Elapsed Time	58,973.078
Load Test Start Time	2019-09-23 13:02:17.657
Load Test End Time	2019-09-23 13:46:54.671
Load Test Elapsed Time	2,677.014
Power Test Start Time	2019-09-23 13:46:54.673
Power Test End Time	2019-09-23 18:29:41.836
Power Test Elapsed Time	16,967.163
Throughput Test Start Time	2019-09-23 18:29:41.837
Throughput Test End Time	2019-09-24 05:25:10.734
Throughput Test Elapsed Time	39,328.897
Performance Metric (BBQpm@ 10000)	3,124.72



### Performance Run Report (Run 2)

```
*****
TPCx-BB
Result
v1.3.1
*****
INFO: T_LOAD = 2671.662
INFO: T_LD = 0.1 * T_LOAD: 267.1662
INFO: T_PT = 6164.16941371755
INFO: T_T_PUT = 40094.411
INFO: T_TT = 5011.801375
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 = 3089.93423799941
```

### Repeatability Run Report (Run 1)

```
*****
TPCx-BB
Result
v1.3.1
*****
INFO: T_LOAD = 2677.014
INFO: T_LD = 0.1 * T_LOAD: 267.7014
INFO: T_PT = 6137.16833147717
INFO: T_T_PUT = 39328.897
INFO: T_TT = 4916.112125
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 = 3124.72030342658
```

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