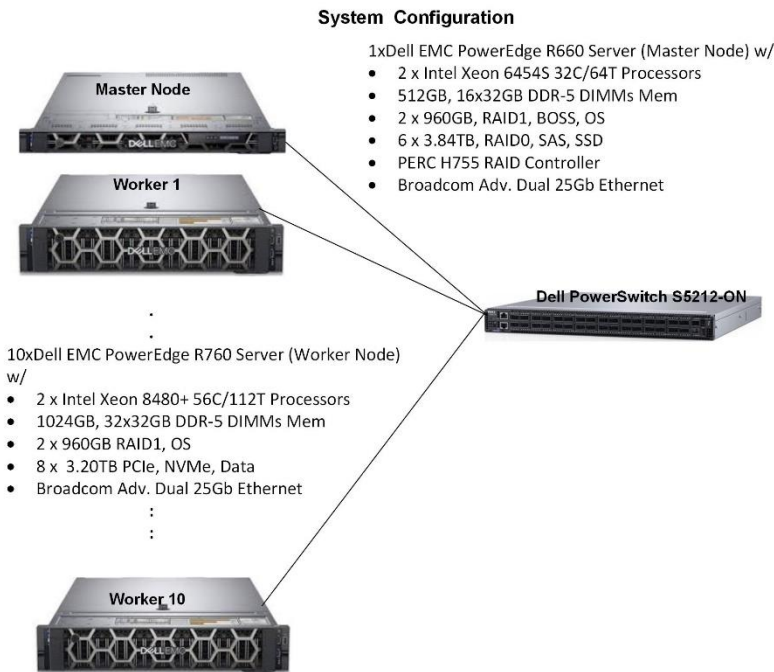
		Dell PowerEdge R660/R760		TPCx-BB Rev. v1.6.2 TPC-Pricing Rev. v2.9.0	
				Report Date: November 3, 2023	
Total System Cost		TPCx-BB Performance Metric		Price/Performance	
834,667 USD		4,519.40 BBQpm@10000		184.69 USD \$/BBQpm@10000	
Framework	Operating System	Other Software	Availability Date	Scale Factor	Streams
Cloudera CDP Private Cloud Base v7.1.7	Red Hat Enterprise Linux 8.6 (Ootpa)	None	November 3, 2023	10000	12

System Configuration



Physical Storage/Scale Factor: 30.02		Scale Factor/Physical Memory: 0.93	
Servers: 11x PowerEdge R660 / PowerEdge R760 Total Processors/Cores/Threads 22/1,184/2,368			
Server Configuration:	1x PowerEdge R660 (Admin): 2x Intel(R) Xeon(R) Gold 6454S 512 GiB PERC H755 2x 960 GB BOSS M.2 SSD 6x 3.84 TB SAS SSD Broadcom Adv. Dual 25 Gb Ethernet	10x PowerEdge R760 (Worker): 2x Intel(R) Xeon(R) Platinum 8480+ 1,024 GiB n/a 2x 960 GB BOSS M.2 SSD 8x 3.20 TB NVMe Broadcom Adv. Dual 25 Gb Ethernet	
Network Controller:	Dell PowerSwitch S5212-ON		



Dell PowerEdge R660/R760

TPCx-BB Rev. v1.6.2
TPC-Pricing Rev. v2.9.0

Report Date:
November 3, 2023

Description	Part Number	Key	Unit Price	Qty	Extended Price	3 yr. Maint. Price
HARDWARE COMPONENTS						
PowerEdge R760 Server						
No Trusted Platform Module	210-BDZY	1	190,294.88	10	1,902,948.80	
2.5" Chassis with 8 Universal Drive Slots (SAS/SATA/NVME), Front PERC 11, 2 CPU	461-AADZ	1	0.00	10		
Intel® Xeon® Platinum 8480+ 2.0G, 56C/112T, 16GT/s, 105M Cache, Turbo, HT (350W) DDR5-4800	404-BBFB	1	0.00	10		
Intel® Xeon® Platinum 8480+ 2.0G, 56C/112T, 16GT/s, 105M Cache, Turbo, HT (350W) DDR5-4800	379-BEXV	1	0.00	10		
No HBM	379-BDCC, 379-BEXV	1	0.00	10		
Heatsink for 2 CPU configuration (CPU greater than 165W)	379-BFFD	1	0.00	10		
Performance Optimized	412-ABCP	1	0.00	10		
4800MT/s RDIMMs	370-AAIP	1	0.00	10		
32GB RDIMM, 4800MT/s Dual Rank	370-AHCL	1	0.00	10		
C7, Unconfigured RAID for HDDs or SSDs (Mixed Drive Types Allowed)	370-AGZP	1	0.00	320		
DELLPLUS NO	780-BCDS	1	0.00	10		
3.2TB, Enterprise, NVMe, Mixed Use, U2, G4, P5620 with carrier	692-BBBB	1	0.00	10		
Performance BIOS Setting	400-BOXP	1	0.00	80		
UEFI BIOS Boot Mode with GPT Partition	384-BBBL	1	0.00	10		
No Energy Star	800-BBDM	1	0.00	10		
High Performance Fan x6	387-BBEY	1	0.00	10		
Dual, Hot-Plug, Fully Redundant Power Supply (1+1), 1400W, Mixed Mode	750-ADRE	1	0.00	10		
NEMA 5-15P to C13 Wall Plug, 125 Volt, 15 AMP, 10 Feet (3m), Power Cord, North America	450-AJHG	1	0.00	10		
Riser Config 2, 2x8 FH Slots (Gen4), 4x8 FH Slots (Gen5), 2x16 LP Slots (Gen4)	450-AALV	1	0.00	20		
Motherboard supports ALL CPUs (required for CPUs 250W and above)	330-BBXY	1	0.00	10		
iDRAC9 Datacenter 16G with OpenManage Enterprise Advanced Plus	329-BHJS	1	0.00	10		
Broadcom 57414 Dual Port 10/25GbE SFP28, OCP NIC 3.0	528-CTID, 528-CTZH	1	0.00	10		
LOM Blank	540-BCOC	1	0.00	10		
No Cables Required, No GPU Blanks	540-BDOW	1	0.00	10		
PowerEdge 2U Standard Bezel	470-AEYU	1	0.00	10		
BOSS-N1 controller card + with 2 SED M.2 960GB (RAID 1)	321-BHMY, 325-BEVI	1	0.00	10		
No Quick Sync	403-BCVY, 470-AFMF	1	0.00	10		
iDRAC9 Legacy Password for OCP cards	350-BBYX	1	0.00	10		
iDRAC Service Module (ISM), NOT Installed	379-BETF	1	0.00	10		
iDRAC Group Manager, Disabled	379-BCQX	1	0.00	10		
No Operating System	379-BCQY	1	0.00	10		
No Media Required	611-BBBF	1	0.00	10		
ReadyRails Sliding Rails With Cable Management Arm	605-BBFN	1	0.00	10		
Fan Foam, HDD 2U	770-BDRQ, 770-BEKK	1	0.00	10		
Keyboard and Optical Mouse, USB, Black, English	750-ACOM	1	0.00	10		
No Systems Documentation, No OpenManage DVD Kit	570-AAKV, 580-ADJC	1	0.00	10		
PowerEdge R760 Shipping	631-AACK	1	0.00	10		
PowerEdge R760 Shipping Material	340-DCEP	1	0.00	10		
PowerEdge R760 No CCC, No CE, and No BIS Marking	340-DIQY	1	0.00	10		
Basic Next Business Day 36 Months, 36 Month(s)	343-BBSU	1	0.00	10		
No Installation	709-BBFM	1	249.00	10		2,490.00
Prosupport Plus and 4Hr Mission Critical, 36 Month(s)	900-9997	1	\$0.00	1		
ProDeploy Dell Server R Series 1U/2U	865-BBMY	1	13,692.86	10		136,928.60
Red Hat Enterprise Linux, Non Factory Install, Requires License & Subscription Selection	854-0555	1	\$0.00	10		
	605-BBFL	1	\$0.00	10		

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Dell PowerEdge R660/R760

TPCx-BB Rev. v1.6.2
TPC-Pricing Rev. v2.9.0

Report Date:
November 3, 2023

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Description	Part Number	Key	Unit Price	Qty	Extended Price	3 yr. Maint. Price
PowerEdge R660 Server	210-BEQQ	1	\$99282.12	1	\$99,282.12	
Trusted Platform Module 2.0 V3	461-AAIG	1	\$99.00	1		
2.5" Chassis with up to 10 Hard Drives (SAS/SATA), 2CPU, PERC11	321-BHRW	1	\$580.00	1		
Intel® Xeon® Gold 6454S 2.2G, 32C/64T, 16GT/s, 60M Cache, Turbo, HT (270W) DDR5-4800	338-CHSY	1	\$7800.00	1		
Intel® Xeon® Gold 6454S 2.2G, 32C/64T, 16GT/s, 60M Cache, Turbo, HT (270W) DDR5-4800	338-CHSY, 379-BDCO	1	\$7800.00	1		
No HBM	379-BFFD	1	\$0.00	1		
Heatsink for 2 CPU configuration (CPU more than or equal to 250W)	412-ABCG	1	\$332.00	1		
Performance Optimized	370-AAIP	1	\$0.00	1		
4800MT/s RDIMMs	370-AHCL	1	\$0.00	1		
32GB RDIMM, 4800MT/s Dual Rank	370-AGZP	1	\$30080.00	16		
C7, Unconfigured RAID for HDDs or SSDs (Mixed Drive Types Allowed)	780-BCDS	1	\$0.00	1		
PERC H755 with rear load Brackets	405-AAZB, 750-ADRI	1	\$3349.00	1		
3.84TB SSD SAS, Read Intensive, up to 24Gbps FIPS-140 512e 2.5in Hot-Plug, AG Drive	345-BENR	1	\$35568.12	6		
Power Saving BIOS Setting	384-BBBH	1	\$0.00	1		
UEFI BIOS Boot Mode with GPT Partition	800-BBDM	1	\$0.00	1		
No EnergyStar	387-BBEY	1	\$0.00	1		
4 Very High Performance Fans	384-BCUJ	1	\$289.00	1		
Dual, Fully Redundant(1+1), Hot-Plug Power Supply,1100W MM(100-240Vac) Titanium	450-AKLF	1	\$1429.00	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		
Riser Config 3, Full Height, 2x16 FH Slots (Gen5)	330-BBYZ	1	\$818.00	1		
Motherboard supports ALL CPUs and is required for CPUs 250W and above	329-BHFX	1	\$450.00	1		
Server Secured Component Verification	528-COYT	1	\$99.00	1		
iDRAC9 Datacenter 16G with OpenManage Enterprise Advanced Plus	528-CTID, 528-CTZH	1	\$1188.00	1		
Broadcom 57414 Dual Port 10/25GbE SFP28, OCP NIC 3.0	540-BCOC	1	\$709.00	1		
LOM Blank	540-BDMK	1	\$0.00	1		
Standard Bezel	325-BEVE, 350-BCKC	1	\$98.00	1		
BOSS-N1 controller card + with 2 SED M.2 960GB (RAID 1)	403-BCVY, 470-AFMG	1	\$2768.00	1		
No Quick Sync	350-BBXM	1	\$0.00	1		
iDRAC9 Factory Generated Password for OCP cards	379-BETG	1	\$0.00	1		
iDRAC Service Module (ISM), NOT Installed	379-BCQX	1	\$0.00	1		
iDRAC Group Manager, Disabled	379-BCQY	1	\$0.00	1		
No Operating System	611-BBBF	1	\$0.00	1		
No Media Required	605-BBFN	1	\$0.00	1		
ReadyRails Sliding Rails With Cable Management Arm	770-BDMT, 770-BECD	1	\$218.00	1		
Keyboard and Optical Mouse, USB, Black, English	570-AAKV, 580-ADJC	1	\$12.00	1		
No Systems Documentation, No OpenManage DVD Kit	631-AACK	1	\$0.00	1		
PowerEdge R660 Shipping	340-DBXZ	1	\$49.00	1		
PowerEdge R660 Shipping Material, 10x2.5", 8x2.5" Smart Flow or 16xEDSFF	340-DBYC	1	\$99.00	1		
PowerEdge R660 CE, CCC and BIS Marking on 2.5" Chassis	343-BBTS, 343-BBUB	1	\$0.00	1		
Basic Next Business Day 36 Months, 36 Month(s)	709-BBFM	1	\$249.00	1		\$249.00
No Installation	900-9997	1	\$0.00	1		
Prosupport Plus and 4Hr Mission Critical, 36 Month(s)	865-BBMY	1	\$7123.18	1		\$7,123.18
Red Hat Enterprise Linux, Non Factory Install, Requires License & Subscription Selection	605-BBFL	1	\$0.00	1		

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Dell PowerEdge R660/R760

TPCx-BB Rev. v1.6.2
TPC-Pricing Rev. v2.9.0

Report Date:
November 3, 2023

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Description	Part Number	Key	Unit Price	Qty	Extended Price	3 yr. Maint. Price
Dell Networking PowerSwitch S5212-ON	210-APHW, 343-BBRX	1	\$20548.00	1	\$20,548.00	
S52XX User Manual	343-BBLP	1	\$0.00	1		
OS10 Enterprise,S5212F-ON	634-BRXD	1	\$0.00	1		
Power Cord, 125V, 15A, 10 Feet, NEMA 5-15/C13, Qty 2	450-AAFH, 450-AAFH	1	\$0.00	1		
Dell NW Dual Tray, 4-post, S5212F-ON	770-BDQJ	1	\$0.00	1		
3 Years ProSupport with Next Business Day Onsite Service	818-3530, 818-3543, 818-3544, 818-3562, 975-3461, 989-3439, 997-6306	1	\$2930.98	1		\$2,930.98
3 Years ProSupport OS10 Enterprise Software Support-Maintenance	848-8544	1	\$524.79	1		\$524.79
Dell Networking, Cable, SFP28 to SFP28, 25GbE, Passive Copper Twinax Direct Attach Cable, 2 Meter	470-ACET	1	\$0.00	11		
Dell 24 Monitor	210-AIWG	1	\$169.99	1	\$169.99	
DELL EMC NETSHELTER SX 24U RACK - 600MM	A7522217	1	\$1,405.00	1	\$1,405.00	
HARDWARE COMPONENTS				Subtotal	\$2,040,210.31	\$150,246.55
SOFTWARE COMPONENTS						
Cloudera SEL Data Platform Private Cloud Base Edition, Annual Subscription per compute node, Business Level Support	AB242979	1	\$15,000	1	\$15,000.00	
Cloudera SEL Data Platform Private Cloud Base Edition, Annual Subscription per storage node, Business Level Support	AB352445	1	\$15,230	10	\$152,295.00	
RHEL, 1-2SKT, Physical Node, 1YR Premium Sub, up to 4 Virtual Guest, Digitally Fulfilled	528-CHFJ	1	1,299.00	33	\$42,867.00	
SOFTWARE COMPONENTS				Subtotal	\$210,162.00	\$0.00
Total					\$2,250,372.31	\$150,246.55
Large Purchase Discount (65%)*					-1,462,742.00	-97,660.26

Pricing: 1 = Dell ⁽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. <p style="text-align: center;">Audited by Doug Johnson of InfoSizing</p>	<table style="width: 100%;"> <tr> <td>Three-Year Cost of Ownership</td> <td>\$834,667</td> </tr> <tr> <td>BBQpm@10000</td> <td>4,519.40</td> </tr> <tr> <td>\$/BBQpm@10000</td> <td>\$ 184.69</td> </tr> </table>	Three-Year Cost of Ownership	\$834,667	BBQpm@10000	4,519.40	\$/BBQpm@10000	\$ 184.69
Three-Year Cost of Ownership	\$834,667						
BBQpm@10000	4,519.40						
\$/BBQpm@10000	\$ 184.69						

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	12
SUT Validation Test	PASS

Performance Run (Run 2)

Overall Run Start Time	2023-10-31 14:32:11.646
Overall Run End Time	2023-11-01 04:29:26.163
Overall Run Elapsed Time	50,234.517
Load Test Start Time	2023-10-31 14:32:11.647
Load Test End Time	2023-10-31 14:49:29.757
Load Test Elapsed Time	1,038.110
Power Test Start Time	2023-10-31 14:49:29.758
Power Test End Time	2023-10-31 17:18:35.554
Power Test Elapsed Time	8,945.796
Throughput Test Start Time	2023-10-31 17:18:35.554
Throughput Test End Time	2023-11-01 04:29:26.163
Throughput Test Elapsed Time	40,250.609
Performance Metric (BBQpm@ 10000)	4,519.40

Repeatability Run (Run 1)

Overall Run Start Time	2023-10-31 00:14:02.656
Overall Run End Time	2023-10-31 14:12:24.884
Overall Run Elapsed Time	50,302.228
Load Test Start Time	2023-10-31 00:14:02.657
Load Test End Time	2023-10-31 00:31:09.831
Load Test Elapsed Time	1,027.174
Power Test Start Time	2023-10-31 00:31:09.833
Power Test End Time	2023-10-31 03:01:22.239
Power Test Elapsed Time	9,012.406
Throughput Test Start Time	2023-10-31 03:01:22.240
Throughput Test End Time	2023-10-31 14:12:24.884
Throughput Test Elapsed Time	40,262.644
Performance Metric (BBQpm@ 10000)	4,521.78

Performance Run Report (Run 2)

TPCx-BB

Result

v1.6.2

INFO: T_LOAD = 1038.11

INFO: T_LD = 0.1 * T_LOAD: 103.810999999999

INFO: T_PT = 4485.916413649

INFO: T_T_PUT = 40250.609

INFO: T_TT = 3354.21741666666

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 = 4519.40675345921

Repeatability Run Report (Run 1)

TPCx-BB

Result

v1.6.2

INFO: T_LOAD = 1027.174

INFO: T_LD = 0.1 * T_LOAD: 102.7174

INFO: T_PT = 4482.26977803591

INFO: T_T_PUT = 40262.644

INFO: T_TT = 3355.22033333333

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 = 4521.78062131844

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