




	<h1>PowerEdge R7515</h1>		TPCx-HS	2.0.3
			TPC Pricing	2.4.0
			Report Date	Sep. 17, 2019
Availability Date	TPCx-HS Performance	Price/Performance	Total System Cost	
October 15, 2019	9.81 HSph@1TB	\$45,655.76 \$/HSph@1TB	\$447,883 USD	
System Under Test Configuration Overview				
Scale Factor	Hadoop Software	Operating System	Other Software	
1	Cloudera Enterprise Edition 6.3	Red Hat Enterprise Linux Server 7.6	N/A	
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>...</p> <p>9x Dell PowerEdge R7515 Servers (Data Nodes)</p> <ul style="list-style-type: none"> • 1x AMD EPYC 7542 32-Core Processor • 512 GB (8x 64GB RDIMM 3200MT/s Dual Rank) • 2x240GB SSD SATA m.2 Hot-plug Drive • 1x Mellanox Dual Port 100GbE QSFP28 NIC • 3x Dell 1.6TB, NVMe, 2.5 SFF Drive <p>...</p>  <p>...</p>  <p>1x Dell PowerEdge R6525 Server (Master Node)</p> <ul style="list-style-type: none"> • 2x AMD EPYC 7502 32-Core Processor • 512 GB (8x 64GB RDIMM 3200MT/s Dual Rank) • 2x240GB SSD SATA 2.5in Hot-plug Drive • 1x Broadcom Adv. Dual 25Gb Ethernet NIC (cluster connectivity) • 1x Embedded Broadcom Gigabit NIC (external connectivity) </div> <div style="text-align: center;">  <p>Mellanox SN2700</p> </div> </div>				
Physical Storage/Scale Factor: 48.00		Scale Factor/Physical Memory: 0.20		
Total Number of Servers:		10 (9x PowerEdge R7515; 1x PowerEdge R6525)		
Total Processors/Cores/Threads:		11/352/704		
Server Configuration:	Per PowerEdge R7515	Per PowerEdge R6525		
Processors	1x AMD EPYC 7542 32-Core Processor	2x AMD EPYC 7502 32-Core Processor		
Memory	512 GiB	512 GiB		
Storage Controller	Perc H740P	Perc H740P		
Storage Device	2x 240GB SATA SSD m.2 3x Dell 1.6TB NVMe	2x 240GB SATA SSD m.2		
Network	Mellanox Dual Port 100GbE	Broadcom Adv. Dual 25Gb		
Connectivity:	Mellanox SN2700 (32-port, 100Gbe)			
Total Rack Units:	(9xR7515)+(1xR6525)+(1xMSN2700) = 18 + 1 + 1 = 20RU			

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Description	Part Number	Source	Unit Price	Qty	Extended Price	3 Yr. Maint. Price
HARDWARE COMPONENTS						
PowerEdge R7515				1	\$41,778.17	\$376,003.53
PowerEdge R7515 Server	210-ASVQ	1	\$0.00	1	\$0.00	
PowerEdge R6515/R7515 Motherboard, with 2 x No Trusted Platform Module	384-BCEL	1	\$0.00	1	\$0.00	
PowerEdge R7515 Shipping	461-AADZ	1	\$0.00	1	\$0.00	
PowerEdge R7515 Shipping Material,DAO w/CC Cert Marking	340-CODN,	1	\$0.00	1	\$0.00	
Standard Heatsink	343-BBNT	1	\$0.00	1	\$0.00	
3200MT/s RDIMMs	412-AASE	1	\$0.00	1	\$0.00	
Performance Optimized	370-AEVR	1	\$0.00	1	\$0.00	
No Media Required	370-AAIP	1	\$0.00	1	\$0.00	
iDRAC9, Express X5	605-BBFN	1	\$0.00	1	\$0.00	
iDRAC Group Manager, Disabled	385-BBOU	1	\$0.00	1	\$0.00	
iDRAC,Factory Generated Password	379-BCQY	1	\$0.00	1	\$0.00	
Single, Hot-plug Power Supply (1+0), 495W	379-BCSF	1	\$0.00	1	\$0.00	
NEMA 5-15P to C13 Wall Plug, 125 Volt, 15 AMP,	450-ADWP	1	\$0.00	1	\$0.00	
PowerEdge 2U Standard Bezel	450-AALV	1	\$0.00	1	\$0.00	
No Quick Sync	350-BBWP	1	\$0.00	1	\$0.00	
Performance BIOS Setting	350-BBKU	1	\$0.00	1	\$0.00	
ReadyRails Sliding Rails With Cable Management Arm	384-BBBL	1	\$0.00	1	\$0.00	
No Systems Documentation, No OpenManage DVD Kit	770-BBBR	1	\$0.00	1	\$0.00	
US Order	631-AACK	1	\$0.00	1	\$0.00	
Basic Deployment Dell Server R Series 1U/2U	332-1286	1	\$0.00	1	\$0.00	
Chassis with up to 24x2.5" Drives	804-6747	1	\$0.00	1	\$0.00	
No Internal Optical Drive for x10 or greater HDD Chassis	379-BDTF	1	\$0.00	1	\$0.00	
Riser Config 2, 2 x 16 FH + 2 x 16 LP PCIe slot	429-AAIQ	1	\$0.00	1	\$0.00	
NVMe Backplane	330-BBNL	1	\$0.00	1	\$0.00	
No Additional Mid Fan	379-BDSX	1	\$0.00	1	\$0.00	
2.5" Chassis with up to 24 NVMe Drives	384-BBSO	1	\$0.00	1	\$0.00	
AMD EPYC 7542 2.90GHz, 2C/64T, 128M Cache (225W) DDR4-3200	321-BERW	1	\$0.00	1	\$0.00	
64GB RDIMM, 3200MT/s, Dual Rank	338-BTTY	1	\$0.00	1	\$0.00	
C30, No RAID for NVME chassis	370-AEVP	1	\$0.00	8	\$0.00	
No Hard Drive	780-BCDO	1	\$0.00	1	\$0.00	
Dell 1.6TB, NVMe, Mixed Use Express Flash, 2.5 SFF Drive, U.2, PM1725b with Carrier	400-ABHL	1	\$0.00	1	\$0.00	
Mellanox ConnectX-5 EX Dual Port 40/100GbE	400-BEFC	1	\$0.00	3	\$0.00	
BOSS controller card + with 2 M.2 Sticks 240G	540-BCIU	1	\$0.00	1	\$0.00	
No Controller	403-BCHM	1	\$0.00	1	\$0.00	
UEFI BIOS Boot Mode with GPT Partition	405-AACD	1	\$0.00	1	\$0.00	
Keyboard and Optical Mouse, USB, Black, English	800-BBDM	1	\$0.00	1	\$0.00	
3 Years ProSupport Plus Mission Critical 4Hr Onsite Service	570-AAKV,	1	\$12.00	3	\$36.00	
Dell 24 Monitor - E2417H	827-1296,	1	\$5,299.00	9	\$47,691.00	\$47,691.00
Mellanox MSN2700-CS2F, 32 Port QSFP 100Gbe	E2417H	1	\$169.99	3	\$509.97	
1m (3ft) Dell DAC-Q28-100G-1M Compatible 100G QSFP28 Passive Direct Attach Copper Twinax Cable	MSN2700-		\$35,913.00	1	\$35,913.00	
3m (10ft) Dell DAC-Q28-45FP28-25G-3M Compatible 100G QSFP28 to 4x25G SFP28 Passive Direct Attach Copper Breakout Cable	Q28-PC01		\$29.00	11	\$319.00	
C13 to C14, PDU Style, 12 AMP, 2 Feet (.6m) Power Cord, North America	Q-		\$93.00	3	\$279.00	
APC NetShelter SX 24U 600mm x 1070mm Deep Enclosure	492-BBDI	1	\$20.00	22	\$440.00	
Rack PDU, Basic, Zero U, 15A, 120V, 5-15 input, (14) 5-15 output	A7545498	1	\$1,129.99	1	\$1,129.99	
	A7541364	1	\$174.99	1	\$174.99	
Subtotal					\$414,805.48	\$47,691.00

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PowerEdge R6525 Server

PowerEdge R6525 Server	210-ATCF	1	\$749.00	1	\$749.00
BOSS controller card + with 2 M.2 sticks 240G (RAID 1), LP	403-BCHM	1	\$879.00	1	\$879.00
PowerEdge R6525 Motherboard, with 2 x 1Gb Onboard LOM (BCM5720)	384-BCGI	1	\$0.00	1	\$0.00
Very High Performance Fan for 10 x 2.5" or 10 x 2.5" + 2 x 2.5" chassis	384-BCGH	1	\$399.00	1	\$399.00
Chassis with up to 10 x 2.5" Hot Plug Hard Drives (2CPU & XGM1)	321-BEUP	1	\$370.00	1	\$370.00
No Trusted Platform Module	461-AADZ	1	\$0.00	1	\$0.00
PowerEdge R6525 Shipping Label, FCC2, PSU, 800W, w/o BIS	343-BBOL	1	\$0.00	1	\$0.00
PowerEdge R6525 x4 or x10 Drive Shipping Material	340-COGL	1	\$99.00	1	\$99.00
AMD EPYC 7502 2.00GHz/2.55GHz, 32C/64T, 64M Cache (180W) DDR4-2666	338-BSWD	1	\$5,599.00	2	\$11,198.00
Heatsink for 1st CPU, greater than or equal to 180W	412-AASH	1	\$0.00	1	\$0.00
Heatsink for 2nd CPU, greater than or equal to 180W	412-AASJ	1	\$0.00	1	\$0.00
3200MT/s RDIMMs	370-AEVR	1	\$0.00	1	\$0.00
64GB RDIMM, 3200MT/s Dual Rank	370-AEVP	1	\$2,439.00	8	\$19,512.00
Performance Optimized	370-AAIP	1	\$0.00	1	\$0.00
Unconfigured RAID	780-BCDS	1	\$0.00	1	\$0.00
PERC H745 for Chassis up to 10 drives	405-AAUZ	1	\$1,199.00	1	\$1,199.00
No Media Required	421-5736	1	\$0.00	1	\$0.00
iDRAC9,Enterprise	385-BBKT	1	\$489.00	1	\$489.00
iDRAC Group Manager, Disabled	379-BCQY	1	\$0.00	1	\$0.00
iDRAC, Factory Generated Password	379-BCSF	1	\$0.00	1	\$0.00
Riser Config 2, 1 x 16 LP PCIe slot (CPU1), 2 x 16 LP PCIe slot (CPU2)	330-BBNR	1	\$349.00	1	\$349.00
No Internal Optical Drive	429-ABBF	1	\$0.00	1	\$0.00
Dual, Hot-plug, Redundant Power Supply (1+1), 1400W	450-AIQZ	1	\$1,699.00	1	\$1,699.00
No Bezel	350-BBBW	1	\$0.00	1	\$0.00
Dell EMC Luggage Tag (x8 or x10 chassis)	350-BBXP	1	\$0.00	1	\$0.00
No Quick Sync	350-BBXM	1	\$49.00	1	\$49.00
Performance BIOS Settings	384-BBBL	1	\$0.00	1	\$0.00
UEFI BIOS Boot Mode with GPT Partition	800-BBDM	1	\$0.00	1	\$0.00
ReadyRails Sliding Rails With Cable Management Arm	770-BCKT	1	\$189.00	1	\$189.00
No Systems Documentation, No OpenManage DVD Kit	631-AACK	1	\$0.00	2	\$0.00
US Order	332-1286	1	\$0.00	1	\$0.00
ProSupport and 4Hr Mission Critical, 36 Month(s)	[865-BBNB]	1	\$4,661.00	1	\$4,661.00
No Installation	[900-9997]	1	\$0.00	1	\$0.00
NEMA 5-15P to C13 Wall Plug, 125 Volt, 15 AMP, 10 Feet (3m), Power Cord, North America	450-AALV	1	\$0.00	2	\$0.00

Sub Total					\$37,180.00	\$4,661.00
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HARDWARE COMPONENTS					Subtotal	\$451,985.48	\$52,352.00
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SOFTWARE COMPONENTS							
Cloudera Enterprise Data Engineering (CDH 6.3), 3yr Node License	CEDEN-	1	\$14,769.24	10	\$147,692.40		
Red Hat Linux Registration Document, No Subscription	340-AVFG	1	\$0.00	10	\$0.00		
Enterprise Linux OS, Non Factory Installed, Requires Subscription Selection	605-BBFL	1	\$0.00	10	\$0.00		
Red Hat Enterprise Linux, 1-2SKT, Physical Node, 3YR Premium Subscription, with up to 1 Virtual Guest	605-BBH0	1	\$3,702.00	10	\$37,020.00		

SOFTWARE COMPONENTS					Subtotal	\$184,712.40	\$0.00
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Total					\$636,697.88	\$52,352.00
Large Purchase Discount (35%)*					-222,844.26	-18,323.20

Pricing: 1 = Dell	Three-Year Cost of Ownership:	\$447,883
* Discount applies to all line items where Key = 1. Discount based upon total system cost as purchased by a regular customer.	HSpH@1TB:	9.81
Audited by Doug Johnson, InfoSizing	\$/ HSpH@1TB:	\$45,655.76

Prices used in TPC benchmarks reflect the actual prices a customer would pay for a one-time purchase of the stated Line Items. 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 Line Items. For complete details, see the pricing section of the TPC Benchmark Standard. If you find that the stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you.

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Numerical Quantities	
Performance Run – Run 2	
Scale Factor	1TB
Run Start Time	2019-09-10 06:04:28.000
Run End Time	2019-09-10 06:10:32.000
Run Elapsed Time	367.000
HSGen Start Time	2019-09-10 06:04:29.000
HSGen End Time	2019-09-10 06:05:32.000
HSGen Elapsed Time	65.236
HSSort Start Time	2019-09-10 06:05:36.000
HSSort End Time	2019-09-10 06:09:56.000
HSSort Elapsed Time	259.864
HSValidate Start Time	2019-09-10 06:10:00.000
HSValidate End Time	2019-09-10 06:10:32.000
HSValidate Elapsed Time	32.710
Repeatability Run – Run 1	
Scale Factor	1TB
Run Start Time	2019-09-10 05:56:26.000
Run End Time	2019-09-10 06:02:21.000
Run Elapsed Time	359.000
HSGen Start Time	2019-09-10 05:56:27.000
HSGen End Time	2019-09-10 05:57:33.000
HSGen Elapsed Time	67.205
HSSort Start Time	2019-09-10 05:57:37.000
HSSort End Time	2019-09-10 06:01:46.000
HSSort Elapsed Time	249.576
HSValidate Start Time	2019-09-10 06:01:50.000
HSValidate End Time	2019-09-10 06:02:21.000
HSValidate Elapsed Time	31.840



PowerEdge R7515

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Run Reports

Run Report for Performance Run – Run 2

===== TPCx-HS Performance Metric (HSph@SF) Report

Test Run 2 Details	Total Time =	367
	Total Size =	10000000000
	Scale-Factor =	1

TPCx-HS Performance Metric (HSph@SF): 9.8135

Run Report for Repeatability Run – Run 1

===== TPCx-HS Performance Metric (HSph@SF) Report

Test Run 1 Details	Total Time =	359
	Total Size =	10000000000
	Scale-Factor =	1

TPCx-HS Performance Metric (HSph@SF): 10.0300

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Revision History

Date	Edition	Description
September 17, 2019	First	Initial Publication