






	<h1>Dell PowerEdge R6415</h1>		TPCx-HS v2.0.3
			TPC Pricing v2.4.0
			Report Date Jan. 23, 2019
Availability Date January 23, 2019	TPCx-HS Performance 17.19 HSph@10TB	Price/Performance \$27,461.96 \$/ HSph@10TB	Total System Cost \$472,071 USD
System Under Test Configuration Overview			
Scale Factor 10	Hadoop Software Cloudera Enterprise Edition 6.0	Operating System Red Hat Enterprise Linux Server Release 7.5	Other Software N/A
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>...</p> <p>16x Dell PowerEdge R6415 Servers (Data Nodes)</p> <ul style="list-style-type: none"> • 1x AMD EPYC 7551P 32-Core Processor • 256 GB (8x 32GB RDIMM 2666MT/s Dual Rank) • 1x 960GB SSD SATA 2.5in Hot-plug Drive • 1x Mellanox Dual Port 25GbE SFP28 NIC • 3x Dell 1.6TB, NVMe, 2.5 SFF Drive <p>...</p>  <p>...</p>  <p>1x Dell PowerEdge R6415 Server (Master Node)</p> <ul style="list-style-type: none"> • 1x AMD EPYC 7551P 32-Core Processor • 256 GB (8x 32GB RDIMM 2666MT/s Dual Rank) • 1x 960GB SSD SATA 2.5in Hot-plug Drive • 1x Mellanox Dual Port 25GbE SFP28 NIC </div> <div style="text-align: center;">  <p>Dell S-Series (S5148F-ON) 48x25GbE and 6x100GbE Network Switch.</p> </div> </div>			
Physical Storage/Scale Factor: 9.31		Scale Factor/Physical Memory: 2.35	
Total Number of Servers:		17x Dell PowerEdge R6415	
Total Processors/Cores/Threads:		17/544/1,088	
Server Configuration:		Per Dell PowerEdge R6415	
Processors		1x AMD EPYC 7551P 32-Core	
Memory		256 GiB	
Storage Controller		Perc H740P	
Storage Device		1x 960 GB SSD SATA (all nodes)	
		3x Dell 1.6TB NVMe (Data Nodes)	
Network		1x Mellanox Dual Port 25GbE SFP28 NIC	
Connectivity:		Dell S-Series (S5148F-ON) Network Switch	
Total Rack Units:		(17xR6415) + (1xS5148F) = (17x1) + (1x1) = 18RU	

		<h1 style="margin: 0;">Dell PowerEdge R6415</h1>		TPCx-HS	v2.0.3	
				TPC Pricing	v2.4.0	
				Report Date	Jan. 23, 2019	
Description	Part Number	Source	Unit Price	Qty	Extended Price	3 Yr. Maint. Price
HARDWARE COMPONENTS						
PowerEdge R6415 Server						
PowerEdge R6415/R7415 Motherboard	210-ANJO	1	\$28,553.00	16	\$456,848.00	
No Trusted Platform Module	384-BBSR	1	\$0.00	16	\$0.00	
2.5" Chassis with up to 10 Hard Drives, including up to 8 SAS/SATA or 9 NVME Drives	461-AADZ	1	\$0.00	16	\$0.00	
PowerEdge R6415 Shipping	321-BDFY	1	\$0.00	16	\$0.00	
PowerEdge R6415 x4 or x10 Drive Shipping Material	340-BTFM	1	\$0.00	16	\$0.00	
AMD EPYC™ 7551P 2.00GHz/2.55GHz, 32C/64T, 64M Cache (180W) DDR4-2666	343-BBGL	1	\$0.00	16	\$0.00	
Standard Heatsink	338-BNCU	1	\$0.00	16	\$0.00	
2666MT/s RDIMMs	412-AALH	1	\$0.00	16	\$0.00	
Performance Optimized	370-ADNU	1	\$0.00	16	\$0.00	
Unconfigured RAID	370-AAIP	1	\$0.00	16	\$0.00	
PERC H740P RAID Controller, 8GB NV Cache, Mini card	780-BCDS	1	\$0.00	16	\$0.00	
Red Hat Enterprise Linux Non Factory Install,x64,Req Lic&Sub Selection	405-AAMS	1	\$0.00	16	\$0.00	
iDRAC9,Enterprise	421-4727	1	\$0.00	16	\$0.00	
iDRAC Group Manager, Disabled	385-BBKT	1	\$0.00	16	\$0.00	
iDRAC,Factory Generated Password	379-BCQY	1	\$0.00	16	\$0.00	
Riser Config 1, 2 x 16 LP	379-BCSF	1	\$0.00	16	\$0.00	
On-Board LOM	330-BBIV	1	\$0.00	16	\$0.00	
No Internal Optical Drive	542-BBBP	1	\$0.00	16	\$0.00	
Dual, Hot Plug, Redundant Power Supply (1+1), 550W	429-AAIQ	1	\$0.00	16	\$0.00	
No Bezel	450-AGZB	1	\$0.00	16	\$0.00	
Dell EMC Luggage Tag	350-BBBW	1	\$0.00	16	\$0.00	
No Quick Sync	350-BBME	1	\$0.00	16	\$0.00	
Performance BIOS Settings	350-BBKR	1	\$0.00	16	\$0.00	
UEFI BIOS Boot Mode with GPT Partition	384-BBBL	1	\$0.00	16	\$0.00	
ReadyRails Sliding Rails With Cable Management Arm	800-BBDM	1	\$0.00	16	\$0.00	
No Systems Documentation, No OpenManage DVD Kit	770-BCKT	1	\$0.00	16	\$0.00	
Dell Hardware Limited Warranty Plus On-Site Service	631-AACK	1	\$0.00	16	\$0.00	
ProSupport Mission Critical: 7x24 HW / SW Technical Support and Assistance, 3 Years	816-0779	1	\$0.00	16	\$0.00	\$0.00
ProSupport Mission Critical: 4-Hour 7x24 On-Site Service with Emergency Dispatch, 3 Years	816-0796	1	\$1,438.00	16	\$23,008.00	\$23,008.00
Thank you choosing Dell ProSupport. For tech support, visit //www.dell.com/support or call 1-800- 945-3355	816-0784	1	\$262.00	16	\$4,192.00	\$4,192.00
On-Site Installation Declined	989-3439	1	\$0.00	16	\$0.00	\$0.00
32GB RDIMM 2666MT/s Dual Rank	900-9997	1	\$0.00	16	\$0.00	\$0.00
960GB SSD SATA 6Gbps 512e 2.5in Hot Plug S4510 Drive	370-ADNF	1	\$0.00	128	\$0.00	
Dell 1.6TB, NVMe, Mixed Use Express Flash, 2.5 SFF Drive, U.2, PM1725a with Carrier	400-BDNJ	1	\$0.00	16	\$0.00	
Mellanox ConnectX-4 Lx Dual Port 25GbE SFP28 Network Adapter, Low Profile	400-AUMP	1	\$0.00	48	\$0.00	
C13 to C14, PDU Style, 12 AMP, 6.5 Feet (2m) Power Cord, North America	406-BBLD	1	\$0.00	16	\$0.00	
Dell EMC S5148F-ON Switch,48x 25GbE,6x 100GbE QSFP28, IO to PSU,2 PSU,OS10	492-BBDI	1	\$0.00	32	\$0.00	
OS10 Enterprise S5148F-ON	210-ANCK	1	\$25,701.00	1	\$25,701.00	
Dell Networking, Cable, SFP28 to SFP28, 25GbE, Passive Copper Twinax Direct Attach Cable, 2 Meter	634-BMIF	1	\$0.00	1	\$0.00	
Dell EMC S5148 Series User Guide	470-ACET	1	\$0.00	17	\$0.00	
Force10, Power Cord, 125V, 15A, 10 Feet, NEMA 5-15/C13, S-Series	343-BBFV	1	\$0.00	1	\$0.00	
Dell Hardware Limited Warranty 1 Year	450-AAFH	1	\$0.00	1	\$0.00	
Thank you choosing Dell ProSupport. For tech support, visit //www.dell.com/support or call 1-800- 945-3355	814-8268	1	\$0.00	1	\$0.00	
Dell Limited Hardware Warranty Extended Year(s)	989-3439	1	\$0.00	1	\$0.00	
Mission Critical Package: 4-Hour 7X24 On-Site Service with Emergency Dispatch, 2 Year Extended	975-3461	1	\$0.00	1	\$0.00	\$0.00
ProSupport: 7x24 HW / SW Tech Support and Assistance, 3 Year	814-8278	1	\$423.00	1	\$423.00	\$423.00
Info 3rd Party Software Warranty provided by Vendor	814-8288	1	\$5,956.00	1	\$5,956.00	\$5,956.00
Mission Critical Package: 4-Hour 7X24 On-Site Service with Emergency Dispatch, 1 Year	997-6306	1	\$0.00	1	\$0.00	\$0.00
On-Site Installation Declined	814-8277	1	\$111.00	1	\$111.00	\$111.00
APC NetShelter SX 24U 600mm x 1070mm Deep Enclosure	900-9997	1	\$0.00	1	\$0.00	\$0.00
Rack PDU, Basic, Zero U, 15A, 120V, 5-15 input, (14) 5-15 output	A7067508	1	\$1,079.99	1	\$1,079.99	
Logitech MK120 Keyboard and Mouse	A7541364	1	\$174.99	1	\$174.99	
Dell 24 Monitor	A6999510	1	\$15.99	1	\$15.99	
	210-AIWG	1	\$139.99	1	\$139.99	
Subtotal					\$483,959.96	\$33,690.00

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		TPC Pricing	v2.4.0				
		Report Date	Jan. 23, 2019				
Description		Part Number	Source	Unit Price	Qty	Extended Price	3 Yr. Maint. Price
PowerEdge R6415 Server		210-ANJO	1	\$18,416.00	1	\$18,416.00	
PowerEdge R6415/R7415 Motherboard		384-BBSR	1	\$0.00	1	\$0.00	
No Trusted Platform Module		461-AADZ	1	\$0.00	1	\$0.00	
2.5" Chassis with up to 10 Hard Drives, including up to 8 SAS/SATA or 9 NVME Drives		321-BDFY	1	\$0.00	1	\$0.00	
PowerEdge R6415 Shipping		340-BTFM	1	\$0.00	1	\$0.00	
PowerEdge R6415 x4 or x10 Drive Shipping Material		343-BBGL	1	\$0.00	1	\$0.00	
AMD EPYC™ 751P 2.00GHz/2.55GHz, 32C/64T, 64M Cache (180W) DDR4-2666		338-BNCU	1	\$0.00	1	\$0.00	
Standard Heatsink		412-AALH	1	\$0.00	1	\$0.00	
2666MT/s RDIMMs		370-ADNU	1	\$0.00	1	\$0.00	
Performance Optimized		370-AAIP	1	\$0.00	1	\$0.00	
Unconfigured RAID		780-BCDS	1	\$0.00	1	\$0.00	
PERC H740P RAID Controller, 8GB NV Cache, Mini card		405-AAMS	1	\$0.00	1	\$0.00	
Red Hat Enterprise Linux Non Factory Install,x64,Req Lic&Sub Selection		421-4727	1	\$0.00	1	\$0.00	
iDRAC9,Enterprise		385-BBKT	1	\$0.00	1	\$0.00	
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 1, 2 x 16 LP		330-BBIV	1	\$0.00	1	\$0.00	
On-Board LOM		542-BBBP	1	\$0.00	1	\$0.00	
No Internal Optical Drive		429-AAIQ	1	\$0.00	1	\$0.00	
Dual, Hot Plug, Redundant Power Supply (1+1), 550W		450-AGZB	1	\$0.00	1	\$0.00	
No Bezel		350-BBBW	1	\$0.00	1	\$0.00	
Dell EMC Luggage Tag		350-BBME	1	\$0.00	1	\$0.00	
No Quick Sync		350-BBKR	1	\$0.00	1	\$0.00	
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	\$0.00	1	\$0.00	
No Systems Documentation, No OpenManage DVD Kit		631-AACK	1	\$0.00	1	\$0.00	
Dell Hardware Limited Warranty Plus On-Site Service		816-0779	1	\$0.00	1	\$0.00	\$0.00
ProSupport Mission Critical: 7x24 HW / SW Technical Support and Assistance, 3 Years		816-0796	1	\$1,438.00	1	\$1,438.00	\$1,438.00
ProSupport Mission Critical: 4-Hour 7x24 On-Site Service with Emergency Dispatch, 3 Years		816-0784	1	\$262.00	1	\$262.00	\$262.00
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	\$0.00	\$0.00
On-Site Installation Declined		900-9997	1	\$0.00	1	\$0.00	\$0.00
32GB RDIMM 2666MT/s Dual Rank		370-ADNF	1	\$0.00	8	\$0.00	\$0.00
960GB SSD SATA 6Gbps 512e 2.5in Hot Plug S4510 Drive		400-BDNJ	1	\$0.00	1	\$0.00	\$0.00
Mellanox ConnectX-4 Lx Dual Port 25GbE SFP28 Network Adapter, Low Profile		406-BBLD	1	\$0.00	1	\$0.00	\$0.00
C13 to C14, PDU Style, 12 AMP, 6.5 Feet (2m) Power Cord, North America		492-BBDI	1	\$0.00	2	\$0.00	\$0.00
Sub Total						\$18,416.00	\$1,700.00
HARDWARE COMPONENTS						Subtotal	\$502,375.96
SOFTWARE COMPONENTS							
SEL Cloudera Basic Gold Node , Node License, 24x7, 3YR		CEBN-GOLD-I	1	\$7,386.00	17	\$125,562.00	\$125,562.00
Red Hat Enterprise Linux, Non Factory Install, x64, Reqs Lic & Sub Selection		421-4727	1	\$0.00	17	\$0.00	\$0.00
Red Hat Linux Registration Document, No Subscription		340-AVFG	1	\$0.00	17	\$0.00	\$0.00
Red Hat Enterprise Linux,1-25KT,3yr Premium Subscription,1 Virtual Guest		421-5721	1	\$3,702	17	\$62,934.00	\$62,934.00
SOFTWARE COMPONENTS						Subtotal	\$0.00
Total						\$502,375.96	\$223,886.00
Large Purchase Discount (35%)*						-\$175,831.59	-\$78,360.10
<p>Pricing: 1 = Dell; 1S = One or more components of the Measured Configuration have been substituted in the Priced Configuration. See the FDR for details. * Discount applies to all line items where Key = 1. Discount based upon total system cost as purchased by a regular customer.</p>		<p>Three-Year Cost of Ownership: \$472,071</p> <p>HSp@10TB: 17.19</p> <p>\$/ HSp@10TB: \$27,461.96</p>					
<p>Audited by Doug Johnson, InfoSizing</p> <p><i>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.</i></p>							

	<h1>Dell PowerEdge R6415</h1>		TPCx-HS	v2.0.3
			TPC Pricing	v2.4.0
			Report Date	Jan. 23, 2019
<h2>Numerical Quantities</h2>				
<h3>Performance Run – Run 1</h3>				
Scale Factor			10TB	
Run Start Time	2018-12-12 22:13:32.000			
Run End Time	2018-12-12 22:48:23.000			
Run Elapsed Time			2,094.000	
HSGen Start Time	2018-12-12 22:13:33.000			
HSGen End Time	2018-12-12 22:22:26.000			
HSGen Elapsed Time			534.793	
HSSort Start Time	2018-12-12 22:22:29.000			
HSSort End Time	2018-12-12 22:45:00.000			
HSSort Elapsed Time			1,351.870	
HSValidate Start Time	2018-12-12 22:45:04.000			
HSValidate End Time	2018-12-12 22:48:23.000			
HSValidate Elapsed Time			201.125	
<h3>Repeatability Run – Run 2</h3>				
Scale Factor			10TB	
Run Start Time	2018-12-12 22:49:29.000			
Run End Time	2018-12-12 23:24:15.000			
Run Elapsed Time			2,089.000	
HSGen Start Time	2018-12-12 22:49:31.000			
HSGen End Time	2018-12-12 22:58:27.000			
HSGen Elapsed Time			537.405	
HSSort Start Time	2018-12-12 22:58:30.000			
HSSort End Time	2018-12-12 23:20:59.000			
HSSort Elapsed Time			1,350.761	
HSValidate Start Time	2018-12-12 23:21:03.000			
HSValidate End Time	2018-12-12 23:24:15.000			
HSValidate Elapsed Time			194.029	



Dell PowerEdge R6415

TPCx-HS	v2.0.3
TPC Pricing	v2.4.0
Report Date	Jan. 23, 2019

Run Reports

Run Report for Performance Run – Run 1

TPCx-HS Performance Metric (HSph@SF) Report

Test Run 1 Details	Total Time =	2094
	Total Size =	100000000000
	Scale-Factor =	10

TPCx-HS Performance Metric (HSph@SF): 17.1939

Run Report for Repeatability Run – Run 2

TPCx-HS Performance Metric (HSph@SF) Report

Test Run 2 Details	Total Time =	2089
	Total Size =	100000000000
	Scale-Factor =	10

TPCx-HS Performance Metric (HSph@SF): 17.2354

	Dell PowerEdge R6415	TPCx-HS v2.0.3 TPC Pricing v2.4.0 Report Date Jan. 23, 2019
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Revision History

Date	Edition	Description
January 23, 2019	First	Initial Publication