



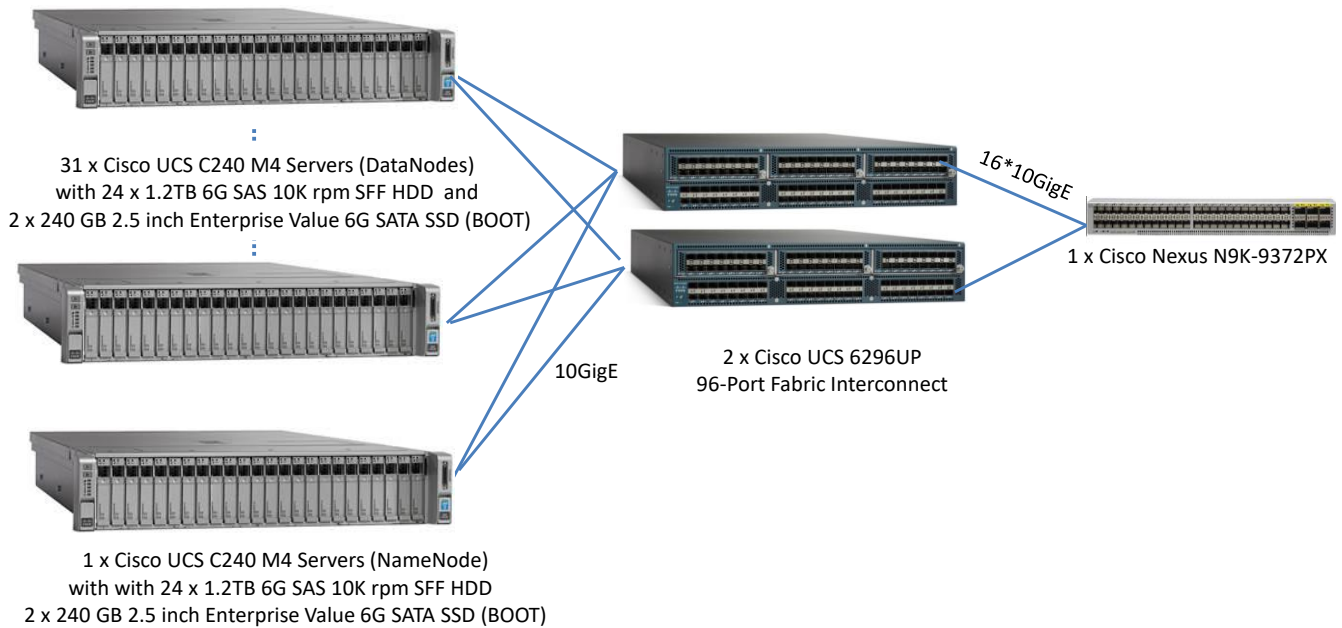
Cisco UCS Integrated Infrastructure for Big Data

TPCx-HS Rev. 1.4.0
TPC-Pricing Rev. 2.1.0

Report Date: **July 7, 2016**
Revised: **August 1, 2016**

Total System Cost		TPCx-HS Performance Metric		Price/Performance	
842,308 USD		22.26 HSph@100TB		37,839.54 USD \$/HSph@100TB	
Scale Factor	Apache Hadoop Compatible Software	Operating System	Other Software	Availability Date	
100TB	IBM Open Platform (IBM IOP) 4.1	Red Hat Enterprise Linux Server Release 6.7	None	July 7, 2016	

System Configuration



Physical Storage/Scale Factor: 9.37

Scale Factor/Physical Memory: 12.50

Servers:	32 x Cisco UCS C240M4 Server
Total Processors/Cores/Threads	64/896 /1,792
Server Configuration:	Per node:
Processors	2 x Intel® Xeon® Processor E5-2680 v4, 2.40 GHz, 35 MB L3
Memory	256GB
Storage Controller	1 x Cisco 12G SAS Modular Raid Controller
Storage Device	24 x 1.2TB 12G SAS 10KrpmSFF HDD 2 x 240GB 2.5in. Enterprise Value 6G SATA SSD (boot disk)
Network	1 x Cisco UCS VIC 1227 MLOM - Dual Port 10Gb SFP+ 2 x Cisco UCS 6296UP 96-Port Fabric Interconnect
Connectivity:	1 x Cisco Nexus N9K-9372PX
Total Rack Units:	(32*2RU)+(2*2RU)+(1*1RU) = 69RU



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Description	Part Number	Source	Unit Price	Qty	Extended Price	3 Year Maint. Price
Cisco UCS Integrated Infrastructure for Big Data Performance Optimized B	UCS-SL-CPA4-P1	1	\$685,107.18	1	\$ 685,107.18	
UCS C240M4SX	UCS-SPBD-C240M4-P1	1	-	16	-	
2.40 GHz E5-2680 v4/120W 14C/35MB Cache/DDR4 2400MHz	UCS-CPU-E52680E	1	-	32	-	
16GB DDR4-2133-MHz RDIMM/PC4-17000/dual rank/x4/1.2v	UCS-MR-1X162RU-A	1	-	256	-	
1.2 TB 12G SAS 10K RPM SFF HDD	UCS-HD12TB10K12G	1	-	384	-	
240 GB 2.5 inch Enterprise Value 6G SATA SSD (boot)	UCS-SD240GBKS4-EB	1	-	32	-	
Right PCI Riser Bd (Riser 1) 2onbd SATA bootdrvs+ 2PCI slts	UCSC-PCI-1C-240M4	1	-	16	-	
Cisco UCS VIC1227 VIC MLOM - Dual Port 10Gb SFP+	UCSC-MLOM-CSC-02	1	-	16	-	
1200W / 800W V2 AC Power Supply for 2U C-Series Servers	UCSC-PSU2V2-1200W	1	-	32	-	
Power Cord, 125V AC 13A NEMA 5-15 Plug, North America	CAB-9K12A-NA	1	-	32	-	
Ball Bearing Rail Kit for C220 M4 and C240 M4 rack servers	UCSC-RAILB-M4	1	-	16	-	
Supercap cable 250mm	UCSC-SCCBL240	1	-	16	-	
Heat sink for UCS C240 M4 rack servers	UCSC-HS-C240M4	1	-	32	-	
Cisco 12G SAS Modular Raid Controller	UCSC-MRAID12G	1	-	16	-	
Cisco 12Gbps SAS 2GB FBWC Cache module (Raid 0/1/5/6)	UCSC-MRAID12G-2GB	1	-	16	-	
(Not sold standalone) UCS 6296UP 2RU FI w /18p LIC,16xCables	UCS-SA-BD-FI96	1	-	2	-	
UCS 6296UP Power Supply/100-240V AC	UCS-PSU-6296UP-AC	1	-	4	-	
Power Cord, 125V AC 13A NEMA 5-15 Plug, North America	CAB-9K12A-NA	1	-	4	-	
10GBASE-CU SFP+ Cable 3 Meter	SFP-H10GB-CU3M	1	-	32	-	
UCS Manager v3.1	N10-MGT014	1	-	2	-	
UCS 6296UP Chassis Accessory Kit	UCS-ACC-6296UP	1	-	2	-	
UCS 6296UP Fan Module	UCS-FAN-6296UP	1	-	8	-	
UCS 6200 Series Expansion Module Blank	UCS-BLKE-6200	1	-	6	-	
UCS C240M4SX	UCS-SPBD-C240M4-P1	1	\$ 40,663.00	16	\$ 650,608.00	
2.40 GHz E5-2680 v4/120W 14C/35MB Cache/DDR4 2400MHz	UCS-CPU-E52680E	1	-	32	-	
16GB DDR4-2133-MHz RDIMM/PC4-17000/dual rank/x4/1.2v	UCS-MR-1X162RU-A	1	-	256	-	
1.2 TB 12G SAS 10K RPM SFF HDD	UCS-HD12TB10K12G	1	-	384	-	
240 GB 2.5 inch Enterprise Value 6G SATA SSD (boot)	UCS-SD240GBKS4-EB	1	-	32	-	
Right PCI Riser Bd (Riser 1) 2onbd SATA bootdrvs+ 2PCI slts	UCSC-PCI-1C-240M4	1	-	16	-	
Cisco UCS VIC1227 VIC MLOM - Dual Port 10Gb SFP+	UCSC-MLOM-CSC-02	1	-	16	-	
1200W / 800W V2 AC Power Supply for 2U C-Series Servers	UCSC-PSU2V2-1200W	1	-	32	-	
Power Cord, 125V AC 13A NEMA 5-15 Plug, North America	CAB-9K12A-NA	1	-	32	-	
Ball Bearing Rail Kit for C220 M4 and C240 M4 rack servers	UCSC-RAILB-M4	1	-	16	-	
Supercap cable 250mm	UCSC-SCCBL240	1	-	16	-	
Heat sink for UCS C240 M4 rack servers	UCSC-HS-C240M4	1	-	32	-	
Cisco 12G SAS Modular Raid Controller	UCSC-MRAID12G	1	-	16	-	
Cisco 12Gbps SAS 2GB FBWC Cache module (Raid 0/1/5/6)	UCSC-MRAID12G-2GB	1	-	16	-	



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Description	Part Number	Source	Unit Price	Qty	Extended Price	3 Year Maint. Price
Cisco Nexus 9372PX Switch	N9K-C9372PX	1	\$ 22,500.00	1	\$ 22,500.00	
Cisco SNTP Cisco Nexus 9372PX Sw itch, 36 24x7	CON-SNTP-9372PX	1	\$ 5,256.00	1		\$ 5,256.00
Nexus 9500 or 9300 Base NX-OS Software Rel 6.1(2)I3(3A)	N9KDK9-612I3.3A	1	-	1	-	
Nexus 3K/9K Fixed Accessory Kit	N3K-C3064-ACC-KIT	1	-	1	-	
Nexus 2K/3K/9K Single Fan, port side exhaust airflow	NXA-FAN-30CFM-F	1	-	4	-	
Power Cord, 250VAC 10A CEE 7/7 Plug, EU	CAB-9K10A-EU	1	-	2	-	
Nexus 9300 650W AC PS, Port-side Exhaust	N9K-PAC-650W-B	1	-	2	-	
2rd Gen FI License to connect C-direct only	UCS-L-6200-10G-C	1	\$ 925.00	60	\$ 55,500.00	
10GBASE-CU SFP+ Cable 3 Meter	SFP-H10GB-CU3M	1	\$100	64	\$6,400	
Cisco Smart Net 24X7X4 3Y UCS C240 M4S BD SP Server	CON-OSP-C240V4SP	1	\$ 1,284.99	32		\$41,120
Cisco R42610 standard rack w/side panels	RACK-UCS2	1	\$ 3,429.00	2	\$ 6,858.00	
Cisco Smart Net 24X7X4 3Y UCS 6296UP 2RU Fabric Int/2 PSU/4 Fans	CON-SNTP-FI6296UP	1	\$ 5,781.00	2		\$11,562
Red Hat Enterprise Linux Server, 3Y 24x7	CON-ISV1-RH2SUG3A	1	\$ 2,397.00	32	\$ 76,704.00	
Total					\$1,503,677.18	\$ 57,937.68
Large Purchase Discount 1	61% for products and 35% for service	1			\$ (917,243.08)	\$(20,278.19)
Acer V206HQLAbd - LED monitor - 20" (Inc 2 spares)	UM.1V6AA.A02	2	79.99	3	\$ 239.97	
Logitech USB Corded Keyboard/Mouse Combo MK120 (Inc 2 spares)	920-002565	2	17.99	3	\$ 53.97	
IBM Elite Support for Apache Hadoop	IBM-D1G8TLL	3	6810	32	\$ 217,920.00	

Pricing: 1 = Cisco, 2 = CDW.com, 3 = IBM ⁽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.	Three-Year Cost of Ownership \$842,308 HSph@100TB 22.26 \$/HSph@100TB \$37,839.54
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Audited by Doug Johnson of InfoSizing

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.



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Performance Run

Scale Factor	100TB
Run Start Time	2016-06-25 11:21:03
Run End Time	2016-06-25 15:50:32
Run Elapsed Time	16,171.000
HSGen Start Time	2016-06-25 11:21:04
HSGen End Time	2016-06-25 12:26:11
HSGen Elapsed Time	3,908.233
HSSort Start Time	2016-06-25 12:26:13
HSSort End Time	2016-06-25 15:21:42
HSSort Elapsed Time	10,529.997
HSValidate Start Time	2016-06-25 15:21:46
HSValidate End Time	2016-06-25 15:50:32
HSValidate Elapsed Time	1,727.825

Repeatability Run

Scale Factor	100TB
Run Start Time	2016-06-25 16:00:42
Run End Time	2016-06-25 20:29:26
Run Elapsed Time	16,126.000
HSGen Start Time	2016-06-25 16:00:43
HSGen End Time	2016-06-25 17:06:02
HSGen Elapsed Time	3,920.592
HSSort Start Time	2016-06-25 17:06:05
HSSort End Time	2016-06-25 20:00:17
HSSort Elapsed Time	10,453.239
HSValidate Start Time	2016-06-25 20:00:20
HSValidate End Time	2016-06-25 20:29:26
HSValidate Elapsed Time	1,747.406



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Run Report for Performance Run - Run 1

TPCx-HS Performance Metric (HSph@SF) Report

Test Run 1 Details	Total Time =	16171
	Total Size =	1000000000000
	Scale-Factor =	100

TPCx-HS Performance Metric (HSph@SF): 22.2622

Run Report for Repeatability Run - Run 2

TPCx-HS Performance Metric (HSph@SF) Report

Test Run 2 Details	Total Time =	16126
	Total Size =	1000000000000
	Scale-Factor =	100

TPCx-HS Performance Metric (HSph@SF): 22.3244
