



Cisco UCS Integrated Infrastructure for Big Data

TPCx-HS Rev. 1.3.0
TPC-Pricing Rev. 2.1.0

Report Date:
October 23, 2015

Total System Cost

TPCx-HS Performance Metric

Price/Performance

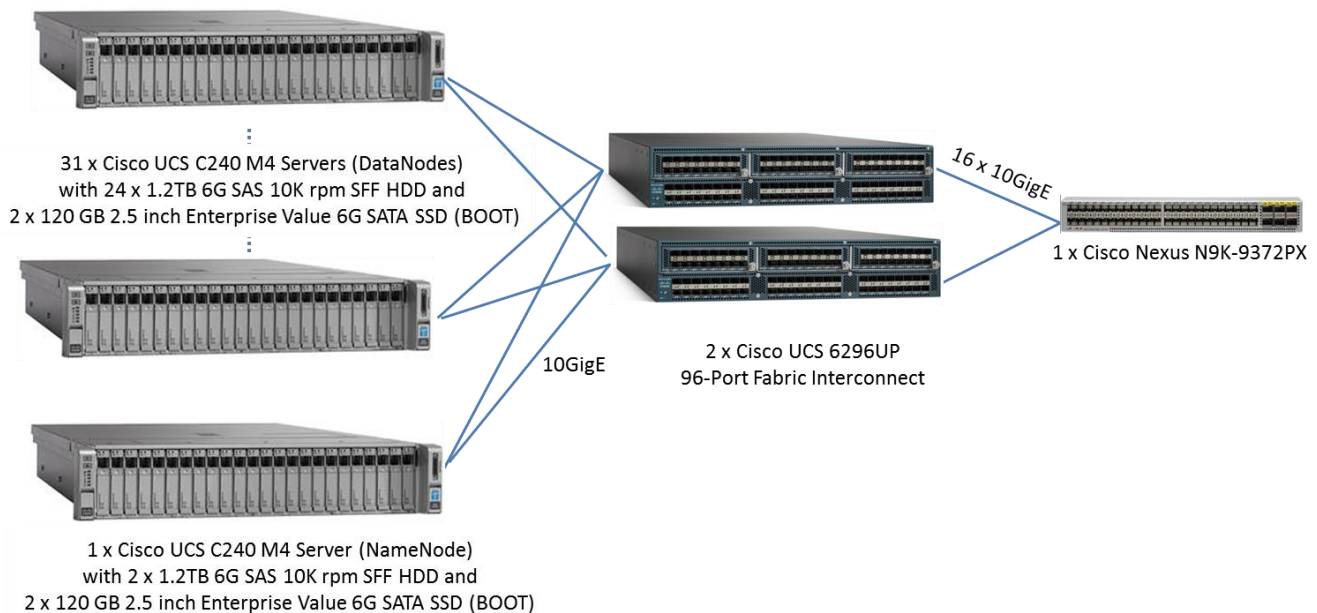
861,868 USD

21.99
HSph @ 100TB

39,193.64 USD
\$/HSph @ 100TB

Scale Factor	Apache Hadoop Compatible Software	Operating System	Other Software	Availability Date
100TB	Cloudera Distribution for Apache Hadoop (CDH) 5.3.2	Red Hat Enterprise Linux Server 6.5	None	October 23, 2015

System Configuration



Physical Storage/Scale Factor: 9.03

Scale Factor/Physical Memory: 12.5

Servers:	32 x Cisco UCS C240M4 Server
Total Processors/Cores/Threads	64/768/1536
Server Configuration:	Per node:
Processors	2 x Intel® Xeon® Processor E5-2680 v3, 2.50 GHz, 30MB L3
Memory	256GB
Storage Controller	1 x Cisco 12G SAS Modular Raid Controller, 2GB FBWC Cache
Storage Device	24 x 1.2TB 6G SAS 10Krpm SFF HDD (for 31 DataNodes) 2 x 1.2TB 6G SAS 10Krpm SFF HDD (for 1 NameNode)
Network	2 x 120GB 2.5in. Enterprise Value 6G SATA SSD (boot disks, all nodes) 1 x Cisco UCS VIC1227 VIC MLOM - Dual Port 10Gb SFP+
Connectivity:	2 x Cisco UCS 6296UP 96-Port Fabric Interconnect 1 x Cisco Nexus N9K-9372PX



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Description	Part Number	Source	Unit Price	Qty	Extended Price	3 Year Maint.
Hardware Components						
Cisco UCS CPA v3 Performance Optimized Bundle	UCS-SL-CPA3-P	1	\$0.00	1	\$0.00	
(Not sold Standalone)UCS C240 M4SX w/E52680v3,256GB mem	UCS-SA-C240M4SX-P	1	\$48,005.00	16	\$768,080.00	
2.50 GHz E5-2680 v3/120W 12C/30MB Cache/DDR4 2133MHz	UCS-CPU-E52680D	1	\$0.00	32	\$0.00	
16GB DDR4-2133-MHz RDIMM/PC4-17000/dual rank/x4/1.2v	UCS-MR-1X162RU-A	1	\$0.00	256	\$0.00	
120 GB 2.5 inch Enterprise Value 6G SATA SSD (BOOT)	UCS-SD120G0KSB-EV	1	\$0.00	32	\$0.00	
1.2 TB 6G SAS 10K rpm SFF HDD	UCS-HD12T10KS2-E	1	\$0.00	384	\$0.00	
Cisco 12Gbps SAS 2GB FBWC Cache module (Raid 0/1/5/6)	UCSC-MRAID12G-2GB	1	\$0.00	16	\$0.00	
Cisco 12G SAS Modular Raid Controller	UCSC-MRAID12G	1	\$0.00	16	\$0.00	
Cisco UCS VIC1227 VIC MLOM - Dual Port 10Gb SFP+	UCSC-MLOM-CSC-02	1	\$0.00	16	\$0.00	
Right PCI Riser Bd (Riser 1) 2onbd SATA bootdrvs+ 2PCI slts	UCSC-PCI-1C-240M4	1	\$0.00	16	\$0.00	
1200W / 800W V2 AC Power Supply for 2U C-Series Servers	UCSC-PSU2V2-1200W	1	\$0.00	32	\$0.00	
Power Cord 125VAC 13A NEMA 5-15 Plug North America	CAB-9K12A-NA	1	\$0.00	32	\$0.00	
Right PCI Riser Bd (Riser 1) 2onbd SATA bootdrvs+ 2PCI slts	UCSC-PCI-1C-240M4	1	\$0.00	16	\$0.00	
Heat sink for UCS C240 M4 rack servers	UCSC-HS-C240M4	1	\$0.00	32	\$0.00	
Supercap cable 250mm	UCSC-SCCBL240	1	\$0.00	16	\$0.00	
Ball Bearing Rail Kit for C220 M4 and C240 M4 rack servers	UCSC-RAILB-M4	1	\$0.00	16	\$0.00	
(Not sold standalone) UCS 6296UP 2RU FI w/18p LIC,16xCables	UCS-SA-BD-FI96	1	\$22,517.00	2	\$45,034.00	
UCS 6296UP Power Supply/100-240VAC	UCS-PSU-6296UP-AC	1	\$0.00	4	\$0.00	
10GBASE-CU SFP+ Cable 3 Meter	SFP-H10GB-CU3M	1	\$0.00	32	\$0.00	
UCS Manager v2.2	N10-MGT012	1	\$0.00	2	\$0.00	
UCS 6296UP Chassis Accessory Kit	UCS-ACC-6296UP	1	\$0.00	2	\$0.00	
UCS 6200 Series Expansion Module Blank	UCS-BLKE-6200	1	\$0.00	6	\$0.00	
UCS 6296UP Fan Module	UCS-FAN-6296UP	1	\$0.00	8	\$0.00	
Power Cord 125VAC 13A NEMA 5-15 Plug North America	CAB-9K12A-NA	1	\$0.00	4	\$0.00	
(Not sold Standalone)UCS C240 M4SX w/E52680v3,256GB mem	UCS-SA-C240M4SX-P	1	\$48,005.00	16	\$768,080.00	
2.50 GHz E5-2680 v3/120W 12C/30MB Cache/DDR4 2133MHz	UCS-CPU-E52680D	1	\$0.00	32	\$0.00	
16GB DDR4-2133-MHz RDIMM/PC4-17000/dual rank/x4/1.2v	UCS-MR-1X162RU-A	1	\$0.00	256	\$0.00	
120 GB 2.5 inch Enterprise Value 6G SATA SSD (BOOT)	UCS-SD120G0KSB-EV	1	\$0.00	32	\$0.00	
1.2 TB 6G SAS 10K rpm SFF HDD	UCS-HD12T10KS2-E	1	\$0.00	384	\$0.00	
Cisco 12Gbps SAS 2GB FBWC Cache module (Raid 0/1/5/6)	UCSC-MRAID12G-2GB	1	\$0.00	16	\$0.00	
Cisco 12G SAS Modular Raid Controller	UCSC-MRAID12G	1	\$0.00	16	\$0.00	
Cisco UCS VIC1227 VIC MLOM - Dual Port 10Gb SFP+	UCSC-MLOM-CSC-02	1	\$0.00	16	\$0.00	
Right PCI Riser Bd (Riser 1) 2onbd SATA bootdrvs+ 2PCI slts	UCSC-PCI-1C-240M4	1	\$0.00	16	\$0.00	
1200W / 800W V2 AC Power Supply for 2U C-Series Servers	UCSC-PSU2V2-1200W	1	\$0.00	32	\$0.00	
Power Cord 125VAC 13A NEMA 5-15 Plug North America	CAB-9K12A-NA	1	\$0.00	32	\$0.00	
Right PCI Riser Bd (Riser 1) 2onbd SATA bootdrvs+ 2PCI slts	UCSC-PCI-1C-240M4	1	\$0.00	16	\$0.00	
Heat sink for UCS C240 M4 rack servers	UCSC-HS-C240M4	1	\$0.00	32	\$0.00	
Supercap cable 250mm	UCSC-SCCBL240	1	\$0.00	16	\$0.00	
Ball Bearing Rail Kit for C220 M4 and C240 M4 rack servers	UCSC-RAILB-M4	1	\$0.00	16	\$0.00	
Cisco Smart Net 24X7X4 3Y UCS C240 M4S BD SP Server	CON-OSP-C240V4SP	1	\$1,284.99	32		\$41,119.68
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	\$100.00	64	\$6,400.00	
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 Fabrc Int/2 PSU/4 Fans	CON-SNTP-FI6296UP	1	\$5,781.00	2		\$11,562.00
Cisco Nexus 9372PX Switch	N9K-C9372PX	1	\$22,500.00	1	\$22,500.00	
Cisco SNTP Cisco Nexus 9372PX Switch, 36 24x7	CON-SNTP-9372PX		\$5,256.00	1		\$5,256.00
Hardware subtotal					\$1,672,452.00	\$57,937.68



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Description	Part Number	Source	Unit Price	Qty	Extended Price	3 Year Maint.
Software Components						
Red Hat Enterprise Linux Server, 3Y 24x7	CON-ISV1-RH2SUG3A	1	\$2,397.00	32	\$76,704.00	Inc.
Cloudera Enterprise Edition	UCS-BD-CBI85-3YR	1	\$11,354.00	32	\$363,328.00	Inc.
Software subtotal					\$440,032.00	
Total					\$2,112,484.00	\$57,937.68
Acer V206HQLAbd - LED monitor - 20" (Inc. 2 spares)	UM.1V6AA.A02	2	\$94.99	3	\$284.97	
Logitech USB Corded Keyboard/Mouse Combo MK120 (Inc. 2 spares)	920-002565	2	\$17.99	3	\$53.97	
Large Purchase Discount ⁽¹⁾ (61% for products and 35% for service)		1			(\$1,288,615.24)	(\$20,278.19)

Pricing: 1 = Cisco, 2 = CDW.com

⁽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.

Audited by Doug Johnson of InfoSizing, Inc.

Three-Year Cost of Ownership \$861,868

HSph@100TB 21.99

\$/HSph@100TB \$39,193.64

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.



Measurement Results for Performance Run

Scale Factor	100TB
Run Start Time	2015-10-15 04:14:24
Run End Time	2015-10-15 08:47:07
Run Elapsed Time	16,366.000
HSGen Start Time	2015-10-15 04:14:24
HSGen End Time	2015-10-15 05:15:58
HSGen Elapsed Time	3,694.774
HSSort Start Time	2015-10-15 05:16:00
HSSort End Time	2015-10-15 08:16:14
HSSort Elapsed Time	10,814.180
HSValidate Start Time	2015-10-15 08:16:17
HSValidate End Time	2015-10-15 08:47:07
HSValidate Elapsed Time	1,851.366

Measurement Results for Repeatability Run

Scale Factor	100TB
Run Start Time	2015-10-14 22:53:32
Run End Time	2015-10-15 03:24:14
Run Elapsed Time	16,245.000
HSGen Start Time	2015-10-14 22:53:32
HSGen End Time	2015-10-14 23:55:04
HSGen Elapsed Time	3,693.534
HSSort Start Time	2015-10-14 23:55:07
HSSort End Time	2015-10-15 02:53:40
HSSort Elapsed Time	10,713.556
HSValidate Start Time	2015-10-15 02:53:43
HSValidate End Time	2015-10-15 03:24:14
HSValidate Elapsed Time	1,833.046



Run Report for Performance Run

```
=====  
TPCx-HS Performance Metric (HSph@SF) Report  
  
Test Run 2 details: Total Time = 16366  
                    Total Size = 1000000000000  
                    Scale-Factor = 100.0000  
  
TPCx-HS Performance Metric (HSph@SF): 21.9968  
  
=====
```

Run Report for Repeatability Run

```
=====  
TPCx-HS Performance Metric (HSph@SF) Report  
  
Test Run 1 details: Total Time = 16245  
                    Total Size = 1000000000000  
                    Scale-Factor = 100.0000  
  
TPCx-HS Performance Metric (HSph@SF): 22.1606  
  
=====
```