

	<h1>Machbase 7.0.6</h1>		TPCx-IoT	2.1.0								
			TPCx-IoT Performance Metric	5,739,514.34 IoTps	Price/Performance	\$86.42 USD/kIoTps						
<b>Total System Cost</b> <b>\$496,021.74 USD</b>				<b>Report Date</b> Nov. 13, 2022								
<b>Servers</b>		<b>Operating System</b>		<b>Availability Date</b>								
Dell PowerEdge R7615		Red Hat Enterprise Linux Server Release 8.6		<b>Feb 28, 2023</b>								
<b>System Under Test Configuration Overview</b>												
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 30%;">  <p><b>NVIDIA MSN2700 100GbE Ethernet Switch</b> (32 x QSFP28 Ports)</p> </div> <div style="width: 35%; text-align: center;"> <p><b>5 x Dell PowerEdge R7615</b> each with:</p>  </div> <div style="width: 30%;"> <p><b>1 x Master Node(Dell PowerEdge R7615)</b>  1 x AMD EPYC 9554 64-Core Processor  12 x 64GB (768GB) Memory  1 x 100GbE 2-Port Adaptor  1GbE 2-Port Adaptor  1 x 600GB SAS HDD</p> <p><b>1 x Master Node(Dell PowerEdge R7615)</b>  1 x AMD EPYC 9554 64-Core Processor  12 x 64GB (768GB) Memory  1 x 100GbE 2-Port Adaptor  1GbE 2-Port Adaptor  1 x 960GB SAS SSD</p> <p><b>3 x Data Nodes(Dell PowerEdge R7615)</b>  1 x AMD EPYC 9374F 32-Core Processor  12 x 32GB (384GB) Memory  1 x 100GbE 2-Port Adaptor  1GbE 2-Port Adaptor  2 x 240GB NVMe M.2 SSD  8 x 3.84TB NVMe U.2 SSD</p> </div> </div>												
<b>Total Servers:</b>		5x Dell PowerEdge R7615										
<b>Total Processors/Cores/Threads:</b>		5/224/448										
<b>Server Configuration:</b>		<table border="0" style="width: 100%;"> <tr> <td style="width: 33%;"> <b>Processor</b> 2x AMD EPYC 9554 (2.7GHz, 64-core, 256 MB L3) </td> <td style="width: 33%;"> <b>Data Nodes</b> 3x AMD EPYC 9374F (3.3GHz, 32-core, 256 MB L3) </td> </tr> <tr> <td> <b>Memory</b> 2x 768 GB </td> <td> 3x 384 GB </td> </tr> <tr> <td> <b>Storage Device</b> 1x 600GB SAS U.2 HDD 1x 960GB SAS U.2 SSD </td> <td> 6x 240GB NVMe M.2 SSD 24x 3.84TB NVMe U.2 SSD </td> </tr> <tr> <td> <b>Network Controller</b> 2x Mellanox MT28800 Family 100GbE 2x Broadcom BCM5720 Dual-Port 1GbE </td> <td> 3x Mellanox MT28800 Family 100GbE 3x Broadcom BCM5720 Dual-Port 1GbE </td> </tr> </table>			<b>Processor</b> 2x AMD EPYC 9554 (2.7GHz, 64-core, 256 MB L3)	<b>Data Nodes</b> 3x AMD EPYC 9374F (3.3GHz, 32-core, 256 MB L3)	<b>Memory</b> 2x 768 GB	3x 384 GB	<b>Storage Device</b> 1x 600GB SAS U.2 HDD 1x 960GB SAS U.2 SSD	6x 240GB NVMe M.2 SSD 24x 3.84TB NVMe U.2 SSD	<b>Network Controller</b> 2x Mellanox MT28800 Family 100GbE 2x Broadcom BCM5720 Dual-Port 1GbE	3x Mellanox MT28800 Family 100GbE 3x Broadcom BCM5720 Dual-Port 1GbE
<b>Processor</b> 2x AMD EPYC 9554 (2.7GHz, 64-core, 256 MB L3)	<b>Data Nodes</b> 3x AMD EPYC 9374F (3.3GHz, 32-core, 256 MB L3)											
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<b>Network Controller</b> 2x Mellanox MT28800 Family 100GbE 2x Broadcom BCM5720 Dual-Port 1GbE	3x Mellanox MT28800 Family 100GbE 3x Broadcom BCM5720 Dual-Port 1GbE											
<b>Connectivity</b>		NVIDIA MSN2700 100GbE Switch										
<b>Total Rack Units:</b>		(5x PowerEdge R7615) + (1x MSN2700) = (5x2) + (1x1) = 11 RU										



# Machbase 7.0.6

TPCx-IoT	2.1.0
TPC Pricing	2.8.0
Report Date	Nov. 13, 2022

Description	Part Number	Source	List Price (USD)	Qty	Extended Price (USD)	3 yr. Maint. Price (USD)
<b>Server Hardware</b>						
<b>Dell PowerEdge R7615(Master Node)</b>	210-BFVW	1	81,880.00	2	163,760.00	
2.5 Chassis	379-BDTF	1	0.00	2		
NVMe Backplane	379-BDSX	1	0.00	2		
Trusted Platform Module 2.0 V3	461-AAIM	1	0.00	2		
C3-3 8x U.2 G4 RAID	321-BIFE	1	0.00	2		
AMD EPYC 9554 3.10GHz, 64C/128T, 256M Cache (360W) DDR5-4800	338-CGXC	1	0.00	2		
Standard Heatsink	412-AAASE	1	0.00	2		
Performance Optimized	370-AAIP	1	0.00	2		
4800MT/s RDIMMs	370-AHCL	1	0.00	24		
64GB RDIMM, 4800MT/s Dual Rank	370-AGZR	1	0.00	2		
Unconfigured RAID	780-BCDS	1	0.00	2		
PERC H755N Front	405-AAZE	1	0.00	2		
Performance BIOS Settings	384-BBBL	1	0.00	6		
High Performance Fan	750-AAWT	1	0.00	2		
Dual, Hot-Plug, Power Supply Redundant (1+1), 1400W, Mixed Mode	450-AJHG	1	0.00	2		
Jumper Cord - C13/C14, 4M, 250V, 12A (North America, Guam, North Marianas, Philippines, Samoa)	492-BBDV	1	0.00	2		
Riser Config 2, 2 x 16 FH + 2 x 16 LP PCIe slot	330-BBNL	1	0.00	4		
Broadcom 5720 Dual Port 1GbE Optional LOM	540-BDKD	1	0.00	2		
Mellanox ConnectX-5 EX Dual Port 40/100GbE QSFP28 Adapter, PCIe Full Height	540-BCIU	1	0.00	2		
PowerEdge R7615 Motherboard	329-BHOH	1	0.00	2		
iDRAC9, Enterprise 15G	385-BBOT	1	0.00	2		
PowerEdge 2U Standard Bezel	350-BBWP	1	0.00	2		
No Quick Sync	350-BBKU	1	0.00	2		
iDRAC, Legacy Password	379-BCSG	1	0.00	2		
iDRAC Group Manager, Enabled	379-BCQV	1	0.00	2		
Red Hat Enterprise Linux 8.6 (Ootpa), kernel 4.18.0-372.9.1.el8.x86_64	605-BBFL	1	0.00	2		
No Media Required	605-BBFN	1	0.00	2		
ReadyRails Sliding Rails	770-BBBQ	1	0.00	2		
No Internal Optical Drive	429-AAIQ	1	0.00	2		
No Systems Documentation, NoOpenManage DVD Kit	631-AAACK	1	0.00	2		
PowerEdge R7615 Shipping	340-CMZG	1	0.00	2		
PowerEdge R7615 Ship Material	340-CODN	1	0.00	2		
PowerEdge R7615 No CE or CCCMarking	343-BBPP	1	0.00	2		
US Order	332-1286	1	0.00	2		
Dell Hardware Limited Warranty Plus On-Site Service	827-1402	1	200.00	2		400.00
ProSupport Mission Critical: 7x24 HW / SW Technical Support and Assistance 3 Years	827-1344	1	1,383.00	2		2,766.00
ProSupport Mission Critical: 4-Hour 7x24 On-Site Service with Emergency Dispatch 3 Years	827-1352	1	717.00	2		1,434.00
On-Site Installation Declined	900-9997	1	0.00	2		
Dell 24 Monitor	210-AIWG	1	169.99	1	169.99	
<b>Dell PowerEdge R7615(Data Node)</b>	210-BFVW	1	78.873.00	3	236,619.00	
2.5 Chassis	379-BDTF	1	0.00	3		

NVMe Backplane	379-BDSX	1	0.00	3		
Trusted Platform Module 2.0 V3	461-AAIM	1	0.00	3		
C5-3 16x U.2 G4 RAID Low Z (Two PERCs)	321-BIFN	1	0.00	3		
AMD EPYC 9374F 3.85GHz, 32C/64T, 256M Cache (320W) DDR5-4800	338-CGXD	1	0.00	3		
Standard Heatsink	412-AASE	1	0.00	3		
Performance Optimized	370-AAIP	1	0.00	3		
4800MT/s RDIMMs	370-AHCL	1	0.00	3		
32GB RDIMM, 4800MT/s Dual Rank	370-AGZR	1	0.00	36		
Unconfigured RAID	780-BCDS	1	0.00	3		
BOSS-S2 controller card + with 2 M.2 240GB (RAID 1)	403-BCMG	1	0.00	3		
PERC H755N Front	405-AAZE	1	0.00	24		
3.84TB Data Center NVMe ReadIntensive AG Drive U2 Gen4 with Carrier	400-BMTN	1	0.00	3		
Performance BIOS Settings	384-BBBL	1	0.00	3		
High Performance Fan	750-AAWT	1	0.00	3		
Dual, Hot-Plug,Power Supply Redundant (1+1), 1400W, Mixed Mode	450-AJHG	1	0.00	6		
Jumper Cord - C13/C14, 4M, 250V, 12A (North America, Guam,North Marianas, Philippines, Samoa)	492-BBDV	1	0.00	3		
Riser Config 2, 2 x 16 FH + 2 x 16 LP PCIe slot	330-BBNL	1	0.00	3		
Broadcom 5720 Dual Port 1GbE Optional LOM	540-BDKD	1	0.00	3		
Mellanox ConnectX-5 EX Dual Port 40/100GbE QSFP28 Adapter,PCIe Full Height	540-BCIU	1	0.00	3		
PowerEdge R7615 Motherboard	329-BHOH	1	0.00	3		
iDRAC9,Enterprise 15G	385-BBOT	1	0.00	3		
PowerEdge 2U Standard Bezel	350-BBWP	1	0.00	3		
No Quick Sync	350-BBKU	1	0.00	3		
iDRAC,Legacy Password	379-BCSG	1	0.00	3		
iDRAC Group Manager, Enabled	379-BCQV	1	0.00	3		
Red Hat Enterprise Linux 8.6 (Ootpa), kernel 4.18.0-372.9.1.el8.x86_64	605-BBFL	1	0.00	3		
No Media Required	605-BBFN	1	0.00	3		
ReadyRails Sliding Rails	770-BBBQ	1	0.00	3		
No Internal Optical Drive	429-AAIQ	1	0.00	3		
No Systems Documentation, NoOpenManage DVD Kit	631-AACK	1	0.00	3		
PowerEdge R7615 Shipping	340-CMZG	1	0.00	3		
PowerEdge R7615 Ship Material	340-CODN	1	0.00	3		
PowerEdge R7615 No CE or CCCMarking	343-BBPP	1	0.00	3		
US Order	332-1286	1	0.00	3		
Dell Hardware Limited Warranty Plus On-Site Service	827-1402	1	200.00	3		600.00
ProSupport Mission Critical:7x24 HW / SW Technical Support and Assistance 3 Years	827-1344	1	1,383.00	3		4,149.00
ProSupport Mission Critical:4-Hour 7x24 On-Site Service with Emergency Dispatch 3 Years	827-1352	1	717.00	3		2,151.00
On-Site Installation Declined	900-9997	1	0.00	3		
Dell 24 Monitor	210-AIWG	1	169.99	1		169.99
600GB Hard Drive SAS ISE 12Gbps 10k 512n 2.5in Hot-Plug	400-BIFV	1	587.62	1		587.62
960GB SSD SAS ISE Read Intensive 12Gbps 512 2.5in Hot-plug AG Drive, 1 DWPD, AP9567 - APC Basic Rack PDU - 0U - 120V NEMA 5-15 Input / 14 x NEMA 5-15 Output	400-AXQU	1	2468.62	1		2468.62
	A7541364	1	263.00	1		263.00
				<b>Sub-Total</b>		<b>404,038.22</b>
						<b>11,500.00</b>
<b>Network Hardware</b>						
Dell Networking S3048-ON, 48x 1GbE, 4x SFP+ 10GbE ports, Stacking, PSU to IO air, 1x AC PSU, NO OS	210-AEDQ	1	10,150.00	1		10,150.00

No OS Installed	619-AGYQ	1	0.00	1	0.00	
Dell Networking S3048-ON User Guide	634-BCXR	1	10.00	1	10.00	
Force10, Power Cord, 250V, 12A, 2 Meters, C13/C14	450-AASX	1	20.00	1	20.00	
ProDeploy Additional Deployment Time:8 Hour Onsite Project Management1	823-9284	1	2,613.75	1		2,613.75
Basic Deployment Dell Networking 1S Series Switch	825-5241	1	392.82	1		392.82
3 Years ProSupport Plus Mission Critical 4HR On-Site Service-Disti SNS	802-7389, 802-7400, 802-7415, 802-7429, 802-7430, 951-2015, 997-6306	1	6,207.13	1		6,207.13
MSN3420-CB2F Spectrum-2 based 25/100GbE 1U Open Ethernet Switch	MSN3420-CB2F	2	16,661.00	1	16,661.00	
MCP1600-C002E30N Direct Attach Copper Cable Ethernet 100GbE QSFP28 2m Black 30AWG CA-N	MCP1600-C002E30N	2	1,832.00	1	1,832.00	
ENT Business Critical Support Services for SN3420 – 36 Months	780-C34N0Z+P2CMI36	2	3,666.00	1		3,666.00
				<b>Sub-Total</b>	<b>28,673.00</b>	<b>12,879.7</b>
<b>Software</b>						
Machbase v6.5.1 Cluster Edition (includes 1y 7x24x4 Technical Support) (1Set = 4Node)	-	3	170,000.00	1	170,000.00	
Machbase v6.5.1 Cluster Edition 7x24x4 Technical Support	-	3	25,500.00	2		51,000.00
				<b>Sub-Total</b>	<b>170,000.00</b>	<b>51,000.00</b>
<b>Infrastructure</b>						
HP 225 Wired Mouse and Keyboard Combo (w/ spares)	286J4UT#ABA	4	19.00	3	57.00	
				<b>Sub-Total</b>	<b>57.00</b>	<b>-</b>
<b>Discounts*</b>						
Hardware Server, Network Large Puchase Discount(35%)	-				(144,976.38)	(7,249.80)
Machbase v6.5.1 Cluster Edition (includes 1y 7x24x4 Technical Support)	-				(23,000.00)	
Machbase v6.5.1 Cluster Edition 7x24x4 Technical Support	-					(6,900.00)
				<b>Sub-Total</b>	<b>(23,000.00)</b>	<b>(6,900.00)</b>
				<b>Total</b>	<b>\$434,791.84 USD</b>	<b>\$61,229.90 USD</b>

**Price Source**

1) Dell Inc. 2) NVIDIA Inc.  
3) Machbase Inc. 4) Hewlett Packard Inc.

**Audited by Pre-Publication Board**

\*All discounts are based on US list prices and for similar quantities and configurations. 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: \$496,021.74 USD**

**IoTps: 5,739,514.34**

**USD/kIoTps: \$86.42 USD**

Prices used in TPC benchmarks must reflect the actual prices a customer would pay for purchase of the components in all regions specified in the result. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchases are not permitted. All discounts reflect standard pricing conventions for the listed components. For complete details, see the pricing section of the TPC benchmark specification. If you find that stated prices are not available according to these terms, please inform the TPC at [pricing@tpc.org](mailto:pricing@tpc.org). Thank you.



# Machbase 7.0.6

TPCx-IoT 2.1.0  
TPC Pricing 2.8.0  
Report Date Nov. 13, 2022

## Numerical Quantities

Scale Factor 13,000,000,000

### Performance Run (Run1)

Warmup Run Start Time 2022-11-13 17:10:23.000  
Warmup Run End Time 2022-11-13 17:44:32.000  
Warmup Run Elapsed Time 2,049.000

Measured Run Start Time 2022-11-13 17:44:33.000  
Measured Run End Time 2022-11-13 18:22:06.000  
Measured Run Elapsed Time 2,253.000

Performance Metric (IoTps) 5,770,084.33

### Repeatability Run (Run2)

Warmup Run Start Time 2022-11-13 18:23:14.000  
Warmup Run End Time 2022-11-13 18:58:07.000  
Warmup Run Elapsed Time 2,093.000

Measured Run Start Time 2022-11-13 18:58:08.000  
Measured Run End Time 2022-11-13 19:35:53.000  
Measured Run Elapsed Time 2,265.000

Performance Metric (IoTps) **5,739,514.34**



# Machbase 7.0.6

TPCx-IoT	2.1.0
TPC Pricing	2.8.0
Report Date	Nov. 13, 2022

## Performance Run Report (Run1)

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### TPCx-IoT Performance Metric (IoTps) Report

Test Run2 details : Total Time For Warmup Run In Seconds = 2,049.000

Test Run2 details : Total Time In Seconds = 2,253.000  
Total Number of Records = 13,000,000,000

TPCx-IoT Performance Metric (IoTps): 5,770,084.33

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## Repeatability Run Report (Run2)

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### TPCx-IoT Performance Metric (IoTps) Report

Test Run1 details : Total Time For Warmup Run In Seconds = 2,093.000


Test Run1 details : Total Time In Seconds = 2,265.000  
Total Number of Records = 13,000,000,000

TPCx-IoT Performance Metric (IoTps): 5,739,514.34

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Summary details of the run reports are show above. For the complete run reports, see the [Supporting Files Archive](#).

	<h2>Machbase 7.0.6</h2>	<table border="0"> <tr> <td>TPCx-IoT</td> <td style="text-align: right;">2.1.0</td> </tr> <tr> <td>TPC Pricing</td> <td style="text-align: right;">2.8.0</td> </tr> <tr> <td>Report Date</td> <td style="text-align: right;">Nov. 13, 2022</td> </tr> </table>	TPCx-IoT	2.1.0	TPC Pricing	2.8.0	Report Date	Nov. 13, 2022
TPCx-IoT	2.1.0							
TPC Pricing	2.8.0							
Report Date	Nov. 13, 2022							
<h3>Revision History</h3> <table border="0" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: left;">Date</th> <th style="text-align: left;">Edition</th> <th style="text-align: left;">Description</th> </tr> </thead> <tbody> <tr> <td>Nov 13, 2022</td> <td>First</td> <td>Initial Publication</td> </tr> </tbody> </table>			Date	Edition	Description	Nov 13, 2022	First	Initial Publication
Date	Edition	Description						
Nov 13, 2022	First	Initial Publication						