

VMware® VMmark™ V1.1 Results

Vendor and Hardware Platform: IBM System x3650
Virtualization Platform: ESX Server 3.5 Update 1 (build 82663)

VMmark V1.1 Score =
8.63 @ 6 Tiles

Tested By: Principled Technologies

Test Date: Aug-2008

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Performance

	webservers		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1830.88	1.80	18080.17	1.09	1646.92	1.50	19.07	1.49	2165.82	1.45	1.45
p1	1822.40	1.79	18089.95	1.09	1709.80	1.56	19.01	1.48	2179.75	1.46	1.46
p2	1822.58	1.79	18033.33	1.09	1765.20	1.61	19.41	1.51	2184.85	1.46	1.47
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1892.50	1.86	18015.40	1.08	1529.35	1.39	19.16	1.49	2157.53	1.45	1.43
p1	1855.78	1.82	18028.97	1.09	1703.30	1.55	18.99	1.48	2155.43	1.44	1.46
p2	1845.35	1.81	18039.55	1.09	1784.45	1.63	19.22	1.50	2154.90	1.44	1.47
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1865.38	1.83	18032.65	1.09	1423.15	1.30	19.67	1.53	2152.68	1.44	1.42
p1	1837.78	1.80	17592.10	1.06	1598.05	1.46	19.62	1.53	2168.78	1.45	1.44
p2	1856.67	1.82	18081.85	1.09	1702.88	1.55	19.56	1.52	2133.07	1.43	1.46
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1828.97	1.79	18043.97	1.09	1497.70	1.37	18.54	1.44	2227.57	1.49	1.42
p1	1736.08	1.70	17570.30	1.06	1726.70	1.57	18.51	1.44	2115.07	1.42	1.42
p2	1741.60	1.71	18011.83	1.08	1690.78	1.54	18.77	1.46	2101.62	1.41	1.43
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1880.15	1.85	17988.15	1.08	1327.80	1.21	18.63	1.45	2173.45	1.46	1.39
p1	1848.58	1.81	17999.15	1.08	1631.12	1.49	18.77	1.46	2146.07	1.44	1.44
p2	1836.78	1.80	17554.00	1.06	1716.67	1.57	18.81	1.47	2128.97	1.43	1.44
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1799.80	1.77	18030.55	1.09	1305.92	1.19	19.02	1.48	2258.07	1.51	1.39
p1	1718.00	1.69	18013.47	1.08	1516.60	1.38	19.19	1.50	2247.43	1.51	1.42
p2	1709.42	1.68	18034.17	1.09	1651.50	1.51	19.35	1.51	2259.95	1.51	1.44

p0_score:	8.49
p1_score:	8.63
p2_score:	8.72
Unreviewed_VMmark_Score:	8.63

Configuration

Server and Network	
Server Manufacturer and Model	IBM System x3650 7979AC1
Processor Vendor and Model	Intel Xeon X5460
Processor Speed (GHz)	3.16
Number of Sockets/Cores per Socket	2 Sockets / 4 Cores per Socket (8 Cores Total)
Primary Cache	32KB(I) + 32KB(D) on chip, per core
Secondary Cache	12 MB(I+D) on chip, per chip, 6 MB shared/2 cores
Other Cache	None
Memory	32 GB
Disk Subsystem Type	SAS (OS), FC SAN (VMs)
Number of Disk Controllers	N/A
Number of Host Bus Adapters	2
Host Bus Adapter Vendors and Models	1 x QLogic Corp QLE2462 1 x IBM ServeRAID 8k-l Controller
Number of Network Controllers	2
Network Controller Vendors and Models	2 x Intel 82571EB Dual Port Gigabit Ethernet Controller
Network Switch Vendors and Models	Netgear GS724T
Network Speed	1000Base-T
Other Hardware	None
Other Software	None
Hardware Availability Date	Nov-2007
Software Availability Date	Apr-2008
Virtualization Software	
Vendor, Product, Version, and Build	VMware ESX Server 3.5 Update 1 (build 82663)
Virtualization Type	Hardware Virtualization
Supplemental Software	None
Virtualization Software Availability Date	Apr-2008
Storage	

Array Vendor, Model, and Firmware Version	<ol style="list-style-type: none"> 1. IBM System Storage DS4500, version 06.60.08.00 2. IBM System Storage EXP 710 storage expansion unit, version 06.60.08.00 3. IBM System Storage EXP 710 storage expansion unit, version 06.60.08.00 4. IBM System Storage EXP 710 storage expansion unit, version 06.60.08.00 5. IBM System Storage EXP 710 storage expansion unit, version 06.60.08.00 6. IBM System Storage EXP 710 storage expansion unit, version 06.60.08.00 7. IBM System Storage EXP 710 storage expansion unit, version 06.60.08.00 8. IBM System Storage EXP 710 storage expansion unit, version 06.60.08.00 9. IBM System Storage EXP 710 storage expansion unit, version 06.60.08.00 10. IBM System Storage EXP 710 storage expansion unit, version 06.60.08.00 11. IBM System Storage EXP 710 storage expansion unit, version 06.60.08.00
Fibre Channel Switch Vendors and Models	None
Disk Space Used	416 GB
Array Cache Size	2 GB
Number and Size of LUNs	LUN 0: 475 GB LUN 1: 475 GB LUN 2: 475 GB LUN 3: 475 GB LUN 4: 475 GB LUN 5: 475 GB LUN 6: 339 GB LUN 7: 339 GB LUN 8: 339 GB LUN 9: 339 GB LUN 10: 339 GB LUN 11: 339 GB LUN 12: 950 GB
RAID Type	RAID 0
Number of Members per RAID Set	LUN 0: 7 members LUN 1: 7 members LUN 2: 7 members LUN 3: 7 members LUN 4: 7 members LUN 5: 7 members LUN 6: 5 members LUN 7: 5 members LUN 8: 5 members LUN 9: 5 members LUN 10: 5 members LUN 11: 5 members LUN 12: 14 members
Disk Vendor, Model, and Speed	Seagate, ST373453FC/15K
Clients	
Number of Clients	6
System Model(s)	Custom Built

Processor Vendor(s) and Model(s)	Intel Pentium 4
Processor Speed(s) (GHz)	3.00
Number of Sockets/Cores per Socket	1 Sockets / 1 Cores per Socket (1 Cores Total)
Memory	1 GB
Network Controller Vendor and Model	Mavell Yukon
Operating System, Version, and Service Pack	Microsoft Windows Server 2003 Enterprise Edition, Service Pack 2
Other Hardware	None
Other Software	None

Notes for Workload

Server and Network Notes

- The ServeRAID onboard controller contained 2 73GB/15K drives in a RAID 1 for the OS.
- Onboard Ethernet disabled (default enabled).
- Processor Hardware Prefetcher disabled (default enabled).
- Processor Adjacent Sector Prefetcher disabled (default auto-configure).

Virtualization Software Notes

- VMware ESX Server 3.5 Update 1 (build 82663)
- Four vSwitch1, vSwitch2, vSwitch3, vSwitch4 bound to vmnic7, vmnic6, vmnic4, and vmnic5 (physical NICs) respectively.
- Each vSwitch was configured to 1000 Mb, Full Duplex (default Auto negotiate)
- Each vSwitch was configured to 120 ports (default 56).
- Network adapter type was set to enhanced vmxnet for all VMs.
- Service Console was shared with vSwitch2.
- Webserver VMs 0-2 were attached to vSwitch1; all Database, Javasever, and Standby VMs were attached to vSwitch2, and fileserver 0-2 VMs were also attached to vSwitch2; Webserver VMs 3-5 were attached to vSwitch3; all Mailserver VMs were attached to vSwitch4, and fileserver 3-5 VMs were also attached to vSwitch4.
- Path policy of each LUN storage was configured to Fixed (default Most Recently Used)
- Database VMs were stored on LUN12, each Fileserver VM was stored on its own LUN (LUNs 6-11), and all other VMs in a tile were stored on their own LUN (LUNs 0-5).
- vmfs2 module was unloaded prior to the benchmark run.
- Disk.SchedNumReqOutstanding 128 (default 32)

Operating System Notes

- Microsoft Windows Server 2003 Enterprise Edition, Service Pack 2 on Windows-based virtual machines.

Software Notes

Client Notes

- Microsoft Windows Server 2003 Enterprise Edition, Service Pack 2

Other Notes

IBM System Storage DS4500

- IBM System Storage DS4500 original availability date was March 2003.
- IBM System Storage EXP 710 storage expansion unit original availability date was October 2004.
- Cache block size 16KB (default 4KB)
- Background media scan disabled (default enabled)
- Write caching with mirroring disabled (default enabled)
- Write caching without batteries disabled (default enabled)

QLogic QLE2462

- Loop reset delay 8 (default 5)
- PortDownRetryCount 14 (default 30)
- Interrupt Delay Timer 10 (default 0)
- Enable Target Reset No (default Yes)
- Link down timeout 60 (default 30)
- Execution Throttle 256 (default 16)
- LUNs per Target 256 (default 128)
- Maximum queue depth 64 (default 32)
- Login Retry Count 30 (default 8)
- Operation Mode 5 (default 0)

This is a full disclosure report for a VMmark benchmark result. All published VMmark results must be from fully-compliant tests for which a full disclosure report is publicly available.

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