

VMware® VMmark™ V1.1 Results

Vendor and Hardware Platform: IBM System x3850 M2
Virtualization Platform: VMware ESX 3.5.0 U2 Build 103908

VMmark V1.1 Score =
19.10 @ 14 Tiles

Tested By: IBM Inc., RTP, NC

Test Date: 2008-08-14

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Performanc

	webservers		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1632.62	1.60	17815.12	1.07	1775.08	1.62	17.15	1.34	2111.25	1.41	1.39
p1	1598.55	1.57	17832.33	1.07	1747.67	1.59	17.22	1.34	2123.55	1.42	1.39
p2	1604.75	1.57	17802.80	1.07	1732.85	1.58	17.32	1.35	2109.62	1.41	1.38
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1668.78	1.64	17722.75	1.07	1712.38	1.56	17.82	1.39	2037.12	1.37	1.39
p1	1621.20	1.59	17773.22	1.07	1787.03	1.63	17.31	1.35	2053.78	1.38	1.39
p2	1574.92	1.55	17778.15	1.07	1652.58	1.51	17.31	1.35	2024.72	1.36	1.35
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1670.70	1.64	17784.50	1.07	1798.00	1.64	17.69	1.38	2055.10	1.38	1.40
p1	1660.55	1.63	17767.92	1.07	1815.03	1.65	17.11	1.33	2045.90	1.37	1.39
p2	1591.95	1.56	17818.15	1.07	1785.42	1.63	17.40	1.36	2047.42	1.37	1.38
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1510.72	1.48	17743.00	1.07	1630.70	1.49	17.57	1.37	2031.05	1.36	1.34
p1	1477.40	1.45	17799.20	1.07	1682.28	1.53	17.68	1.38	2051.15	1.37	1.35
p2	1463.35	1.44	17800.88	1.07	1682.50	1.53	17.10	1.33	2045.42	1.37	1.34
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1654.50	1.62	17774.45	1.07	1654.20	1.51	17.41	1.36	2125.10	1.42	1.38
p1	1602.62	1.57	17826.45	1.07	1566.85	1.43	17.14	1.34	2130.10	1.43	1.36
p2	1547.60	1.52	17812.78	1.07	1588.47	1.45	16.91	1.32	2107.90	1.41	1.34
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1692.62	1.66	17800.83	1.07	1668.22	1.52	17.76	1.38	2124.88	1.42	1.40
p1	1621.97	1.59	17822.70	1.07	1675.12	1.53	17.55	1.37	2125.28	1.42	1.38
p2	1635.53	1.61	17825.22	1.07	1750.65	1.60	17.42	1.36	2118.28	1.42	1.40
TILE_6	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1672.10	1.64	17834.47	1.07	1666.92	1.52	17.02	1.33	2130.35	1.43	1.38
p1	1628.28	1.60	17849.90	1.07	1635.65	1.49	17.49	1.36	2137.03	1.43	1.38
p2	1600.55	1.57	17375.78	1.05	1533.38	1.40	17.30	1.35	2120.90	1.42	1.35
TILE_7	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1597.78	1.57	17824.20	1.07	1687.12	1.54	17.33	1.35	2085.07	1.40	1.37

p1	1642.33	1.61	17878.90	1.08	1698.60	1.55	17.59	1.37	2106.32	1.41	1.39
p2	1664.20	1.63	17361.80	1.05	1697.72	1.55	17.43	1.36	2091.30	1.40	1.38
TILE_8	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1614.88	1.58	17754.08	1.07	1588.97	1.45	17.18	1.34	2058.18	1.38	1.35
p1	1647.50	1.62	17841.25	1.07	1652.35	1.51	17.04	1.33	2060.60	1.38	1.37
p2	1643.50	1.61	17820.45	1.07	1588.80	1.45	16.81	1.31	2066.32	1.38	1.35
TILE_9	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1639.03	1.61	17907.72	1.08	1612.97	1.47	17.32	1.35	2095.70	1.40	1.37
p1	1674.58	1.64	17828.30	1.07	1774.80	1.62	16.82	1.31	2098.93	1.41	1.39
p2	1574.17	1.54	17687.47	1.06	1788.35	1.63	17.47	1.36	2103.38	1.41	1.39
TILE_10	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1691.30	1.66	17821.75	1.07	1424.33	1.30	17.33	1.35	2059.25	1.38	1.34
p1	1673.30	1.64	17834.62	1.07	1646.88	1.50	17.35	1.35	2060.97	1.38	1.38
p2	1669.03	1.64	17796.75	1.07	1611.10	1.47	17.12	1.33	2042.42	1.37	1.36
TILE_11	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1664.72	1.63	17005.38	1.02	1442.90	1.32	17.41	1.36	2042.67	1.37	1.33
p1	1643.80	1.61	17417.67	1.05	1565.17	1.43	17.06	1.33	2044.62	1.37	1.34
p2	1665.38	1.63	17464.55	1.05	1656.20	1.51	16.88	1.32	2049.65	1.37	1.36
TILE_12	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1710.17	1.68	17827.15	1.07	1286.80	1.17	16.99	1.32	2125.03	1.42	1.32
p1	1698.28	1.67	17755.12	1.07	1502.35	1.37	17.27	1.35	2124.97	1.42	1.36
p2	1627.88	1.60	17778.40	1.07	1516.75	1.38	17.14	1.34	2135.50	1.43	1.35
TILE_13	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1650.55	1.62	17792.78	1.07	1227.35	1.12	17.34	1.35	2058.38	1.38	1.29
p1	1642.40	1.61	17838.05	1.07	1521.55	1.39	17.08	1.33	2059.82	1.38	1.35
p2	1547.40	1.52	17832.92	1.07	1637.78	1.49	17.14	1.34	2057.05	1.38	1.35
p0_score:	19.07										
p1_score:	19.22										
p2_score:	19.10										
Unreviewed_VMmark_Score:	19.10										

Configuration

Server and Network	
Server Manufacturer and Model	IBM System x3850 M2
Processor Vendor and Model	6-core Intel Xeon MP Processor X7460
Processor Speed (GHz)	2.66 GHz
Number of Sockets/Cores per Socket	4 Sockets / 6 Cores per Socket (24 Cores Total)
Primary Cache	32KB(I) + 32KB(D) on chip, per core

Secondary Cache	3 MB per core pair, 9MB Total
Other Cache	Tertiary L3 Cache: 16MB
Memory	80GB (24x2GB + 8x4GB) PC2-5300 667MHz Registered ECC DDR2 DIMM
Disk Subsystem Type	FC SAN (OS + VMs)
Number of Disk Controllers	1
Number of Host Bus Adapters	2
Host Bus Adapter Vendors and Models	2 x QLogic Corp QLE2462QLA2462
Number of Network Controllers	4
Network Controller Vendors and Models	Intel PRO 1000PT Dual Port 1GbE
Network Switch Vendors and Models	Cisco WS-C6506-E with Wsx6748-GE-TX Blade
Network Speed	Gigabit Ethernet TX
Other Hardware	USB CDROM/DVD
Other Software	None
Hardware Availability Date	10/10/2008
Software Availability Date	10/10/2008
Virtualization Software	
Vendor, Product, Version, and Build	VMware ESX 3.5.0 U2 RTM Build 103908
Virtualization Type	Hardware Virtualization
Supplemental Software	None
Virtualization Software Availability Date	07/25/2008
Storage	
Array Vendor, Model, and Firmware Version	IBM System Storage DS4800, version 09.60.G5.23 3x IBM System Storage EXP 810 storage expansion unit, version 98B3 10x IBM System Storage EXP 700 storage expansion unit, version 9330
Fibre Channel Switch Vendors and Models	None
Disk Space Used	959GB
Array Cache Size	IBM System Storage DS4800, 4GB
Number and Size of LUNs	LUN0: 80GB LUN20: 100GB LUN21: 100GB LUN22: 100GB LUN23: 100GB LUN24: 100GB LUN25: 100GB LUN26: 100GB LUN27: 100GB LUN28: 100GB LUN29: 100GB

	LUN30: 100GB LUN31: 100GB LUN32: 100GB LUN33: 100GB LUN34: 100GB LUN40: 33GB LUN42: 33GB LUN44: 33GB LUN46: 33GB LUN48: 33GB LUN50: 33GB LUN52: 33GB LUN54: 33GB
RAID Type	LUN0: RAID 5 LUN20-LUN54: RAID 1
Number of Members per RAID Set	LUN0: 16 members LUN20-LUN34: 7 members LUN40-LUN54: 3 members
Disk Vendor, Model, and Speed	Seagate Technologies Inc., ST336753FC, 15K RPM Seagate Technologies Inc., ST3146855FC, 15K RPM
Clients	
Number of Clients	14
System Model(s)	x336
Processor Vendor(s) and Model(s)	Intel Xeon
Processor Speed(s) (GHz)	3.2GHz
Number of Sockets/Cores per Socket	2 Sockets / 1 Cores per Socket (2 Cores Total), Hyper-Threading Enabled
Memory	3 GB
Network Controller Vendor and Model	Broadcom NetXtreme Gigabit Ethernet
Operating System, Version, and Service Pack	Microsoft Windows Server 2003 R2 Enterprise Edition SP2
Other Hardware	None
Other Software	None

Notes for Workload

Server and Network Notes

- Onboard Ethernet disabled (default enabled)
- Onboard SAS disabled (default enabled)

Virtualization Software Notes

- VMware ESX 3.5.0 U2 Build 103908
- vSwitch speed: 1000 TX, Full Duplex(default Auto negotiate)
- 2 vSwitches: vSwitch0, vSwitch1 both with 120 ports (56 default)
- vSwitch1 was attached to 5 NICs. It contained all the web servers
- vSwitch0 was attached to 3 NICs. It contained all other VMs (File, Database, Standby, Mail, and Java) along with the service console.
- Network adapter type was set to enhanced vmxnet for all VMs.
- All database VMs were stored on LUNs 40-54 in pairs (numbered 40+First Tile Number).
- All other VMs were stored on LUNs 20-34 each tile on its own LUN (numbered 20+Tile Number).
- Path policy of each LUN storage is set to “Fixed” (default “Most Recently Used)
- ESX boot image was on LUN 0.
- Disk.SchedNumReqOutstanding 128 (default 32)
- Disabled ESX logging on all VMs except fileserver3 & 10
- Disabled Firewall and IPtables processes on ESX host
- Pegasus CIMOM server was unloaded prior to run
- VMFS2 was unloaded prior to run
- Misc.RunningVCpuLimit = 192 (default 128)
- VMFS3.MaxHeapSizeMB = 64 (default 16)
- COW.MaxHeapSizeMB = 64 (default 32)

Operating System Notes

- Microsoft Windows Server 2003 R2 Enterprise Edition Service Pack 2 on Windows-based virtual machines
- [KB 933360](#) was applied

Software Notes

Client Notes

- Microsoft Windows Server 2003 R2 Enterprise Edition, Service Pack 2
- [KB 933360](#) was applied

Other Notes

IBM System Storage DS4800

- 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 2462

- Loop reset delay 8 (default 5)
 - PortDownRetryCount 14 (default 30)
 - Operation Mode 5 (default 0)
 - 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)
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