

VMware® VMmark™ V1.1 Results

Vendor and Hardware Platform: IBM System x3850 M2
 Virtualization Platform: VMware ESX 3.5.0 U3 Build 123630

**VMmark V1.1 Score =
 20.50 @ 14 Tiles**

Tested By: IBM Inc., RTP, NC

Test Date: 03/06/2009

Performance Section
[Performance](#)

Configuration Section
[Configuration](#)

Notes Section
[Notes for Workload](#)

Performance

	webserver		javaserver		mailserver		fileserver		database		
	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
TILE_0											
p0	1932.72	1.90	17997.42	1.08	1819.33	1.66	19.14	1.49	2207.82	1.48	1.50
p1	1904.85	1.87	18018.88	1.08	1860.40	1.70	18.65	1.45	2200.55	1.47	1.49
p2	1863.15	1.83	17975.33	1.08	1925.72	1.76	18.37	1.43	2183.80	1.46	1.49
TILE_1											
p0	1930.83	1.89	18028.75	1.09	1730.62	1.58	18.97	1.48	2282.55	1.53	1.49
p1	1883.60	1.85	18040.25	1.09	1833.47	1.67	18.67	1.46	2263.93	1.52	1.49
p2	1863.50	1.83	18057.83	1.09	1796.12	1.64	18.64	1.45	2256.20	1.51	1.48
TILE_2											
p0	1894.80	1.86	17939.30	1.08	1641.67	1.50	18.91	1.47	2283.47	1.53	1.47
p1	1901.17	1.87	17965.33	1.08	1809.15	1.65	18.42	1.44	2268.90	1.52	1.49
p2	1811.70	1.78	17982.33	1.08	1760.47	1.61	18.32	1.43	2264.78	1.52	1.46
TILE_3											
p0	1925.83	1.89	17991.85	1.08	1836.20	1.67	18.98	1.48	2187.10	1.47	1.49
p1	1899.95	1.86	17934.53	1.08	1854.72	1.69	18.61	1.45	2176.82	1.46	1.48
p2	1882.53	1.85	17886.83	1.08	1796.72	1.64	18.63	1.45	2164.25	1.45	1.47
TILE_4											
p0	1927.50	1.89	17561.22	1.06	1642.67	1.50	18.87	1.47	2282.85	1.53	1.46
p1	1878.72	1.84	18018.15	1.08	1765.05	1.61	18.69	1.46	2276.32	1.53	1.48
p2	1888.78	1.85	18014.30	1.08	1924.92	1.76	18.42	1.44	2273.12	1.52	1.50
TILE_5											
p0	1915.15	1.88	18040.47	1.09	1678.78	1.53	18.99	1.48	2194.18	1.47	1.47
p1	1888.58	1.85	17998.38	1.08	1709.55	1.56	18.70	1.46	2185.53	1.46	1.46
p2	1863.30	1.83	17982.95	1.08	1815.15	1.65	18.07	1.41	2176.60	1.46	1.46

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
Number of Sockets/Cores per Socket	4 Sockets / 6 Cores per Socket (24 Cores Total)
Primary Cache	32 KB(I) + 32KB(D) on chip, per core
Secondary Cache	3 MB per core pair, 9 MB Total
Other Cache	16MB L3 cache
Memory	128 GB (32 x 4 GB PC2-5300 667MHz Registered ECC DDR2 DIMM)
Disk Subsystem Type	FC SAN (OS + VMs)
Number of Disk Controllers	2
Number of Host Bus Adapters	2
Host Bus Adapter Vendors and Models	2 x QLogic QLA2462
Number of Network Controllers	2
Network Controller Vendors and Models	Intel PRO 1000PT Dual Port 1GbE
Network Switch Vendors and Models	Nortel Passport 8010 Gigabit Switch
Network Speed	Gigabit Ethernet TX
Other Hardware	None
Other Software	None
Hardware Availability Date	10/10/2008
Software Availability Date	11/17/2008

Virtualization Software

Vendor, Product, Version, and Build	VMware ESX 3.5.0 U3 GA Build 123630
Virtualization Type	Hardware Virtualization
Supplemental Software	None
Virtualization Software Availability Date	11/06/2008

Storage

Array Vendor, Model, and Firmware Version	IBM System Storage DS4800, version 10.36.G5.07 5x IBM System Storage EXP 810 storage expansion unit, version B977 7x IBM System Storage EXP 700 storage expansion unit, version B95E
Fibre Channel Switch Vendors and Models	None
Disk Space Used	1212 GB
Array Cache Size	IBM System Storage DS4800, 4GB
Number and Size of LUNs	Total of 29 LUNs LUN0: 100GB LUN20-33: 100GB each LUN200-213: 33GB each
RAID Type	LUN0: RAID 5 LUN20-LUN213: RAID 0
Number of Members per RAID Set	LUN0: 16 members LUN20-LUN33: 7 members LUN200-LUN213: 3 members
Disk Vendor, Model, and Speed	Seagate Technologies Inc., ST336753FC, 15K RPM Seagate Technologies Inc., ST3146855FC, 15K RPM Seagate Technologies Inc., ST373455FC, 15K RPM Seagate Technologies Inc., ST373554FC, 15K RPM Seagate Technologies Inc., ST336732FC, 15K RPM

Clients

Number of Clients	14
System Model(s)	IBM eServer xSeries 336
Processor Vendor(s) and Model(s)	Intel Xeon
Processor Speed(s) (GHz)	3.2
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 SAS disabled (default enabled)

- Onboard Ethernet disabled (default enabled)
- Serial Port A disabled (default Port 3F8, IRQ4)
- Primary IDE Channel disabled (default enabled)
- Planar Ethernet PXE/DHCP disabled (default enabled)
- USB Disk disabled (default enabled)
- Boot on POST/BIOS Error disabled (default enabled)
- Cluster Mode set to Physical (default logical)

Virtualization Software Notes

- VMware ESX 3.5.0 U3 Build 123630
- Four vSwitches: vSwitch0, vSwitch2, vSwitch3 and vSwitch4
- All vSwitches are configured with 120 ports (default 56)
- All vSwitches are configured with speed: 1000 TX, Full Duplex (default Auto negotiate)
- vSwitch0 was attached to vmnic0
- vSwitch2 was attached to vmnic7
- vSwitch3 was attached to vmnic3
- vSwitch4 was attached to vmnic6
- Webserver 0-6 and Service console are attached to vSwitch0
- Webserver 7-13 are attached to vSwitch2
- Database/Fileserver/ Java/Mail/Standby 0-6 are attached to vSwitch4
- Database/Fileserver/ Java/Mail/Standby 7-13 are attached to vSwitch3
- Network adapter type was set to enhanced vmxnet for all VMs
- All database VMs were stored on LUNs 200-213 each database on its own LUN (numbered 200+ Tile Number)
- All other VMs were stored on LUNs 20-33 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
- Stopped Firewall, IPtables and Pegasus CIMOM server processes on ESX host prior to run
- VMFS2 module was unloaded prior to run
- Disabled ESX logging on all VMs
- Disk.SchedNumReqOutstanding was set to 128 (default 32)
- Misc.RunningVCpuLimit was set to 256 (default 128)
- COW.MaxHeapSizeMB was set to 64 (default 32)
- VMFS3.MaxHeapSizeMB was set to 64 (default 16)
- EtherswitchHashSize was set to 4 (default 1)
- BufferCache.SoftMaxDirty was set to 85 (default 15)
- VMkernel.Boot.cpuCellSize was set to 6 (default 4)
- Net.TcpipUseIoat was set to 1 (default 0)
- Net.MaxNetifRxQueueLen was set to 300 (default 100)

- Net.MaxNetifTxQueueLen was set to 1000 (default 200)
- Net.MaxPortRxQueueLen was set to 160 (default 80)
- Vmxnet2PinRxBuf was set to 1 (default 0)
- IDE and Floppy devices were disconnected on all VMs prior to run (default connected)
- RoutingPolicy was set to 1 (default =2)

Operating System Notes

- Microsoft Windows Server 2003 R2 Enterprise Edition Service Pack 2 on Windows-based virtual machines
- KB 933360 was applied
- Suse Linux Enterprise Server 10 (64-bit) Service Pack 2 on Linux-based virtual machines

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 QLA2462

- 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)

VMMARK.CONFIG

- Standby/DELAYTIME="260"
- WebServer/DELAYTIME="280"
- Database/DELAYTIME="420"
- FileServer/DELAYTIME="480"

Virtual Machines

- Sched.mem.max = "121098" on Fileserver3

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.

For information about VMmark and the rules regarding its usage visit www.vmware.com/products/vmmark.

VMware and VMmark are trademarks or registered trademarks of VMware, Inc. VMware® VMmark™ is a product of [VMware, Inc.](http://www.vmware.com). VMmark utilizes SPECjbb®2005 and SPECweb®2005, which are available from the [Standard Performance Evaluation Corporation \(SPEC®\)](http://www.spec.org).