

VMware® VMmark™ V1.1 Results

Vendor and Hardware Platform: IBM BladeCenter LS42
Virtualization Platform: VMware ESX 3.5.0 U3 Beta (build 121023)

VMmark V1.1 Score =
19.17 @ 14 Tiles

Tested By: IBM Inc., RTP, NC

Test Date: 12/20/2008

Performance Section
[Performance](#)

Configuration Section
[Configuration](#)

Notes Section
[Notes for Workload](#)

Performance

	webservers		javaservers		mailservers		fileservers		databases	
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio
p0	1648.67	1.62	18006.28	1.08	1691.58	1.54	17.32	1.35	2115.60	1.42
p1	1637.15	1.61	18052.03	1.09	1510.62	1.38	17.54	1.37	2129.00	1.43
p2	1621.03	1.59	18069.30	1.09	1479.00	1.35	17.35	1.35	2129.90	1.43
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio
p0	1716.22	1.68	18098.53	1.09	1662.47	1.52	17.34	1.35	2120.03	1.42
p1	1684.15	1.65	17634.60	1.06	1646.38	1.50	16.62	1.30	2134.22	1.43
p2	1682.75	1.65	18096.67	1.09	1579.12	1.44	16.90	1.32	2137.38	1.43
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio
p0	1628.45	1.60	18093.15	1.09	1291.65	1.18	18.25	1.42	2180.97	1.46
p1	1568.40	1.54	18095.95	1.09	1155.95	1.05	18.18	1.42	2194.80	1.47
p2	1574.50	1.55	18072.85	1.09	1136.47	1.04	18.15	1.41	2191.10	1.47
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio
p0	1721.90	1.69	18117.42	1.09	1589.17	1.45	18.17	1.42	2126.78	1.43
p1	1692.72	1.66	17712.42	1.07	1519.75	1.39	17.99	1.40	2149.75	1.44
p2	1687.20	1.66	18134.55	1.09	1493.70	1.36	17.89	1.39	2146.18	1.44
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio
p0	1549.72	1.52	18131.15	1.09	1670.22	1.52	18.01	1.40	1840.92	1.23
p1	1513.62	1.49	18096.22	1.09	1747.42	1.59	17.64	1.37	1779.35	1.19
p2	1509.85	1.48	17643.20	1.06	1556.72	1.42	17.54	1.37	1769.17	1.19
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio
p0	1635.67	1.61	18113.95	1.09	1559.15	1.42	18.08	1.41	2124.03	1.42
p1	1571.83	1.54	18117.88	1.09	1485.30	1.35	18.07	1.41	2137.50	1.43
p2	1575.67	1.55	18111.58	1.09	1389.80	1.27	17.99	1.40	2135.78	1.43

Configuration

Server and Network

Server Manufacturer and Model	IBM BladeCenter LS42
Processor Vendor and Model	Quad-Core AMD Opteron™ Processor 8384
Processor Speed (GHz)	2.7
Number of Sockets/Cores per Socket	4 Sockets / 4 Cores per Socket (16 Cores Total)
Primary Cache	64 KB I +64 KB D on chip per core
Secondary Cache	512 KB per package, 4 package total
Other Cache	6144 KB L3 cache per package, 4 package total
Memory	128 GB (16 x 8 GB VLP PC2-5300P ECC DDR2 DIMM)
Disk Subsystem Type	FC SAN (OS + VMs)
Number of Disk Controllers	1
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	QLogic QLGC 41Y8581
Number of Network Controllers	4
Network Controller Vendors and Models	2x Broadcom BCM 5709 Gigabit Ethernet, 2x Broadcom BCM 5715S Gigabit Ethernet
Network Switch Vendors and Models	Cisco WS-C6506-E with Wsx6748-GE-TX Blade
Network Speed	Gigabit Ethernet TX
Other Hardware	None
Other Software	None
Hardware Availability Date	03/13/2009
Software Availability Date	11/30/2008

Virtualization Software

Vendor, Product, Version, and Build	VMware ESX 3.5.0 U3 Build 121023
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 09.60.G5.23 1x IBM System Storage EXP 810 storage expansion unit, version 98B5
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	7 x IBM System Storage EXP 700 storage expansion unit, version 9330
Fibre Channel Switch Vendors and Models	None
Disk Space Used	987 GB
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 LUN40: 33GB LUN42: 33GB LUN44: 33GB LUN46: 33GB LUN47: 33GB LUN48: 33GB LUN50: 33GB LUN52: 33GB
RAID Type	LUN0: RAID 5 LUN20-LUN53: RAID 0
Number of Members per RAID Set	LUN0: 16 members LUN20-LUN33: 7 members LUN40-LUN52: 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)
- Memory chip kill disabled (default enabled)

Virtualization Software Notes

- VMware ESX 3.5.0 U3 Build 121023
- Four vSwitches: vSwitch0, vSwitch1, vSwitch2 and vSwitch3.
- 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.
- vSwitch1 was attached to vmnic4.
- vSwitch2 was attached to vmnic2.
- vSwitch3 was attached to vmnic3.
- Database/Fileserver/ Java/Mail/Standby 0-6, Database 7-9 and service console are attached to vSwitch0.
- Database 10-13, Fileserver/ Java/Mail/Standby 7-13 are attached to vSwitch2.
- Webserver 0-6 are attached to vSwitch1.
- Webserver 7-13 are attached to vSwitch3.
- Network adapter type was set to enhanced vmxnet for all VMs.
- All database VMs were stored on LUNs 40-52 in pairs (numbered 40+First Tile Number), except LUN46 contain only database 6 and LUN47 contain only database 7.
- 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.
- Disabled Firewall and IPTables processes on ESX host
- Virtualized MMU was enabled on all VMs (default Automatic)
- Disk.SchedNumReqOutstanding was set to 128 (default 32)
- Disabled ESX logging on all VMs
- VMFS2 was unloaded prior to run

- Misc.RunningVCpuLimit was set to 192 (default 128)
- COW.MaxHeapSizeMB was set to 64 (default 32)
- VMFS3.MaxHeapSizeMB was set to 64 (default 16)
- EtherswitchHashSize set to 4 (default 1)
- IRQ.RoutingPolicy was set to 0 (default 2)
- BufferCache.SoftMaxDirty was set to 85 (default 15)
- IDE and Floppy devices were not connected on all VMs

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
- Suse Linux Enterprise Server 10 (32-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 size16KB (default 4KB)
- Background media scan disabled (default enabled)
- Write caching with mirroring disabled (default enabled)
- Write caching without batteries disabled (default enabled)

QLogic QLGC 41Y8581

- 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)

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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