

VMware® VMmark™ V1.1.1 Results

Vendor and Hardware Platform: Fujitsu BX924 S2
 Virtualization Platform: VMware ESX 4.0 Update 2 (build 261974)

**VMmark V1.1.1 Score =
30.05 @ 20 Tiles**

Tested By: Fujitsu

Test Date: 09-17-2010

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Performance

	webserver		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1735.58	1.70	18154.62	1.09	1895.30	1.73	19.25	1.50	2370.03	1.59	1.50
p1	1761.53	1.73	18154.00	1.09	1829.55	1.67	19.15	1.49	2372.90	1.59	1.50
p2	1737.30	1.70	18158.88	1.09	1900.62	1.73	19.00	1.48	2374.03	1.59	1.50
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2001.20	1.96	18174.38	1.09	1796.88	1.64	19.26	1.50	2317.65	1.55	1.52
p1	1998.25	1.96	18166.00	1.09	1729.70	1.58	19.04	1.48	2327.70	1.56	1.51
p2	1992.05	1.96	18176.67	1.09	1680.15	1.53	19.00	1.48	2329.75	1.56	1.50
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2002.88	1.97	18173.78	1.09	1863.25	1.70	19.27	1.50	2318.18	1.55	1.53
p1	1998.78	1.96	18181.58	1.09	1811.42	1.65	19.11	1.49	2326.60	1.56	1.52
p2	1988.90	1.95	18189.85	1.09	1905.80	1.74	18.92	1.47	2326.65	1.56	1.54
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1957.40	1.92	18163.08	1.09	1807.25	1.65	19.68	1.53	2373.05	1.59	1.53
p1	1954.33	1.92	18166.50	1.09	1770.05	1.61	19.72	1.54	2377.62	1.59	1.53
p2	1941.25	1.91	18130.97	1.09	1860.58	1.70	19.51	1.52	2378.03	1.59	1.54
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1959.67	1.92	18170.83	1.09	1712.17	1.56	19.62	1.53	2375.55	1.59	1.52
p1	1953.75	1.92	18157.83	1.09	1826.50	1.67	19.73	1.54	2378.55	1.59	1.54
p2	1947.00	1.91	18158.42	1.09	1687.30	1.54	19.48	1.52	2379.72	1.59	1.51
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1957.65	1.92	17698.10	1.07	1841.72	1.68	19.58	1.53	2325.75	1.56	1.52
p1	1954.20	1.92	18150.40	1.09	1774.80	1.62	19.47	1.52	2331.62	1.56	1.52
p2	1940.40	1.90	18149.40	1.09	1755.47	1.60	19.32	1.51	2334.15	1.56	1.51

TILE_6	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1998.22	1.96	17706.50	1.07	1699.50	1.55	19.11	1.49	2375.30	1.59	1.50
p1	1998.35	1.96	18155.62	1.09	1723.58	1.57	18.99	1.48	2378.12	1.59	1.51
p2	1985.53	1.95	18156.47	1.09	1691.85	1.54	18.88	1.47	2380.97	1.60	1.50
TILE_7	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2000.62	1.96	18162.67	1.09	1711.08	1.56	19.37	1.51	2322.47	1.56	1.51
p1	1997.35	1.96	18175.35	1.09	1776.47	1.62	19.16	1.49	2325.75	1.56	1.52
p2	1992.92	1.96	18181.75	1.09	1656.25	1.51	18.83	1.47	2325.57	1.56	1.49
TILE_8	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2002.40	1.97	18164.08	1.09	1712.67	1.56	19.64	1.53	2318.90	1.55	1.51
p1	2003.53	1.97	18159.88	1.09	1782.58	1.63	19.67	1.53	2326.28	1.56	1.53
p2	1994.62	1.96	18151.15	1.09	1760.70	1.61	19.54	1.52	2328.68	1.56	1.52
TILE_9	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1946.10	1.91	17700.60	1.07	1733.35	1.58	19.66	1.53	2322.93	1.56	1.50
p1	1956.42	1.92	18162.97	1.09	1813.20	1.65	19.54	1.52	2324.25	1.56	1.52
p2	1938.05	1.90	18167.75	1.09	1862.12	1.70	19.27	1.50	2325.30	1.56	1.53
TILE_10	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1951.28	1.91	18176.80	1.09	1371.58	1.25	19.75	1.54	2378.20	1.59	1.45
p1	1951.65	1.92	18179.72	1.09	1333.12	1.22	19.60	1.53	2381.97	1.60	1.44
p2	1941.83	1.91	18172.05	1.09	1384.28	1.26	19.42	1.51	2383.97	1.60	1.45
TILE_11	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1954.62	1.92	17729.47	1.07	1685.97	1.54	19.28	1.50	2325.35	1.56	1.49
p1	1945.50	1.91	18197.05	1.10	1799.08	1.64	19.27	1.50	2331.88	1.56	1.52
p2	1936.80	1.90	18192.25	1.10	1938.15	1.77	19.08	1.49	2333.03	1.56	1.54
TILE_12	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1997.53	1.96	18160.83	1.09	1618.80	1.48	19.66	1.53	2374.55	1.59	1.50
p1	1998.50	1.96	17712.15	1.07	1620.67	1.48	19.51	1.52	2377.38	1.59	1.50
p2	1989.72	1.95	18161.62	1.09	1767.47	1.61	19.19	1.50	2377.80	1.59	1.52
TILE_13	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1999.80	1.96	18209.00	1.10	1671.67	1.52	19.69	1.53	2373.78	1.59	1.52
p1	1992.70	1.96	18201.95	1.10	1695.90	1.55	19.57	1.53	2378.07	1.59	1.52
p2	1990.00	1.95	18161.53	1.09	1863.08	1.70	19.41	1.51	2378.12	1.59	1.54
TILE_14	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1956.97	1.92	17759.95	1.07	1556.72	1.42	19.62	1.53	2325.78	1.56	1.47
p1	1947.55	1.91	18197.55	1.10	1712.00	1.56	19.51	1.52	2334.57	1.56	1.51
p2	1938.72	1.90	18160.45	1.09	1852.62	1.69	19.34	1.51	2336.88	1.57	1.53

TILE_15	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1999.25	1.96	18152.50	1.09	1405.50	1.28	19.16	1.49	2328.68	1.56	1.45
p1	1990.25	1.95	18155.92	1.09	1630.42	1.49	19.11	1.49	2335.65	1.57	1.49
p2	1982.72	1.95	18163.55	1.09	1730.75	1.58	19.04	1.48	2333.57	1.56	1.51
TILE_16	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2000.20	1.96	18156.55	1.09	1442.47	1.32	19.72	1.54	2382.30	1.60	1.47
p1	1998.35	1.96	18153.65	1.09	1503.05	1.37	19.46	1.52	2383.80	1.60	1.48
p2	1987.83	1.95	17702.95	1.07	1744.35	1.59	19.44	1.52	2384.20	1.60	1.52
TILE_17	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1953.22	1.92	18153.92	1.09	1295.50	1.18	19.38	1.51	2331.00	1.56	1.42
p1	1955.67	1.92	18139.25	1.09	1596.90	1.46	19.16	1.49	2330.10	1.56	1.48
p2	1942.50	1.91	18159.38	1.09	1687.42	1.54	19.04	1.48	2331.30	1.56	1.49
TILE_18	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2004.45	1.97	18150.58	1.09	1238.28	1.13	19.08	1.49	2385.00	1.60	1.42
p1	2000.97	1.96	18153.40	1.09	1421.17	1.30	19.19	1.50	2381.97	1.60	1.46
p2	1991.45	1.95	17691.72	1.06	1743.53	1.59	19.00	1.48	2382.95	1.60	1.51
TILE_19	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1946.83	1.91	18160.12	1.09	1154.72	1.05	19.24	1.50	2378.60	1.59	1.39
p1	1956.03	1.92	18134.80	1.09	1525.20	1.39	18.88	1.47	2377.45	1.59	1.47
p2	1943.92	1.91	18173.05	1.09	1705.45	1.55	18.96	1.48	2378.60	1.59	1.50
p0_score:	29.76										
p1_score:	30.05										
p2_score:	30.24										
Unreviewed_VMmark_Score:	30.05										

Configuration

Server and Network	
Server Manufacturer and Model	Fujitsu BX924 S2
Processor Vendor and Model	Quad-core Intel Xeon X5677
Processor Speed (GHz)	3.46
Total Sockets/Total Cores/Total Threads	2 Sockets / 8 Cores / 16 Threads
Primary Cache	32KB I + 32KB D on chip per core
Secondary Cache	256KB I+D on chip per core
Other Cache	12MB I+D on chip per chip L3
BIOS Version	Rev 3C57.2952

Memory Size (in GB, Number of DIMMs)	144GB, 12
Memory Type and Speed	6x16GB per DIMM and 6x8GB per DIMM, 1333MHz dual rank registered ECC DDR3
Disk Subsystem Type	FC SAN
Number of Disk Controllers	1 (unused)
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	1 dual-channel MC-FC82E (Emulex LPe12002 based)
Number of Network Controllers	2
Network Controller Vendors and Models	One integrated Intel 82599EB dual port 10GbE adapter, one Eth Mezz Card 1Gb 4 Port (Intel 82575 based)
Network Switch Vendors and Models	2xBX600 GbE Switch Blade 30/12, 1xBX900 GbE Connection Blade 36/8+2, 2xBX900 Switch/IBP 10GbE 18/8, 1xCISCO 4900M
Network Speed	10Gbps for all webserver, database and fileserver VMs, 1Gbps for all remaining VMs and SUT
Other Hardware	None
Other Software	None
Hardware Availability Date (MM-DD-YYYY)	11-29-2010
Software Availability Date (MM-DD-YYYY)	06-17-2010

Virtualization Software

Vendor, Product, Version, and Build	VMware ESX 4.0 Update 2 (build 261974)
Virtualization Type	Hardware
Supplemental Software	ixgbe-Driver Version 2.0.62.4.8
Virtualization Software Availability Date (MM-DD-YYYY)	06-10-2010

Storage

Array Vendors, Models, and Firmware Versions	7xFujitsu ETERNUS DX80, Firmware version V10L20-0000
Fibre Channel Switch Vendors and Models	Brocade 5100
Disk Space Used	Total 2353GB: 1318GB for VMs, 11GB for Host-OS, 1TB for VM-config and swap
Array Cache Size	2GB
Total Number of Physical Disks Used	148
Total Number of Enclosures/Pods/Shelves Used	13
Total Number of Physical Disks per Enclosures/Pods/Shelves	12 except first ETERNUS DX80 with only 4 disks

Used	
Total Number of Storage Groups Used	7
Number LUNs Used	Total 30: 28 LUNs for VMs, 1 LUN for Host-OS, 1 LUN for VM-config and swap
LUN Size and Number of Disks Per LUN	8x31GB/6 Disks (Database VMs), 10x18GB/12 Disks (Fileserver VMs), 10x89GB/12 Disks, 1x11GB/4 Disks, 1x1TB/4 Disks
RAID Type	0
Number of Members per RAID Set	ETERNUS DX80[0]: 2, ETERNUS DX80[1-5]: 2/2, ETERNUS DX80[6]: 2/2/2/2
Disk Vendors, Models, and Speeds	144xSeagate, ST3300656SS, 15krpm 4xSeagate, ST3450856SS, 15krpm
Clients	
Number of Clients	20
System Model(s)	BX620 S4
Processor Vendor(s) and Model(s)	Intel Xeon 5130
Processor Speed(s) (GHz)	2
Total Sockets/Total Cores/Total Threads	2 Sockets / 4 Cores / 4 Threads
Memory per Client	3GB
Network Controller Vendors and Models	Broadcom NetXtreme
Operating System, Version, and Service Pack	Microsoft(R) Windows(R) Server 2003 R2 Enterprise Edition, Service Pack 2
Other Hardware	none
Other Software	none

Notes for Workload

Server and Network Notes

- Server BIOS settings:
 - Turbo Boost Technology: Enabled (Intel Turbo Boost up to 3.73GHz, default enabled)
 - Adjacent Cache Line Prefetch: Disabled (default enabled)
 - Hardware Prefetch: Disabled (default enabled)
 - DCU Streamer Disabled (default enabled)
 - Data Reuse Optimizations: Disabled (default enabled)
 - Serial: Disabled (default Auto)
- Emulex HBA BIOS settings:
 - defaults
- vSwitch Configuration:
 - vSwitch0 for Service Console on vmnic0

- vSwitch1 for all Java/Standby/Mail VMs on vmnic2
- vSwitch1 configured for 120 Ports (default 56)
- vSwitch2 for all Database/File VMs on vmnic4
- vSwitch2 configured for 120 Ports (default 56)
- vSwitch3 for all Web VMs on vmnic5
- Storage Configuration:
 - ETERNUS DX80[0]
 - RAID set 0, LUN 0: Boot/Console OS
 - RAID set 0, LUN 1: VM-config and swap
 - ETERNUS DX80[1]
 - RAID set 0, LUN 1: Fileservers for tiles 0 and 2
 - RAID set 0, LUN 2: Javaser/Mailserv/Standby/Webserver for tiles 0 and 2
 - RAID set 1, LUN 3: Fileserver for tiles 1 and 3
 - RAID set 1, LUN 4: Javaser/Mailserv/Standby/Webserver for tiles 1 and 3
 - ETERNUS DX80[2]
 - RAID set 0, LUN 1: Fileservers for tiles 4 and 6
 - RAID set 0, LUN 2: Javaser/Mailserv/Standby/Webserver for tiles 4 and 6
 - RAID set 1, LUN 3: Fileserver for tiles 5 and 7
 - RAID set 1, LUN 4: Javaser/Mailserv/Standby/Webserver for tiles 5 and 7
 - ETERNUS DX80[3]
 - RAID set 0, LUN 1: Fileservers for tiles 8 and 10
 - RAID set 0, LUN 2: Javaser/Mailserv/Standby/Webserver for tiles 8 and 10
 - RAID set 1, LUN 3: Fileserver for tiles 9 and 11
 - RAID set 1, LUN 4: Javaser/Mailserv/Standby/Webserver for tiles 9 and 11
 - ETERNUS DX80[4]
 - RAID set 0, LUN 1: Fileservers for tiles 12 and 14
 - RAID set 0, LUN 2: Javaser/Mailserv/Standby/Webserver for tiles 12 and 14
 - RAID set 1, LUN 3: Fileserver for tiles 13 and 15
 - RAID set 1, LUN 4: Javaser/Mailserv/Standby/Webserver for tiles 13 and 15
 - ETERNUS DX80[5]
 - RAID set 0, LUN 1: Fileservers for tiles 16 and 18
 - RAID set 0, LUN 2: Javaser/Mailserv/Standby/Webserver for tiles 16 and 18
 - RAID set 1, LUN 3: Fileserver for tiles 17 and 19
 - RAID set 1, LUN 4: Javaser/Mailserv/Standby/Webserver for tiles 17 and 19
 - ETERNUS DX80[6]
 - RAID set 0, LUN 1: Database for tiles 0, 4 and 8
 - RAID set 0, LUN 2: Database for tiles 12 and 16
 - RAID set 1, LUN 3: Database for tiles 1, 5 and 9
 - RAID set 1, LUN 4: Database for tiles 13 and 17
 - RAID set 2, LUN 5: Database for tiles 2, 6 and 10
 - RAID set 2, LUN 6: Database for tiles 14 and 18
 - RAID set 3, LUN 7: Database for tiles 3, 7 and 11
 - RAID set 3, LUN 8: Database for tiles 15 and 19

Virtualization Software Notes

- All VMs were upgraded to hardware version 7
- Virtualized MMU was set to full hardware support for all VMs (default automatic)
- Ethernet adapter type set to vmxnet3 for all VMs
- Logging disabled for all VMs (default enabled)
- Floppy and CDROM removed for all VMs (default enabled)
- Firewall disabled for the Console OS (default enabled)
- CPU.HaltingIdleMsecPenalty = 1933 (default 100)
- CPU.HaltingIdleMsecPenaltyMax = 1957 (default 800)
- CPU.Quantum = 60 (default 50)
- IRQ.RoutingPolicy = 0 (default 2)
- Mem.BalancePeriod was set to 0 (default 15)
- Mem.SamplePeriod was set to 0 (default 60)
- Mem.ShareScanGHz was set to 0 (default 4)
- Misc.TimerMaxHardPeriod was set to 4000 (default 2000)
- Misc.TimerMinHardPeriod was set to 2000 (default 100)
- Misc.WorldletHTSharing was set to 135(default 90)
- Net.CoalesceRxQDepthCap=80 (default 40)
- Net.CoalesceTxAlwaysPoll=0 (default 1)
- Net.CoalesceTxQDepthCap=80 (default 40)
- Net.CoalesceTxTimeout=8000 (default 4000)
- Net.MaxNetifRxQueueLen=300 (default 100)
- Net.MaxNetifTxQueueLen=1000 (default 500)
- Net.vmxnetThroughputWeight=255 (default 0)
- Numa.PageMigEnable was set to 0 (default 1)
- VGA buffer for all Windows VMs was set to 1310720 Bytes
- VGA buffer for all Linux VMs was set to 1572864 Bytes
- One dedicated LUN(ETERNUS DX80[0]/LUN 1) for the VM configuration/swap files
- /vmkernel/module/ixgbe.o/options = "VMDQ=1,1 InterruptThrottleRate=3000,3000" (defaults 8,8 / 16000,16000)
- /vmkernel/module/lpfc820.o/options = "lpfc_lun_queue_depth=64 lpfc_cr_count=5 lpfc_cr_delay=1" (defaults 31,1,0)
- Used the VMmark AutoPart utility to expand all mailserver data partitions
- Used the new VMmark harness file 'fileservr_functions.xml' from 02/16/2010

Operating System Notes

- Microsoft Windows Server 2003 R2 VMs were updated with Service Pack 2
- Standby server and mail server were updated with KB955839

Software Notes

- none

Client Notes

- Microsoft Windows Server 2003 R2 Clients were updated with Service Pack 2 and KB955839

Other Notes

- The following parameters were altered from their default values in VMMARK.CONFIG

Database/DELAYTIME=20 (default 360)
Fileserver/DELAYTIME=0 (default 450)
JavaServer/DELAYTIME=10 (default 540)
MailServer/DELAYTIME=15 (default 5)
Standby/DELAYTIME=0 (default 170)
WebServer/DELAYTIME=25 (default 180)

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.

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