

VMware® VMmark™ V1.1.1 Results

Vendor and Hardware Platform: Fujitsu BX960 S1
Virtualization Platform: VMware ESX 4.0 Update 2 (build 257240)

VMmark V1.1.1 Score =
32.82 @ 22 Tiles

Tested By: Fujitsu

Test Date: 06/12/2010

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Performance

	webserver		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2045.42	2.01	18116.70	1.09	1522.47	1.39	19.70	1.54	2380.45	1.60	1.49
p1	2017.62	1.98	18105.12	1.09	1682.55	1.53	19.29	1.50	2386.57	1.60	1.51
p2	1987.35	1.95	18105.15	1.09	1711.62	1.56	18.96	1.48	2388.97	1.60	1.51
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2056.12	2.02	18126.75	1.09	1548.03	1.41	19.89	1.55	2316.57	1.55	1.50
p1	2034.15	2.00	18153.22	1.09	1659.20	1.51	19.71	1.54	2319.40	1.55	1.51
p2	2007.80	1.97	18165.75	1.09	1857.08	1.69	19.32	1.51	2331.97	1.56	1.54
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2018.53	1.98	18105.00	1.09	1464.05	1.33	20.08	1.56	2391.88	1.60	1.49
p1	1972.05	1.94	18107.15	1.09	1663.62	1.52	19.50	1.52	2394.07	1.60	1.51
p2	1921.53	1.89	18116.03	1.09	1781.67	1.62	19.21	1.50	2399.47	1.61	1.52
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2046.65	2.01	18116.08	1.09	1472.15	1.34	20.06	1.56	2402.80	1.61	1.49
p1	2013.90	1.98	18105.85	1.09	1727.70	1.58	19.99	1.56	2408.20	1.61	1.54
p2	1984.30	1.95	18135.08	1.09	1693.33	1.54	19.28	1.50	2415.32	1.62	1.52
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2052.85	2.01	18147.80	1.09	1510.65	1.38	20.00	1.56	2398.20	1.61	1.50
p1	2033.90	2.00	18132.40	1.09	1598.97	1.46	19.59	1.53	2401.93	1.61	1.51
p2	2005.22	1.97	18127.47	1.09	1820.83	1.66	19.56	1.52	2404.18	1.61	1.54
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2041.78	2.00	18142.00	1.09	1349.65	1.23	20.00	1.56	2392.40	1.60	1.46
p1	2016.70	1.98	18143.38	1.09	1534.05	1.40	19.76	1.54	2393.38	1.60	1.49
p2	1990.92	1.95	18137.15	1.09	1738.83	1.59	19.50	1.52	2396.22	1.61	1.53

TILE_6	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2021.40	1.98	18106.15	1.09	1422.92	1.30	19.63	1.53	2391.10	1.60	1.47
p1	1970.92	1.93	18114.42	1.09	1671.67	1.52	18.94	1.48	2393.75	1.60	1.50
p2	1920.05	1.88	18116.20	1.09	1743.08	1.59	18.61	1.45	2397.15	1.61	1.50
TILE_7	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2052.82	2.01	18147.78	1.09	1443.30	1.32	19.62	1.53	2391.60	1.60	1.48
p1	2037.12	2.00	18092.10	1.09	1635.03	1.49	19.52	1.52	2395.28	1.61	1.51
p2	2020.78	1.98	18100.22	1.09	1666.78	1.52	19.21	1.50	2398.93	1.61	1.51
TILE_8	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2013.83	1.98	18121.97	1.09	1360.25	1.24	20.31	1.58	2396.40	1.61	1.47
p1	1967.72	1.93	18117.65	1.09	1604.95	1.46	19.80	1.54	2397.10	1.61	1.50
p2	1918.17	1.88	18121.40	1.09	1818.03	1.66	19.34	1.51	2400.88	1.61	1.53
TILE_9	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2047.12	2.01	18149.72	1.09	1394.60	1.27	19.78	1.54	2394.55	1.60	1.47
p1	2021.67	1.98	18117.30	1.09	1594.95	1.45	19.39	1.51	2395.50	1.61	1.50
p2	1991.25	1.95	18109.35	1.09	1681.40	1.53	18.90	1.47	2396.60	1.61	1.51
TILE_10	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2051.12	2.01	18160.65	1.09	1446.08	1.32	19.61	1.53	2399.93	1.61	1.48
p1	2035.85	2.00	18136.90	1.09	1629.78	1.49	19.16	1.49	2404.53	1.61	1.51
p2	2019.20	1.98	18130.58	1.09	1792.55	1.63	18.69	1.46	2404.93	1.61	1.53
TILE_11	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2018.30	1.98	18127.60	1.09	1257.72	1.15	20.03	1.56	2393.80	1.60	1.44
p1	1970.05	1.93	18128.53	1.09	1515.65	1.38	19.76	1.54	2393.45	1.60	1.48
p2	1922.20	1.89	18119.88	1.09	1720.80	1.57	19.56	1.52	2395.45	1.61	1.51
TILE_12	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2032.45	1.99	17658.10	1.06	1282.50	1.17	19.51	1.52	2399.00	1.61	1.43
p1	2007.03	1.97	18110.30	1.09	1452.92	1.32	19.07	1.49	2403.53	1.61	1.47
p2	1978.28	1.94	18107.70	1.09	1682.70	1.53	18.75	1.46	2412.05	1.62	1.50
TILE_13	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1942.83	1.91	18103.72	1.09	1255.88	1.15	19.60	1.53	2396.38	1.61	1.42
p1	1865.20	1.83	18096.80	1.09	1542.53	1.41	19.05	1.48	2396.03	1.61	1.46
p2	1797.97	1.76	18098.30	1.09	1740.55	1.59	18.62	1.45	2398.55	1.61	1.48
TILE_14	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2061.75	2.02	18093.90	1.09	1275.40	1.16	20.28	1.58	2404.05	1.61	1.46
p1	2047.47	2.01	18094.78	1.09	1518.72	1.38	19.60	1.53	2409.03	1.61	1.50
p2	2027.92	1.99	18082.53	1.09	1606.95	1.47	19.17	1.49	2415.90	1.62	1.50

TILE_15	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2049.10	2.01	18147.95	1.09	1242.58	1.13	18.72	1.46	2401.47	1.61	1.42
p1	2037.90	2.00	18151.78	1.09	1443.62	1.32	18.13	1.41	2404.93	1.61	1.46
p2	2022.30	1.98	18144.05	1.09	1621.55	1.48	17.34	1.35	2404.62	1.61	1.47
TILE_16	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2044.62	2.01	18171.15	1.09	1259.80	1.15	19.69	1.53	2402.38	1.61	1.44
p1	2024.42	1.99	18159.08	1.09	1460.78	1.33	19.13	1.49	2403.03	1.61	1.47
p2	2000.12	1.96	18100.70	1.09	1644.45	1.50	18.90	1.47	2404.05	1.61	1.50
TILE_17	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1961.10	1.92	18155.83	1.09	1208.60	1.10	19.94	1.55	2400.95	1.61	1.42
p1	1919.80	1.88	18170.42	1.09	1466.00	1.34	19.70	1.54	2398.97	1.61	1.47
p2	1861.05	1.83	18169.33	1.09	1599.22	1.46	19.63	1.53	2403.07	1.61	1.48
TILE_18	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2048.50	2.01	18123.58	1.09	1263.33	1.15	19.90	1.55	2394.40	1.60	1.44
p1	2029.90	1.99	18105.85	1.09	1508.78	1.38	19.61	1.53	2393.05	1.60	1.49
p2	2003.12	1.97	18098.00	1.09	1759.05	1.60	19.36	1.51	2396.50	1.61	1.53
TILE_19	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2012.92	1.98	18120.33	1.09	1213.92	1.11	19.45	1.52	2407.93	1.61	1.42
p1	1972.72	1.94	18102.35	1.09	1495.58	1.36	18.88	1.47	2410.32	1.62	1.47
p2	1917.95	1.88	18098.92	1.09	1741.97	1.59	18.32	1.43	2417.10	1.62	1.50
TILE_20	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2041.85	2.00	17672.90	1.06	1262.70	1.15	19.93	1.55	2404.62	1.61	1.44
p1	2018.53	1.98	18131.78	1.09	1459.45	1.33	19.43	1.51	2402.70	1.61	1.48
p2	1990.58	1.95	18139.33	1.09	1636.97	1.49	19.04	1.48	2406.68	1.61	1.50
TILE_21	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2053.22	2.02	18139.05	1.09	1181.25	1.08	19.88	1.55	2409.35	1.61	1.43
p1	2038.97	2.00	18125.70	1.09	1478.17	1.35	19.60	1.53	2411.88	1.62	1.49
p2	2023.28	1.99	17697.50	1.07	1627.12	1.48	19.30	1.50	2412.20	1.62	1.50
p0_score:	32.07										
p1_score:	32.82										
p2_score:	33.20										
Unreviewed_VMmark_Score:	32.82										

Configuration

Server and Network

Server Manufacturer and Model	Fujitsu BX960 S1
Processor Vendor and Model	Intel Xeon E7520
Processor Speed (GHz)	1.87
Total Sockets/Total Cores/Total Threads	4 Sockets / 16 Cores / 32 Threads
Primary Cache	32KB I + 32KB D on chip per core
Secondary Cache	256KB I+D on chip per core
Other Cache	18MB I+D on chip per chip L3
BIOS Version	Aptio 3.6 R1.01C.2873
Memory Size (in GB, Number of DIMMs)	256GB, 32
Memory Type and Speed	8GB per DIMM, Dual Rank 1066MHz registered ECC DDR3
Disk Subsystem Type	FC SAN
Number of Disk Controllers	1
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	Two integrated Intel 82599EB dual port 10GbE adapter
Network Switch Vendors and Models	3xBX600 GbE Switch Blade 30/12, 2xBX900 Switch/IBP 10GbE 18/8, 1xCISCO 4900M
Network Speed	10Gbps
Other Hardware	Intel SATA SSD 32GB (SSDSA2SH032G1GN) for Host-OS attached to onboard ICH10R
Other Software	none
Hardware Availability Date (MM-DD-YYYY)	09/24/2010
Software Availability Date (MM-DD-YYYY)	09/24/2010

Virtualization Software

Vendor, Product, Version, and Build	VMware ESX 4.0 Update 2 (build 257240)
Virtualization Type	Hardware
Supplemental Software	none
Virtualization Software Availability Date (MM-DD-YYYY)	06/10/2010

Storage

Array Vendors, Models, and Firmware Versions	11xFujitsu ETERNUS DX80, Firmware version V10L20-0000
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Fibre Channel Switch Vendors and Models	Brocade 5100
Disk Space Used	Total 2556GB: 1532GB for VMs, 1TB for VM-config and swap
Array Cache Size	2GB
Total Number of Physical Disks Used	172
Total Number of Enclosures/Pods/Shelves Used	15
Total Number of Physical Disks per Enclosures/Pods/Shelves Used	12 except first ETERNUS DX80 with only 4 disks
Total Number of Storage Groups Used	8
Number LUNs Used	Total 33: 32 LUNs for VMs, 1 LUN for VM-config and swap
LUN Size and Number of Disks Per LUN	8x31GB/6 Disks (Database VMs), 12x18GB/12 Disks (Fileserver VMs), 12x89GB/12 Disks, 1x1TB/4 Disks
RAID Type	0
Number of Members per RAID Set	2 except first ETERNUS DX80 with only one member
Disk Vendors, Models, and Speeds	168xSeagate, ST3300656SS, 15krpm 4xSeagate, ST3450856SS, 15krpm

Clients

Number of Clients	22
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:
 - Serial 1: Disabled (default auto)
 - SATA Controller Mode: Enhanced (default SW RAID)
- MC-FC82E(Emulex) HBA BIOS settings:
 - defaults
- vSwitch Configuration:
 - vSwitch0 for Service Console on vmnic0
 - vSwitch1 for all Java/Mail/Standby VMs on vmnic2
 - vSwitch1 configured for 120 Ports (default 56)
 - vSwitch2 for all Database/Fileserver VMs on vmnic1
 - vSwitch2 configured for 56 Ports (default 56)
 - vSwitch3 for all Webserver VMs on vmnic3
 - vSwitch3 configured for 24 Ports (default 56)
- Storage Configuration:
 - ETERNUS DX80[0]
 - 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/Mailserver/Standby/Webserver for tiles 0 and 2
 - RAID set 1, LUN 3: Fileserver for tiles 1 and 3
 - RAID set 1, LUN 4: Javaser/Mailserver/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/Mailserver/Standby/Webserver for tiles 4 and 6
 - RAID set 1, LUN 3: Fileserver for tiles 5 and 7
 - RAID set 1, LUN 4: Javaser/Mailserver/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/Mailserver/Standby/Webserver for tiles 8 and 10
 - RAID set 1, LUN 3: Fileserver for tiles 9 and 11
 - RAID set 1, LUN 4: Javaser/Mailserver/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/Mailserver/Standby/Webserver for tiles 12 and 14
 - RAID set 1, LUN 3: Fileserver for tiles 13 and 15
 - RAID set 1, LUN 4: Javaser/Mailserver/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/Mailserver/Standby/Webserver for tiles 16 and 18
 - RAID set 1, LUN 3: Fileserver for tiles 17 and 19
 - RAID set 1, LUN 4: Javaser/Mailserver/Standby/Webserver for tiles 17 and 19
 - ETERNUS DX80[6]

RAID set 0, LUN 1: Fileservers for tile 20
RAID set 0, LUN 2: Javaser/MAILSERVER/Standby/WEBSERVER for tile 20
RAID set 1, LUN 3: Fileserver for tile 21
RAID set 1, LUN 4: Javaser/MAILSERVER/Standby/WEBSERVER for tile 21

o ETERNUS DX80[7]

RAID set 0, LUN 1: Database for tiles 0, 4 and 8
RAID set 0, LUN 2: Database for tiles 12, 16 and 20
RAID set 1, LUN 4: Database for tiles 1, 5 and 9
RAID set 1, LUN 5: Database for tiles 13, 17 and 21
RAID set 2, LUN 7: Database for tiles 2, 6 and 10
RAID set 2, LUN 8: Database for tiles 14 and 18
RAID set 3, LUN 10: Database for tiles 3, 7 and 11
RAID set 3, LUN 11: 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 = 0 (default 100)
- 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)
- Net.MaxNetifRxQueueLen=300 (default 100)
- Net.MaxNetifTxQueueLen=1000 (default 500)
- 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=1,1,1,1 InterruptThrottleRate=3000,3000,3000,3000" (defaults 8,8,8,8 / 16000,16000,16000,16000)
- /vmkernel/module/lpfc820.o/options = "lpfc_lun_queue_depth=64 lpfc_cr_count=5 lpfc_cr_delay=1" (defaults 31,1,0)
- /vmkernel/module/vmfs2/enabled = "false" (default true)
- Used the VMmark AutoPart utility to expand all mailserver data partitions
- Used the new VMmark harness file 'fileserver_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)
 - TILEDELAY=120 (default 600)
 - 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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