

## VMware® VMmark™ V1.1.1 Results

Vendor and Hardware Platform: Fujitsu RX300 S6  
 Virtualization Platform: VMware ESX 4.0 Update 1 (build 244038)

**VMmark V1.1.1 Score =  
28.02 @ 18 Tiles**

Tested By: Fujitsu

Test Date: 04/18/2010

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### Performance

	webserver		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2049.05	2.01	18143.12	1.09	1644.47	1.50	20.66	1.61	2405.18	1.61	1.54
p1	2051.12	2.01	18151.45	1.09	1808.80	1.65	20.56	1.60	2417.35	1.62	1.57
p2	2057.03	2.02	17698.00	1.07	1922.22	1.75	20.06	1.56	2411.05	1.62	1.57
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1884.10	1.85	18186.10	1.09	1926.10	1.76	20.59	1.60	2411.57	1.62	1.56
p1	1850.85	1.82	18198.03	1.10	1891.90	1.72	20.51	1.60	2421.22	1.62	1.55
p2	1841.40	1.81	18174.22	1.09	1827.65	1.67	20.65	1.61	2405.55	1.61	1.54
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2062.25	2.02	18150.38	1.09	1847.15	1.68	20.63	1.61	2382.88	1.60	1.57
p1	2038.92	2.00	17685.92	1.06	1972.80	1.80	20.52	1.60	2394.12	1.60	1.58
p2	2054.35	2.02	18152.45	1.09	1861.88	1.70	20.51	1.60	2382.12	1.60	1.57
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2068.03	2.03	18133.12	1.09	1824.55	1.66	20.92	1.63	2405.40	1.61	1.57
p1	2061.43	2.02	18133.72	1.09	1905.85	1.74	20.70	1.61	2417.15	1.62	1.59
p2	2062.40	2.02	18144.58	1.09	1908.30	1.74	19.98	1.56	2417.53	1.62	1.58
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2055.22	2.02	18145.65	1.09	1800.03	1.64	20.71	1.61	2379.97	1.59	1.56
p1	2053.65	2.02	18140.20	1.09	1847.08	1.68	20.58	1.60	2391.90	1.60	1.57
p2	2055.88	2.02	18145.50	1.09	1969.40	1.80	20.48	1.60	2391.25	1.60	1.59
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2058.38	2.02	18147.22	1.09	2007.30	1.83	20.71	1.61	2396.53	1.61	1.60
p1	2059.88	2.02	18150.58	1.09	1923.20	1.75	20.31	1.58	2404.05	1.61	1.58
p2	2059.00	2.02	17693.95	1.07	1935.30	1.76	19.82	1.54	2391.72	1.60	1.57

<b>TILE_6</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2066.85	2.03	18143.65	1.09	1770.45	1.61	21.06	1.64	2399.90	1.61	1.57
<b>p1</b>	2065.65	2.03	18145.47	1.09	1878.67	1.71	20.50	1.60	2417.43	1.62	1.58
<b>p2</b>	2061.45	2.02	18146.00	1.09	1817.62	1.66	20.26	1.58	2400.45	1.61	1.56
<b>TILE_7</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2068.38	2.03	18171.88	1.09	1838.80	1.68	20.92	1.63	2401.22	1.61	1.58
<b>p1</b>	2061.45	2.02	17726.92	1.07	1831.15	1.67	21.04	1.64	2421.53	1.62	1.57
<b>p2</b>	2059.25	2.02	18174.53	1.09	1865.40	1.70	20.75	1.62	2425.00	1.62	1.58
<b>TILE_8</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2058.90	2.02	18150.70	1.09	1878.83	1.71	20.70	1.61	2384.65	1.60	1.58
<b>p1</b>	2054.12	2.02	18171.38	1.09	1918.97	1.75	20.45	1.59	2393.57	1.60	1.58
<b>p2</b>	2054.47	2.02	18156.30	1.09	1855.15	1.69	20.68	1.61	2392.35	1.60	1.57
<b>TILE_9</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2061.35	2.02	18169.92	1.09	1728.95	1.58	20.90	1.63	2414.38	1.62	1.56
<b>p1</b>	2056.62	2.02	18177.35	1.09	1890.38	1.72	20.91	1.63	2428.10	1.63	1.59
<b>p2</b>	2053.38	2.02	18182.22	1.09	1911.70	1.74	20.94	1.63	2407.12	1.61	1.59
<b>TILE_10</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2069.38	2.03	18132.72	1.09	1674.58	1.53	20.99	1.64	2331.30	1.56	1.54
<b>p1</b>	2062.62	2.02	18138.35	1.09	1801.30	1.64	20.94	1.63	2359.53	1.58	1.56
<b>p2</b>	2062.00	2.02	18139.75	1.09	1888.12	1.72	20.95	1.63	2365.95	1.59	1.58
<b>TILE_11</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2068.12	2.03	18145.28	1.09	1655.95	1.51	20.94	1.63	2415.80	1.62	1.55
<b>p1</b>	2058.68	2.02	17704.75	1.07	1707.85	1.56	20.85	1.63	2414.50	1.62	1.55
<b>p2</b>	2061.57	2.02	18181.03	1.09	1758.53	1.60	20.60	1.61	2410.95	1.62	1.56
<b>TILE_12</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2067.18	2.03	18142.92	1.09	1566.88	1.43	20.87	1.63	2351.85	1.58	1.52
<b>p1</b>	2064.28	2.03	18154.55	1.09	1720.45	1.57	20.73	1.62	2387.57	1.60	1.55
<b>p2</b>	2060.65	2.02	18161.80	1.09	1777.33	1.62	20.59	1.60	2388.80	1.60	1.56
<b>TILE_13</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2068.68	2.03	18130.38	1.09	1564.70	1.43	20.69	1.61	2338.80	1.57	1.52
<b>p1</b>	2062.10	2.02	18160.78	1.09	1717.67	1.57	20.07	1.56	2348.38	1.57	1.54
<b>p2</b>	2061.82	2.02	18134.08	1.09	1796.58	1.64	20.45	1.59	2341.30	1.57	1.55
<b>TILE_14</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2007.88	1.97	18144.97	1.09	1425.12	1.30	20.89	1.63	2353.05	1.58	1.48
<b>p1</b>	2052.93	2.01	18150.83	1.09	1692.35	1.54	20.55	1.60	2373.90	1.59	1.54
<b>p2</b>	2055.80	2.02	18154.50	1.09	1789.20	1.63	20.44	1.59	2382.32	1.60	1.56

<b>TILE_15</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2057.80	2.02	18174.80	1.09	1316.53	1.20	20.74	1.62	2356.38	1.58	1.47
<b>p1</b>	2050.95	2.01	18189.22	1.09	1613.45	1.47	20.33	1.58	2367.93	1.59	1.52
<b>p2</b>	2055.82	2.02	18183.58	1.09	1709.50	1.56	20.36	1.59	2354.68	1.58	1.54
<b>TILE_16</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2061.00	2.02	18172.17	1.09	1269.95	1.16	20.52	1.60	2350.93	1.58	1.45
<b>p1</b>	2061.35	2.02	18134.47	1.09	1525.58	1.39	20.26	1.58	2363.07	1.58	1.50
<b>p2</b>	2058.12	2.02	17696.40	1.07	1647.55	1.50	20.05	1.56	2362.00	1.58	1.52
<b>TILE_17</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2057.88	2.02	18178.72	1.09	1229.00	1.12	20.55	1.60	2420.45	1.62	1.45
<b>p1</b>	2060.15	2.02	18127.95	1.09	1480.55	1.35	20.65	1.61	2431.82	1.63	1.51
<b>p2</b>	2056.15	2.02	18121.62	1.09	1668.72	1.52	20.88	1.63	2408.88	1.61	1.54
<b>p0_score:</b>	27.66										
<b>p1_score:</b>	28.02										
<b>p2_score:</b>	28.12										
<b>Unreviewed_VMmark_Score:</b>	28.02										

## Configuration

<b>Server and Network</b>	
Server Manufacturer and Model	Fujitsu RX300 S6
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 R1.00e3..2619.N1
Memory Size (in GB, Number of DIMMs)	96GB, 12
Memory Type and Speed	8GB per DIMM, 1333MHz 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 Emulex LPe12002
Number of Network Controllers	2

Network Controller Vendors and Models	Integrated Intel 82575EB dual port 1GbE Adapter, 1xIntel 82571EB dual port adapter
Network Switch Vendors and Models	3xBX600 GbE Switch Blade 30/12
Network Speed	1Gb
Other Hardware	none
Other Software	none
Hardware Availability Date (MM-DD-YYYY)	04/07/2010
Software Availability Date (MM-DD-YYYY)	04/07/2010

#### Virtualization Software

Vendor, Product, Version, and Build	VMware ESX 4.0 Update 1 (build 244038)
Virtualization Type	Hardware
Supplemental Software	igb-Driver Version 1.3.19.12.1 Patch Release ESX400-201002001 Patch Release ESX400-201003001
Virtualization Software Availability Date (MM-DD-YYYY)	04/01/2010

#### Storage

Array Vendors, Models, and Firmware Versions	9xFujitsu ETERNUS DX80, Firmware version V10L20-0000
Fibre Channel Switch Vendors and Models	Brocade 5100
Disk Space Used	Total 2211GB: 1176GB for VMs, 11GB for Host-OS, 1TB for VM-config and swap
Array Cache Size	2GB
Total Number of Physical Disks Used	196
Total Number of Enclosures/Pods/Shelves Used	17
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	9
Number LUNs Used	Total 44: 42 LUNs for VMs, 1 LUN for Host-OS, 1 LUN for VM-config and swap
LUN Size and Number of Disks Per LUN	18x9GB/8 Disks, 18x46GB/8 Disks, 6x31GB/8 Disks, 1x11GB/4 Disks, 1x1TB/4 Disks
RAID Type	0

Number of Members per RAID Set	Two members for ETERNUS DX80 1 to 6, one member for ETERNUS DX80 7 and 8, two members for ETERNUS DX80 0
Disk Vendors, Models, and Speeds	192xSeagate, ST3300656SS, 15krpm 4xSeagate, ST3450856SS, 15krpm
<b>Clients</b>	
Number of Clients	18
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 3.733GHz, default enabled)
  - Adjacent Cache Line Prefetch: Disabled (default enabled)
  - Hardware Prefetch: Disabled (default enabled)
  - DCU Streamer Prefetch: Disabled (default enabled)
  - Data Reuse Optimization: Disabled (default enabled)
- Emulex HBA BIOS settings:
  - defaults
- vSwitch Configuration:
  - vSwitch0 for Service Console on vmnic4
  - vSwitch1 for all Java/Standby VMs on vmnic5
  - vSwitch1 configured for 56 Ports (default 56)
  - vSwitch2 for all Database/File/Mail VMs on vmnic6
  - vSwitch2 configured for 56 Ports (default 56)
  - vSwitch3 for all Web VMs on vmnic7
  - vSwitch3 configured for 24 Ports (default 56)
- 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: Fileserver for tile 0
- RAID set 0, LUN 2: Javaser/Mailserver/Standby/Webserver for tile 0
- RAID set 1, LUN 3: Fileserver for tile 1
- RAID set 1, LUN 4: Javaser/Mailserver/Standby/Webserver for tile 1
- RAID set 2, LUN 5: Fileserver for tile 2
- RAID set 2, LUN 6: Javaser/Mailserver/Standby/Webserver for tile 2

○ ETERNUS DX80[2]

- RAID set 0, LUN 1: Fileserver for tile 3
- RAID set 0, LUN 2: Javaser/Mailserver/Standby/Webserver for tile 3
- RAID set 1, LUN 3: Fileserver for tile 4
- RAID set 1, LUN 4: Javaser/Mailserver/Standby/Webserver for tile 4
- RAID set 2, LUN 5: Fileserver for tile 5
- RAID set 2, LUN 6: Javaser/Mailserver/Standby/Webserver for tile 5

○ ETERNUS DX80[3]

- RAID set 0, LUN 1: Fileserver for tile 6
- RAID set 0, LUN 2: Javaser/Mailserver/Standby/Webserver for tile 6
- RAID set 1, LUN 3: Fileserver for tile 7
- RAID set 1, LUN 4: Javaser/Mailserver/Standby/Webserver for tile 7
- RAID set 2, LUN 5: Fileserver for tile 8
- RAID set 2, LUN 6: Javaser/Mailserver/Standby/Webserver for tile 8

○ ETERNUS DX80[4]

- RAID set 0, LUN 1: Fileserver for tile 9
- RAID set 0, LUN 2: Javaser/Mailserver/Standby/Webserver for tile 9
- RAID set 1, LUN 3: Fileserver for tile 10
- RAID set 1, LUN 4: Javaser/Mailserver/Standby/Webserver for tile 10
- RAID set 2, LUN 5: Fileserver for tile 11
- RAID set 2, LUN 6: Javaser/Mailserver/Standby/Webserver for tile 11

○ ETERNUS DX80[5]

- RAID set 0, LUN 1: Fileserver for tile 12
- RAID set 0, LUN 2: Javaser/Mailserver/Standby/Webserver for tile 12
- RAID set 1, LUN 3: Fileserver for tile 13
- RAID set 1, LUN 4: Javaser/Mailserver/Standby/Webserver for tile 13
- RAID set 2, LUN 5: Fileserver for tile 14
- RAID set 2, LUN 6: Javaser/Mailserver/Standby/Webserver for tile 14

○ ETERNUS DX80[6]

- RAID set 0, LUN 1: Fileserver for tile 15
- RAID set 0, LUN 2: Javaser/Mailserver/Standby/Webserver for tile 15
- RAID set 1, LUN 3: Fileserver for tile 16
- RAID set 1, LUN 4: Javaser/Mailserver/Standby/Webserver for tile 16
- RAID set 2, LUN 5: Fileserver for tile 17
- RAID set 2, LUN 6: Javaser/Mailserver/Standby/Webserver for tile 17

○ ETERNUS DX80[7]

RAID set 0, LUN 1: Database tiles 0 - 2

RAID set 1, LUN 2: Database tiles 3 - 5

RAID set 2, LUN 3: Database tiles 6 - 8

○ ETERNUS DX80[8]

RAID set 0, LUN 1: Database tiles 9 - 11

RAID set 1, LUN 2: Database tiles 12 - 14

RAID set 2, LUN 3: Database tiles 15 - 17

## 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 = 929 (default 50)
- IRQ.RoutingPolicy = 0 (default 2)
- Mem.BalancePeriod was set to 0 (default 15)
- Mem.SwapDecayPct was set to 10 (default 5)
- Net.MaxNetifRxQueueLen=300 (default 100)
- Net.MaxNetifTxQueueLen=1000 (default 500)
- Net.vmxnetThroughputWeight=255 (default 0)
- Emulex driver: lpfc\_lun\_queue\_depth=64, lpfc\_cr\_count=5, lpfc\_cr\_delay=1 (defaults 32,1,0)
- 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/vmfs2/enabled = "false" (default "true")
- Installed Patch Release ESX400-201002001 and Patch Release ESX400-201003001

## 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  
TILEDELAY=750 (default 600)
-

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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