

VMware® VMmark™ V1.1.1 Results

Vendor and Hardware Platform: NEC Express5800/A1160
Virtualization Platform: VMware ESX 4.0 (Build 164009)

VMmark V1.1.1 Score =
48.23 @ 32 Tiles

Tested By: NEC Corporation

Test Date: 10/13/2009

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Performance

	webserver		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2083.32	2.04	17004.50	1.02	1979.28	1.80	19.45	1.52	2227.18	1.49	1.54
p1	2083.47	2.04	17347.75	1.04	1979.40	1.80	19.42	1.51	2216.10	1.48	1.54
p2	2078.32	2.04	17507.40	1.05	1491.00	1.36	19.44	1.52	2209.68	1.48	1.46
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2083.05	2.04	17784.85	1.07	2035.50	1.86	19.58	1.53	2186.55	1.47	1.55
p1	2084.22	2.05	17795.70	1.07	1939.08	1.77	19.44	1.52	2176.28	1.46	1.54
p2	2085.45	2.05	17779.38	1.07	1909.67	1.74	19.28	1.50	2164.40	1.45	1.53
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2074.97	2.04	17399.10	1.05	1965.88	1.79	19.46	1.52	2236.45	1.50	1.54
p1	2075.25	2.04	17851.30	1.07	1908.90	1.74	19.44	1.52	2227.00	1.49	1.54
p2	2068.28	2.03	17825.10	1.07	1852.85	1.69	19.38	1.51	2218.50	1.49	1.53
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2074.47	2.04	17851.90	1.07	1879.47	1.71	19.62	1.53	2124.45	1.42	1.52
p1	2075.18	2.04	17867.20	1.08	1999.45	1.82	19.40	1.51	2106.40	1.41	1.53
p2	2072.10	2.03	17875.30	1.08	1886.08	1.72	19.30	1.50	2106.18	1.41	1.52
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2081.82	2.04	17852.88	1.07	1912.75	1.74	19.48	1.52	2220.90	1.49	1.54
p1	2086.65	2.05	17858.20	1.07	1819.58	1.66	19.42	1.51	2212.28	1.48	1.52
p2	2085.25	2.05	17850.35	1.07	1979.53	1.80	19.31	1.51	2204.78	1.48	1.55
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2083.12	2.04	17873.85	1.08	1892.30	1.73	19.89	1.55	2212.65	1.48	1.54
p1	2084.30	2.05	17408.53	1.05	1950.95	1.78	19.80	1.54	2199.43	1.47	1.54
p2	2083.90	2.05	17861.60	1.08	1965.70	1.79	19.54	1.52	2193.43	1.47	1.55

TILE_6	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2064.95	2.03	17783.40	1.07	2043.97	1.86	19.61	1.53	2118.80	1.42	1.54
p1	2068.05	2.03	17789.28	1.07	1861.95	1.70	18.63	1.45	2104.05	1.41	1.50
p2	2067.20	2.03	17794.75	1.07	1836.97	1.67	19.05	1.48	2102.90	1.41	1.50
TILE_7	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2077.78	2.04	17871.47	1.08	1881.75	1.72	19.50	1.52	2145.32	1.44	1.52
p1	2074.38	2.04	17877.30	1.08	1863.28	1.70	19.34	1.51	2129.72	1.43	1.52
p2	2069.62	2.03	17878.88	1.08	1948.00	1.78	19.24	1.50	2126.18	1.42	1.53
TILE_8	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2084.03	2.05	17869.03	1.08	1833.75	1.67	19.58	1.53	2200.93	1.47	1.53
p1	2084.72	2.05	17888.38	1.08	1937.70	1.77	19.52	1.52	2190.40	1.47	1.54
p2	2088.32	2.05	17873.05	1.08	1925.05	1.76	19.44	1.51	2183.22	1.46	1.54
TILE_9	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2088.07	2.05	17363.95	1.05	1926.83	1.76	19.09	1.49	2131.25	1.43	1.52
p1	2085.68	2.05	17780.95	1.07	1917.22	1.75	19.15	1.49	2113.20	1.42	1.52
p2	2089.47	2.05	17782.88	1.07	1986.25	1.81	19.27	1.50	2116.25	1.42	1.53
TILE_10	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2076.45	2.04	17266.25	1.04	1820.33	1.66	19.24	1.50	2227.18	1.49	1.51
p1	2075.25	2.04	17201.75	1.04	1848.70	1.69	19.24	1.50	2214.55	1.48	1.51
p2	2080.30	2.04	17357.67	1.04	1878.08	1.71	19.15	1.49	2207.00	1.48	1.52
TILE_11	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2078.30	2.04	17790.05	1.07	1779.00	1.62	19.14	1.49	2037.22	1.37	1.48
p1	2082.28	2.04	17791.10	1.07	1786.00	1.63	19.01	1.48	2020.78	1.35	1.48
p2	2083.05	2.04	17801.85	1.07	1873.88	1.71	18.86	1.47	2017.38	1.35	1.49
TILE_12	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2071.45	2.03	17871.60	1.08	1728.03	1.58	19.30	1.50	2123.93	1.42	1.49
p1	2072.85	2.03	17876.10	1.08	1899.28	1.73	19.26	1.50	2109.12	1.41	1.52
p2	2073.97	2.04	17431.25	1.05	1775.08	1.62	19.09	1.49	2111.18	1.41	1.49
TILE_13	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2072.93	2.03	17892.40	1.08	1735.53	1.58	19.46	1.52	2186.35	1.47	1.50
p1	2070.07	2.03	17897.75	1.08	1821.55	1.66	19.42	1.51	2172.80	1.46	1.52
p2	2074.18	2.04	17896.33	1.08	1783.72	1.63	19.29	1.50	2171.12	1.45	1.51
TILE_14	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2085.32	2.05	17876.58	1.08	1758.50	1.60	20.04	1.56	2202.75	1.48	1.52
p1	2081.68	2.04	17910.60	1.08	1862.25	1.70	19.92	1.55	2189.15	1.47	1.53
p2	2077.47	2.04	17454.50	1.05	1859.17	1.70	19.83	1.55	2180.10	1.46	1.52

TILE_15	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2075.28	2.04	17135.38	1.03	1769.05	1.61	18.66	1.45	2181.78	1.46	1.48
p1	2075.00	2.04	17056.75	1.03	1923.00	1.75	18.68	1.46	2167.43	1.45	1.51
p2	2077.47	2.04	17249.25	1.04	1949.03	1.78	18.54	1.45	2160.60	1.45	1.51
TILE_16	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2083.30	2.04	17866.92	1.08	1748.33	1.59	19.57	1.53	2103.32	1.41	1.50
p1	2080.30	2.04	17878.15	1.08	1767.92	1.61	19.54	1.52	2103.12	1.41	1.50
p2	2077.75	2.04	17876.12	1.08	1885.58	1.72	19.33	1.51	2099.62	1.41	1.52
TILE_17	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2082.68	2.04	17841.85	1.07	1721.33	1.57	18.96	1.48	2218.50	1.49	1.50
p1	2080.22	2.04	17411.83	1.05	1860.55	1.70	18.96	1.48	2206.12	1.48	1.51
p2	2083.07	2.04	17859.70	1.08	1802.25	1.64	18.85	1.47	2198.45	1.47	1.51
TILE_18	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2080.32	2.04	17776.62	1.07	1782.95	1.63	19.99	1.56	2188.12	1.47	1.52
p1	2079.20	2.04	17819.97	1.07	1718.92	1.57	19.86	1.55	2179.45	1.46	1.51
p2	2077.45	2.04	17826.00	1.07	1922.42	1.75	19.66	1.53	2172.80	1.46	1.54
TILE_19	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2074.97	2.04	17939.88	1.08	1761.35	1.61	19.46	1.52	2094.75	1.40	1.50
p1	2071.10	2.03	17878.42	1.08	1757.17	1.60	19.38	1.51	2095.05	1.40	1.49
p2	2067.72	2.03	17817.45	1.07	1909.88	1.74	19.41	1.51	2091.47	1.40	1.52
TILE_20	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2084.60	2.05	17736.17	1.07	1659.10	1.51	19.95	1.56	2203.47	1.48	1.50
p1	2080.70	2.04	17757.05	1.07	1813.67	1.65	19.79	1.54	2187.47	1.47	1.52
p2	2086.70	2.05	17748.33	1.07	1817.70	1.66	19.69	1.54	2185.82	1.46	1.52
TILE_21	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2088.10	2.05	17161.20	1.03	1651.75	1.51	19.29	1.50	2164.30	1.45	1.47
p1	2085.60	2.05	17107.88	1.03	1768.75	1.61	19.53	1.52	2151.78	1.44	1.49
p2	2084.57	2.05	16852.47	1.01	1925.00	1.76	19.77	1.54	2143.55	1.44	1.52
TILE_22	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2074.68	2.04	16940.28	1.02	1609.65	1.47	20.05	1.56	2117.22	1.42	1.47
p1	2082.80	2.04	17341.38	1.04	1706.60	1.56	19.96	1.56	2117.75	1.42	1.49
p2	2074.55	2.04	17534.53	1.06	1773.78	1.62	20.03	1.56	2114.90	1.42	1.50
TILE_23	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2080.25	2.04	17403.17	1.05	1674.35	1.53	19.46	1.52	2117.80	1.42	1.48
p1	2084.35	2.05	17368.35	1.05	1751.72	1.60	19.40	1.51	2116.45	1.42	1.49
p2	2077.18	2.04	17510.88	1.05	1808.10	1.65	19.38	1.51	2113.78	1.42	1.50

Configuration

Server and Network	
Server Manufacturer and Model	NEC Express5800/A1160
Processor Vendor and Model	Intel(R) Xeon(R) Processor X7460
Processor Speed (GHz)	2.66
Total Sockets/Total Cores/Total Threads	16 Sockets / 64 Cores / 64 Threads
Primary Cache	32KB(I) + 32KB(D) on chip, per core
Secondary Cache	3MB per core pair x 16, 3MB per core x 32 9MB per socket, 144MB Total
Other Cache	16MB per socket, 256MB Total L3 cache
BIOS Version	2.01.151
Memory Size (in GB, Number of DIMMs)	256GB (4GB x 64)
Memory Type and Speed	PC2-5300F ECC DDR2
Disk Subsystem Type	SAS(OS), FC(VMs)
Number of Disk Controllers	1
Disk Controller Vendors and Models	LSI MegaRAID SAS 8708ELP
Number of Host Bus Adapters	5
Host Bus Adapter Vendors and Models	Emulex LPe11002
Number of Network Controllers	4
Network Controller Vendors and Models	Onboard Intel(R) ESB2 chipset & Dual Port GbE PHY
Network Switch Vendors and Models	NETGEAR JGS524 24-port Gigabit Ethernet Switch
Network Speed	Gigabit Ethernet TX
Other Hardware	None
Other Software	None
Hardware Availability Date (MM-DD-YYYY)	07/31/2009
Software Availability Date (MM-DD-YYYY)	05/21/2009
Virtualization Software	
Vendor, Product, Version, and Build	VMware ESX 4.0 (Build 164009)
Virtualization Type	Hardware Virtualization
Supplemental Software	None

Virtualization Software Availability Date (MM-DD-YYYY)	05/21/2009
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Storage

Array Vendors, Models, and Firmware Versions	NEC Storage S2500, Firmware revision 043H
Fibre Channel Switch Vendors and Models	None
Disk Space Used	2008GB
Array Cache Size	2GB per controller
Total Number of Physical Disks Used	602
Total Number of Enclosures/Pods/Shelves Used	40
Total Number of Physical Disks per Enclosures/Pods/Shelves Used	15
Total Number of Storage Groups Used	10
Number LUNs Used	40
LUN Size and Number of Disks Per LUN	498.25GB, 15disks per LUN
RAID Type	RAID0
Number of Members per RAID Set	15
Disk Vendors, Models, and Speeds	Fujitsu, MAX3073FC, 15K RPM

Clients

Number of Clients	32
System Model(s)	11x NEC Express5800/120Rj-2 21x NEC Express5800/120Rg-2
Processor Vendor(s) and Model(s)	Intel(R) Xeon(R) Processor X5450, Xeon(R) Processor
Processor Speed(s) (GHz)	X5450: 3.0GHz, Xeon(R): 3.0GHz
Total Sockets/Total Cores/Total Threads	X5450: 1 Sockets / 4 Cores / 4 Threads in 120Rj-2 Xeon(R): 2 Sockets / 2 Cores / 4 Threads in 120Rg-2
Memory per Client	4GB
Network Controller Vendors and Models	Intel(R) PRO/1000EB in 120Rj-2 Intel(R) PRO/1000MT Dual Port Server Adapter in 120Rg-2
Operating System, Version, and Service Pack	Microsoft Windows Server 2003 R2 Enterprise Edition SP2
Other Hardware	None

Notes for Workload

Server and Network Notes

- With the NEC Express5800/A1160, customer can request that one to five cores on each Intel(R) Xeon(R) processor X7460 be disabled. Disabling of cores at customer's request, is done by NEC prior to customer shipment. Once disabled by NEC, the cores can only be re-enabled by NEC personnel. In this benchmark thirty-two processor cores out of 96 were disabled on the four nodes of the NEC Express5800/A1160. Processor cores were enabled/disabled as follows:

Node#0,Socket#0,Core#0 was enabled.
Node#0,Socket#0,Core#1 was enabled.
Node#0,Socket#0,Core#2 was enabled.
Node#0,Socket#0,Core#3 was disabled.
Node#0,Socket#0,Core#4 was enabled.
Node#0,Socket#0,Core#5 was disabled.
Node#0,Socket#1,Core#0 was enabled.
Node#0,Socket#1,Core#1 was enabled.
Node#0,Socket#1,Core#2 was enabled.
Node#0,Socket#1,Core#3 was disabled.
Node#0,Socket#1,Core#4 was enabled.
Node#0,Socket#1,Core#5 was disabled.
Node#0,Socket#2,Core#0 was enabled.
Node#0,Socket#2,Core#1 was enabled.
Node#0,Socket#2,Core#2 was enabled.
Node#0,Socket#2,Core#3 was disabled.
Node#0,Socket#2,Core#4 was enabled.
Node#0,Socket#2,Core#5 was disabled.
Node#0,Socket#3,Core#0 was enabled.
Node#0,Socket#3,Core#1 was enabled.
Node#0,Socket#3,Core#2 was enabled.
Node#0,Socket#3,Core#3 was disabled.
Node#0,Socket#3,Core#4 was enabled.
Node#0,Socket#3,Core#5 was disabled.
Node#1,Socket#0,Core#0 was enabled.

Node#1,Socket#0,Core#1 was enabled.
Node#1,Socket#0,Core#2 was enabled.
Node#1,Socket#0,Core#3 was disabled.
Node#1,Socket#0,Core#4 was enabled.
Node#1,Socket#0,Core#5 was disabled.
Node#1,Socket#1,Core#0 was enabled.
Node#1,Socket#1,Core#1 was enabled.
Node#1,Socket#1,Core#2 was enabled.
Node#1,Socket#1,Core#3 was disabled.
Node#1,Socket#1,Core#4 was enabled.
Node#1,Socket#1,Core#5 was disabled.
Node#1,Socket#2,Core#0 was enabled.
Node#1,Socket#2,Core#1 was enabled.
Node#1,Socket#2,Core#2 was enabled.
Node#1,Socket#2,Core#3 was disabled.
Node#1,Socket#2,Core#4 was enabled.
Node#1,Socket#2,Core#5 was disabled.
Node#1,Socket#3,Core#0 was enabled.
Node#1,Socket#3,Core#1 was enabled.
Node#1,Socket#3,Core#2 was enabled.
Node#1,Socket#3,Core#3 was disabled.
Node#1,Socket#3,Core#4 was enabled.
Node#1,Socket#3,Core#5 was disabled.
Node#2,Socket#0,Core#0 was enabled.
Node#2,Socket#0,Core#1 was enabled.
Node#2,Socket#0,Core#2 was enabled.
Node#2,Socket#0,Core#3 was disabled.
Node#2,Socket#0,Core#4 was enabled.
Node#2,Socket#0,Core#5 was disabled.
Node#2,Socket#1,Core#0 was enabled.
Node#2,Socket#1,Core#1 was enabled.
Node#2,Socket#1,Core#2 was enabled.
Node#2,Socket#1,Core#3 was disabled.
Node#2,Socket#1,Core#4 was enabled.
Node#2,Socket#1,Core#5 was disabled.
Node#2,Socket#2,Core#0 was enabled.
Node#2,Socket#2,Core#1 was enabled.
Node#2,Socket#2,Core#2 was enabled.
Node#2,Socket#2,Core#3 was disabled.
Node#2,Socket#2,Core#4 was enabled.
Node#2,Socket#2,Core#5 was disabled.
Node#2,Socket#3,Core#0 was enabled.
Node#2,Socket#3,Core#1 was enabled.
Node#2,Socket#3,Core#2 was enabled.
Node#2,Socket#3,Core#3 was disabled.
Node#2,Socket#3,Core#4 was enabled.
Node#2,Socket#3,Core#5 was disabled.
Node#3,Socket#0,Core#0 was enabled.
Node#3,Socket#0,Core#1 was enabled.
Node#3,Socket#0,Core#2 was enabled.
Node#3,Socket#0,Core#3 was disabled.

Node#3,Socket#0,Core#4 was enabled.
Node#3,Socket#0,Core#5 was disabled.
Node#3,Socket#1,Core#0 was enabled.
Node#3,Socket#1,Core#1 was enabled.
Node#3,Socket#1,Core#2 was enabled.
Node#3,Socket#1,Core#3 was disabled.
Node#3,Socket#1,Core#4 was enabled.
Node#3,Socket#1,Core#5 was disabled.
Node#3,Socket#2,Core#0 was enabled.
Node#3,Socket#2,Core#1 was enabled.
Node#3,Socket#2,Core#2 was enabled.
Node#3,Socket#2,Core#3 was disabled.
Node#3,Socket#2,Core#4 was enabled.
Node#3,Socket#2,Core#5 was disabled.
Node#3,Socket#3,Core#0 was enabled.
Node#3,Socket#3,Core#1 was enabled.
Node#3,Socket#3,Core#2 was enabled.
Node#3,Socket#3,Core#3 was disabled.
Node#3,Socket#3,Core#4 was enabled.
Node#3,Socket#3,Core#5 was disabled.

Virtualization Software Notes

- Eight vSwitches: vSwitch0-7
vSwitch0,2 were configured with 120 ports,vSwitch1,3,4,5,6,7 were configured with 8 ports
- vSwitch0-7 were attached to vmnic0-7,respectively
- Webserver0-4 attached to vSwitch1
- Webserver5-9 attached to vSwitch3
- Webserver10-15 attached to vSwitch4
- Webserver16-20 attached to vSwitch5
- Webserver21-25 attached to vSwitch6
- Webserver26-31 attached to vSwitch7
- All VMs (except for webserver VMs) of tiles 0-15 and Service console attached to vSwitch0
- All VMs (except for webserver VMs) of tiles 16-31 attached to vSwitch2
- Network adapter type was set to vmxnet3 for all VMs
- Database0-3 VMs were stored on LUN 32
- Database4-7 VMs were stored on LUN 33
- Database8-11 VMs were stored on LUN 34
- Database12-15 VMs were stored on LUN 35
- Database16-19 VMs were stored on LUN 36
- Database20-23 VMs were stored on LUN 37
- Database24-27 VMs were stored on LUN 38
- Database28-31 VMs were stored on LUN 39
- All other VMs were stored on LUNs 0-31 each tile on its own LUN
- Stopped Crond,Firewall,IPtables,IP6tables 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)
- lpfc820.o/options was set to lpfc_lun_queue_depth=128 (default lpfc_lun_queue_depth=32)
- Net.EtherswitchHashSize was set to 4 (default 1)
- BufferCache.SoftMaxDirty was set to 85 (default 15)

- Cpu.CoshdHandoffLLC was set to 1 (default 0)
- Net.MaxNetifRxQuereLen was set to 300 (default 100)
- Net.MaxNetifTxQueueLen was set to 1000 (default 500)
- Net.MaxPortRxQueueLen was set to 160 (default 80)
- Removed IDE and Floppy devices from VMs of webserver,fileserver,database prior to run
- Removed IDE devices from VMs of mailserver,javaserver,standbyserver prior to run
- Hardware Version was 7 for all VMs
- Ballooning was enabled for fileserver VMs

Operating System Notes

- Microsoft Windows Server 2003 R2 Enterprise Edition Service Pack 2 on Windows-based virtual machines
- SUSE Linux Enterprise Server 10 (32-and 64-bit) Service Pack 2 on all Linux-based virtual machines

Software Notes

- None

Client Notes

- None

Other Notes

VMMARK.CONFIG

- TILEDELAY=500 (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.

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

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