

VMware® VMmark™ V1.1 Results

Vendor and Hardware Platform: HP Proliant BL680c G5
Virtualization Platform: VMware ESX 3.5.0 Update 2 build 110268

**VMmark V1.1 Score =
16.05 @ 12 Tiles**

Tested By: Hewlett Packard

Test Date: 9/10/2008

Performance Section
[Performance](#)

Configuration Section
[Configuration](#)

Notes Section
[Notes for Workload](#)

Performance

	webservers		javaservers		mailservers		fileservers		databases		
	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
TILE_0											
p0	1645.47	1.61	17843.50	1.07	1714.78	1.56	16.70	1.30	2039.10	1.37	1.37
p1	1646.20	1.62	17913.50	1.08	1653.33	1.51	16.75	1.31	2036.55	1.36	1.36
p2	1509.33	1.48	17896.97	1.08	1546.97	1.41	16.38	1.28	2047.75	1.37	1.32
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM

p0	1630.83	1.60	17754.35	1.07	1651.38	1.51	16.99	1.32	2031.88	1.36	1.36
p1	1591.65	1.56	17846.12	1.07	1628.67	1.48	16.80	1.31	2034.42	1.36	1.35
p2	1576.08	1.55	17485.35	1.05	1430.72	1.30	16.52	1.29	2048.30	1.37	1.30
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1633.70	1.60	17830.38	1.07	1690.05	1.54	16.68	1.30	2038.53	1.37	1.36
p1	1601.33	1.57	17932.28	1.08	1699.17	1.55	16.65	1.30	2040.47	1.37	1.36
p2	1573.62	1.54	17484.60	1.05	1495.17	1.36	16.79	1.31	2053.85	1.38	1.32
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1687.97	1.66	17739.00	1.07	1816.00	1.66	16.64	1.30	2043.30	1.37	1.39
p1	1683.90	1.65	17836.20	1.07	1738.92	1.59	16.37	1.28	2044.60	1.37	1.38
p2	1669.22	1.64	17903.22	1.08	1668.58	1.52	16.55	1.29	2053.30	1.38	1.37
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1662.10	1.63	17781.75	1.07	1597.30	1.46	16.73	1.30	1319.28	0.88	1.24
p1	1596.42	1.57	17835.10	1.07	1501.72	1.37	16.47	1.28	1341.67	0.90	1.22
p2	1623.22	1.59	17890.72	1.08	1537.88	1.40	16.63	1.30	1317.22	0.88	1.22
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1590.58	1.56	17787.35	1.07	1682.83	1.53	16.44	1.28	2103.72	1.41	1.36
p1	1620.10	1.59	17852.75	1.07	1583.03	1.44	16.51	1.29	2123.47	1.42	1.35
p2	1626.97	1.60	17879.15	1.08	1589.67	1.45	16.55	1.29	2125.78	1.42	1.36
TILE_6	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1669.72	1.64	17775.58	1.07	1715.92	1.56	16.36	1.28	2046.20	1.37	1.37

p1	1660.65	1.63	17870.22	1.08	1621.70	1.48	16.62	1.30	2060.30	1.38	1.36
p2	1638.38	1.61	17893.03	1.08	1583.40	1.44	16.83	1.31	2050.72	1.37	1.35
TILE_7	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1646.38	1.62	17791.28	1.07	1618.80	1.48	16.03	1.25	2088.75	1.40	1.35
p1	1605.55	1.58	17888.67	1.08	1471.97	1.34	16.58	1.29	2084.15	1.40	1.33
p2	1606.53	1.58	17847.58	1.07	1571.90	1.43	16.79	1.31	2096.85	1.41	1.35
TILE_8	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1613.45	1.58	17846.15	1.07	1567.53	1.43	15.89	1.24	2031.20	1.36	1.33
p1	1591.67	1.56	17417.83	1.05	1739.17	1.59	16.20	1.26	2036.22	1.36	1.35
p2	1614.58	1.58	17877.17	1.08	1677.05	1.53	16.43	1.28	2061.15	1.38	1.36
TILE_9	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1662.78	1.63	17774.72	1.07	1565.35	1.43	16.29	1.27	2097.62	1.41	1.35
p1	1615.28	1.59	17839.33	1.07	1657.10	1.51	16.46	1.28	2117.72	1.42	1.36
p2	1625.70	1.60	17875.20	1.08	1586.47	1.45	16.85	1.31	2121.82	1.42	1.36
TILE_10	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1536.38	1.51	17798.97	1.07	1494.75	1.36	16.54	1.29	2067.95	1.39	1.31
p1	1621.03	1.59	17878.05	1.08	1623.97	1.48	16.26	1.27	2044.67	1.37	1.35
p2	1643.00	1.61	17849.28	1.07	1685.20	1.54	16.32	1.27	2049.40	1.37	1.36
TILE_11	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1555.38	1.53	17794.38	1.07	1247.03	1.14	16.13	1.26	2062.28	1.38	1.26
p1	1619.22	1.59	17886.45	1.08	1598.10	1.46	16.38	1.28	2062.85	1.38	1.34

p2	1584.75	1.56	17884.70	1.08	1597.00	1.46	15.53	1.21	2059.25	1.38	1.32
p0_score:	16.05										
p1_score:	16.10										
p2_score:	15.98										
Unreviewed_VMmark_Score:	16.05										

Configuration

Server and Network	
Server Manufacturer and Model	HP Proliant BL680c G5
Processor Vendor and Model	Six-Core Intel Xeon E7450
Processor Speed (GHz)	2.4
Number of Sockets/Cores per Socket	4 Sockets / 6 Cores per Socket (24 Cores Total)
Primary Cache	32 KB I + 32 KB D on chip per core
Secondary Cache	12 MB I+D on chip per chip, 3 MB shared/2 cores
Other Cache	

Memory	128 GB (16 x 8 GB) PC2-5300 Fully Buffered DIMMs (DDR2-667)
Disk Subsystem Type	Direct attach SAS for operating system, FC SAN for VMs
Number of Disk Controllers	1
Number of Host Bus Adapters	2 dual port HBA
Host Bus Adapter Vendors and Models	Qlogic QMH2462
Number of Network Controllers	3
Network Controller Vendors and Models	HP NC 360i Integrated Dual Port PCI Express Gigabit Server Adapter (dual port) HP NC373i Multifunction Gigabit Adapter (dual port) HP NC325m PCIe Quad Port 1 Gb adapter (quad port)
Network Switch Vendors and Models	HP ProCurve Switch 3400CL
Network Speed	1000Base-T
Other Hardware	None
Other Software	None
Hardware Availability Date	September 2008
Software Availability Date	July 2008
Virtualization Software	
Vendor, Product, Version, and Build	VMware ESX 3.5.0 build 110268
Virtualization Type	Hardware Virtualization
Supplemental Software	None
Virtualization Software Availability Date	July 2008

Storage	
Array Vendor, Model, and Firmware Version	HP StorageWorks MSA 1000, firmware version 4.48
Fibre Channel Switch Vendors and Models	HP StorageWorks SAN Switch 4/32
Disk Space Used	1432 GB used for virtual machines
Array Cache Size	256 MB
Number and Size of LUNs	2 LUNs of 230 GB (for Database VMs) 12 LUNs of 81 GB (for all other VMs)
RAID Type	RAID 0
Number of Members per RAID Set	14 drives per RAID set
Disk Vendor, Model, and Speed	HP 36GB Ultra320 SCSI drive
Clients	
Number of Clients	12
System Model(s)	HP Proliant DL360 G5
Processor Vendor(s) and Model(s)	Intel Xeon
Processor Speed(s) (GHz)	2.83
Number of Sockets/Cores per Socket	1 Socket / 4 Cores per Socket (4 Cores Total)
Memory	2 GB
Network Controller Vendor and Model	HP NC373i Gigabit adapter
Operating System, Version,	Microsoft Windows Server 2003 Enterprise Edition, Service Pack 2

and Service Pack	
Other Hardware	none
Other Software	none

Notes for Workload

Server and Network Notes

- Server BIOS settings:
 - Embedded Serial Port disabled (default enabled)
 - Virtual Serial Port disabled (default enabled)
 - HW Prefetch disabled (default enabled)
 - Adjacent Sector Prefetch disabled (default enabled)
 - No-Execute Memory Protection disabled (default enabled)
 - Intel Core Multi-Processing (CMP) enabled
- Qlogic HBA BIOS settings:
 - Fibre Channel tape support disabled (default enabled)
 - Execution Throttle set to 256 (default 16)

- Interrupt Delay timer set to 15 (default 0)
- Eight vSwitches were created (each vSwitch was set to 120 ports (default 56) except for vSwitch0 left at default):
 - vSwitch0 (bound to vmnic0) for the service console
 - vSwitch1 (bound to vmnic1) for Webserver0,3,6 and 9 VMs
 - vSwitch2 (bound to vmnic3) for Webserver1,4,7 and 11 VMs
 - vSwitch3 (bound to vmnic6) for Webserver2,5,8 and 12 VMs
 - vSwitch4 (bound to vmnic7) for Database VMs
 - vSwitch5 (bound to vmnic8) for Fileserver VMs
 - vSwitch6 (bound to vmnic2) for Mailserver VMs
 - vSwitch7 (bound to vmnic9) for Javasever and Standby VMs
- 12 LUNs were created for the virtual machines:
 - All LUNs resided on MSA1000s connected via fibre switch
 - Two separate LUNs were used for the Database VMs, each 230 GB
 - All VMs (except Database VMs) for a tile resided on its own Datastore of 81 GB

Virtualization Software Notes

- vmfs2 unloaded prior to run
- USB support unloaded prior to run
- pegasus CIMOM server, firewall, and iptables services unloaded prior to run
- Disk.Sched.NumRequestOutstanding set to 128 (default 32)
- MaxHeapSizeMB set to 64 (default 16)
- Qlogic queue depth set to 64
- Ethernet Adapter type set to Enhanced vmxnet for all VMs
- Misc.RunningVCpuLimit set to 192 (default 128)
- IDE and Floppy devices were removed on all VMs (default enabled)
- Virtualized MMU enabled for all VMs (default Automatic)
- Logging was disabled for all VMs (default logging enabled)
- VMkernel.Boot.force36BitMTRRMask set to disabled (default enabled)

Operating System Notes

Microsoft Windows Server 2003 virtual machines were updated to Service Pack2.

Software Notes

None

Client Notes

Microsoft Windows Server 2003 client machines were updated to Service Pack 2

Tile Delay

- TILEDELAY=1200

Workload Delay

- JavaServer=900
- WebServer=1050
- Database=720
- FileServer=810
- MailServer=5
- Standby=530

Other Notes

None

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.

VMware and VMmark are trademarks or registered trademarks of VMware, Inc. VMware® VMmark™ is a product of [VMware, Inc.](http://www.vmware.com). VMmark utilizes SPECjbb®2005 and SPECweb®2005, which are available from the [Standard Performance Evaluation Corporation \(SPEC®\)](http://www.spec.org).