## Performance

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- **p0_score**: 12.47
- **p1_score**: 12.57
- **p2_score**: 12.58

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**Configuration**
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<tr>
<td>Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)</td>
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<tr>
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<tr>
<td>Network Speed</td>
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<tr>
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<td>3 x IBM Storwize V7000 Midrange Disk System, version 6.2.0.2 (build 36.3.1107080000)</td>
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<td>Number of Physical Disks Used per Enclosure/Pod/Shelf</td>
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<td>Five enclosures with 16 each (16 x 300GB 15K disks)</td>
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<tr>
<td>One enclosure with 8 each (8 x 300GB 15K disks)</td>
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<tr>
<td>Three enclosures with 24 each (24 x 200GB SSD)</td>
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<tr>
<td>Two 2GB USB keys used as ESXi 5 boot drives (one per each node)</td>
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<td>Total Number of Storage Groups Used</td>
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<tr>
<td>1 LUN at 180GB (Deployment Template), set over 2 x 200GB SSD</td>
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<tr>
<td>1 LUN at 160GB (Deployment Target), set over 16 x 300GB 15K disks</td>
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<tr>
<td>1 LUN at 300GB (Standby VMs), set over 32 x 300GB 15K disks</td>
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<td>1 LUN at 160GB (sVmotion Target), set over 32 x 300GB 15K disks</td>
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<tr>
<td>1 LUN at 400GB (OlioDB8), set over 8 x 300GB 15K disks</td>
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<tr>
<td>2 LUNs at 1000GB each (Mailserver Odd for both C and F drives, Mailserver Even for both C and F drives), set over 6 x 200GB SSD</td>
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<td>2 LUNs at 500GB each (OlioWeb_Odd, OlioWeb_Even), set over 3 x 200GB SSD</td>
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<td>10 LUNs at 400GB each (DS2DB0-9), set over 5 x 200GB SSDs</td>
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### Clients

- **Number of Clients**: 11 (1 Dedicated Prime client, 10 clients)
- **System Model(s)**: IBM System x3550 M2
- **Processor Vendor(s) and Model(s)**: Intel Xeon E5520
- **Processor Speed(s) (GHz)**: 2.27
- **Total Sockets/Total Cores/Total Threads**: 2 Sockets / 8 Cores / 16 Threads
- **Memory per Client**: 32 GB
- **Network Controller(s) Vendors and Models**: Onboard Broadcom BCM5709C NetXtreme II GigE, Intel PRO/1000 PT Quad Port LP Server Adapter
- **Other Hardware**: None
- **Other Software**: None

### Virtualization Software Notes

- All VMs used virtual hardware V8
- Ethernet adapter type set to VMXNET 3 for all VMs (default VMXNET 2)
- Logging was disabled for all VMs (default enabled)
- Floppy and CDROM were removed for all VMs (default enabled)
- Firewall disabled for Console OS (default enabled)
- Cluster DRS Automation Level set to “Fully Automated”, Level 1 (“Aggressive”)
· /adv/Cpu/CoschCrossCall = "0" (default 1)
· /adv/CPU/HTWholeCoreThreshold = "0" (default 200)
· /adv/Mem/BalancePeriod = "0" (default 15)
· /adv/Mem/SamplePeriod = "0" (default 60)
· /adv/Mem/ShareScanGHz = "0" (default 4)
· /adv/Misc/TimerMaxHardPeriod = "4000" (default 100000)
· /adv/Misc/TimerMinHardPeriod = "2000" (default 100)
· /adv/Net/MaxNetifRxQueueLen = "500" (default 100)
· /adv/Net/MaxNetifTxQueueLen = "1000" (default 500)
· /adv/Net/intOpts/NetTxCompletionWorldlet = 0 (default 1)
· /adv/Net/NetTxWorldlet = "0" (default 2)
· /adv/Net.vmnetThroughputWeight = 255 (default 0)
· /adv/Numa/LTermFairnessInterval = "0" (default 5)
· /adv/Numa/PageMigEnable = "0" (default 1)
· /adv/Numa,SwapLoadEnable = 0 (default 1)
· /adv/Numa.SwapLocalityEnabled = 0 (default 1)
· /adv/Numa/PageMigRateMax = 10 (default 1000)
· /adv/Numa.LTermFairnessInterval = 0 (default 5)
· /vmkernel/iovDisableIR = "TRUE" (default FALSE)
· /adv/Disk/intOpts/SchedNumReqOutstanding = 256 (default 32)
· /adv/Numa/intOpts/MonMigEnable = 0 (default 1)
· /adv/Numa/intOpts/MigPreventLTermThresh = 20 (default 0)
· /adv/Numa/intOpts/InitialPlacement = 2 (default 0)
· /adv/Cpu/intOpts/HTStolenTolerance = 90 (default 100)

· Enable Jumbo frame for Vmotion
· Disable /DataMover/HardwareAcceleratedMove (default enable)
· Disable /DataMover/HardwareAcceleratedInit (default enable)
· Disable /VMFS3/HardwareAcceleratedLocking (default enable)
· Disable /VMFS3/EnableBlockDelete (default enable)
· Change logging level for hostd, vpxa to "none" (default verbose)
· Change logging level for vpxd.log to "error" (default verbose)
· Remove IBM IMM Provider package (82.ibm-locker-config, 179.ibm-cronjob)
· Power Management settings for host to 'High Performance' (default Balanced)
· All Mailserver, OlioWeb, and OlioDB VMs on Paravirtual SCSI controller (default LSI SAS)
· Logical CPU layout changed for all VMs (except Standby) for one socket with multiple cores (default: multiple sockets with one core per socket)

Driver Options:
· update scsi-qla2xxx 911.k1.1-24OEM.500.0.0.472560 (default: 901.k1.1-14vmw.500.0.0.469512)
· update Emulex firmware 4.1.334.36, device driver 4.1.334.0-1OEM.500.0.0.472560
· esxcfg-module -s "qlport_down_retry=14 (default 30) ql2xmaxdepth=256 (default 32) ql2xintrdelaytimer=3 (default 0) ql2xqfulltracking=0 (default 1)

Server Notes
· Processor Performance states: Disable (default Enable)
· Memory Power management: Disable (default Automatic)
· Patrol Scrub: Disable (default Enable)
· Memory Data Scrambling Disable (default Enable)
· Operating Mode: Max Performance (Default Custom Mode)
· Turbo Boost Technology: Enabled (Intel Turbo Boost up to 3.8GHz, default enabled)

Networking Notes
· vSwitch0 for Virtual Machine Ports for all VMs is connected to vmnic1 at 10Gb/s.
· vSwitch1 for Service Console Port and VMkernel ports is connected vmnic0 at 10Gb/s. Jumbo Frames was enabled for VMkernel Port.
Storage Notes

- ESXi 5 was installed on USB key
  V7000-1:
  - 1 LUN at 180GB (Deployment Template), set over 2 x 200GB SSD
  - 4 LUNs at 400GB each (DS2DB6-9 tile), set over 5 x 200GB SSD
  - 2 LUNs at 170GB each (OlioDB odd and even except OlioDB8), set over 1 x 200GB SSD

V7000-2:
- 1 LUN at 1000GB (Mailserver Even for both C drive and F drive), set over 6 x 200GB SSD
- 1 LUN at 500GB (Olioweb even tile), set over 3 x 200GB SSD
- 3 LUNs at 400GB each (DS2DB0,2,4), set over 5 x 200GB SSD

V7000-3:
- 1 LUN at 1000GB (Mailserver Odd for both C drive and F drive), set over 6 x 200GB SSD
- 1 LUN at 500GB (Olioweb Odd tile), set over 3 x 200GB SSD
- 3 LUNs at 400GB each (DS2DB1,3,5), set over 5 x 200GB SSD

DS5300-1
- 1 LUN at 160GB (DeployTarget), set each over 16 x 300GB 15K disks
  DS5300-2
- 1 LUN at 160GB (Standby/sVmotionSrc), set each over 32 x 300GB 15K disks
- 1 LUN at 160GB (sVmotionTarget), set each over 32 x 300GB 15K disks
- 1 LUN at 400GB (OlioDB8), set each over 8 x 300GB 15K disks

- Multipath policy: Round-robin (default Most Recently Used) for Mailserver_Odd, Mailserver_Even and Fixed (default Most Recently Used) for Other LUNs

Datacenter Management Server Notes

None
Operating System Notes

- All Standby VMs running Microsoft Windows Server 2003 Enterprise SP2 (32-bit)
- All Mailserver VMs running Microsoft Windows Server 2008 R2 Enterprise (64-bit)
- Storage Controller for all Exchange Database Virtual Disks set to Paravirtual
- The service "WinHTTP Web Proxy Auto-Discovery Service" was not running on Mailserver0, 2, 3, 5-9.s

Software Notes

None

Client Notes

- Prime client functionality was split from the client0 driver and was run on a non-virtualized copy of Microsoft® Windows® 2003 Enterprise SP2 (32-bit)
- Prime client running VMware vSphere PowerCLI 5.0 build 435427

Other Notes

HBA Qlogic Adapter

- Loop reset delay 8 (default 5)
- Port Down Retry Count 14 (default 30)
- Operation Mode 5 (default 0)
- Link down timeout 60 (default 30)
- Enable Target Reset No (default yes)
- Interrupt Delay Timer 10 (default 0)

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