











<b>TILE_41</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>																
<b>p1</b>																
<b>p2</b>																
<b>TILE_42</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>																
<b>p1</b>																
<b>p2</b>																
<b>TILE_43</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>																
<b>p1</b>																
<b>p2</b>																
<b>p0_score:</b>	NC															
<b>p1_score:</b>	NC															
<b>p2_score:</b>	NC															

<b>Infrastructure Operations Scores:</b>							vMotion	SVMotion	XVMotion	Deploy
<b>Completed_Ops_PerHour</b>							NC	NC	NC	NC
<b>Avg_Seconds_To_Complete</b>							NC	NC	NC	NC
<b>Failures</b>							NC	NC	NC	NC
<b>Ratio</b>							NC	NC	NC	NC
<b>Number_Of_Threads</b>							NC	NC	NC	NC
<b>Summary</b>							NC			Turbo_Setting:0
							Number_Of_Compliance_Issues(NC)*			Median_Phase(NC)
<b>Unreviewed_VMmark3_Applications_Score</b>							NC			
<b>Unreviewed_VMmark3_Infrastructure_Score</b>							NC			
<b>Unreviewed_VMmark3_Score</b>							NC			

## Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESXi, 8.0 U1a, Build 21813344 / 06-01-2023
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 8.0 U1a, Build 21815093 / 06-01-2023

YYYY)	
Supplemental Software	none
<b>Servers</b>	
Number of Servers in System Under Test (all subsequent fields in this section are per server)	4
Server Manufacturer and Model	IEIT SYSTEMS Co., Ltd NF5280-M7-A0-R0-00 (InMerge1100M7S)
Processor Vendor and Model	Intel Xeon Platinum 8490H
Processor Speed (GHz) / Turbo Boost Speed (GHz)	1.9 / 3.5
Total Sockets/Total Cores/Total Threads	2 Sockets / 120 Cores / 240 Threads
Primary CPU Cache	32KB I + 48 KB D on chip per core
Secondary CPU Cache	2 MB I+D on chip per core
Other CPU Cache	112.5 MB I + D on chip per chip
BIOS Version	05.05.00 (2023-06-15)
Memory Size (in GB, Number of DIMMs)	2048,32
Memory Type and Speed	64GB 2Rx4 PC5-38400 MHz RDIMM
Disk Subsystem Type	vSAN,iSCSI
Number of Disk Controllers	1
Disk Controller Vendors and Models	Intel Corporation Lewisburg SATA AHCI Controller
Total Number of Physical Disks for Hypervisor	1
Disk Vendors, Models, Capacities, and Speeds	Intel,M.2 SATA SSD,480G,6Gbps
Number of Host Bus Adapters	none
Host Bus Adapter Vendors and Models	none
Number of Network Controllers	3
Network Controller Vendors and Models	1x Mellanox Technologies ConnectX-6 Dx EN NIC,OCP 100GbE 2x Mellanox Technologies ConnectX-6 Dx EN NIC 100GbE
Other Hardware	none
Other Software	none
Hardware Availability Date (MM-DD-YYYY)	04-01-2023
BIOS Availability Date (MM-DD-YYYY)	06-15-2023

Software Availability Date (MM-DD-YYYY)	06-01-2023
<b>Network</b>	
Network Switch Vendors and Models	NSC5630EL 40/100GbE
Network Speed	100 Gb/s for management SUT host: 2x 100Gb/s for vSAN,vMotion 2x 100Gb/s for VMs 2x 100Gb/s for iSCSI Client host: 1x 100Gb/s for VMs
<b>Primary Storage</b>	
Storage Category	VMware vSAN
Storage Vendors, Models, and Firmware Versions	4 x NF5280-M7-A0-R0-00 servers in a VMware vSAN 8.0 U1 cluster
Storage Configuration Summary	VMware vSAN 3 x Disk Groups per host two disk groups have 1 x NS8600G2 6.4T U.2 SSD for vSAN cache per Disk Group 4 x NS8600G2 6.4T U.2 SSD for vSAN storage per Disk Group one disk group has 1 x NS8600G2 6.4T U.2 SSD for vSAN cache per Disk Group 5 x NS8600G2 6.4T U.2 SSD for vSAN storage per Disk Group
<b>Datacenter Management Server</b>	
System Model	NF5280M6
Processor Vendor and Model	Intel Xeon Gold 6348
Processor Speed (GHz)	2.6
Total Sockets/Total Cores/Total Threads	2 Sockets / 56 Cores / 112 Threads
Memory Size (in GB, Number of DIMMs)	1024,32
Network Controller(s) Vendors and Models	1 x Mellanox Technologies ConnectX-6 Dx EN NIC 100GbE
Operating System, Version, Bitness, and Service Pack	VMware ESXi, 8.0 U1a, Build 21813344
Virtual Center VM Number of vCPUs	16
Virtual Center VM Virtual Memory (in GB)	39
Virtual Center VM Operating System, Version, Bitness, and Service Pack	VMware vCenter Server 8.0 U1a, Build 21815093
Other Hardware	none
Other Software	none



Clients	
Total Number of Virtual Clients / Virtual Client Hosts	45/ 5
System Model(s)	NF5280M6
Processor Vendor(s) and Model(s)	host1-4: Intel Xeon Platinum 8380 host5: Intel Xeon Gold 6348
Processor Speed(s) (GHz)	host1-4: 2.3 GHz host5: 2.6 GHz
Total Sockets/Total Cores/Total Threads	host1-4: 2 Sockets / 80 Cores / 160 Threads host5: 2 Sockets / 56 Cores / 112 Threads
Memory per Virtual Client Host	1TB
Network Controller(s) Vendors and Models	Mellanox Technologies ConnectX-6 Dx EN NIC 100GbE
Virtual Client Networking Notes	vSwitch0 on vmnic0 for management and VMs
Virtual Client Storage Notes	client1-4 : 1 x Intel M.2 SATA SSD 480G for OS, 1 x P4510 4T for Client client5 : 1 x Intel M.2 SATA SSD 480G for OS, 3 x P4510 4T for Client
Other Hardware	none
Other Software	VMware ESXi, 8.0 U1a, Build 21813344

Security Mitigations						
Vulnerability	CVE	Exploit Name	Public Vulnerability Name	Mitigated		
				Server Firmware	ESXi	Guest OS
Spectre	2017-5753	Variant 1	Bounds Check Bypass	N/A	Yes	Yes
Spectre	2017-5715	Variant 2	Branch Target Injection	Yes	Yes	Yes
Meltdown	2017-5754	Variant 3	Rogue Data Cache Load	N/A	Yes	Yes
Spectre-NG	2018-3640	Variant 3a	Rogue System Register Read	Yes	N/A	N/A
Spectre-NG	2018-3639	Variant 4	Speculative Store Bypass	N/A	Yes	Yes
Foreshadow	2018-3615	Variant 5	L1 Terminal Fault - SGX	N/A	N/A	N/A
Foreshadow-NG	2018-3620	Variant 5	L1 Terminal Fault - OS	N/A	N/A	Yes
Foreshadow-NG	2018-3646	Variant 5	L1 Terminal Fault - VMM	N/A	Yes	N/A

## Notes for Workload

Template deployed with disk type: Thin

## Virtualization Software Notes

-Logical CPU configuration changed for all multi-CPU VMs to 1 socket with multiple cores (default single core per socket)

- Memory shares set to high for all DS3DB (default normal)
- CPU shares set to high for all DS3DB,Client,ElasticDB,ElasticLB,AuctionDB,AuctionLB VMs (default normal)
- CDROM removed from all VMs except for PrimeClient, and template VMs
- All memory reserved for DS3DB(default non-reserved)
- sched.mem.pin was set to "TRUE" for DS3DB VMs
- sched.mem.lpage.enable1GPage was set to "TRUE" for DS3DB VMs
- CPU shares set to low for all Standby VMs (default normal)
- vSphere DRS Migration Threshold set to Fully Automated level 1

### **Advanced settings:**

- Cpu.CreditAgePeriod = 1000 (default 3000)
- Cpu.HTWholeCoreThreshold = 0 (default 800)
- DataMover.HardwareAcceleratedInit = 0 (default 1)
- DataMover.HardwareAcceleratedMove = 0 (default 1)
- Disk.IdleCredit = 64 (default 32)
- Disk.ReqCallThreshold = 1 (default 8)
- Mem.CtlMaxPercent = 0 (default 65)
- Mem.ShareScanGHz = 0 (default 4)
- Net.MaxNetifTxQueueLen = 1000 (default 2000)
- Net.MaxPortRxQueueLen = 160 (default 80)
- Numa.LTermFairnessInterval = 0 (default 5)
- Numa.MigPreventLTermThresh = 20 (default 0)
- Numa.MonMigEnable = 0 (default 1)
- Numa.MigImbalanceThreshold = 57 (default 10)
- Numa.PageMigEnable = 0 (default 1)
- Numa.PreferHT = 1 (default 0)
- Numa.RebalancePeriod = 60000 (default 2000)
- Numa.SwapLoadEnable = 0 (default 1)

-Numa.SwapLocalityEnable = 0 (default 1)

-Power.CpuPolicy = High Performance (default Balanced)

-VMFS3.HardwareAcceleratedLocking = 0 (default 1)

-VMkernel.Boot.hyperthreadingMitigation = true (default false)

-UserVars.HostClientCEIPOptIn= 2(default 0)

-UserVars.SuppressShellWarning = 1 (default 0)

## **Server Notes**

-DCU Stream Prefetcher set to Disabled (default : Enabled)

-DCU IP Prefetcher set to Disabled (default : Enabled)

-LLC Prefetch set to Enabled (default : Disabled)

-LLC Dead Line Allocation set to Disabled (default : Enabled)

-Stale A to S set to Enabled (default : Disabled)

## **Networking Notes**

-vSwitch0 for Service Console on vmnic4 at 100Gbps

vmk0 connected with vSwitch0 for management

MTU 9000 (default 1500)

-vSwitch1 for VMs on vmnic1 at 100Gbps

vmnic1 connected with vswitch1 for vmmark

MTU 9000 (default 1500)

-Distributed Virtual Switch DSwitch1-vMotion for vMotion vmnic3 at 100Gbps

vmk1 on vmnic3 connected with DSwitch-vMotion for vMotion

MTU 9000 (default 1500)

-Distributed Virtual Switch DSwitch-VSAN for vSAN on vmnic2 at 100Gbps

vmk2 on vmnic2 connected with DSwitch-VSAN

MTU 9000 (default 1500)

-iSCSI Virtual Switch for iSCSI on vmnic0 and vmnic5 at 100Gbps

vmk3 on vmnic0 connected with vswitch2 for iSCSI

vmk4 on vmnic5 connected with vswitch3 for iSCSI

## **Storage Notes**

VMware vSAN 8.0 U1

-Capacity: 332.8TB

-Cache: 76.8TB

-Hardware Configuration:

Each host had 3 disk group

two disk groups have

1 x NS8600G2 6.4T U.2 SSD for vSAN cache per Disk Group

4 x NS8600G2 6.4T U.2 SSD for vSAN storage per Disk Group

one disk group has

1 x NS8600G2 6.4T U.2 SSD for vSAN cache per Disk Group

5 x NS8600G2 6.4T U.2 SSD for vSAN storage per Disk Group

-All VMs except Client were located on vsanDatastore

-All Client VMs were located on local storage on each Client servers

iSCSI

-hardware:NF5280M6

-OS:Windows Server Datacenter 2019

-Network: 1 x Mellanox Technologies ConnectX-6 Dx EN NIC 100GbE

LUN1: 4 x P4510 4T RAID 5 for datastore vmotion

LUN2: 4 x P4510 4T RAID 5 for datastore vmotion2

## **Datacenter Management Server Notes**

none

## **Operating System Notes**

none

## **Software Notes**

none

## Client Notes

-Client-host1: Client0-9

-Client-host2: Client10-19

-Client-host3: Client20-29

-Client-host4: Client30-39

-Client-host5: Client40-42,PrimeClient,ntp,vCenter Server

Advanced Settings:

-Power.CpuPolicy = High Performance (default Balanced)

-UserVars.HostClientCEIPOptIn = 2 (default 0)

-UserVars.SuppressShellWarning = 1 (default 0)

Server notes:

-Sub Numa Clustering set to Disabled (default : Enabled)

-DCU Stream Prefetcher set to Disabled (default : Enabled)

-DCU IP Prefetcher set to Disabled (default : Enabled)

-LLC Prefetch set to Enabled (default : Disabled)

-LLC Dead Line Allocation set to Disabled (default : Enabled)

-Stale A to S set to Enabled (default : Disabled)

Networking notes:

-Client-host1: vSwitch0 on vmnic2 connected with vmk0 for management and VMs at 100Gbps  
MTU 9000 (default 1500)

-Client-host2: vSwitch0 on vmnic2 connected with vmk0 for management and VMs at 100Gbps  
MTU 9000 (default 1500)

-Client-host3: vSwitch0 on vmnic2 connected with vmk0 for management and VMs at 100Gbps  
MTU 9000 (default 1500)

-Client-host4: vSwitch0 on vmnic2 connected with vmk0 for management and VMs at 100Gbps  
MTU 9000 (default 1500)

-Client-host5: vSwitch0 on vmnic2 connected with vmk0 for management and VMs at 100Gbps

MTU 9000 (default 1500)

Storage notes:

-Client-host1: 1 x P4510 4T for Client, 1 x P4510 4T for OS

-Client-host2: 1 x P4510 4T for Client, 1 x P4510 4T for OS

-Client-host3: 1 x P4510 4T for Client, 1 x P4510 4T for OS

-Client-host4: 1 x P4510 4T for Client, 1 x P4510 4T for OS

-Client-host5: 3 x P4510 4T for Client, 1 x SSD 480G for OS

## Other Notes

Changes to VMmark3.properties file:

-TileDelay = 30 (default 60)

-AllowRunOverwrite = true (default false)

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