Hewlett Packard
Enterprise

NonStop Technical Boot Camp 2023
TBC23-TB50 NonStop Performance Update 2023

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Forward-looking statements

This is a rolling (up to three year) Roadmap and is subject to change without notice

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Agenda

- NonStop NS8 X4, NS4 X4 Server updates
- XP 8 (Gen 1) array results
- vNS 3.1 performance update
- vNS storage
- Summary
- Backup Slides

NS8 X4 & NS4 X4

System performance

System Physical characteristics

Intel x86 based NS8 **X4** & NS4 **X4** Servers

Component	NS7 X3	NS3 X3	NS8 X4	NS4 X4
CPU (speed/cache)	Intel x86 Skylake-61xx (3.4 GHz/19.25 MB)	Intel x86 Skylake-4xxx (1.6 GHz/11 MB)	Intel x86 Cascade Lake 62xx (3.6 GHz/24.75 MB)	Intel x86 Cascade Lake-32xx (1.9 GHz/8.25 MB)
Core (IPU) Count	2/4/6	1/2	2/4/6	1/2
Memory/CPU	256GB	64GB	256GB	64GB
Interconnect	IB 56Gbps	IB 56Gbps	IB 100Gbps	IB 100Gbps
Storage	G10 V3 CLIM - HDD, SSD	G10 V3 CLIM - HDD, SSD	G10 V4 CLIM - HDD, SSD	G10 V4 CLIM – HDD, SSD
Networking	G10 V3 CLIM 4 * 10 Gbps 1 * 1 Gbps	G10 V3 CLIM 5 * 1 Gbps	G10 V4 CLIM 4 * 10 Gbps 1 * 1 Gbps	G10 V4 CLIM 5 * 1 Gbps
Performance	1.0x	0.53x	1.07x	0.63x

System Benchmarks – NS8.6c vs NS7 X3.6c

Throughput Speedup Ratios

Order-Entry SQL/MP

1.07x

CPU/trans – 1.07x

Unchanged on L23.08

Order-Entry SQL/MX

1.10x

CPU/trans – 1.07x

Unchanged on L23.08

Java OE – T2

1.08x

CPU/trans – 1.08x

Unchanged on L23.08

Java OE – T4

1.09x

CPU/trans – 1.1x

Unchanged on L23.08

System benchmarks – NS8 X4 Core LICENSING options

Order-Entry OLTP SQL/MP benchmark

NS8 X4.2c	NS8 X4.4c	NS8 X4.6c
1.0x	1.9x	2.7x

Same Ratios as NS7 Servers

NS8 X4 OS release performance – L-Series

Benchmarks	L23.08 vs. L21.11 (speedup ratios)
Order-Entry SQL/MP	1.00x
Order-Entry SQL/MX MX	1.00x
Java ™ Order-Entry (T4)	0.99x
Java ™ Order-Entry (T2)	1.02x
Message System	1.00x
Disk	1.00x
TCP/IP	1.01x
EXPAND	1.00x

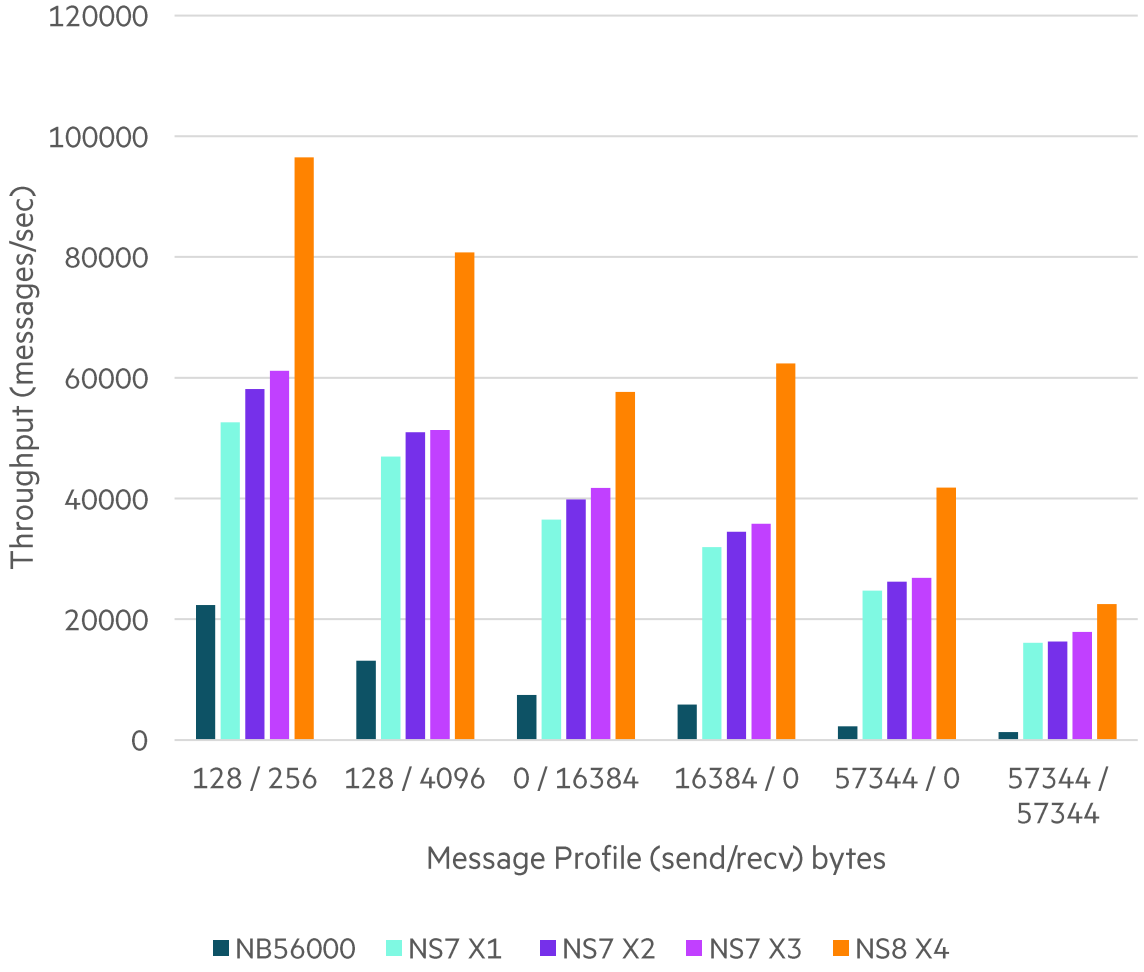
Ratios greater than 1 implies better performance

NonStop Servers

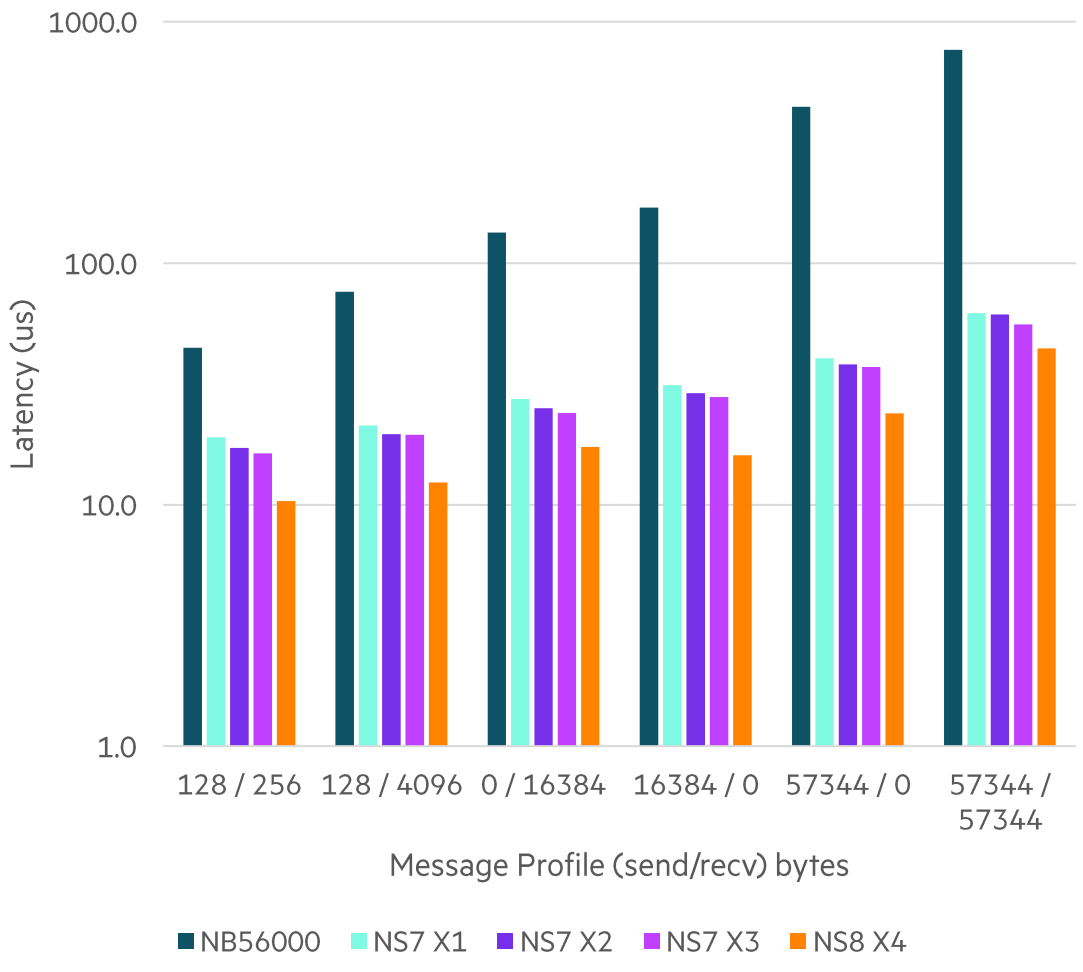
Message, Storage, Networking subsystem performance

Message system – inter-processor throughput/latency comparisons

Single application inter-processor throughput

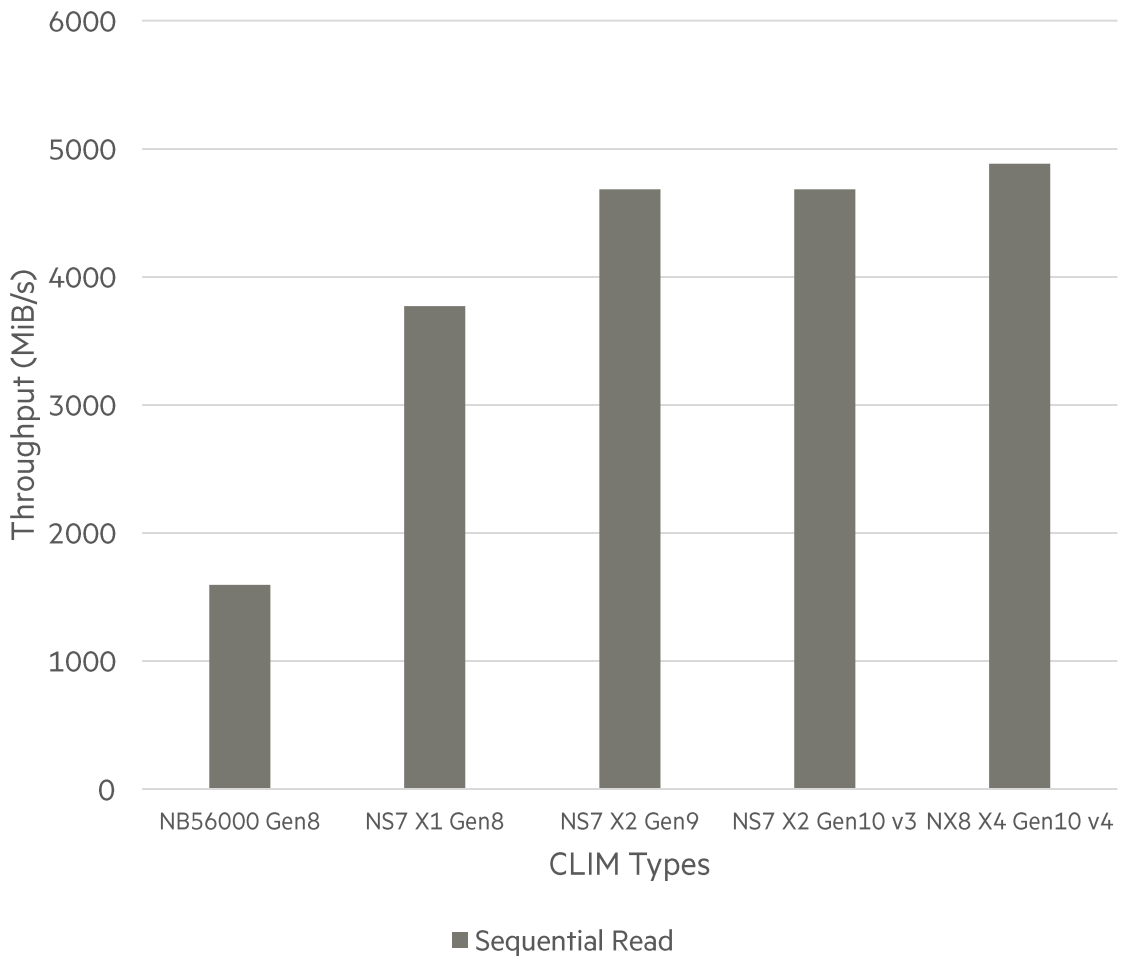


Single application inter-processor latencies

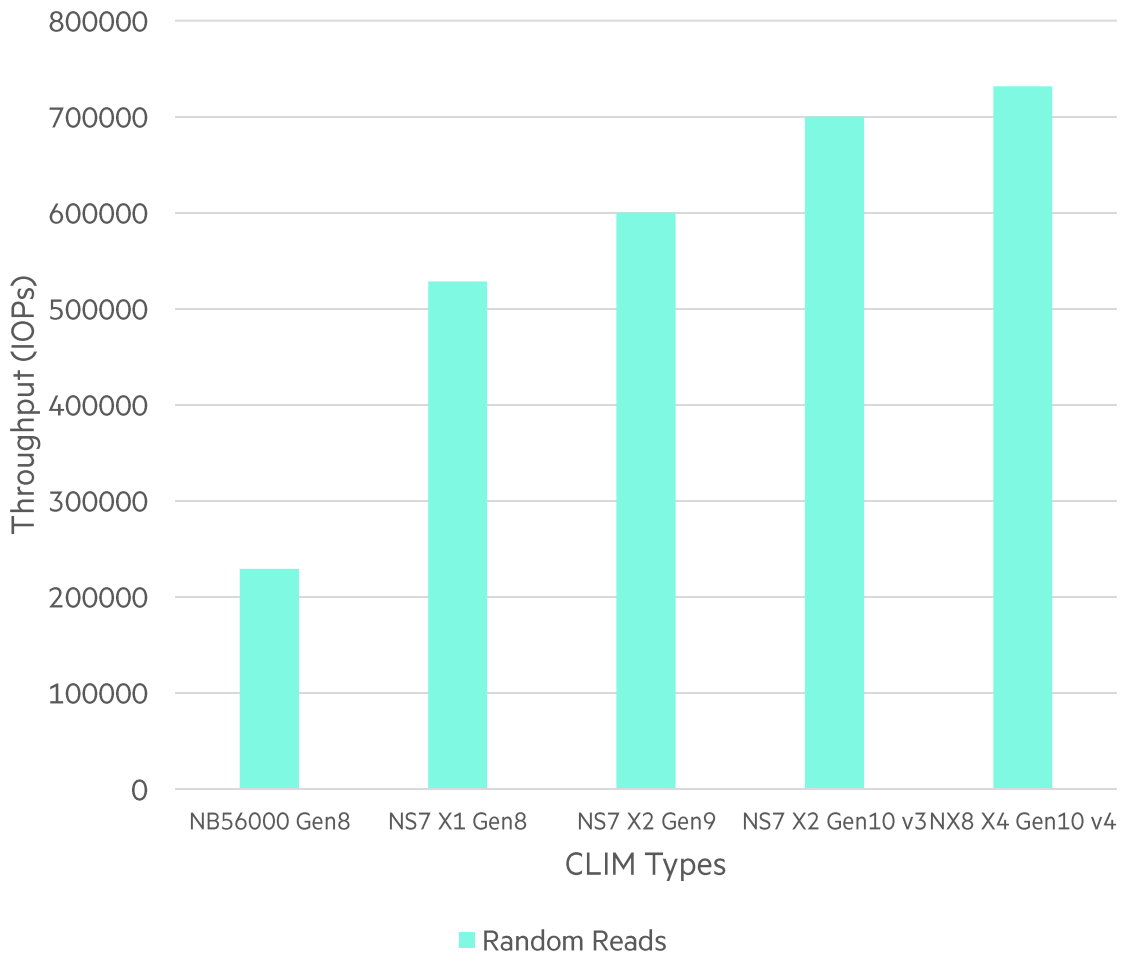


Storage CLIM – max. throughput

Sequential throughput

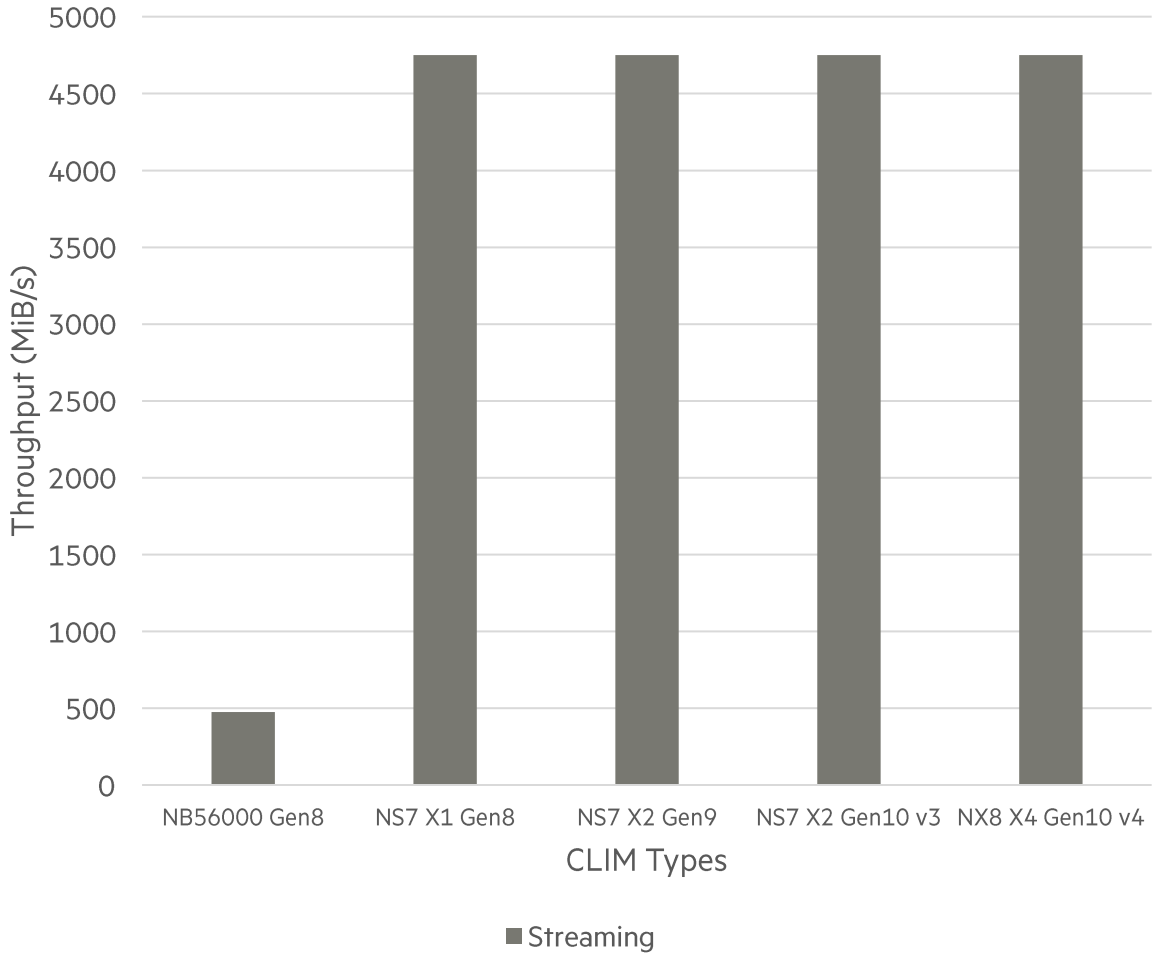


Random IO throughput

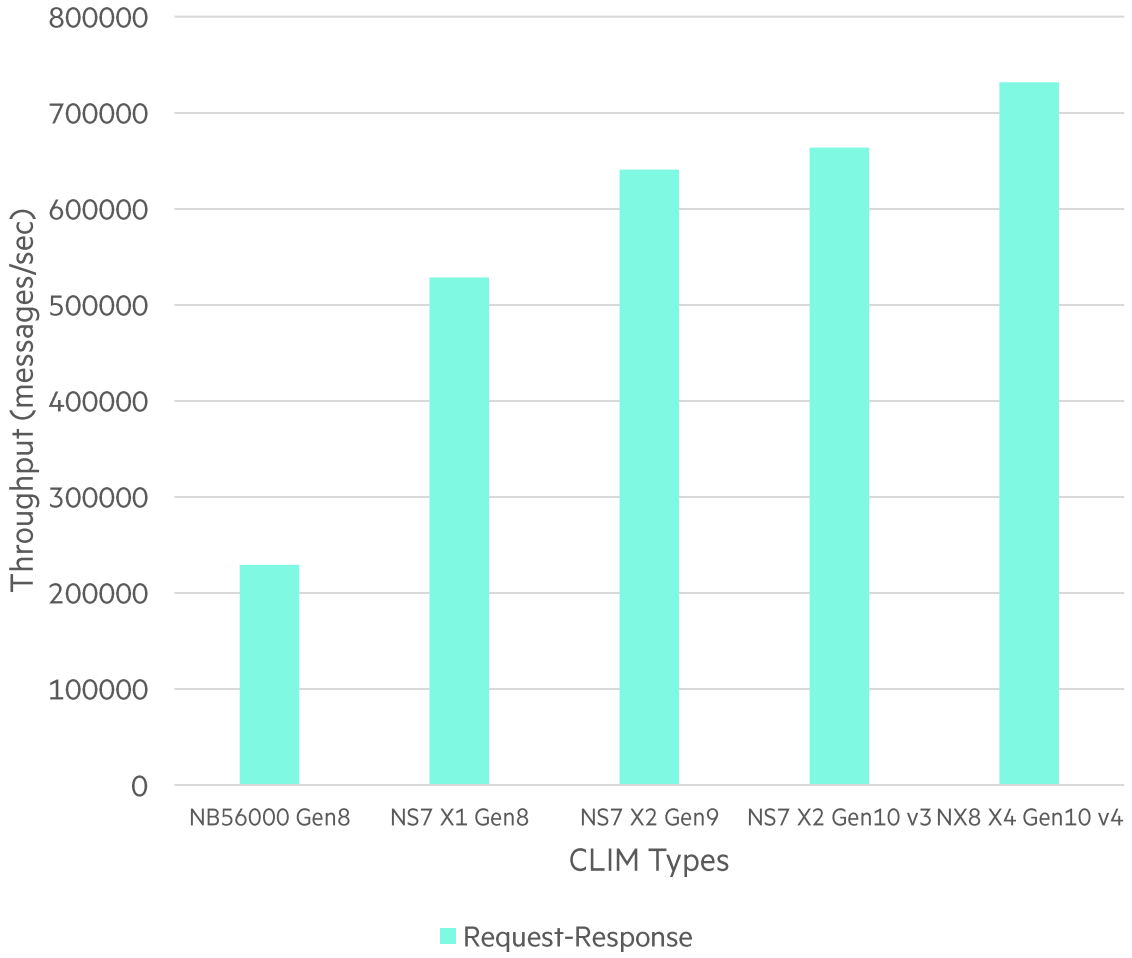


Network CLIM – max. throughput

Streaming throughput



Request-Response throughput

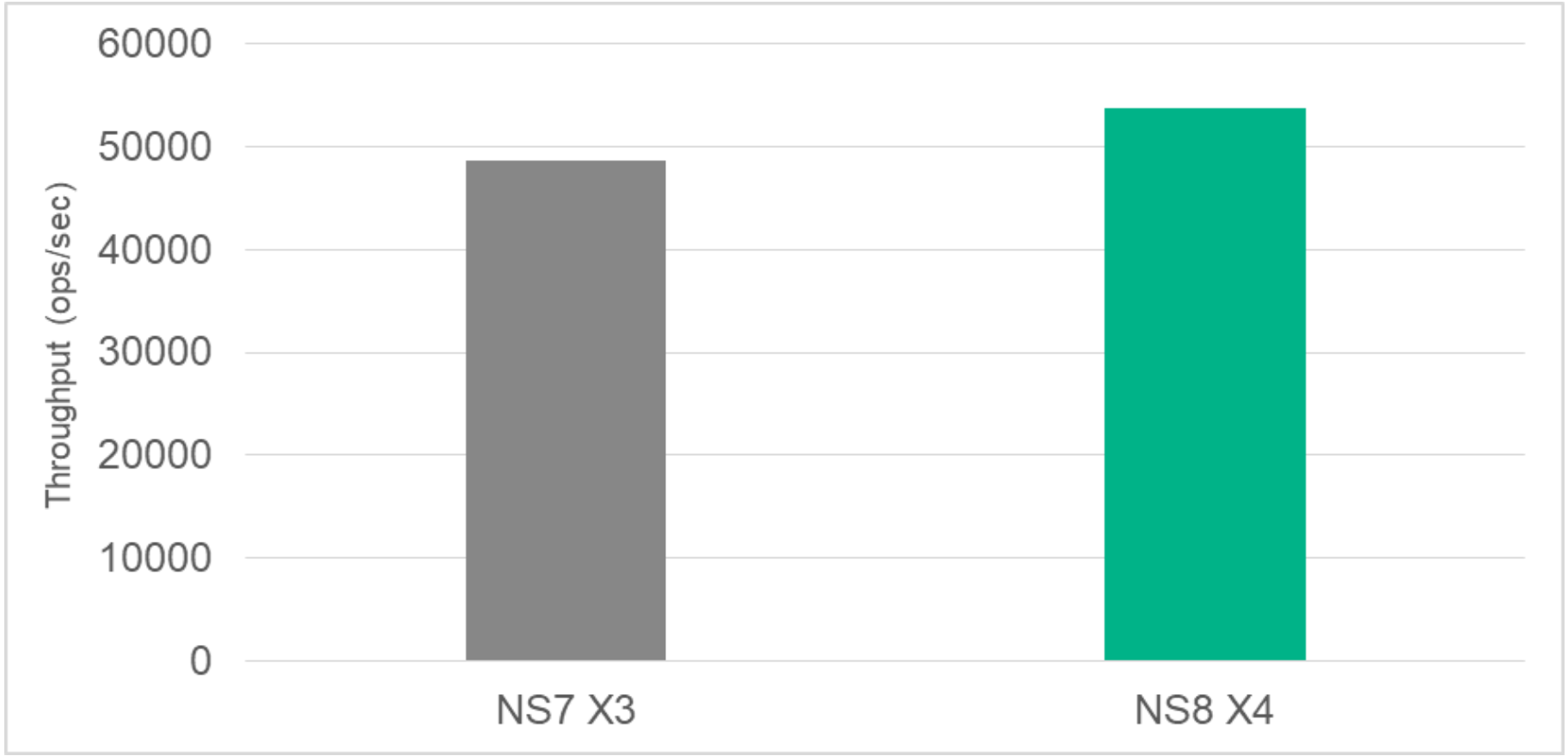


SUB system SPECIFIC PERFORMANCE

Java Performance

NS7 X3 vs. NS8 X4 JAVA ™ benchmark

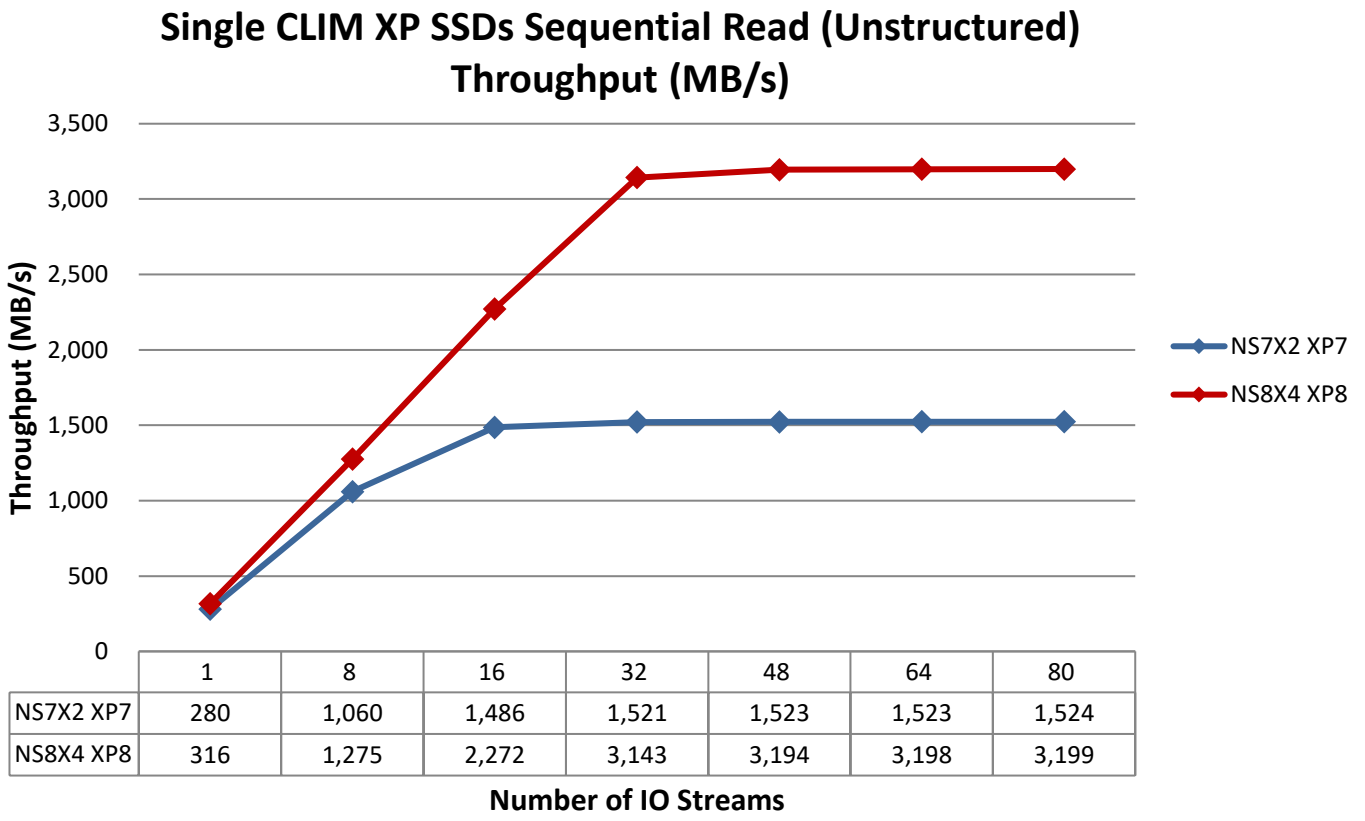
NSJ11 - 64 bit JVM - Single-core



XP8 Gen1 Performance

Sequential Read (56k) Throughput

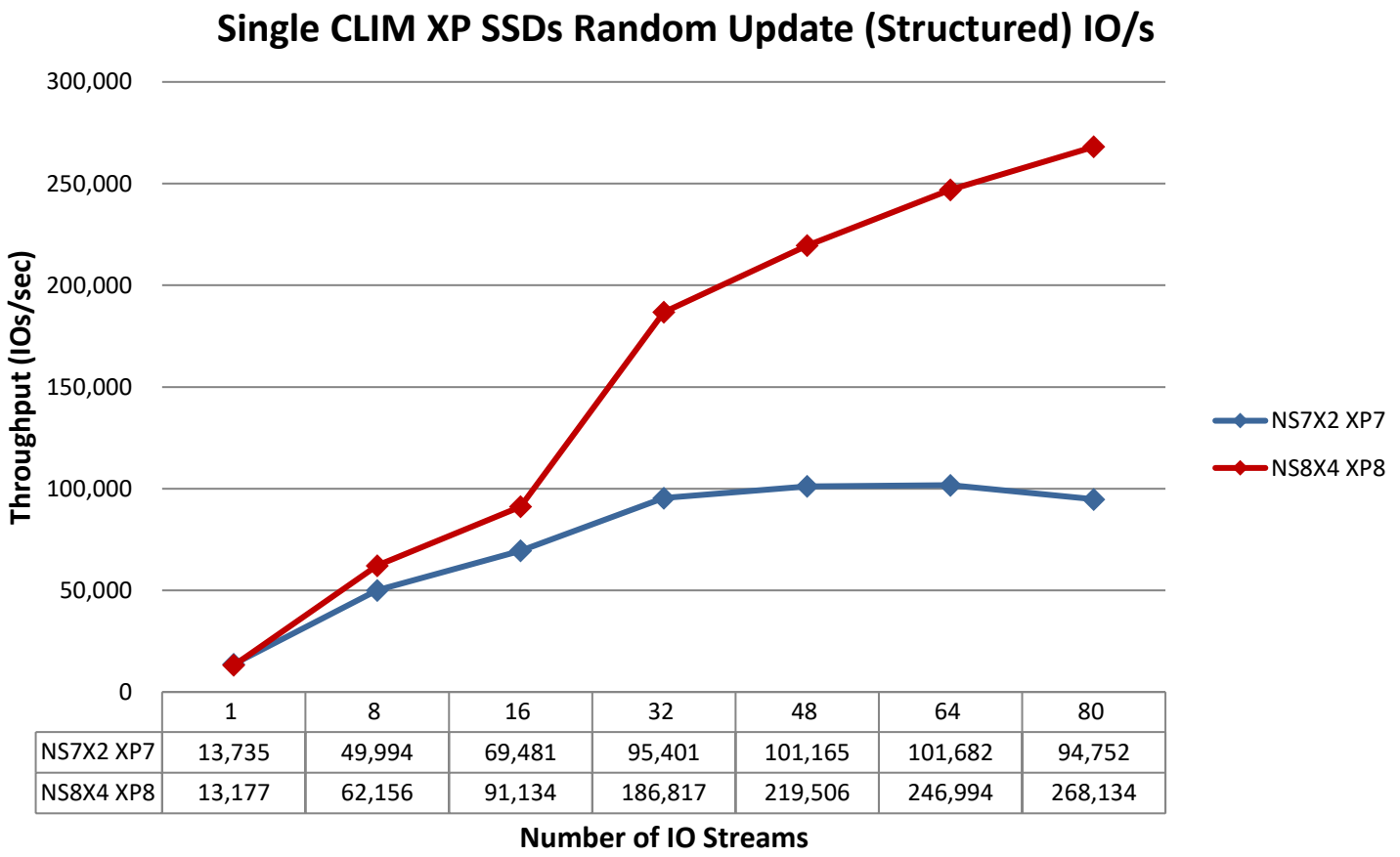
- Throughput for Sequential IOs on XP8 is almost 2x the throughput of XP7
  - 16gbps FC vs 8 gbps FC



	1	8	16	32	48	64	80
NS7X2 XP7	280	1,060	1,486	1,521	1,523	1,523	1,524
NS8X4 XP8	316	1,275	2,272	3,143	3,194	3,198	3,199

RANDOM UPDATE (4K) THROUGHPUT

- XP8 showing about 2.5x higher random write IO throughput for the same workload compared to XP7



	1	8	16	32	48	64	80
NS7X2 XP7	13,735	49,994	69,481	95,401	101,165	101,682	94,752
NS8X4 XP8	13,177	62,156	91,134	186,817	219,506	246,994	268,134

vNS Performance

System physical characteristics

Intel x86 vNS Performance Reference (vNS 3.1 (VMware ® 7.0)) vs. NS8 X4

Component	NS8 X4	vNS (Gen 10) [1]	NS4 X4	NS2 X3
CPU (speed/cache)	Intel x86 Cascade Lake-62xx (3.6 GHz/24.75 MB)	Intel x86 Cascade Lake 62XXR (3.4 GHz/24 MB)	Intel x86 Cascade Lake-62xx (1.9 GHz/8.25 MB)	Intel x86 Skylake-4xxx (2.1 GHz/11 MB)
Core (IPU) Count	2/4/6	1/2/4/6	1/2	1/2
Memory/CPU	256 GB	256 GB	64 GB	64 GB
Interconnect	IB (100 Gbps)	ROCE (100Gbps/25Gbps)	IB (100Gbps)	ROCE (25Gbps)
Storage	G10 V4 CLIM • Direct attach SAS SSD	Storage vCLIM • HPE 3Par AFA (iSCSI) • MSA 2050 AFA JBOD (iSCSI)	G10 IB CLIM - SAS HDD, SAS SSD	G10 Storage vCLIM SAS HDD (24 max.)
Networking	G10 V4 CLIM • 4 * 10 Gbps • 1 * 1 Gbps	IP vCLIM • 4 * 10 Gbps • 1 * 1 Gbps	G10 IB CLIM 5 * 1 Gbps	G10 IP vCLIM 5 * 1 Gbps
Software	L22.09	L22.09	L20.10	L19.08
Performance	1.0x →	0.81x	1.0x →	0.34x

System benchmarks – vNS 3.1

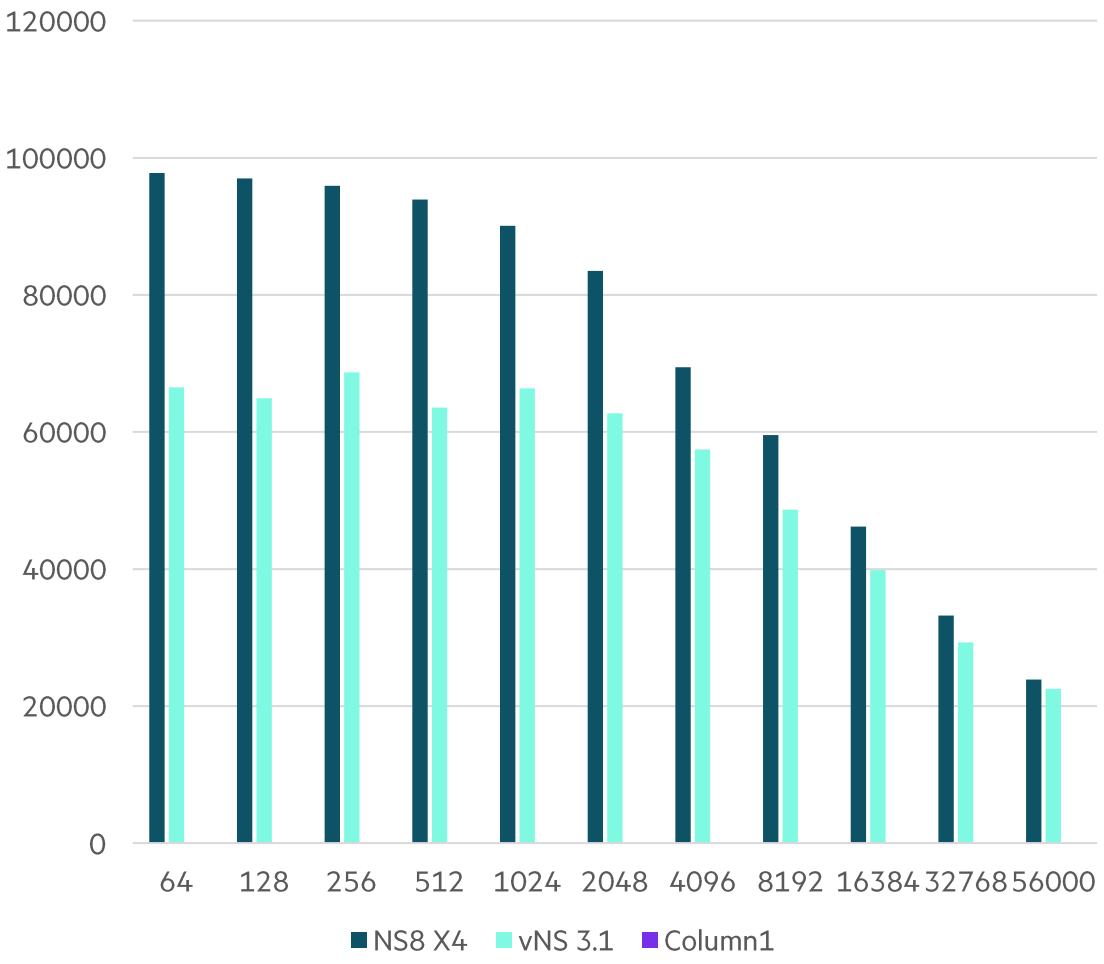
Order-Entry OLTP SQL/MP benchmark

vNS 3.1.4c vs NS8 X4.4c	vNS 3.1.2c vs NS8 X4.2c
0.83x	0.81x

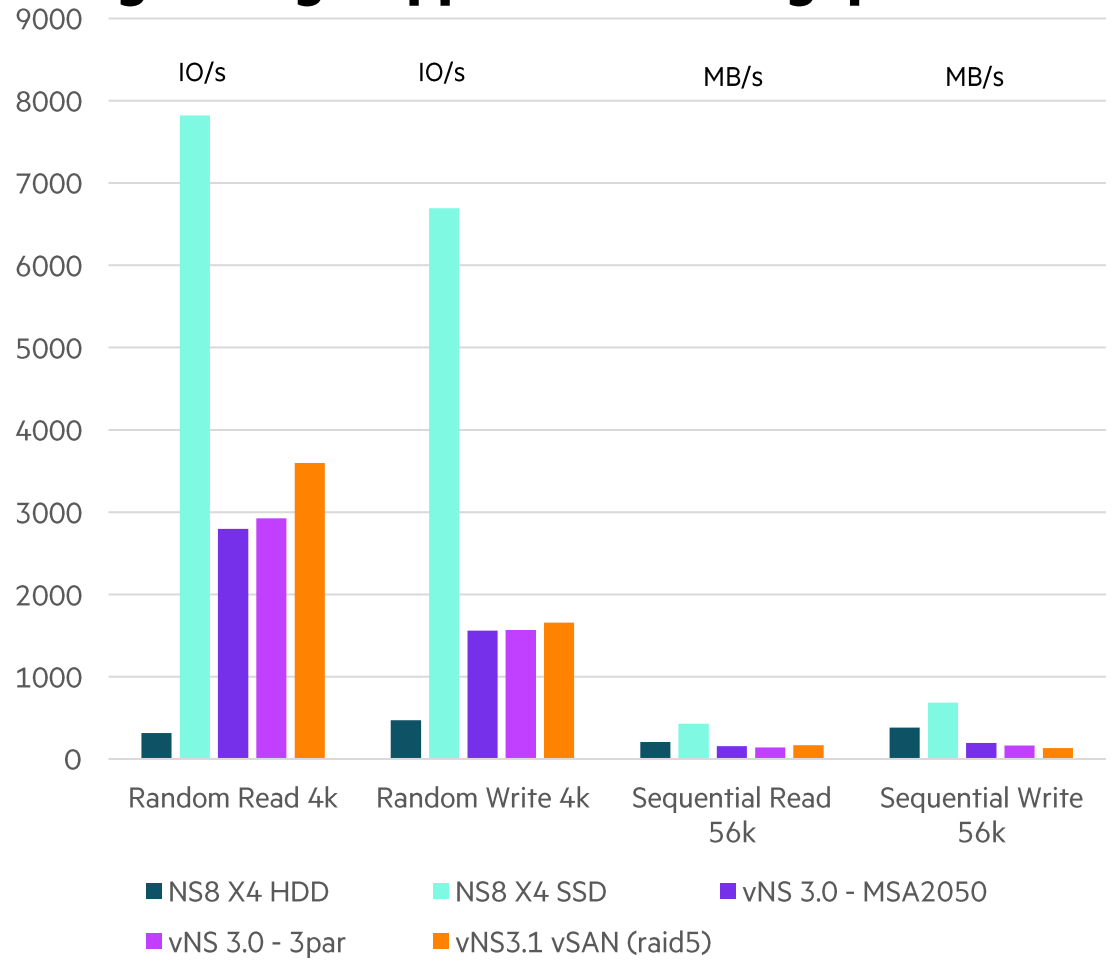
- 6c results expected to be the same as 4c results
- 1.0x performance gain compared to vNS 3.0
- 1.05x performance gain compared to vNS 2.3

vNS atomic measurements

Message system inter-cpu message rate

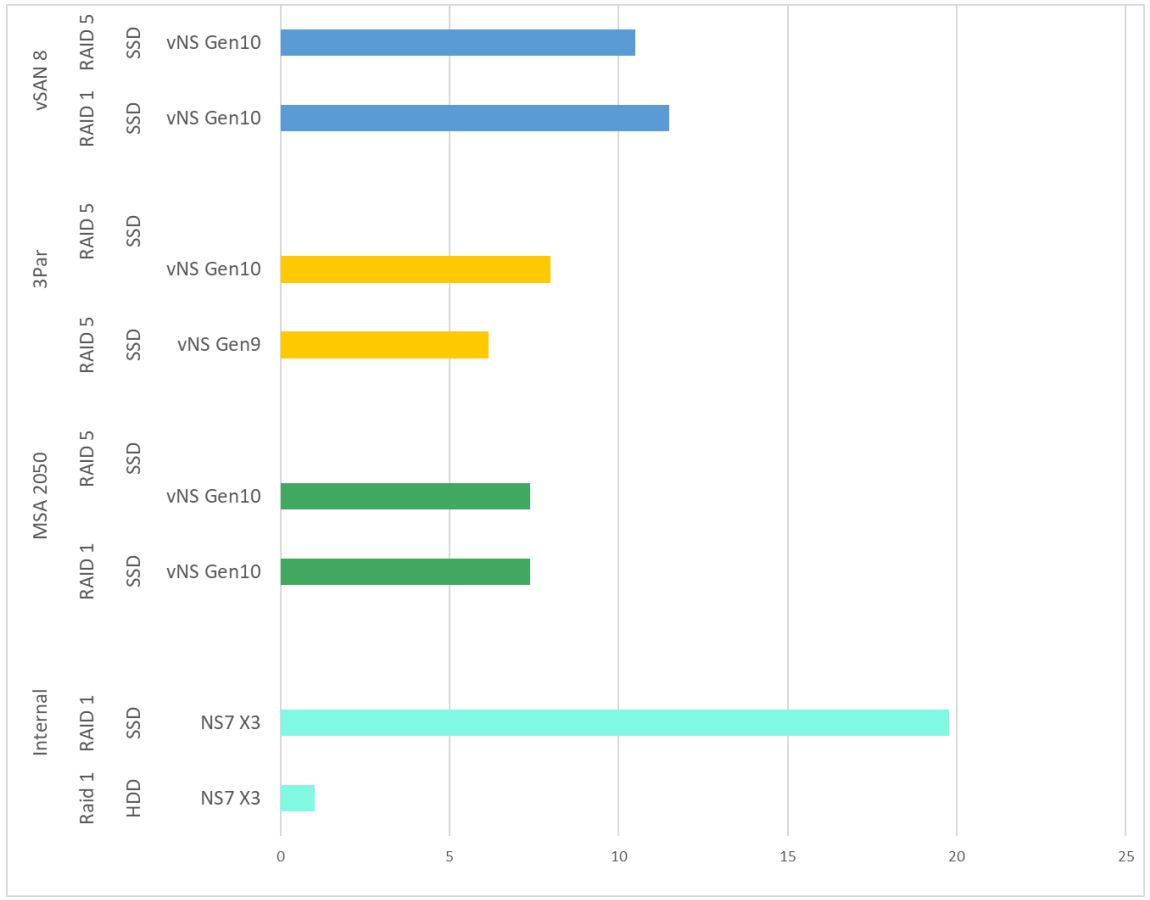


Storage – single application throughput

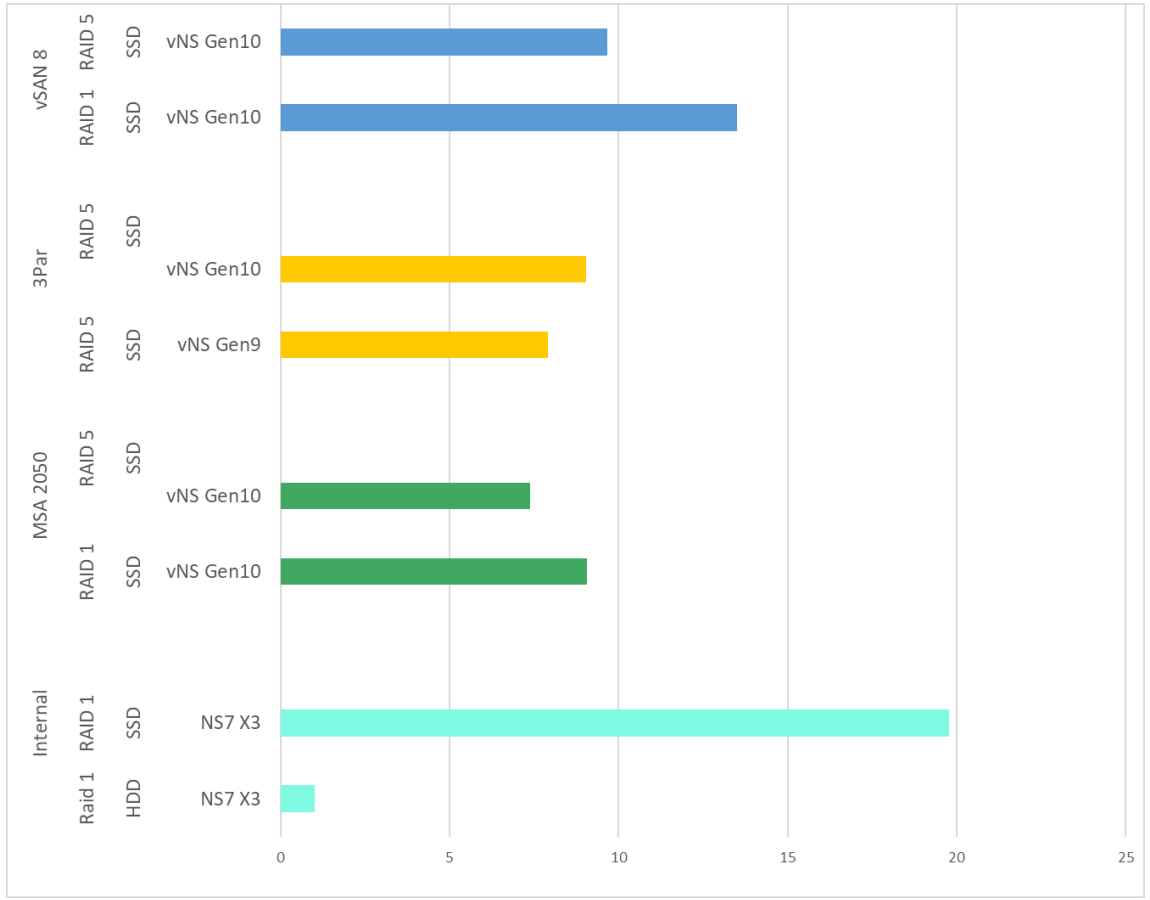


vNS Storage atomic measurements

Storage – Random Reads (4k)



Storage – Random Updates (4k)



Summary

- NS8, NS4 performance unchanged in L23.08
- XP8 performance is ~2x better than XP7
- vNS 3.1 is about 1.05x performance of vNS 2.3
- Multiple options for vNS storage; varied performance characteristics; choose carefully
- For migration to vNS; POC strongly suggested

NonStop Partnership– It's a Beautiful Thing!

Thank you for attending this talk TBC23-TB50 NonStop Performance Update 2023

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