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CentOS-640-TunedThroughput-LPDisabled-NCEnabled-RUN4

Testing-CentOS-Linux-on-a-Dell-640-III-The-active-tuned-adm-profile-is-throughput-performance-III-Logical-Processors-are-disabled-III-Both-Native-tRFC-Timing-for-16Gb-Density-DIMMs-and-Correctable-Memory-ECC-SMI-are-enabled-III-Turboboost-is-enabled--Memory-Patrol-Scrub-is-Standard--Monitor-MemWait-is-Disabled--and-the-Workload-Profile-is--Not-available-

Test Systems:

CentOS-640-TunedThroughput-LPDisabled-NCEnabled-RUN4--08-19

Processor: Intel Xeon Gold 5218 @ 3.90GHz (16 Cores), Motherboard: Dell 0H28RR (2.11.2 BIOS), Memory: 8 x 8192 MB DDR4-3200MT/s HMA81GR7CJR8N-XN, Disk: 4000GB PERC H730P Mini, Graphics: mgadrmfb

OS: CentOS Linux 8, Kernel: 4.18.0-147.el8.x86_64 (x86_64), Compiler: GCC 8.4.1 20200928, File-System: xfs, Screen Resolution: 1024x768

Kernel Notes: Transparent Huge Pages: always
Compiler Notes: --build=x86_64-redhat-linux --disable-libmpx --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,lto --enable-multilib

--enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=x86-64 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Disk Notes: MQ-DEADLINE / attr2,inode64,noquota,relatime,rw,seclabel / Block Size: 4096
Processor Notes: Scaling Governor: intel_pstate performance - CPU Microcode: 0x5003102
Security Notes: SELinux + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Enhanced IBRS IBPB: conditional RSB filling

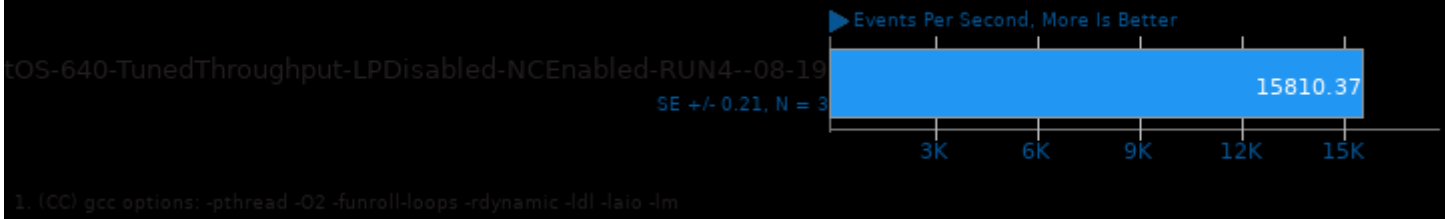
	CentOS-640-TunedThroughput-LPDisabled-NCEnabled-RUN4--08-
Sysbench - CPU (Events/sec)	15810
Standard Deviation	0%
Core-Latency - A.L.B.C.C (ns)	265.576
CacheBench - R.M.W (MB/s)	28884
Standard Deviation	0%
CacheBench - Write (MB/s)	27107
Standard Deviation	0%
CacheBench - Read (MB/s)	3288
Standard Deviation	0%
pmbench - 16 - 8.R.2.W (us - Page Latency)	0.0994
Standard Deviation	0.4%
pmbench - 4 - 8.R.2.W (us - Page Latency)	0.0888
Standard Deviation	0.1%
pmbench - 1 - 8.R.2.W (us - Page Latency)	0.0860
Standard Deviation	0.1%
pmbench - 16 - 100% Writes (us - Page Latency)	0.0436
Standard Deviation	0%
pmbench - 4 - 100% Writes (us - Page Latency)	0.0333
Standard Deviation	0%
pmbench - 16 - 100% Reads (us - Page Latency)	0.0518
Standard Deviation	0.1%
pmbench - 1 - 100% Writes (us - Page Latency)	0.0313
Standard Deviation	0.2%
pmbench - 4 - 100% Reads (us - Page Latency)	0.0416
Standard Deviation	0.5%
pmbench - 1 - 100% Reads (us - Page Latency)	0.0402
Standard Deviation	0.2%
pmbench - 16 - 50% (us - Page Latency)	0.0820
Standard Deviation	0.2%
pmbench - 4 - 50% (us - Page Latency)	0.0702
Standard Deviation	0.4%
pmbench - 1 - 50% (us - Page Latency)	0.0677
Standard Deviation	0%
MBW - M.C.F.B.S - 8192 MiB (MiB/s)	8314
Standard Deviation	0.5%
MBW - M.C.F.B.S - 4096 MiB (MiB/s)	8449
Standard Deviation	0.4%
MBW - M.C.F.B.S - 1024 MiB (MiB/s)	8768
Standard Deviation	0.4%
MBW - M.C.F.B.S - 512 MiB (MiB/s)	8853
Standard Deviation	0.1%

MBW - M.C.F.B.S - 128 MiB (MiB/s)	8994
Standard Deviation	0.7%
MBW - Memory Copy - 8192 MiB (MiB/s)	9786
Standard Deviation	0.5%
MBW - Memory Copy - 4096 MiB (MiB/s)	9757
Standard Deviation	0.5%
MBW - Memory Copy - 1024 MiB (MiB/s)	9802
Standard Deviation	0.5%
MBW - Memory Copy - 512 MiB (MiB/s)	9838
Standard Deviation	0.7%
MBW - Memory Copy - 128 MiB (MiB/s)	9960
Standard Deviation	0.4%
Stream - Add (MB/s)	52634
Standard Deviation	0.2%
Stream - Triad (MB/s)	52805
Standard Deviation	0.4%
Stream - Scale (MB/s)	46512
Standard Deviation	0.2%
Stream - Copy (MB/s)	62063
Standard Deviation	0.4%
RAMspeed SMP - Average - Floating Point (MB/s)	27916
Standard Deviation	0.2%
RAMspeed SMP - Triad - Floating Point (MB/s)	27481
Standard Deviation	0.4%
RAMspeed SMP - Scale - Floating Point (MB/s)	28159
Standard Deviation	0.2%
RAMspeed SMP - Copy - Floating Point (MB/s)	29435
Standard Deviation	0.6%
RAMspeed SMP - Add - Floating Point (MB/s)	27579
Standard Deviation	1.3%
RAMspeed SMP - Average - Integer (MB/s)	28224
Standard Deviation	0.2%
RAMspeed SMP - Triad - Integer (MB/s)	27220
Standard Deviation	0.5%
RAMspeed SMP - Scale - Integer (MB/s)	28106
Standard Deviation	0.5%
RAMspeed SMP - Copy - Integer (MB/s)	29438
Standard Deviation	0.7%
RAMspeed SMP - Add - Integer (MB/s)	28221
Standard Deviation	0.6%
Intel Memory Latency Checker - P.I.B - Stream-Triad Like (MB/s)	66500
Standard Deviation	0.1%
Intel Memory Latency Checker - P.I.B - 1:1 Reads-Writes (MB/s)	63163
Standard Deviation	0.8%
Intel Memory Latency Checker - P.I.B - 2:1 Reads-Writes (MB/s)	68873
Standard Deviation	0.2%
Intel Memory Latency Checker - P.I.B - 3:1 Reads-Writes (MB/s)	70483
Standard Deviation	0.1%
Intel Memory Latency Checker - P.I.B - All Reads (MB/s)	78859
Standard Deviation	0%
Intel Memory Latency Checker - Max Bandwidth - Stream-Triad Like (MB/s)	72394
Standard Deviation	0.1%

Intel Memory Latency Checker - Max Bandwidth - 1:1 Reads-Writes (MB/s)	63373
Standard Deviation	0.3%
Intel Memory Latency Checker - Max Bandwidth - 2:1 Reads-Writes (MB/s)	68704
Standard Deviation	0.1%
Intel Memory Latency Checker - Max Bandwidth - 3:1 Reads-Writes (MB/s)	70524
Standard Deviation	0.1%
Intel Memory Latency Checker - Max Bandwidth - All Reads (MB/s)	79765
Standard Deviation	0%
Intel Memory Latency Checker - Idle Latency (ns)	68.5
Standard Deviation	0%
IOzone - 4Kb - 512MB - Write Performance (MB/s)	61.31
Standard Deviation	2.1%

Sysbench 1.0.20

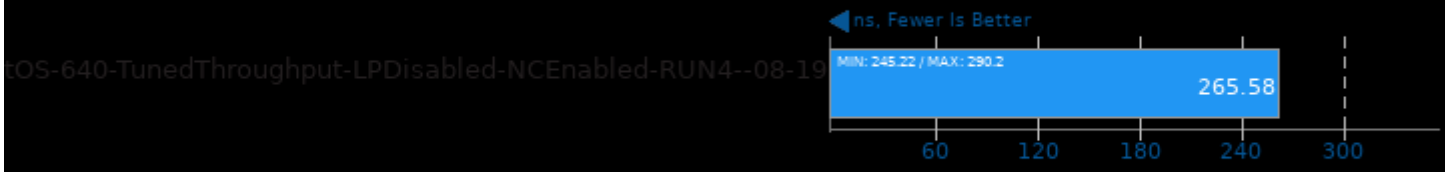
Test: CPU



1. (CC) gcc options: -pthread -O2 -funroll-loops -rdynamic -ldl -laio -lm

Core-Latency

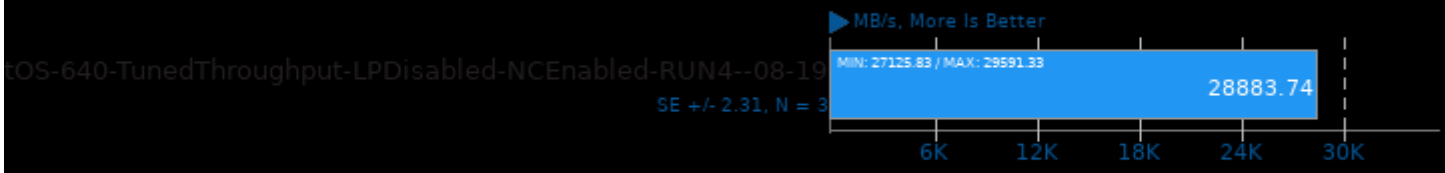
Average Latency Between CPU Cores



1. (CXX) g++ options: -std=c++11 -pthread -O3

CacheBench

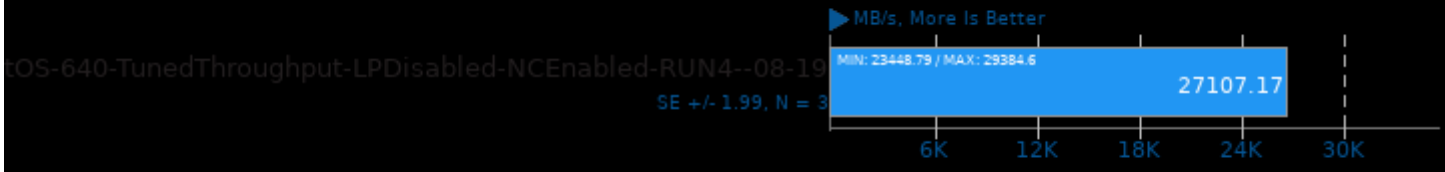
Test: Read / Modify / Write



1. (CC) gcc options: -lrt

CacheBench

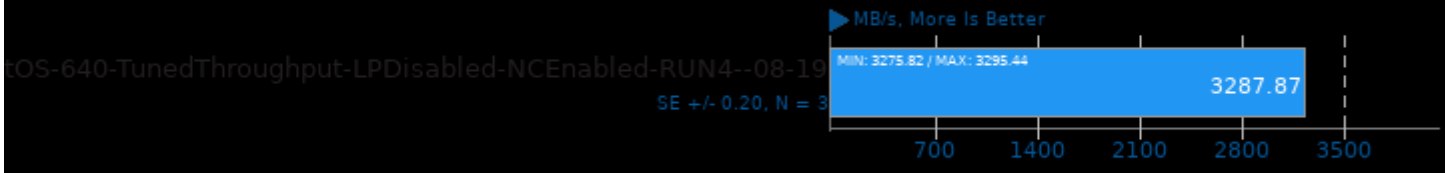
Test: Write



1. (CC) gcc options: -lrt

CacheBench

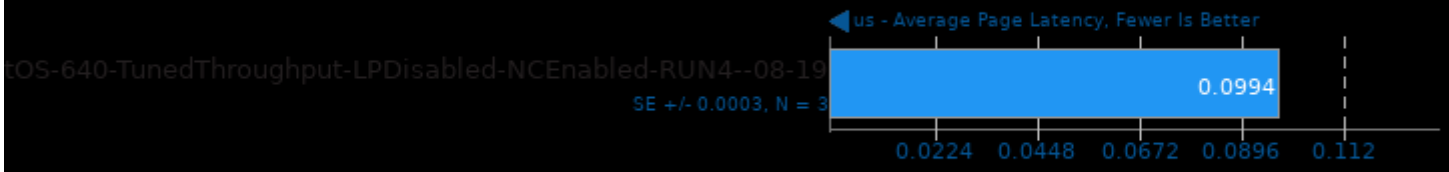
Test: Read



1. (CC) gcc options: -lrt

pmbench

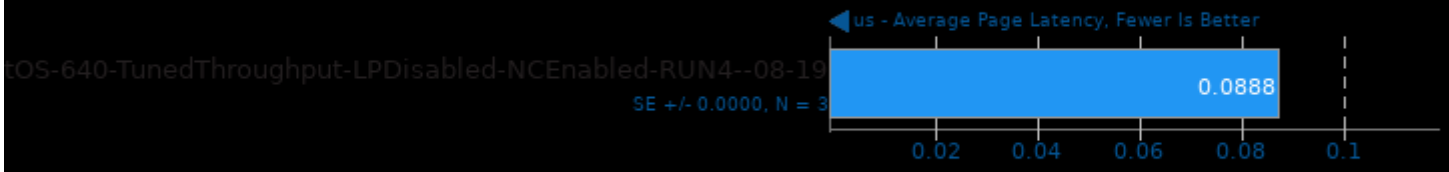
Concurrent Worker Threads: 16 - Read-Write Ratio: 80% Reads 20% Writes



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

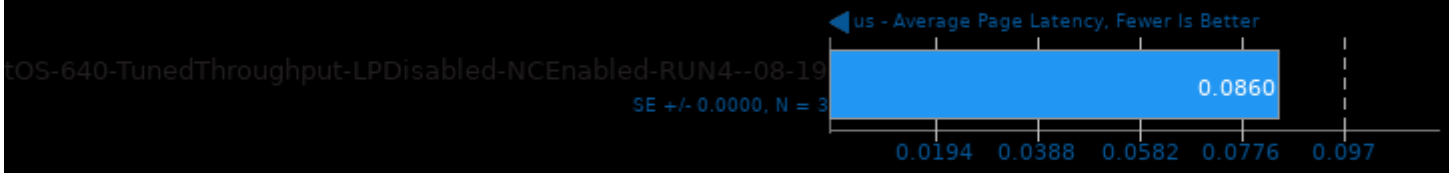
Concurrent Worker Threads: 4 - Read-Write Ratio: 80% Reads 20% Writes



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

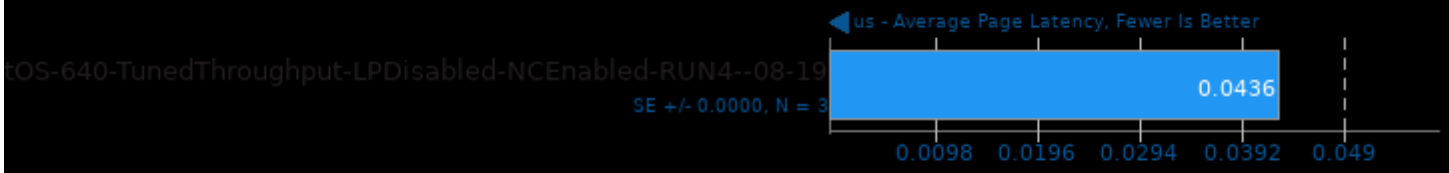
Concurrent Worker Threads: 1 - Read-Write Ratio: 80% Reads 20% Writes



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

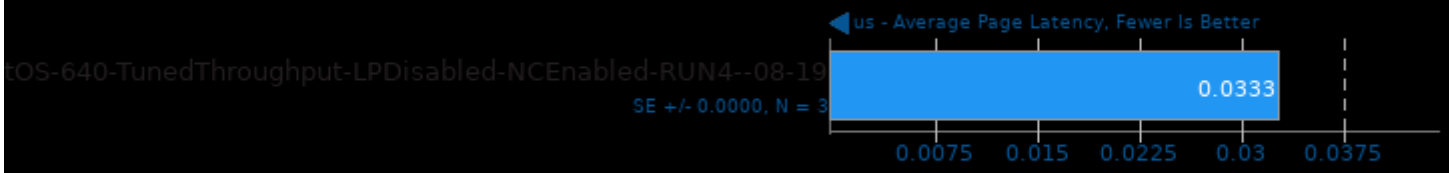
Concurrent Worker Threads: 16 - Read-Write Ratio: 100% Writes



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

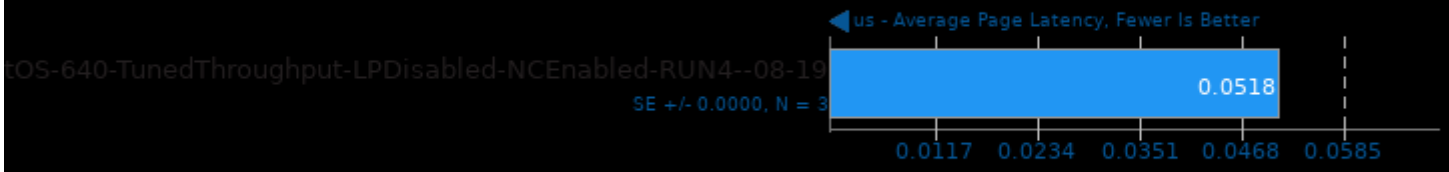
Concurrent Worker Threads: 4 - Read-Write Ratio: 100% Writes



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

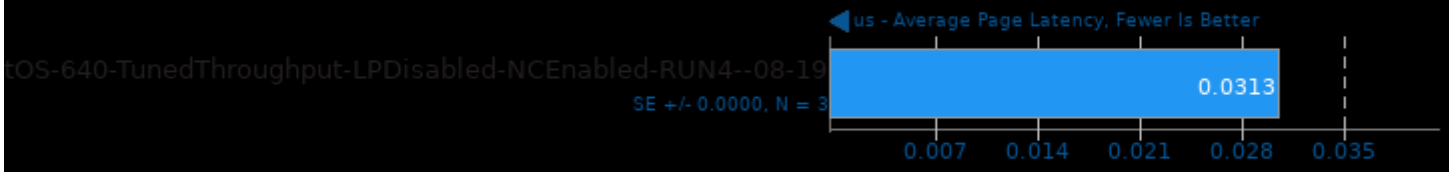
Concurrent Worker Threads: 16 - Read-Write Ratio: 100% Reads



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

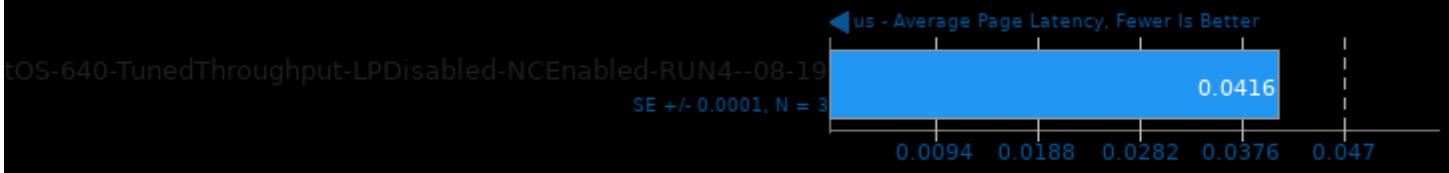
Concurrent Worker Threads: 1 - Read-Write Ratio: 100% Writes



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

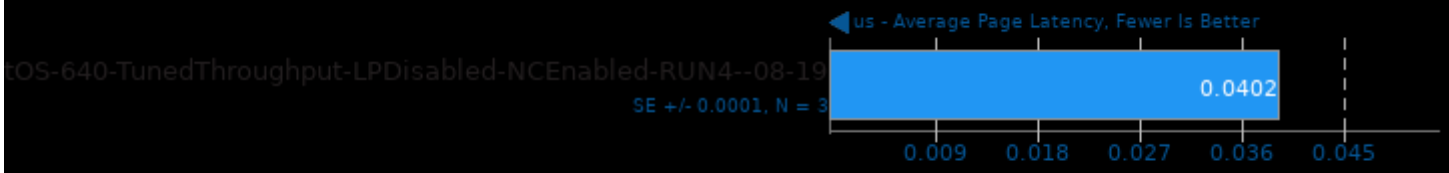
Concurrent Worker Threads: 4 - Read-Write Ratio: 100% Reads



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

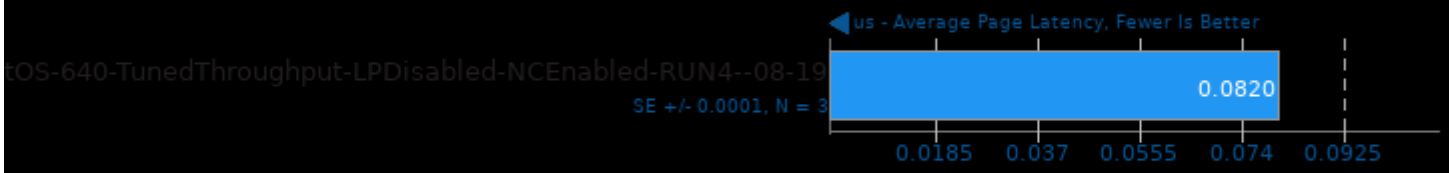
Concurrent Worker Threads: 1 - Read-Write Ratio: 100% Reads



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

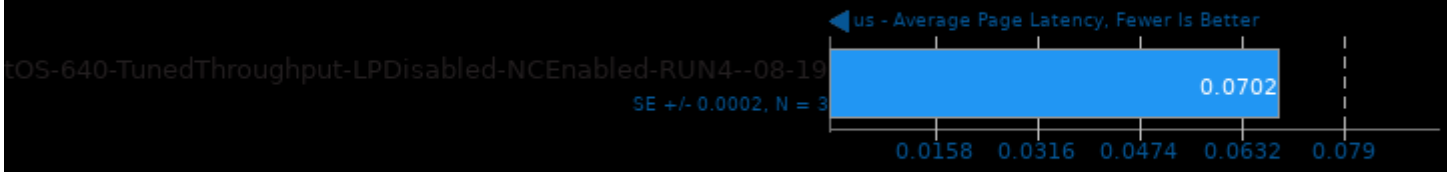
Concurrent Worker Threads: 16 - Read-Write Ratio: 50%



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

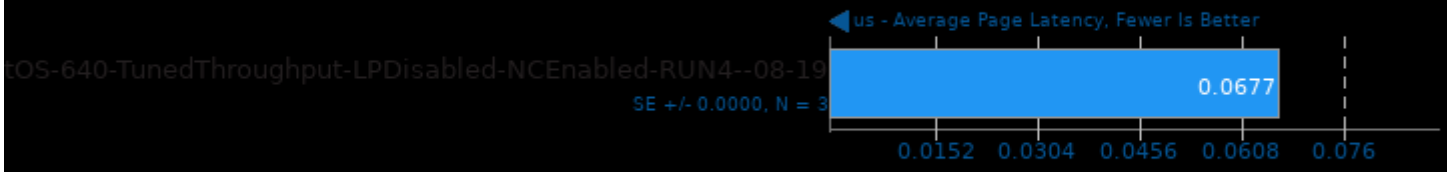
Concurrent Worker Threads: 4 - Read-Write Ratio: 50%



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

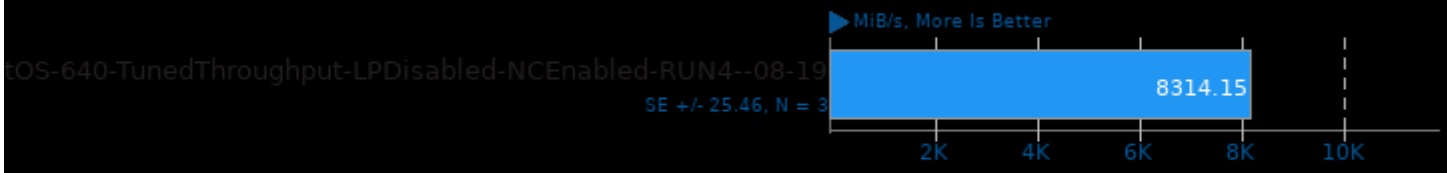
Concurrent Worker Threads: 1 - Read-Write Ratio: 50%



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

MBW 2018-09-08

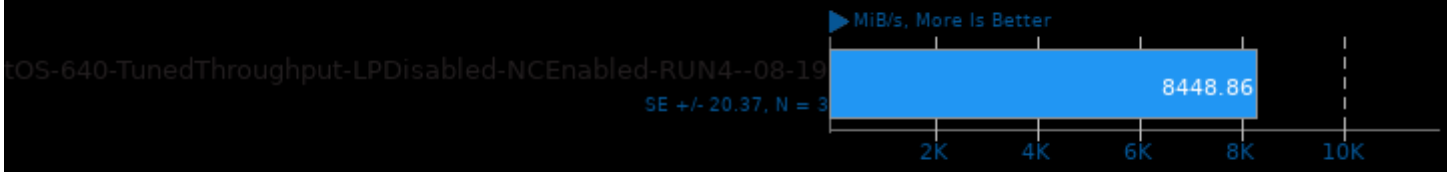
Test: Memory Copy, Fixed Block Size - Array Size: 8192 MiB



1. (CC) gcc options: -O3 -march=native

MBW 2018-09-08

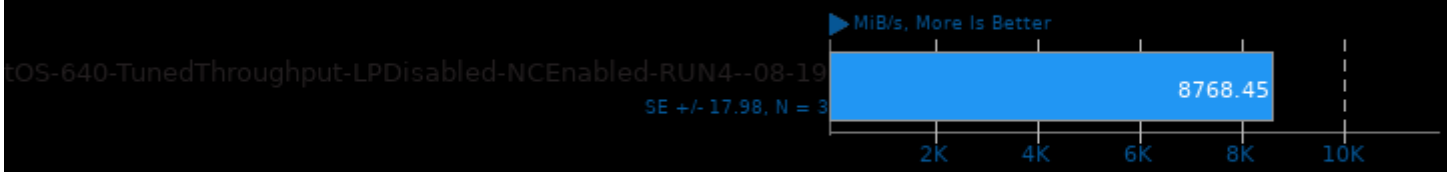
Test: Memory Copy, Fixed Block Size - Array Size: 4096 MiB



1. (CC) gcc options: -O3 -march=native

MBW 2018-09-08

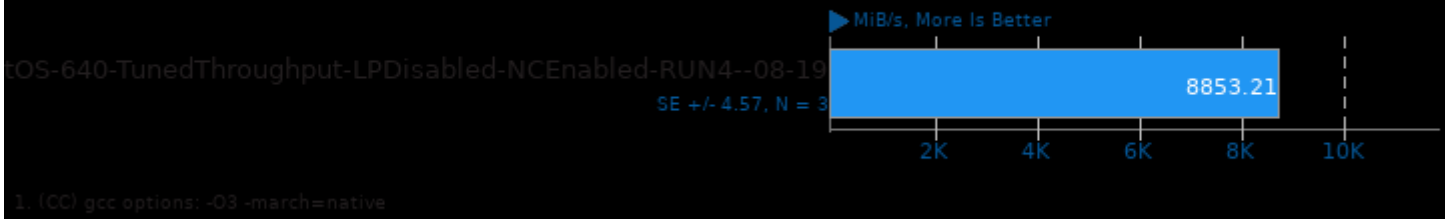
Test: Memory Copy, Fixed Block Size - Array Size: 1024 MiB



1. (CC) gcc options: -O3 -march=native

MBW 2018-09-08

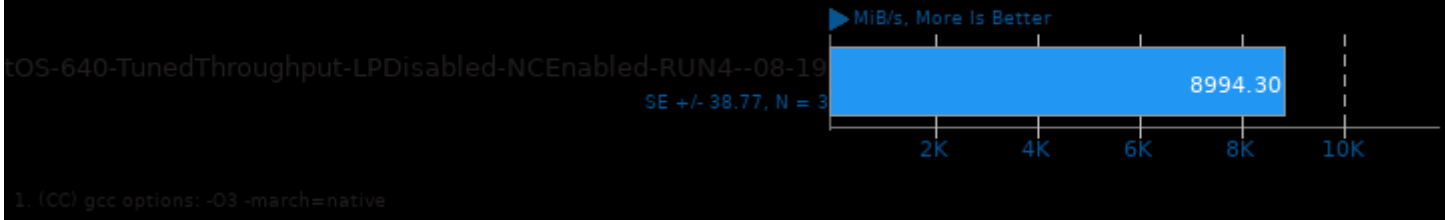
Test: Memory Copy, Fixed Block Size - Array Size: 512 MiB



1. (CC) gcc options: -O3 -march=native

MBW 2018-09-08

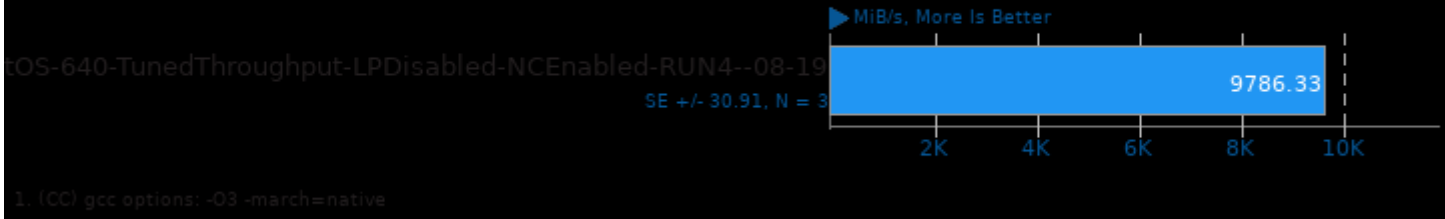
Test: Memory Copy, Fixed Block Size - Array Size: 128 MiB



1. (CC) gcc options: -O3 -march=native

MBW 2018-09-08

Test: Memory Copy - Array Size: 8192 MiB



1. (CC) gcc options: -O3 -march=native

MBW 2018-09-08

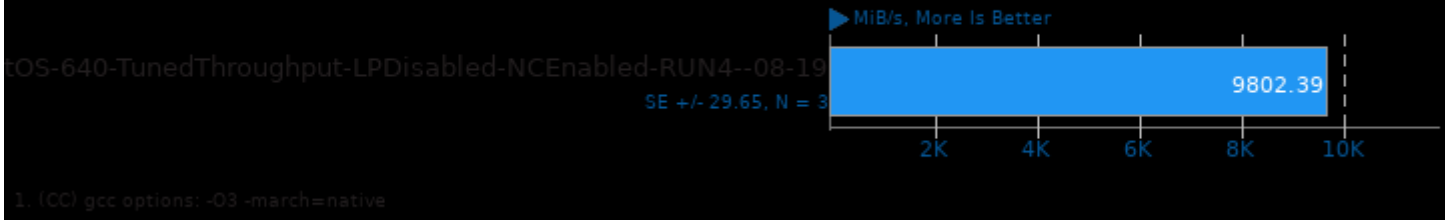
Test: Memory Copy - Array Size: 4096 MiB



1. (CC) gcc options: -O3 -march=native

MBW 2018-09-08

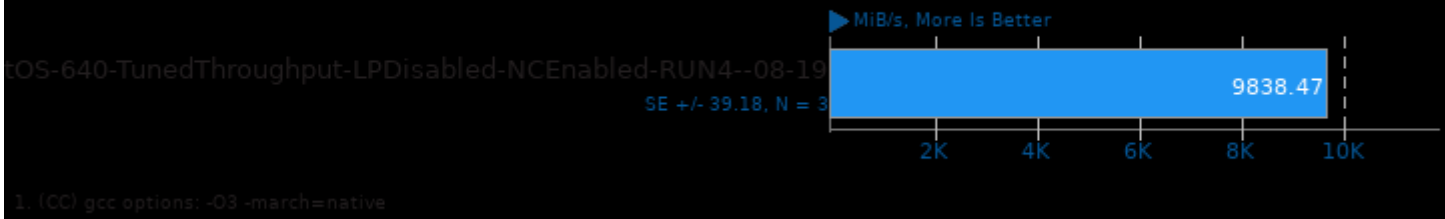
Test: Memory Copy - Array Size: 1024 MiB



1. (CC) gcc options: -O3 -march=native

MBW 2018-09-08

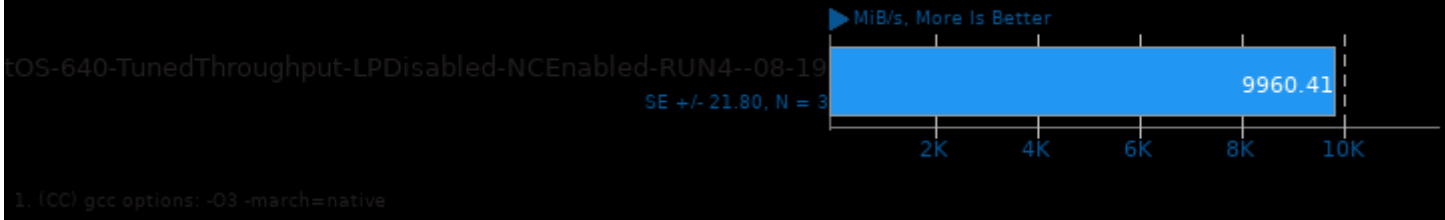
Test: Memory Copy - Array Size: 512 MiB



1. (CC) gcc options: -O3 -march=native

MBW 2018-09-08

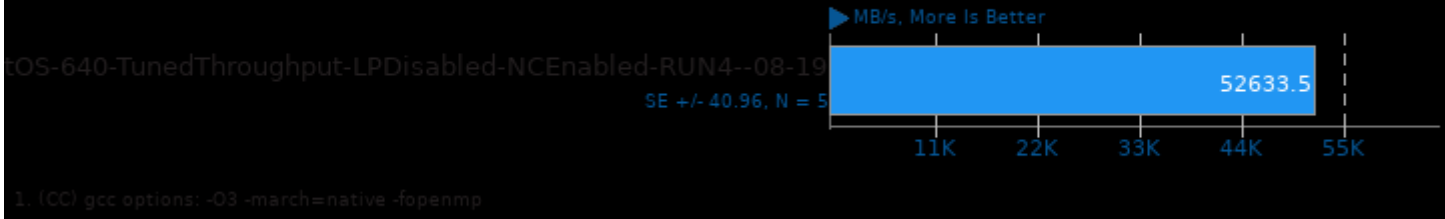
Test: Memory Copy - Array Size: 128 MiB



1. (CC) gcc options: -O3 -march=native

Stream 2013-01-17

Type: Add



1. (CC) gcc options: -O3 -march=native -fopenmp

Stream 2013-01-17

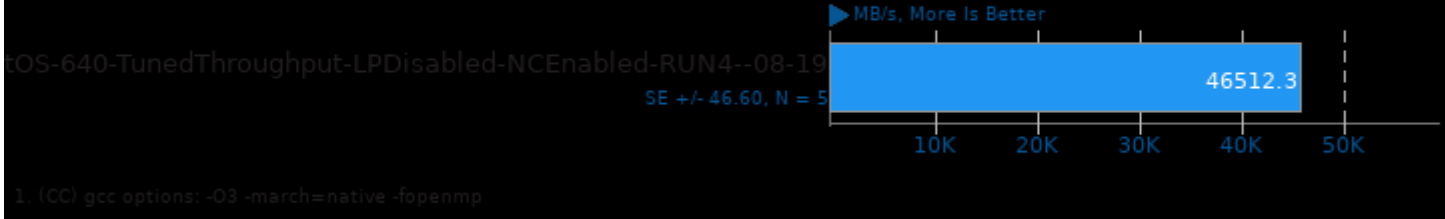
Type: Triad



1. (CC) gcc options: -O3 -march=native -fopenmp

Stream 2013-01-17

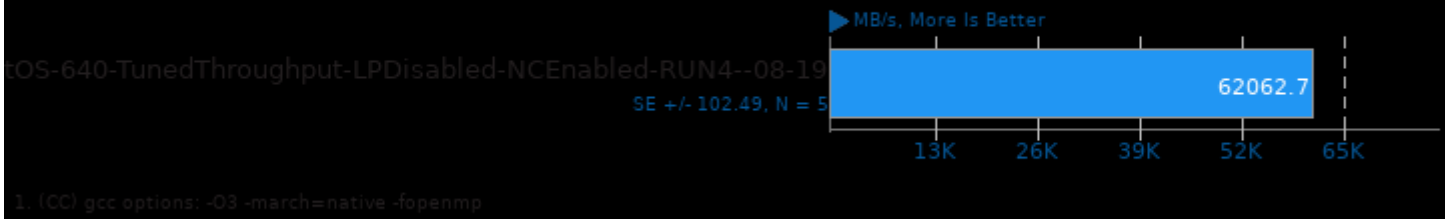
Type: Scale



1. (CC) gcc options: -O3 -march=native -fopenmp

Stream 2013-01-17

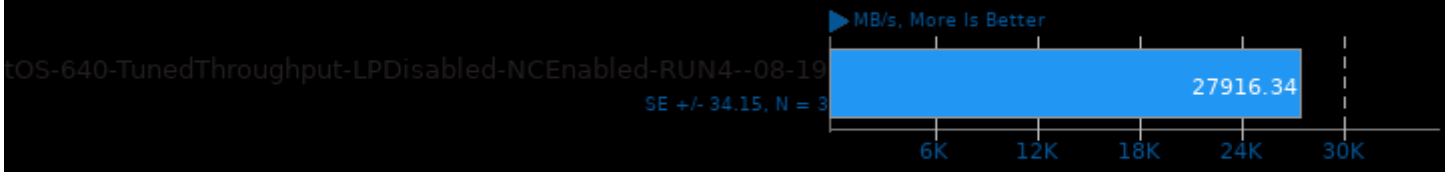
Type: Copy



1. (CC) gcc options: -O3 -march=native -fopenmp

RAMspeed SMP 3.5.0

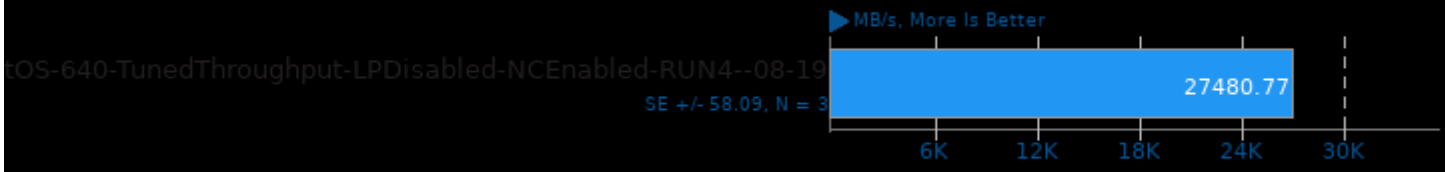
Type: Average - Benchmark: Floating Point



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

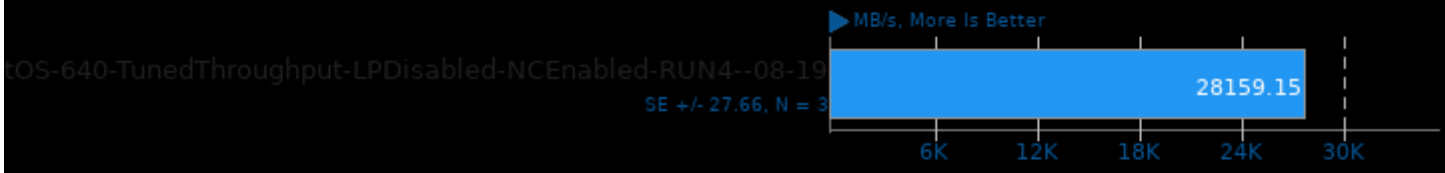
Type: Triad - Benchmark: Floating Point



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

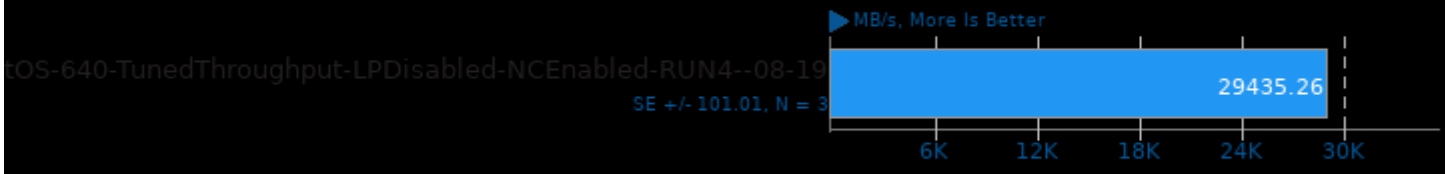
Type: Scale - Benchmark: Floating Point



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

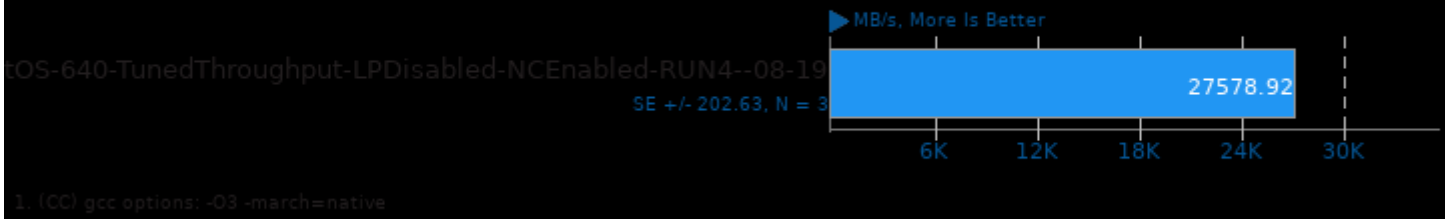
Type: Copy - Benchmark: Floating Point



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

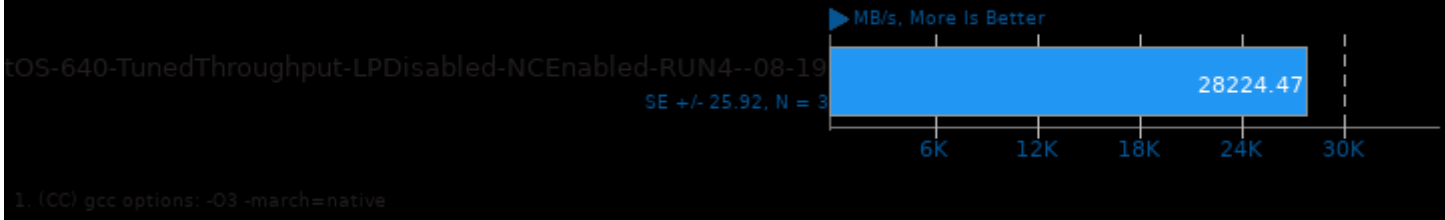
Type: Add - Benchmark: Floating Point



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

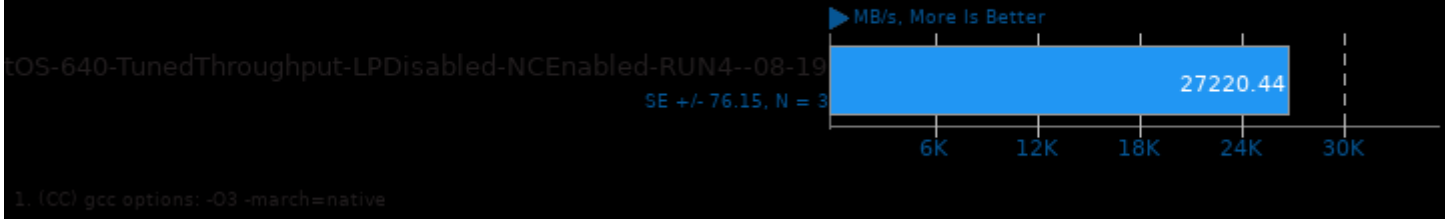
Type: Average - Benchmark: Integer



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

Type: Triad - Benchmark: Integer



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

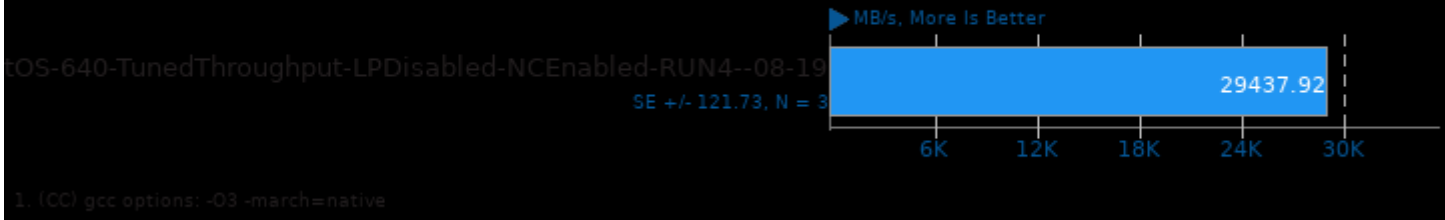
Type: Scale - Benchmark: Integer



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

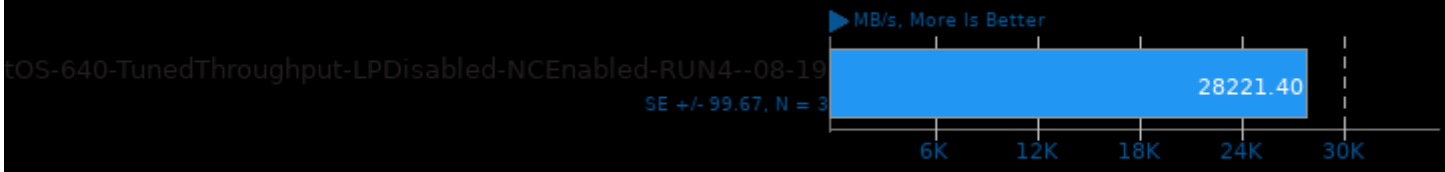
Type: Copy - Benchmark: Integer



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

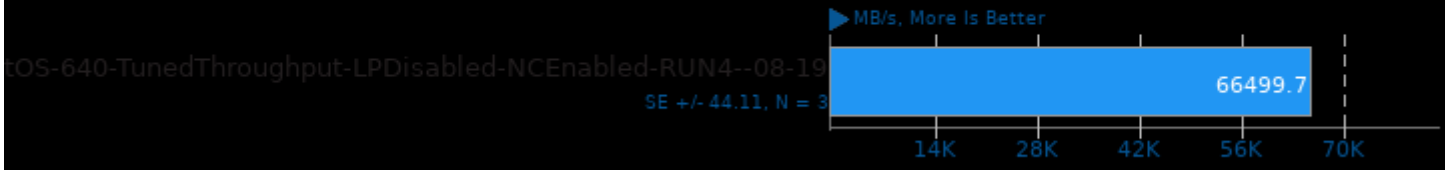
Type: Add - Benchmark: Integer



1. (CC) gcc options: -O3 -march=native

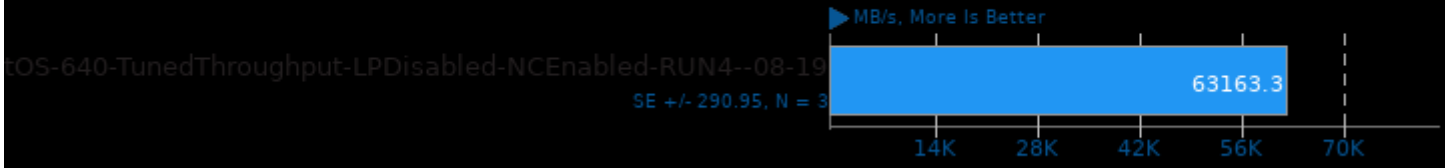
Intel Memory Latency Checker

Test: Peak Injection Bandwidth - Stream-Triad Like



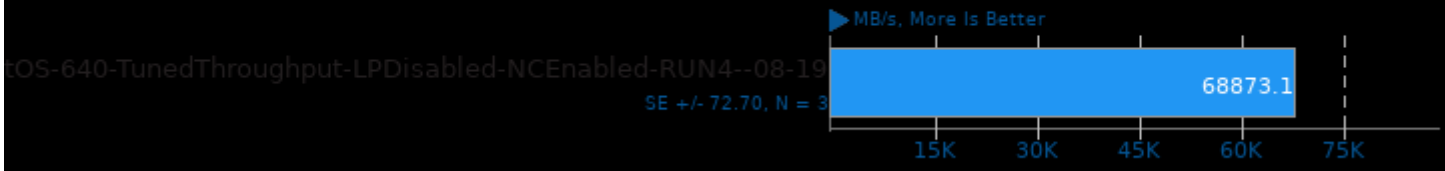
Intel Memory Latency Checker

Test: Peak Injection Bandwidth - 1:1 Reads-Writes



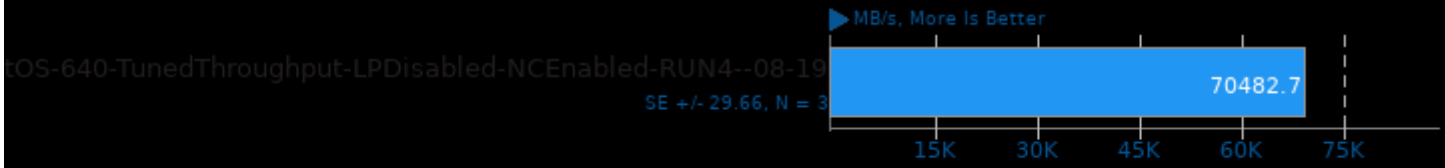
Intel Memory Latency Checker

Test: Peak Injection Bandwidth - 2:1 Reads-Writes



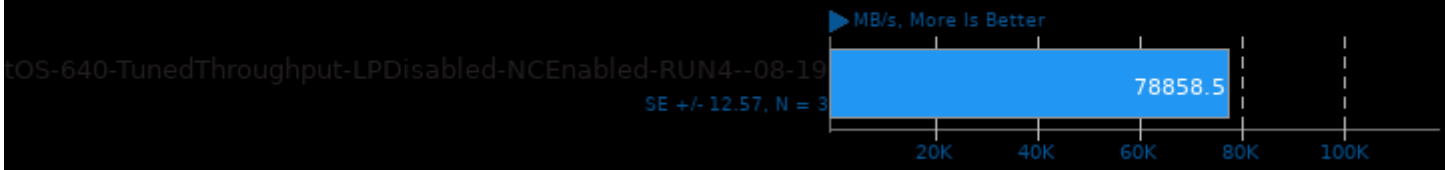
Intel Memory Latency Checker

Test: Peak Injection Bandwidth - 3:1 Reads-Writes

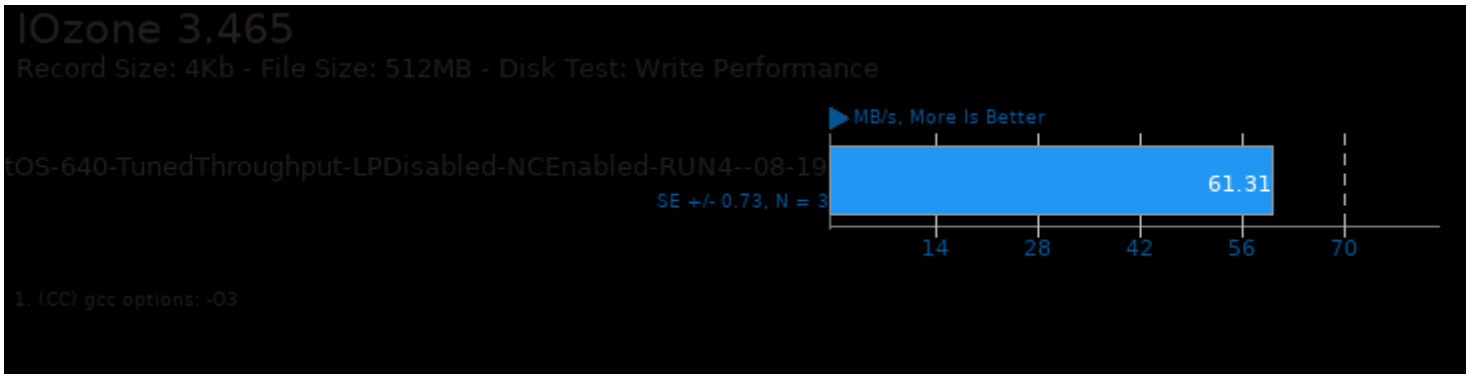


Intel Memory Latency Checker

Test: Peak Injection Bandwidth - All Reads




Intel Memory Latency Checker
Test: Max Bandwidth - Stream-Triad Like
MB/s, More Is Better
OS-640-TunedThroughput-LPDisabled-NCEnabled-RUN4--08-19
SE +/- 55.92, N = 3
72393.54
16K
32K
48K
64K
80K
Intel Memory Latency Checker
Test: Max Bandwidth - 1:1 Reads-Writes
MB/s, More Is Better
OS-640-TunedThroughput-LPDisabled-NCEnabled-RUN4--08-19
SE +/- 100.56, N = 3
63372.67
14K
28K
42K
56K
70K
Intel Memory Latency Checker
Test: Max Bandwidth - 2:1 Reads-Writes
MB/s, More Is Better
OS-640-TunedThroughput-LPDisabled-NCEnabled-RUN4--08-19
SE +/- 47.87, N = 3
68704.24
15K
30K
45K
60K
75K
Intel Memory Latency Checker
Test: Max Bandwidth - 3:1 Reads-Writes
MB/s, More Is Better
OS-640-TunedThroughput-LPDisabled-NCEnabled-RUN4--08-19
SE +/- 49.31, N = 3
70524.00
15K
30K
45K
60K
75K
Intel Memory Latency Checker
Test: Max Bandwidth - All Reads
MB/s, More Is Better
OS-640-TunedThroughput-LPDisabled-NCEnabled-RUN4--08-19
SE +/- 3.97, N = 3
79765.44
20K
40K
60K
80K
100K
Intel Memory Latency Checker
Test: Idle Latency
ns, Fewer Is Better
OS-640-TunedThroughput-LPDisabled-NCEnabled-RUN4--08-19
SE +/- 0.00, N = 3
68.5
15
30
45
60
75



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