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## **multicore-result**

ARMv8 rev 0 testing with a e3360\_1099 and NVIDIA TEGRA on Ubuntu 20.04 via the Phoronix Test Suite.

### **Test Systems:**

#### **mu\_co 7zip**

##### **mu\_co**

Processor: ARMv8 rev 0 @ 1.91GHz (8 Cores), Motherboard: e3360\_1099, Memory: 32GB, Disk: 125GB DUTA42, Graphics: NVIDIA TEGRA

OS: Ubuntu 20.04, Kernel: 5.10.41-tegra (aarch64), Display Server: X Server, Vulkan: 1.2.186, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 4096x2160

Kernel Notes: Transparent Huge Pages: always  
Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc=auto --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-target-system-zlib=auto -v

Processor Notes: Scaling Governor: tegra194 performance

Security Notes: itlb\_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec\_store\_bypass: Not affected + spectre\_v1: Mitigation of \_\_user pointer sanitization + spectre\_v2: Mitigation of Branch predictor hardening + srbds: Not affected + tsx\_async\_abort: Not affected

|  | mu_co | 7zip     | mu_co |
|--|-------|----------|-------|
| <b>7-Zip Compression - C.S.T (MIPS)</b>                      | 15335 |          |       |
| Standard Deviation   | 2.4%  |          |       |
| <b>ACES DGEMM - S.F.P.R (GFLOP/s)</b>                        |       | 0.584248 |       |
| Standard Deviation   |       | 0.2%     |       |
| <b>AOBench - 2048 x 2048 - Total Time (sec)</b>              |       | 80.306   |       |
| Standard Deviation   |       | 4.5%     |       |
| <b>ASKAP - tConvolve MPI - Degridding (Mpix/sec)</b>         |       | 1168     |       |
| Standard Deviation   |       | 0.9%     |       |
| <b>ASKAP - tConvolve MPI - Gridding (Mpix/sec)</b>           |       | 1109     |       |
| Standard Deviation   |       | 1.5%     |       |
| <b>Build2 - Time To Compile (sec)</b>                        |       | 1010     |       |
| Standard Deviation   |       | 2.2%     |       |
| <b>C-Ray - Total Time - 4.1.R.P.P (sec)</b>                  |       | 195.825  |       |
| Standard Deviation   |       | 2.2%     |       |
| <b>Coremark - CoreMark Size 666 - I.P.S (Iterations/Sec)</b> |       | 124686   |       |
| Standard Deviation   |       | 1%       |       |
| <b>FFmpeg - H.2.H.T.N.D (sec)</b>                            |       | 20.693   |       |
| Standard Deviation   |       | 2.4%     |       |
| <b>GraphicsMagick - HWB Color Space (Iterations/min)</b>     |       | 294      |       |
| Standard Deviation   |       | 1.4%     |       |
| <b>High Performance Conjugate Gradient (GFLOP/s)</b>         |       | 5.50072  |       |
| Standard Deviation   |       | 0.5%     |       |
| <b>Intel MPI Benchmarks - IMB-P2P PingPong (Msg/sec)</b>     |       | 1380584  |       |
| Standard Deviation   |       | 2%       |       |
| <b>John The Ripper - MD5 (Real C/S)</b>                      |       | 208295   |       |
| Standard Deviation   |       | 1.4%     |       |
| <b>m-queens - Time To Solve (sec)</b>                        |       | 222.068  |       |
| Standard Deviation   |       | 0.1%     |       |
| <b>MariaDB - 1 (Queries/sec)</b>                             |       | 1561     |       |
| Standard Deviation   |       | 2.2%     |       |
| <b>MariaDB - 8 (Queries/sec)</b>                             |       | 825      |       |
| Standard Deviation   |       | 0.2%     |       |
| <b>MariaDB - 16 (Queries/sec)</b>                            |       | 659      |       |
| Standard Deviation   |       | 0.6%     |       |
| <b>MariaDB - 32 (Queries/sec)</b>                            |       | 399      |       |
| Standard Deviation   |       | 0.6%     |       |
| <b>MariaDB - 64 (Queries/sec)</b>                            |       | 200      |       |
| Standard Deviation   |       | 0.1%     |       |
| <b>oneDNN - C.B.S.A - f32 - CPU (ms)</b>                     |       | 118.931  |       |
| Standard Deviation   |       | 1.4%     |       |
| <b>oneDNN - C.B.S.A - u8s8f32 - CPU (ms)</b>                 |       | 118.249  |       |
| Standard Deviation   |       | 1.8%     |       |
| <b>Parallel BZIP2 Compression - 2.F.C (sec)</b>              |       | 13.733   |       |
| Standard Deviation   |       | 7.3%     |       |
| <b>Pennant - sedovbig (Hydro Cycle Time - sec)</b>           |       | 143.4677 |       |

|   |                    |          |
|---|--------------------|----------|
|   | Standard Deviation | 0.8%     |
| <b>Pennant - leblancbig (Hydro Cycle Time - sec)</b>    |                    | 108.0833 |
|   | Standard Deviation | 1.2%     |
| <b>Rust Mandelbrot - T.T.C.S.P.M (sec)</b>              |                    | 137.630  |
|   | Standard Deviation | 0.9%     |
| <b>Rust Prime Benchmark - P.N.T.T.2.0.0 (sec)</b>       |                    | 39.804   |
|   | Standard Deviation | 2.1%     |
| <b>Smallpt - G.I.R.1.S (sec)</b>                        |                    | 39.555   |
|   | Standard Deviation | 1%       |
| <b>Stockfish - Total Time (Nodes/s)</b>                 |                    | 3854119  |
|   | Standard Deviation | 0.4%     |
| <b>Sysbench - CPU (Events/sec)</b>                      |                    | 11916    |
|   | Standard Deviation | 0.7%     |
| <b>Timed Apache Compilation - Time To Compile (sec)</b> |                    | 153.221  |
|   | Standard Deviation | 0.6%     |

## 7-Zip Compression 16.02

Compress Speed Test



1. (CXX) g++ options: -pipe -fthread

## ACES DGEMM 1.0

Sustained Floating-Point Rate



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

## AOBench

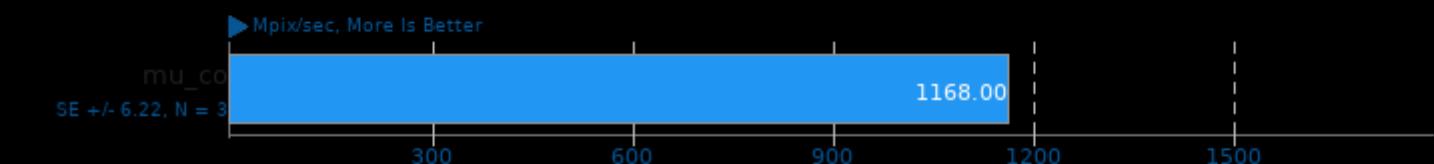
Size: 2048 x 2048 - Total Time



1. (CC) gcc options: -lm -O3

## ASKAP 1.0

Test: tConvolve MPI - Degridding



1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp

## ASKAP 1.0

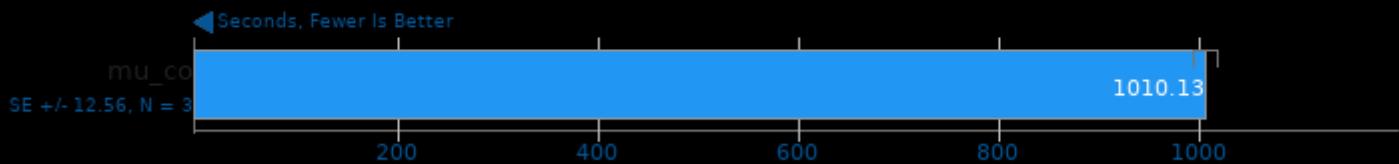
Test: tConvolve MPI - Gridding



1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp

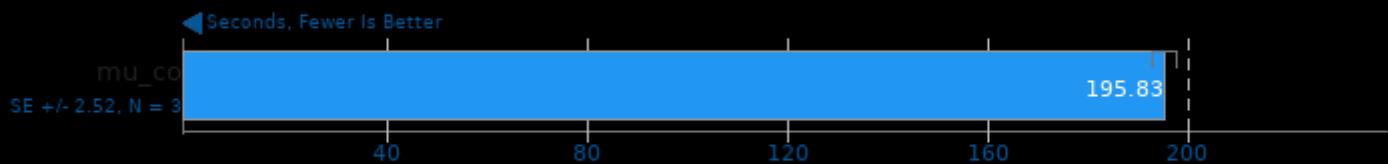
## Build2 0.13

Time To Compile



## C-Ray 1.1

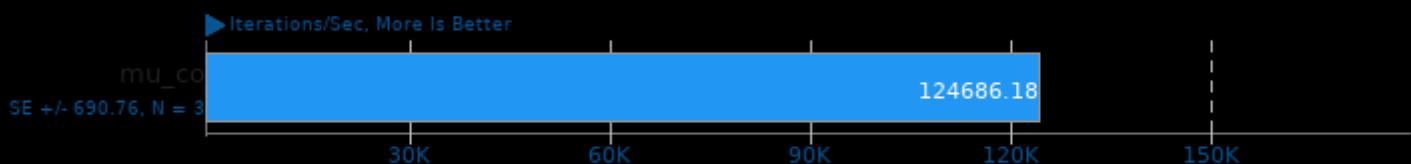
Total Time - 4K, 16 Rays Per Pixel



1. (CC) gcc options: -lm -lpthread -O3

## Coremark 1.0

CoreMark Size 666 - Iterations Per Second



1. (CC) gcc options: -O2 -fintc -fint

## FFmpeg 4.0.2

H.264 HD To NTSC DV



1. (CC) gcc options: -lavdevice -lavfilter -lavformat -lavcodec -lswresample -lswscale -lavutil -lm -lxcb -lasound -pthread -llzma -std=c11 -fomit-frame-pointer

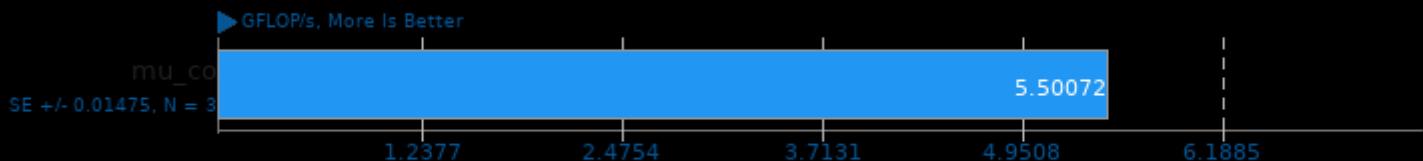
## GraphicsMagick 1.3.33

Operation: HWB Color Space



1. (CC) gcc options: -fopenmp -O2 -pthread -ljbig -lwebp -lwebpmux -ltiff -ljpeg -lXext -lSM -lICE -lX11 -llzma -lz -lm -lpthread

## High Performance Conjugate Gradient 3.1



## Intel MPI Benchmarks 2019.3

Test: IMB-P2P PingPong



## John The Ripper 1.9.0-jumbo-1

Test: MD5



## m-queens 1.2

Time To Solve



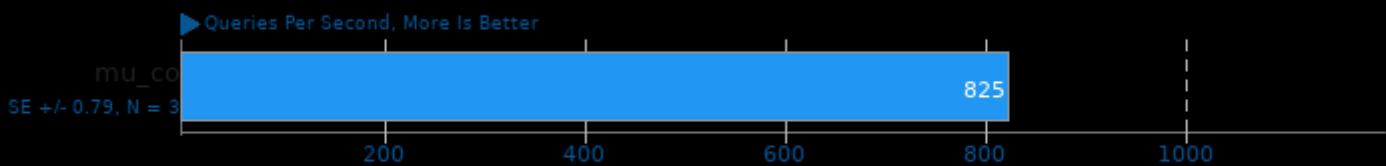
## MariaDB 10.6.4

Clients: 1



## MariaDB 10.6.4

Clients: 8



1. (CXX) g++ options: -pie -fPIC -fstack-protector -moutline-atomics -O3 -pthread -llzma -l numa -lpcre2-8 -lcrypt -laio -lz -lm -lssl -lcrypto -lpthread -ldl

## MariaDB 10.6.4

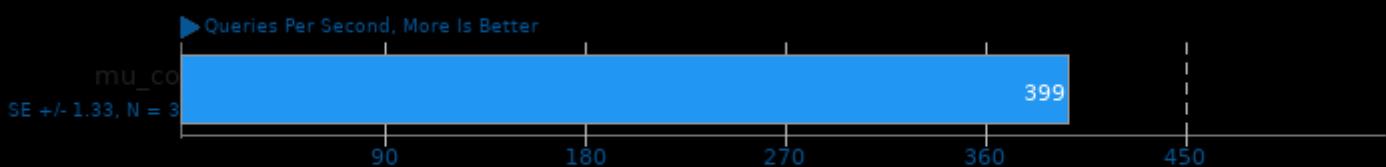
Clients: 16



1. (CXX) g++ options: -pie -fPIC -fstack-protector -moutline-atomics -O3 -pthread -llzma -l numa -lpcre2-8 -lcrypt -laio -lz -lm -lssl -lcrypto -lpthread -ldl

## MariaDB 10.6.4

Clients: 32



1. (CXX) g++ options: -pie -fPIC -fstack-protector -moutline-atomics -O3 -pthread -llzma -l numa -lpcre2-8 -lcrypt -laio -lz -lm -lssl -lcrypto -lpthread -ldl

## MariaDB 10.6.4

Clients: 64



1. (CXX) g++ options: -pie -fPIC -fstack-protector -moutline-atomics -O3 -pthread -llzma -l numa -lpcre2-8 -lcrypt -laio -lz -lm -lssl -lcrypto -lpthread -ldl

## oneDNN 2.1.2

Harness: Convolution Batch Shapes Auto - Data Type: f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -std=c++11 -fopenmp -mcpu=native -fPIC -pie -lpthread -ldl

## oneDNN 2.1.2

Harness: Convolution Batch Shapes Auto - Data Type: u8s8f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -std=c++11 -fopenmp -mcpu=native -fPIC -pie -lpthread -ldl

## Parallel BZIP2 Compression 1.1.12

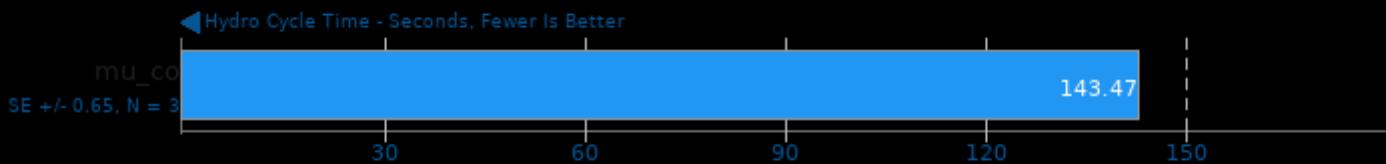
256MB File Compression



1. (CXX) g++ options: -O2 -pthread -lbz2 -lpthread

## Pennant 1.0.1

Test: sedovbig



1. (CXX) g++ options: -fopenmp -pthread -lmpi\_cxx -lmpi

## Pennant 1.0.1

Test: leblancbig



1. (CXX) g++ options: -fopenmp -pthread -lmpi\_cxx -lmpi

## Rust Mandelbrot

Time To Complete Serial/Parallel Mandelbrot



1. (CC) gcc options: -pie -nodefaultlibs -lgcc\_s -lutil -lrt -lpthread -lm -ldl -lc

## Rust Prime Benchmark

Prime Number Test To 200,000,000



1. (CC) gcc options: -pie -nodefaultlibs -lgcc\_s -lutil -lrt -lpthread -lm -ldl -lc

## Smallpt 1.0

Global Illumination Renderer; 128 Samples



1. (CXX) g++ options: -fopenmp -O3

## Stockfish 13

Total Time



1. (CXX) g++ options: -lgcov -lpthread -fno-exceptions -std=c++17 -fprofile-use -fno-peel-loops -fno-tracer -pedantic -O3 -fno-rtti -fno-rtti=jobserver

## Sysbench 1.0.20

Test: CPU



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

## Timed Apache Compilation 2.4.41

Time To Compile



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