



## R32\_4\_4\_Xavier-NX\_AN110\_Camera\_IMX290\_Dual\_1

ARMv8 rev 0 testing with a NVIDIA Jetson Xavier NX Developer Kit and NVIDIA Tegra Xavier on Ubuntu 18.04 via the Phoronix Test Suite.

### Test Systems:

#### eMMC

Processor: ARMv8 rev 0 @ 1.42GHz (6 Cores), Motherboard: NVIDIA Jetson Xavier NX Developer Kit, Memory: 8GB, Disk: 16GB Storage Media + 16GB DG4016, Graphics: NVIDIA TEGRA, Monitor: Acer KG241Q

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 1.0.0, Vulkan: 1.2.131, Compiler: GCC 7.5.0 + CUDA 10.2, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=glibc --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --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 -v  
Disk Notes: CFQ / data=ordered,relatime,rw

Processor Notes: Scaling Governor: tegra\_cpufreq schedutil

## eMMC\_W

Processor: ARMv8 rev 0 @ 1.42GHz (6 Cores), Motherboard: NVIDIA Jetson Xavier NX Developer Kit, Memory: 8GB, Disk: 16GB Storage Media + 16GB DG4016, Graphics: NVIDIA TEGRA, Monitor: Acer KG241Q

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 1.0.0, OpenGL: 4.6.0, Vulkan: 1.2.131, Compiler: GCC 7.5.0 + CUDA 10.2, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=glibc --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --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 -v  
Processor Notes: Scaling Governor: tegra\_cpufreq schedutil  
Disk Mount Options Notes: data=ordered,relatime,rw

## usb3.0

### usb3.0\_w

### usb2.0

Processor: ARMv8 rev 0 @ 1.42GHz (6 Cores), Motherboard: NVIDIA Jetson Xavier NX Developer Kit, Memory: 8GB, Disk: 16GB Storage Media + 16GB DG4016, Graphics: NVIDIA TEGRA, Monitor: Acer KG241Q

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 1.0.0, OpenGL: 4.6.0, Vulkan: 1.2.131, Compiler: GCC 7.5.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=glibc --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --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 -v  
Disk Notes: CFQ / data=ordered,relatime,rw  
Processor Notes: Scaling Governor: tegra\_cpufreq schedutil

## sd

### sd\_w

## Memory

### cpu

Processor: ARMv8 rev 0 @ 1.42GHz (6 Cores), Motherboard: NVIDIA Jetson Xavier NX Developer Kit, Memory: 8GB, Disk: 16GB DG4016 + 31GB SD32G, Graphics: NVIDIA Tegra Xavier, Monitor: Acer KG241Q

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 32.4.4, OpenGL: 4.6.0, Vulkan: 1.2.131, Compiler: GCC 7.5.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=glibc --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --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 -v

Processor Notes: Scaling Governor: tegra\_cpufreq schedutil

## RS232\_UART

Processor: ARMv8 rev 0 @ 1.42GHz (6 Cores), Motherboard: NVIDIA Jetson Xavier NX Developer Kit, Memory: 8GB, Disk: 16GB DG4016, Graphics: NVIDIA Tegra Xavier, Monitor: Acer KG241Q

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: Unity 7.5.0, Display Server: X Server 1.19.6, Display Driver: NVIDIA 32.4.4, OpenGL: 4.6.0, Vulkan: 1.2.131, Compiler: GCC 7.5.0, File-System: ext4, Screen Resolution: 1920x1080

Processor Notes: Scaling Governor: tegra\_cpufreq schedutil

|   | eMMC  | eMMC_<br>W | usb3.0 | usb3.0_<br>w | usb2.0 | sd     | sd_w   | Memory | cpu | RS232_U<br>ART |
|---|-------|------------|--------|--------------|--------|--------|--------|--------|-----|----------------|
| Flexible IO Tester -<br>Seq Read - Linux<br>AIO - No - Yes -<br>4KB (MB/s)  | 147   |            | 102    |              | 17.6   | 55.1   |        |        |     |                |
| Normalized  | 100%  |            | 69.39% |              | 11.97% | 37.48% |        |        |     |                |
| Standard Deviation  | 3.7%  |            | 1%     |              | 0%     | 0.5%   |        |        |     |                |
| Flexible IO Tester -<br>Seq Read - Linux<br>AIO - No - Yes -<br>4KB (IOPS)  | 37527 |            | 26100  |              | 4510   | 14100  |        |        |     |                |
| Normalized  | 100%  |            | 69.55% |              | 12.02% | 37.57% |        |        |     |                |
| Standard Deviation  | 3.8%  |            | 0.8%   |              | 0%     | 0.7%   |        |        |     |                |
| Flexible IO Tester -<br>Seq Read - Linux<br>AIO - No - Yes -<br>8MB (MB/s)  | 305   |            | 163    |              |        | 102    |        |        |     |                |
| Normalized  | 100%  |            | 53.44% |              |        | 33.44% |        |        |     |                |
| Standard Deviation  | 3%    |            |        |              |        | 1%     |        |        |     |                |
| Flexible IO Tester -<br>Seq Read - Linux<br>AIO - No - Yes -<br>8MB (IOPS)  | 35    |            | 17     |              |        | 9      |        |        |     |                |
| Normalized  | 100%  |            | 48.57% |              |        | 25.71% |        |        |     |                |
| Standard Deviation  | 4.4%  |            |        |              |        |        |        |        |     |                |
| Flexible IO Tester -<br>Seq Write - Linux<br>AIO - No - Yes -<br>4KB (MB/s) |       | 69.9       |        | 18.8         |        |        | 14.9   |        |     |                |
| Normalized  |       | 100%       |        | 26.9%        |        |        | 21.32% |        |     |                |
| Standard Deviation  |       | 6.5%       |        | 36.6%        |        |        | 2.3%   |        |     |                |

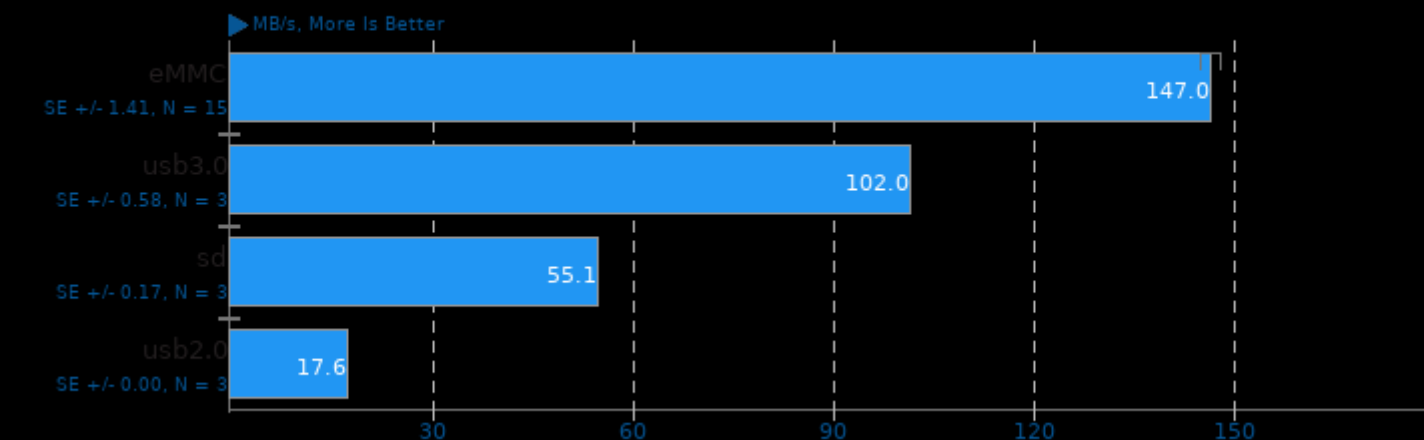
|   |       |        |        |
|---|-------|--------|--------|
| Flexible IO Tester -<br>Seq Write - Linux<br>AIO - No - Yes -<br>4KB (IOPS) | 17860 | 4855   | 3812   |
| Normalized  | 100%  | 27.18% | 21.34% |
| Standard Deviation  | 6.6%  | 36.3%  | 2.6%   |
| Flexible IO Tester -<br>Seq Write - Linux<br>AIO - No - Yes -<br>8MB (MB/s) | 92.9  | 33.9   | 57.6   |
| Normalized  | 100%  | 36.49% | 62%    |
| Standard Deviation  | 4.7%  | 1.7%   | 1.5%   |
| Flexible IO Tester -<br>Seq Write - Linux<br>AIO - No - Yes -<br>8MB (IOPS) | 8     | 1      | 4      |
| Normalized  | 100%  | 12.5%  | 50%    |
| Standard Deviation  | 7.9%  | 43.3%  |        |
| Stream - Copy<br>(MB/s)   |       |        | 29759  |
| Standard Deviation  |       |        | 1.1%   |
| Stream - Scale<br>(MB/s)  |       |        | 29456  |
| Standard Deviation  |       |        | 2.4%   |
| Stream - Triad<br>(MB/s)  |       |        | 28934  |
| Standard Deviation  |       |        | 1.1%   |
| Stream - Add  |       |        | 28591  |
| Standard Deviation  |       |        | 1.3%   |
| Stress-NG - Crypto<br>(Bogo Ops/s)  |       |        | 596.84 |
| Standard Deviation  |       |        | 1.5%   |
| Stress-NG - Forking<br>(Bogo Ops/s)   |       |        | 4092   |
| Standard Deviation  |       |        | 1.2%   |
| Stress-NG - CPU<br>Stress (Bogo   |       |        | 463.57 |
| Standard Deviation  |       |        | 3.6%   |
| Stress-NG - Matrix  |       |        | 6698   |
| Math (Bogo Ops/s)   |       |        |        |
| Standard Deviation  |       |        | 0.6%   |
| Stress-NG - Vector  |       |        | 25479  |
| Math (Bogo Ops/s)   |       |        |        |
| Standard Deviation  |       |        | 0.3%   |
| Stress-NG -<br>Memory Copying<br>(Bogo Ops/s)                               |       |        | 1841   |
| Standard Deviation  |       |        | 0.2%   |
| Stress-NG - G.C.S.F<br>(Bogo Ops/s)   |       |        | 120311 |
| Standard Deviation  |       |        | 3.9%   |

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|                    |       |
|--------------------|-------|
| Stress-NG -        | 28.35 |
| G.Q.D.S (Bogo      |       |
| Standard Deviation | 10.9% |

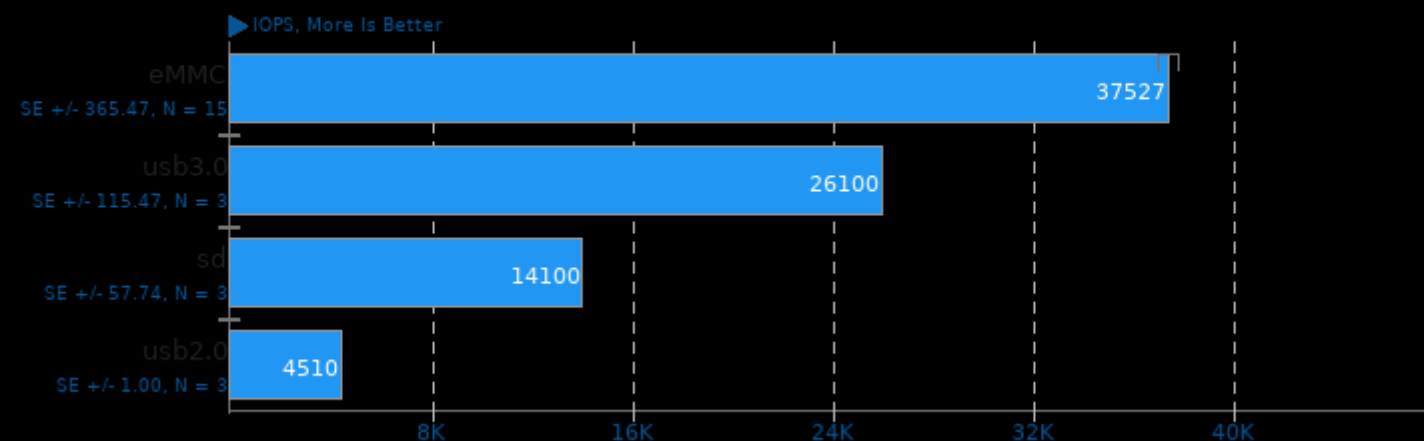
## Flexible IO Tester 3.25

Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory



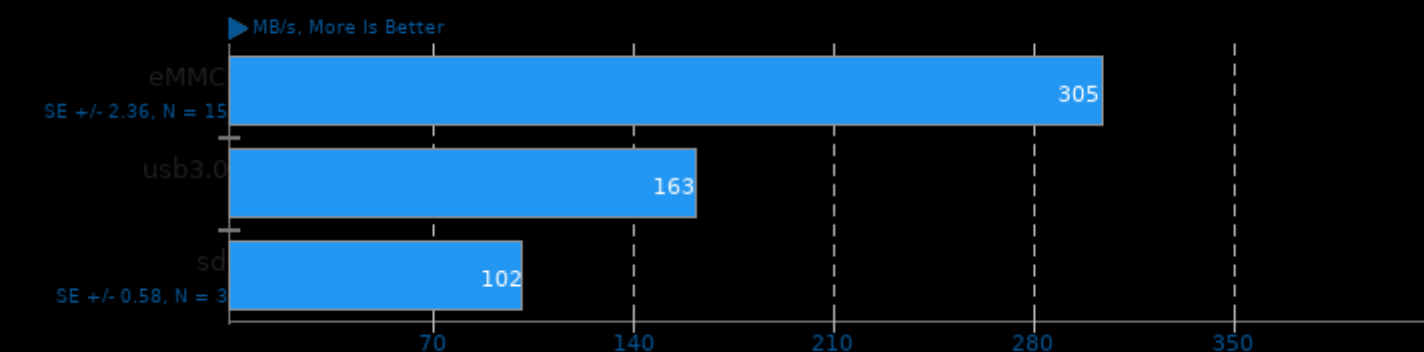
## Flexible IO Tester 3.25

Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory



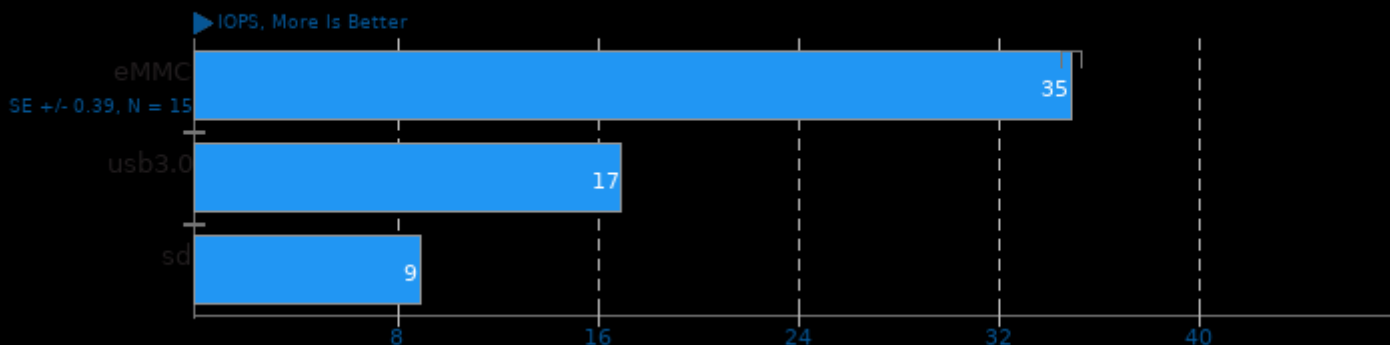
## Flexible IO Tester 3.25

Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory



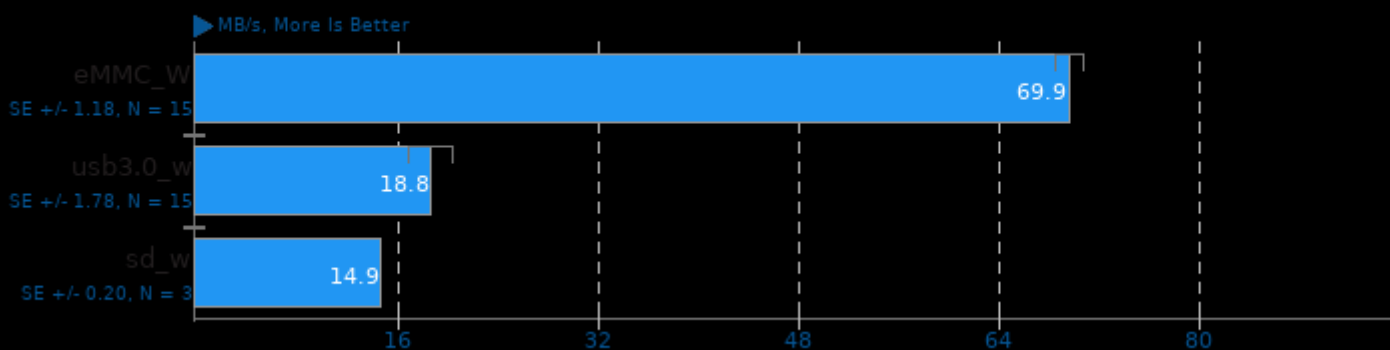
## Flexible IO Tester 3.25

Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory



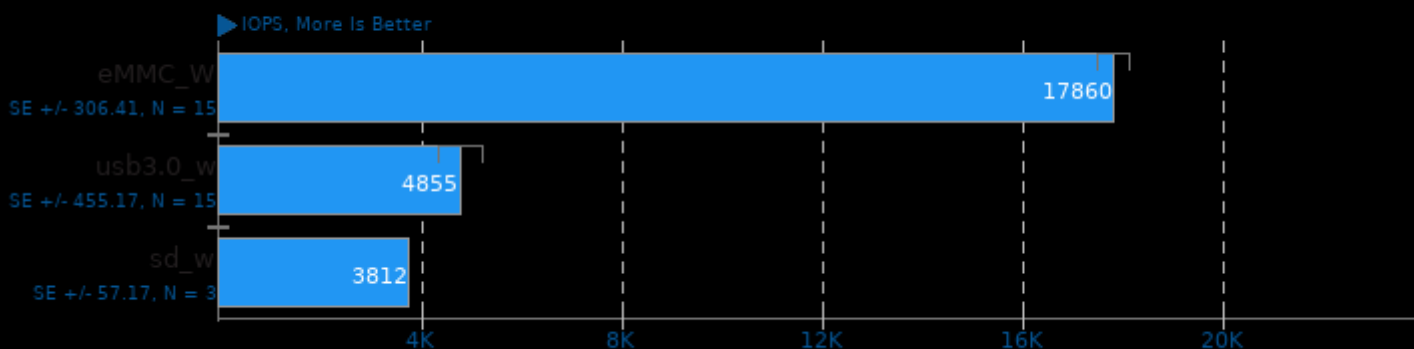
## Flexible IO Tester 3.25

Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory



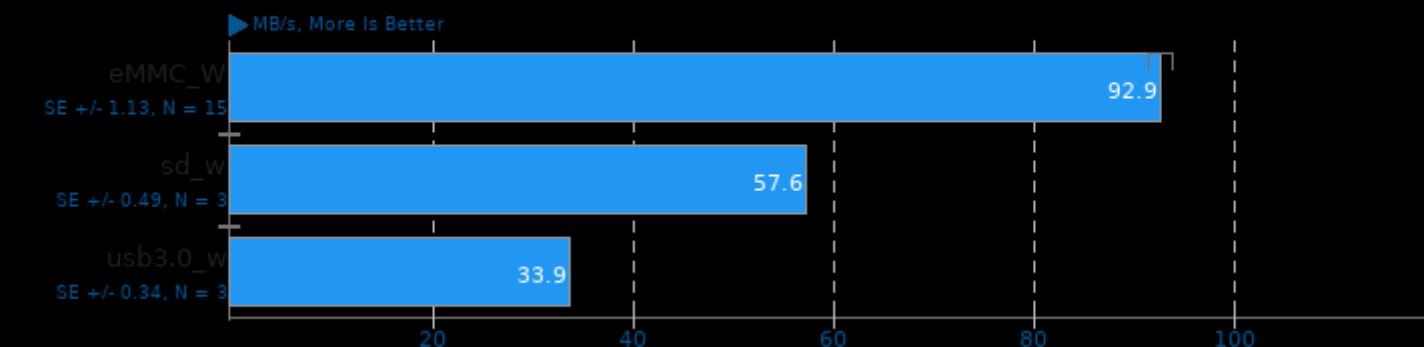
## Flexible IO Tester 3.25

Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory



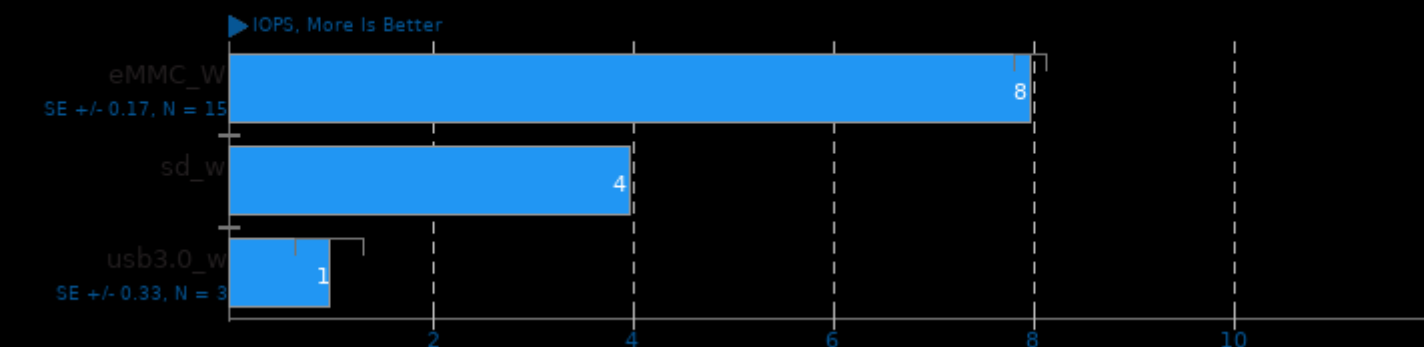
## Flexible IO Tester 3.25

Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory



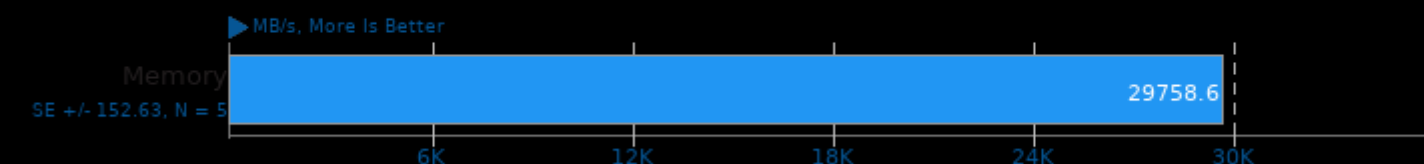
## Flexible IO Tester 3.25

Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory



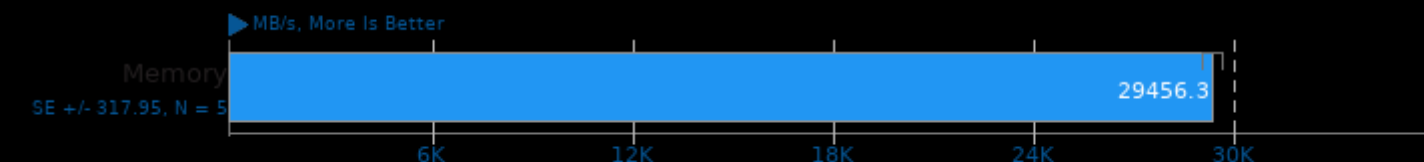
## Stream 2013-01-17

Type: Copy



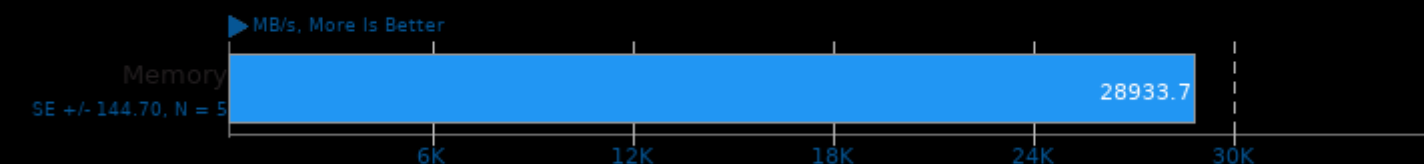
## Stream 2013-01-17

Type: Scale



## Stream 2013-01-17

Type: Triad





## Stream 2013-01-17

Type: Add



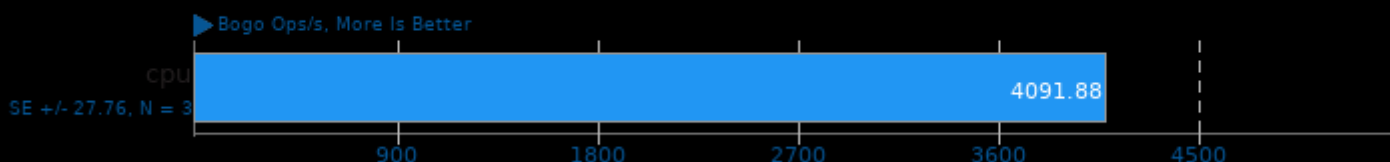
## Stress-NG 0.11.07

Test: Crypto



## Stress-NG 0.11.07

Test: Forking



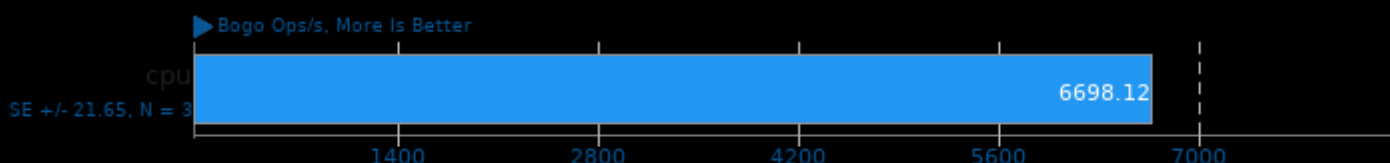
## Stress-NG 0.11.07

Test: CPU Stress



## Stress-NG 0.11.07

Test: Matrix Math



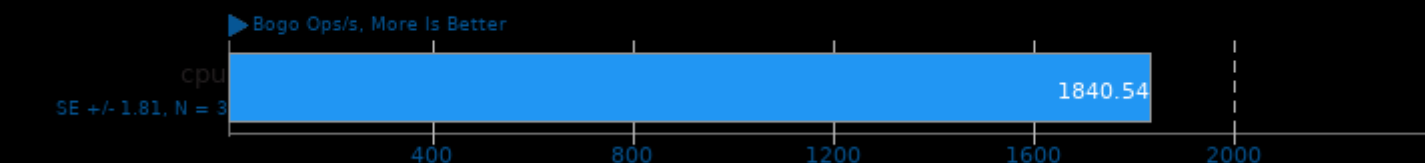
## Stress-NG 0.11.07

Test: Vector Math



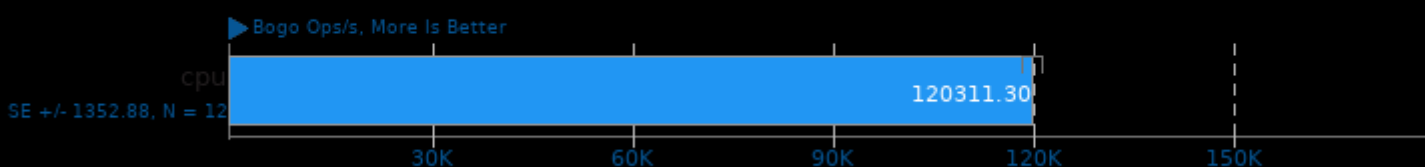
## Stress-NG 0.11.07

Test: Memory Copying



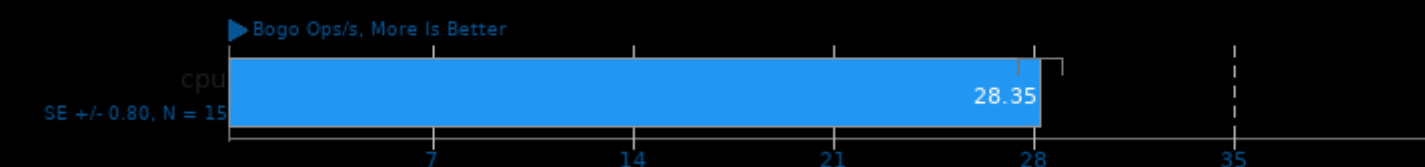
## Stress-NG 0.11.07

Test: Glibc C String Functions



## Stress-NG 0.11.07

Test: Glibc Qsort Data Sorting



## Serial Loopback Test

/dev/ttyTHS0, /dev/ttyTHS1, /dev/ttyTHS4



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