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# AMDGPU-PRO vs. Linux 4.7 + Mesa 12.1-dev Ubuntu 16.04 Linux

AMDGPU-PRO BETA 2 vs. Mesa 12.1-dev + Linux 4.7 Git graphics benchmarks. Tests by Michael Larabel.

**Automated Executive Summary**

*AMDGPU-PRO: R9 Fury had the most wins, coming in first place for 83% of the tests.*

*Based on the geometric mean of all complete results, the fastest (AMDGPU-PRO: R9 Fury) was 4.78x the speed of the slowest (Linux 4.7 + Mesa 12.1 Git: R9 290). AMDGPU-PRO: R9 290 was 0.6x the speed of AMDGPU-PRO: R9 285, AMDGPU-PRO: R9 Fury was 2.722x the speed of AMDGPU-PRO: R9 290, Linux 4.7 + Mesa 12.1 Git: R9 285 was 0.566x the speed of AMDGPU-PRO: R9 Fury, Linux 4.7 + Mesa 12.1 Git: R9 290 was 0.369x the speed of Linux 4.7 + Mesa 12.1 Git: R9 285, Linux 4.7 + Mesa 12.1 Git: R9 Fury was 4.544x the speed of Linux 4.7 + Mesa 12.1 Git: R9 290.*

## Test Systems:

### AMDGPU-PRO: R9 285

Processor: Intel Xeon E3-1280 v5 @ 4.00GHz (8 Cores), Motherboard: MSI C236A WORKSTATION (MS-7998) v1.0,

Chipset: Intel Sky Lake, Memory: 16384MB, Disk: Samsung SSD 950 PRO 256GB, Graphics: XFX AMD Radeon R9 200 2048MB, Audio: Realtek ALC1150, Network: Intel Connection

OS: Ubuntu 16.04, Kernel: 4.4.0-22-generic (x86_64), Desktop: Unity 7.4.0, OpenGL: 4.5.13439, OpenCL: OpenCL 2.0 AMD-APP (2079.3), Compiler: GCC 5.3.1 20160413, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: intel_pstate performance
Graphics Notes: GLAMOR

## AMDGPU-PRO: R9 290

Processor: Intel Xeon E3-1280 v5 @ 4.00GHz (8 Cores), Motherboard: MSI C236A WORKSTATION (MS-7998) v1.0, Chipset: Intel Sky Lake, Memory: 16384MB, Disk: Samsung SSD 950 PRO 256GB, Graphics: XFX AMD Radeon R9 200 4096MB, Audio: Realtek ALC1150, Network: Intel Connection

OS: Ubuntu 16.04, Kernel: 4.4.0-22-generic (x86_64), Desktop: Unity 7.4.0, OpenGL: 4.5.13439, OpenCL: OpenCL 2.0 AMD-APP (2079.3), Compiler: GCC 5.3.1 20160413, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: intel_pstate performance
Graphics Notes: GLAMOR

## AMDGPU-PRO: R9 Fury

Processor: Intel Xeon E3-1280 v5 @ 4.00GHz (8 Cores), Motherboard: MSI C236A WORKSTATION (MS-7998) v1.0, Chipset: Intel Sky Lake, Memory: 16384MB, Disk: Samsung SSD 950 PRO 256GB, Graphics: Sapphire AMD Radeon R9 Fury 4096MB, Audio: Realtek ALC1150, Network: Intel Connection

OS: Ubuntu 16.04, Kernel: 4.4.0-22-generic (x86_64), Desktop: Unity 7.4.0, OpenGL: 4.5.13439, OpenCL: OpenCL 2.0 AMD-APP (2079.3), Compiler: GCC 5.3.1 20160413, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: intel_pstate performance
Graphics Notes: GLAMOR

## Linux 4.7 + Mesa 12.1 Git: R9 285

Processor: Intel Xeon E3-1280 v5 @ 4.00GHz (8 Cores), Motherboard: MSI C236A WORKSTATION (MS-7998) v1.0, Chipset: Intel Sky Lake, Memory: 16384MB, Disk: Samsung SSD 950 PRO 256GB, Graphics: XFX AMD Radeon R9 285/380 2048MB, Audio: Realtek ALC1150, Monitor: DELL P2415Q, Network: Intel Connection

OS: Ubuntu 16.04, Kernel: 4.7.0-999-generic (x86_64) 20160608, Desktop: Unity 7.4.0, Display Driver: modesetting 1.18.3, OpenGL: 4.3 Mesa 12.1.0-devel- padoka PPA (git-42624ea) Gallium 0.4, Compiler: GCC 5.3.1 20160413, File-System: ext4, Screen Resolution: 3840x2160

Processor Notes: Scaling Governor: intel_pstate performance

Graphics Notes: GLAMOR

## Linux 4.7 + Mesa 12.1 Git: R9 290

Processor: Intel Xeon E3-1280 v5 @ 4.00GHz (8 Cores), Motherboard: MSI C236A WORKSTATION (MS-7998) v1.0, Chipset: Intel Sky Lake, Memory: 16384MB, Disk: Samsung SSD 950 PRO 256GB, Graphics: XFX AMD Radeon R9 290 4096MB, Audio: Realtek ALC1150, Monitor: DELL P2415Q, Network: Intel Connection

OS: Ubuntu 16.04, Kernel: 4.7.0-999-generic (x86_64) 20160608, Desktop: Unity 7.4.0, Display Driver: modesetting 1.18.3, OpenGL: 4.3 Mesa 12.1.0-devel- padoka PPA (git-42624ea) Gallium 0.4, Compiler: GCC 5.3.1 20160413, File-System: ext4, Screen Resolution: 3840x2160

Processor Notes: Scaling Governor: intel_pstate performance
Graphics Notes: GLAMOR

## Linux 4.7 + Mesa 12.1 Git: R9 Fury

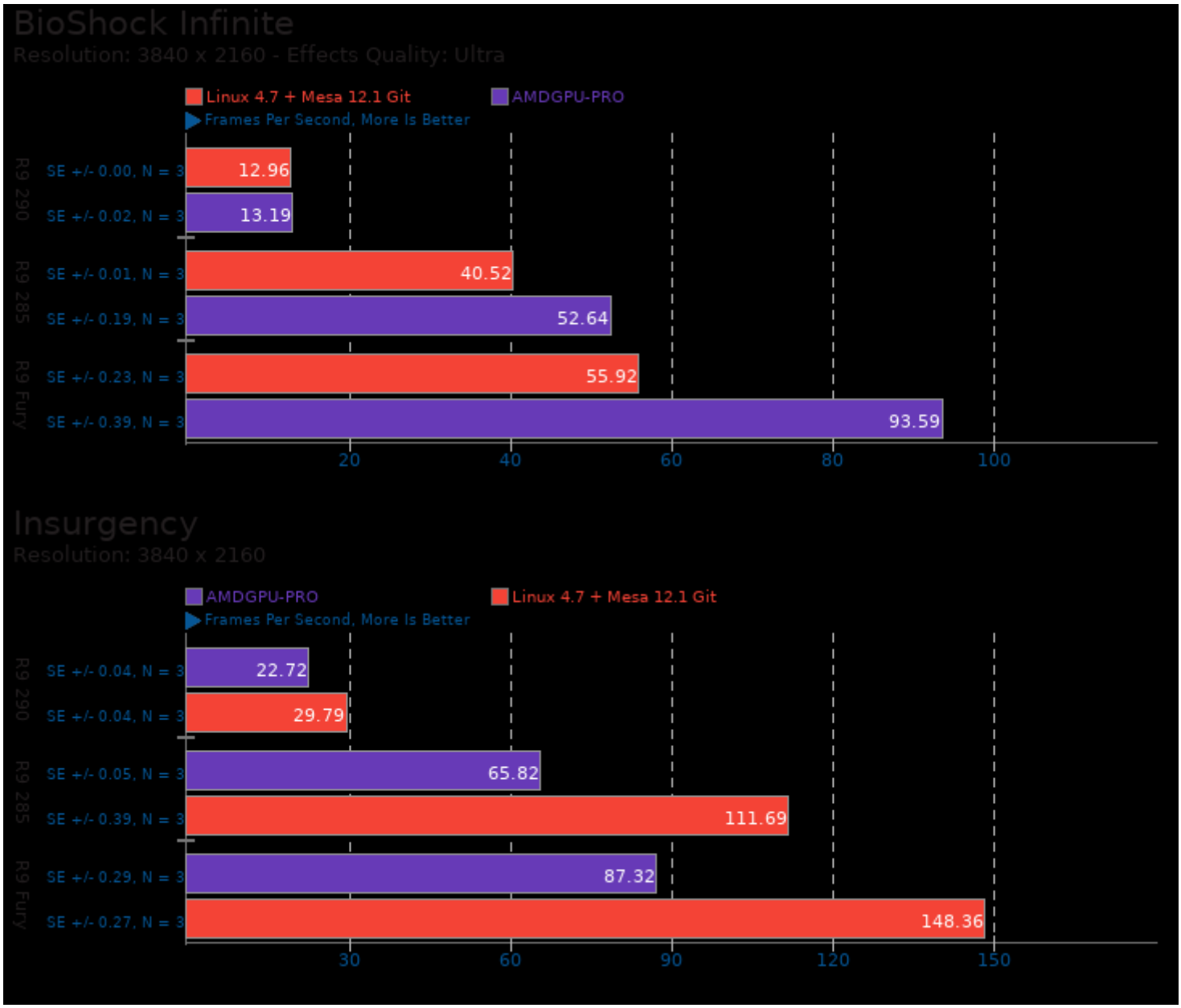
Processor: Intel Xeon E3-1280 v5 @ 4.00GHz (8 Cores), Motherboard: MSI C236A WORKSTATION (MS-7998) v1.0, Chipset: Intel Sky Lake, Memory: 16384MB, Disk: Samsung SSD 950 PRO 256GB, Graphics: Sapphire AMD Radeon R9 FURY / NANO 4096MB, Audio: Realtek ALC1150, Monitor: DELL P2415Q, Network: Intel Connection

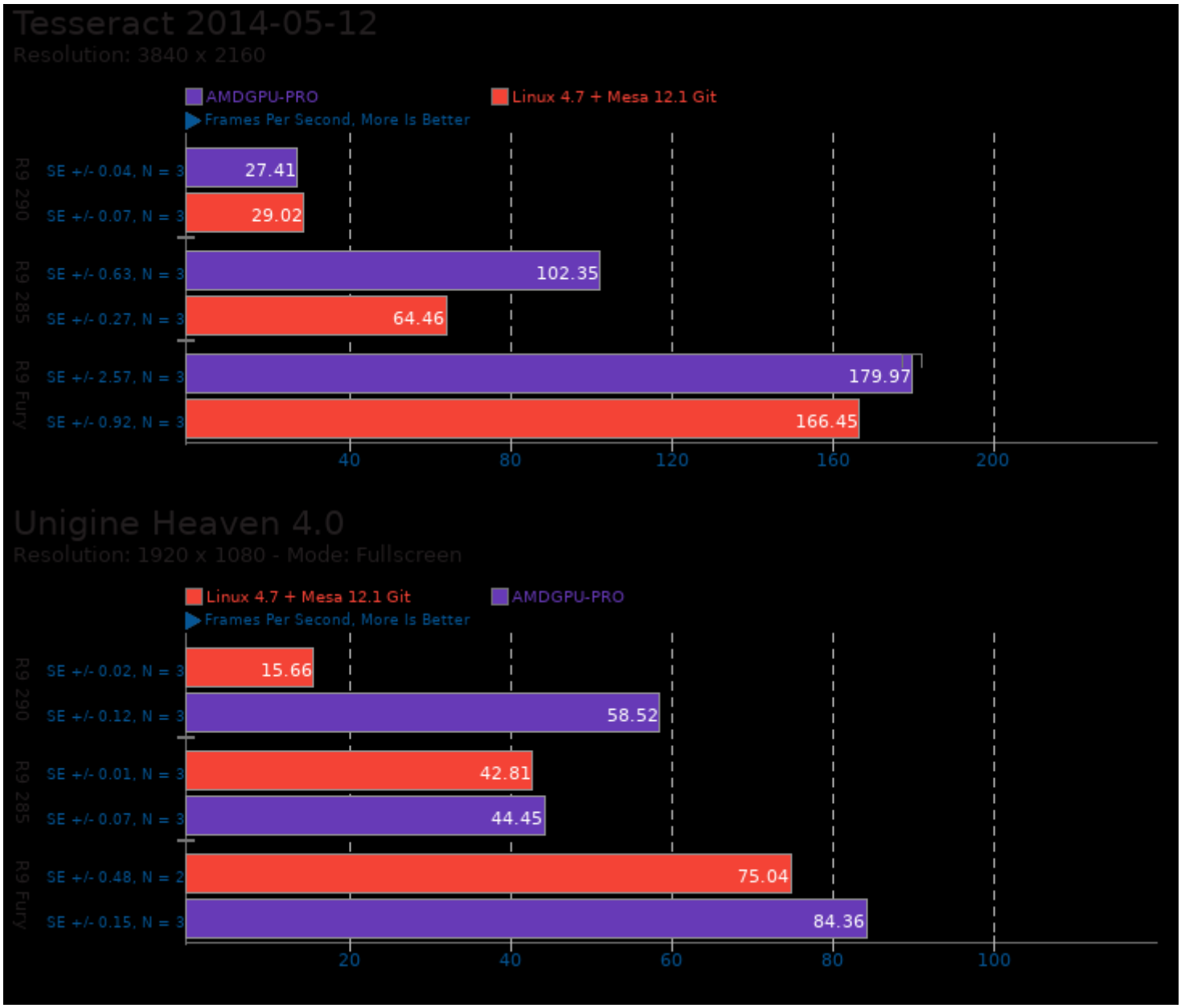
OS: Ubuntu 16.04, Kernel: 4.7.0-999-generic (x86_64) 20160608, Desktop: Unity 7.4.0, Display Driver: modesetting 1.18.3, OpenGL: 4.3 Mesa 12.1.0-devel- padoka PPA (git-42624ea) Gallium 0.4, Compiler: GCC 5.3.1 20160413, File-System: ext4, Screen Resolution: 3840x2160

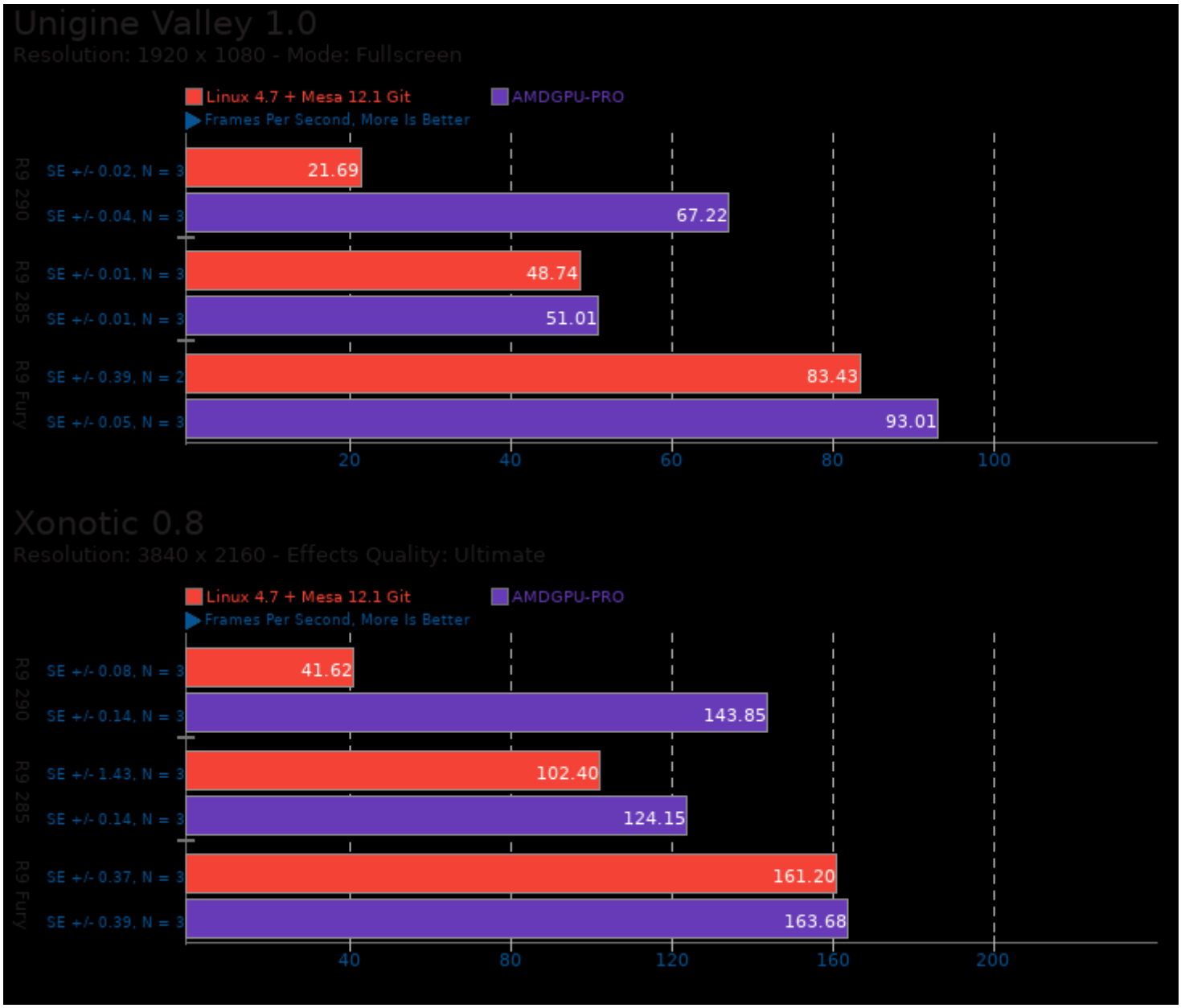
Processor Notes: Scaling Governor: intel_pstate performance
Graphics Notes: GLAMOR

| | AMDGPU-PRO: R9 285 | AMDGPU-PRO: R9 290 | AMDGPU-PRO: R9 Fury | Linux 4.7 + Mesa 12.1 Git: R9 285 | Linux 4.7 + Mesa 12.1 Git: R9 290 | Linux 4.7 + Mesa 12.1 Git: R9 Fury |
|---|---|---|---|---|---|---|
| **BioShock Infinite - 3840 x 2160 - Ultra (FPS)** | 52.64 | 13.19 | **93.59** | 40.52 | **12.96** | 55.92 |
| **Normalized** | 56.25% | 14.09% | 100% | 43.3% | 13.85% | 59.75% |
| **Standard Deviation** | 0.6% | 0.3% | 0.7% | 0% | 0% | 0.7% |
| **Insurgency - 3840 x 2160 (FPS)** | 65.82 | **22.72** | 87.32 | 111.69 | 29.79 | **148.36** |
| **Normalized** | 44.37% | 15.31% | 58.86% | 75.28% | 20.08% | 100% |
| **Standard Deviation** | 0.1% | 0.3% | 0.6% | 0.6% | 0.2% | 0.3% |
| **Tesseract - 3840 x 2160** | 102.35 | **27.41** | **179.97** | 64.46 | 29.02 | 166.45 |
| **Normalized** | 56.87% | 15.23% | 100% | 35.82% | 16.12% | 92.49% |
| **Standard Deviation** | 1.1% | 0.2% | 2.5% | 0.7% | 0.4% | 1% |
| **Unigine Heaven - 1920 x 1080 - Fullscreen (FPS)** | 44.45 | 58.52 | **84.36** | 42.81 | **15.66** | 75.04 |
| **Normalized** | 52.69% | 69.37% | 100% | 50.75% | 18.56% | 88.95% |
| **Standard Deviation** | 0.3% | 0.3% | 0.3% | 0% | 0.3% | 0.9% |

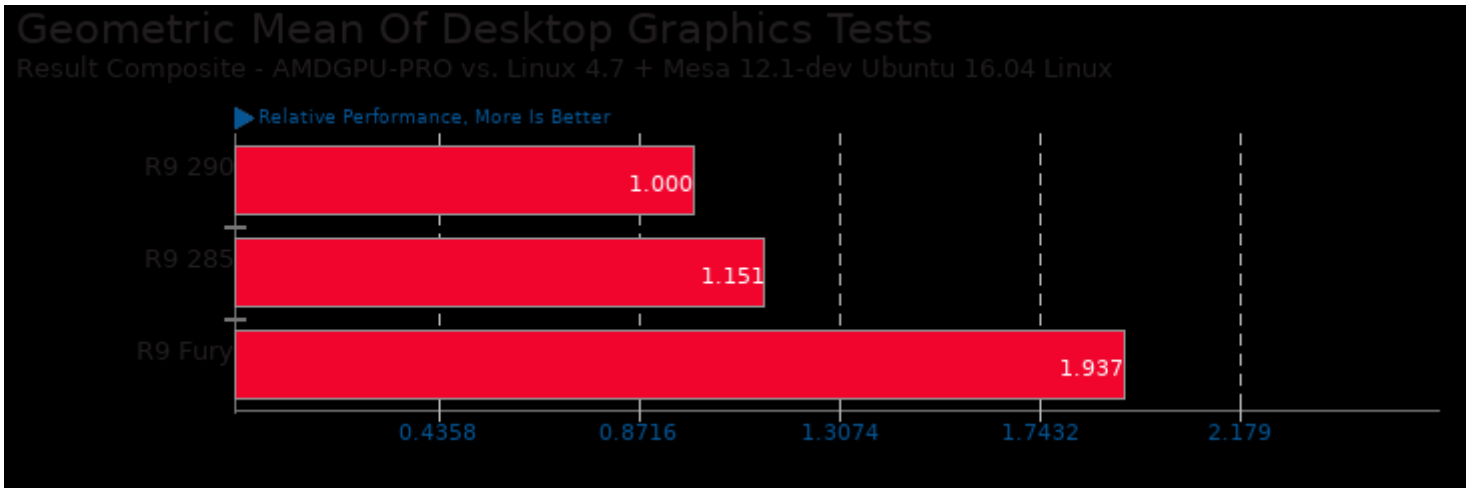
| | | | | | | |
|---|---|---|---|---|---|---|
| **Unigine Valley - 1920 x 1080 - Fullscreen (FPS)** | 51.01 | 67.22 | **93.01** | 48.74 | **21.69** | 83.43 |
| **Normalized** | 54.84% | 72.27% | 100% | 52.4% | 23.32% | 89.7% |
| **Standard Deviation** | 0% | 0.1% | 0.1% | 0% | 0.1% | 0.7% |
| **Xonotic - 3840 x 2160 - Ultimate (FPS)** | 124.15 | 143.85 | **163.68** | 102.40 | **41.62** | 161.20 |
| **Normalized** | 75.85% | 87.88% | 100% | 62.56% | 25.43% | 98.48% |
| **Standard Deviation** | 0.2% | 0.2% | 0.4% | 2.4% | 0.3% | 0.4% |


BioShock Infinite
Resolution: 3840 x 2160 - Effects Quality: Ultra
Linux 4.7 + Mesa 12.1 Git
AMDGPU-PRO
Frames Per Second, More Is Better
R9 290
R9 285
R9 Fury
SE +/- 0.00, N = 3
12.96
SE +/- 0.02, N = 3
13.19
SE +/- 0.01, N = 3
40.52
SE +/- 0.19, N = 3
52.64
SE +/- 0.23, N = 3
55.92
SE +/- 0.39, N = 3
93.59
20
40
60
80
100
Insurgency
Resolution: 3840 x 2160
AMDGPU-PRO
Linux 4.7 + Mesa 12.1 Git
Frames Per Second, More Is Better
R9 290
R9 285
R9 Fury
SE +/- 0.04, N = 3
22.72
SE +/- 0.04, N = 3
29.79
SE +/- 0.05, N = 3
65.82
SE +/- 0.39, N = 3
111.69
SE +/- 0.29, N = 3
87.32
SE +/- 0.27, N = 3
148.36
30
60
90
120
150

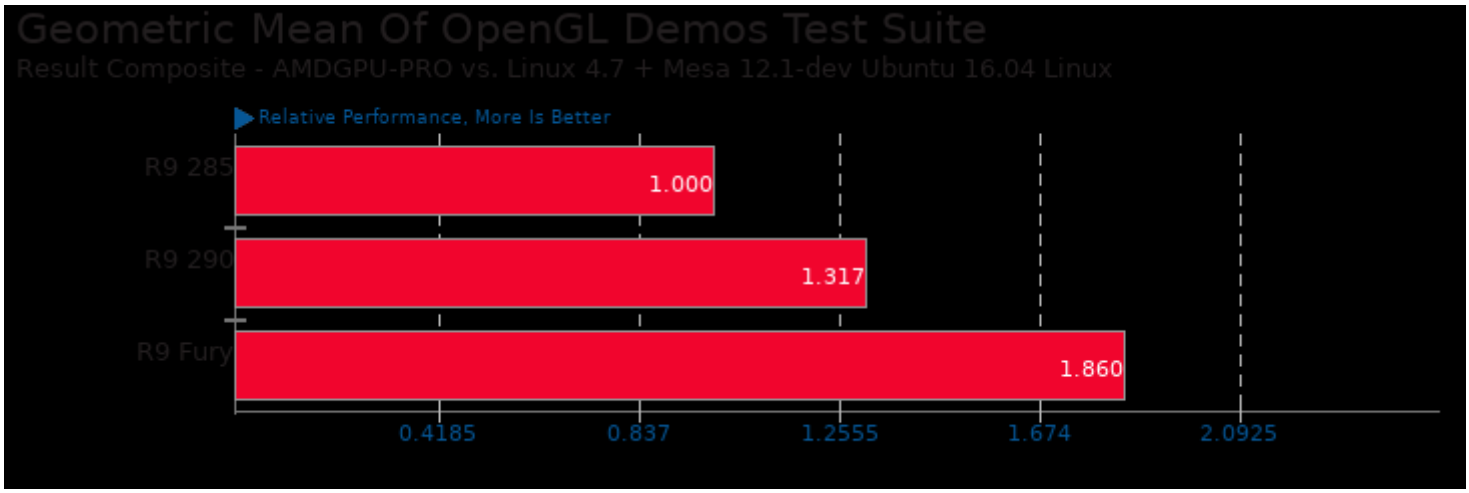

Tesseract 2014-05-12
Resolution: 3840 x 2160
AMDGPU-PRO
Linux 4.7 + Mesa 12.1 Git
Frames Per Second, More Is Better
R9 290
SE +/- 0.04, N = 3
27.41
SE +/- 0.07, N = 3
29.02
R9 285
SE +/- 0.63, N = 3
102.35
SE +/- 0.27, N = 3
64.46
R9 Fury
SE +/- 2.57, N = 3
179.97
SE +/- 0.92, N = 3
166.45
40
80
120
160
200
Unigine Heaven 4.0
Resolution: 1920 x 1080 - Mode: Fullscreen
Linux 4.7 + Mesa 12.1 Git
AMDGPU-PRO
Frames Per Second, More Is Better
R9 290
SE +/- 0.02, N = 3
15.66
SE +/- 0.12, N = 3
58.52
R9 285
SE +/- 0.01, N = 3
42.81
SE +/- 0.07, N = 3
44.45
R9 Fury
SE +/- 0.48, N = 2
75.04
SE +/- 0.15, N = 3
84.36
20
40
60
80
100


Unigine Valley 1.0
Resolution: 1920 x 1080 - Mode: Fullscreen
Linux 4.7 + Mesa 12.1 Git
AMDGPU-PRO
Frames Per Second, More Is Better
R9 290
SE +/- 0.02, N = 3
21.69
SE +/- 0.04, N = 3
67.22
R9 285
SE +/- 0.01, N = 3
48.74
SE +/- 0.01, N = 3
51.01
R9 Fury
SE +/- 0.39, N = 2
83.43
SE +/- 0.05, N = 3
93.01
20
40
60
80
100
Xonotic 0.8
Resolution: 3840 x 2160 - Effects Quality: Ultimate
Linux 4.7 + Mesa 12.1 Git
AMDGPU-PRO
Frames Per Second, More Is Better
R9 290
SE +/- 0.08, N = 3
41.62
SE +/- 0.14, N = 3
143.85
R9 285
SE +/- 1.43, N = 3
102.40
SE +/- 0.14, N = 3
124.15
R9 Fury
SE +/- 0.37, N = 3
161.20
SE +/- 0.39, N = 3
163.68
40
80
120
160
200

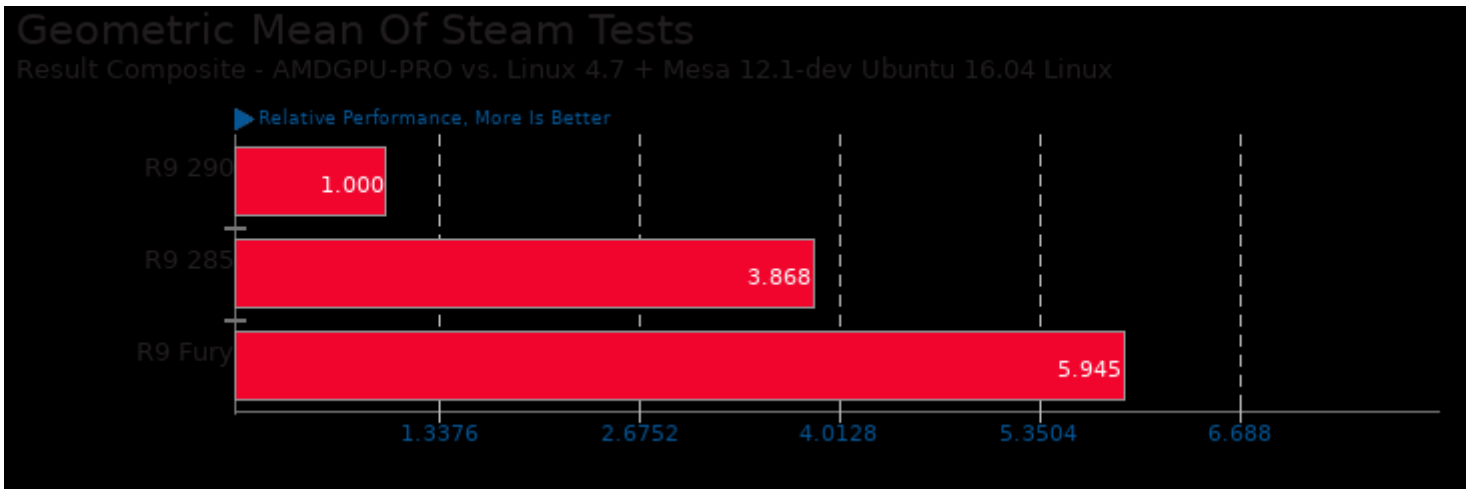
These geometric means are based upon test groupings / test suites for this result file.



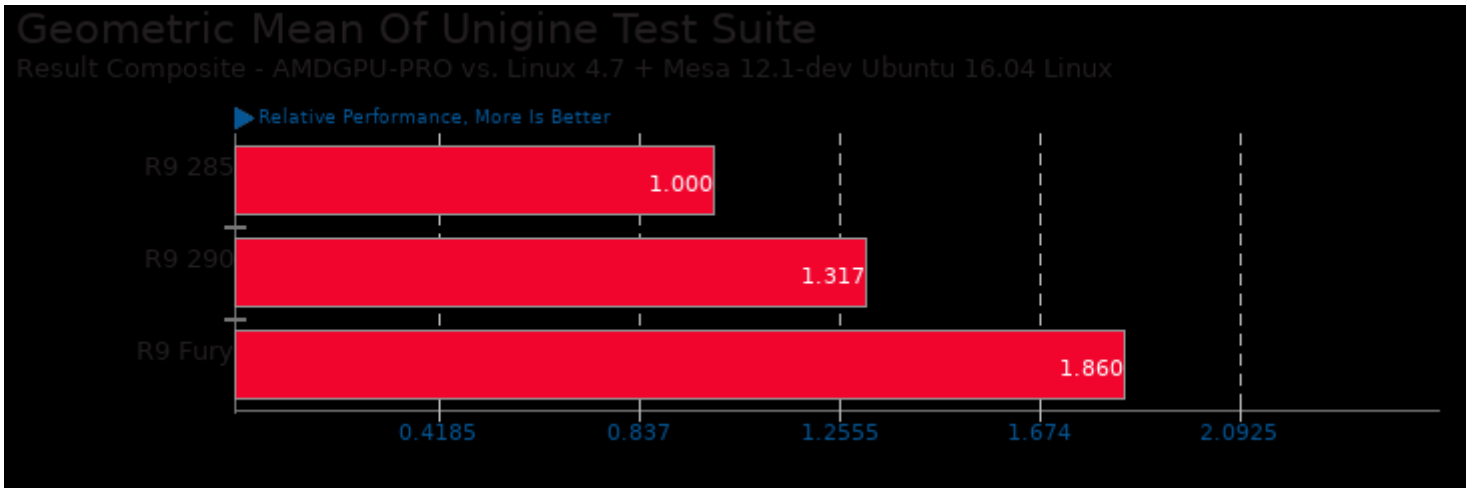

Geometric mean based upon tests: pts/xonotic, pts/tesseract, pts/unigine-valley and pts/unigine-heaven




Geometric mean based upon tests: pts/unigine-valley and pts/unigine-heaven




Geometric mean based upon tests: pts/bioshock-infinite and pts/insurgency




Geometric mean based upon tests: pts/unigine-valley and pts/unigine-heaven

*This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 05:06.*