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Optimus Power Testing + Linux 3.12/3.13 Kernels

Benchmarks for a future article on Phoronix.com looking at battery power consumption using MONITOR=sys.power environment variable while running different OpenGL games on a clean install of Ubuntu 13.10, then with DRI_PRIME=1, and then when installing Bumblebee stable and running phoronix-test-suite via optirun for discrete NVIDIA graphics on binary blob. Now with LInux 3.13 and 3.13 kernel results included.

Automated Executive Summary

Bumblebee - Optirun had the most wins, coming in first place for 66% of the tests.

Based on the geometric mean of all complete results, the fastest (Bumblebee - Optirun) was 1.126x the speed of the slowest (Linux 3.13 Git). Ubuntu 13.10 DRI_PRIME=1 was 0.937x the speed of Bumblebee - Optirun, Linux 3.12 was 0.988x the speed of Ubuntu 13.10 DRI_PRIME=1, Ubuntu 13.10 Stock was 0.985x the speed of Linux 3.12, Linux 3.13 Git was 0.974x the speed of Ubuntu 13.10 Stock.

Test Systems:

Ubuntu 13.10 Stock

Ubuntu 13.10 DRI_PRIME=1

Processor: Intel Core i7-3517U @ 1.90GHz (4 Cores), Motherboard: ASUS UX32VDA v1.0, Chipset: Intel 3rd Gen Core DRAM, Memory: 4096MB, Disk: 2 x 128GB SanDisk SD5SF212, Graphics: Intel HD 4000 (1150MHz), Audio: Realtek ALC269VB, Network: Intel Centrino Advanced-N 6235

OS: Ubuntu 13.10, Kernel: 3.11.0-14-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: intel 2.99.904, OpenGL: 3.1 Mesa 9.2.1, Compiler: GCC 4.8, File-System: ext4, Screen Resolution: 1920x1080

Environment Notes: DRI_PRIME=1
Graphics Notes: SNA
System Notes: This was running on battery power.

Bumblebee - Optirun

Processor: Intel Core i7-3517U @ 1.90GHz (4 Cores), Motherboard: ASUS UX32VDA v1.0, Chipset: Intel 3rd Gen Core DRAM, Memory: 4096MB, Disk: 2 x 128GB SanDisk SD5SF212, Graphics: ASUS NVIDIA GeForce GT 620M, Audio: Realtek ALC269VB, Network: Intel Centrino Advanced-N 6235

OS: Ubuntu 13.10, Kernel: 3.11.0-14-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: intel 2.99.904, OpenGL: 4.2.0, Compiler: GCC 4.8, File-System: ext4, Screen Resolution: 1920x1080

Environment Notes: PRIMUS_libGLa=/usr/lib/NVIDIA-304/libGL.so.1:/usr/lib32/NVIDIA-304/libGL.so.1 PRIMUS_libGLd=/usr/$LIB/libGL.so.1:/usr/lib/$LIB/libGL.so.1:/usr/$LIB/mesa/libGL.so.1:/usr/lib/$LIB/mesa/libGL.so.1
Graphics Notes: SNA
System Notes: This was running on battery power.

Linux 3.12

Processor: Intel Core i7-3517U @ 3.00GHz (4 Cores), Motherboard: ASUS UX32VDA v1.0, Chipset: Intel 3rd Gen Core DRAM, Memory: 4096MB, Disk: 2 x 128GB SanDisk SD5SF212, Graphics: Intel HD 4000 (1150MHz), Audio: Realtek ALC269VB, Network: Intel Centrino Advanced-N 6235

OS: Ubuntu 13.10, Kernel: 3.12.0-031200-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: intel 2.99.904, OpenGL: 3.1 Mesa 9.2.1, Compiler: GCC 4.8, File-System: ext4, Screen Resolution: 1920x1080

Graphics Notes: SNA
System Notes: This was running on battery power.

Linux 3.13 Git

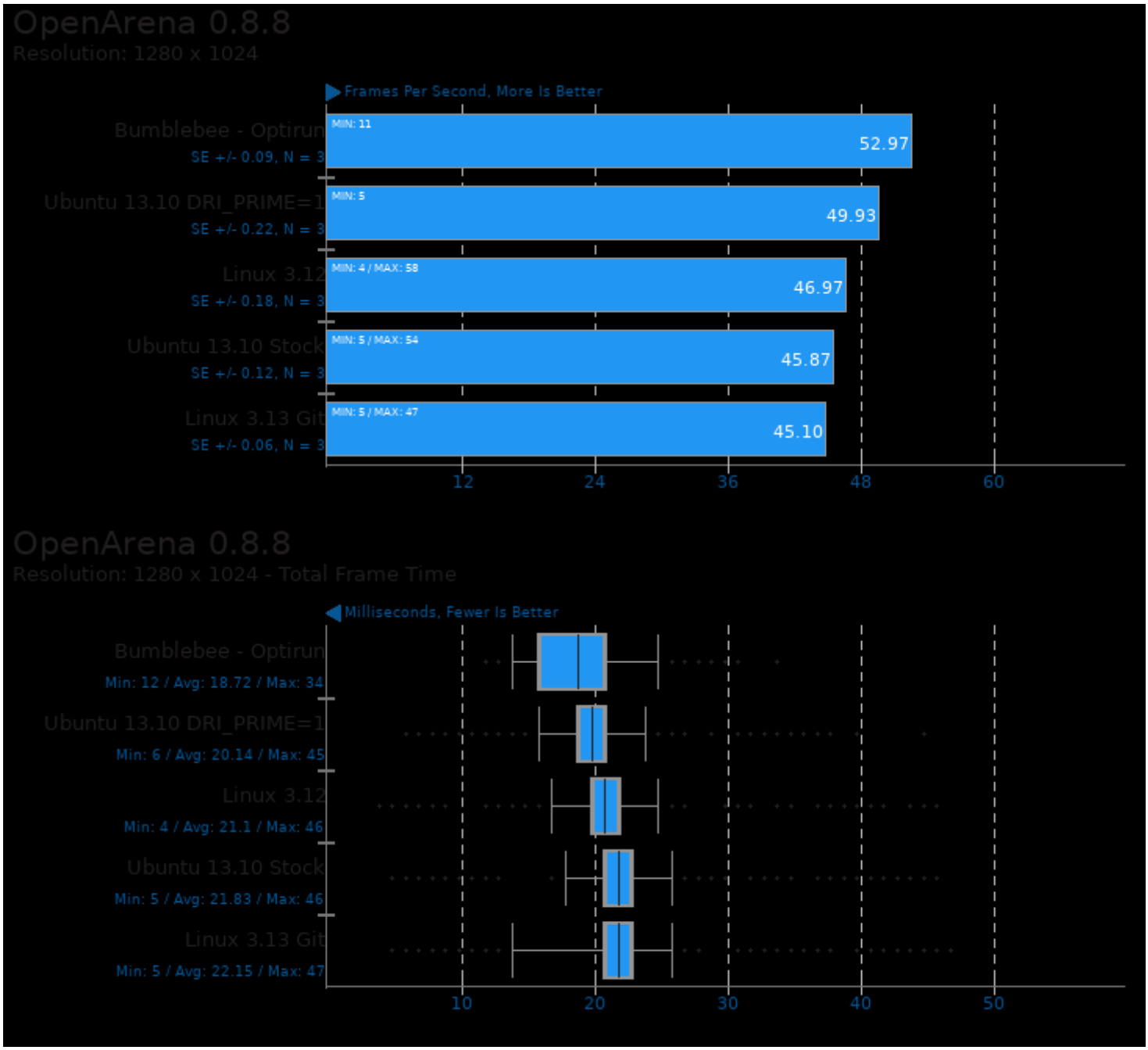
Processor: Intel Core i7-3517U @ 3.00GHz (4 Cores), Motherboard: ASUS UX32VDA v1.0, Chipset: Intel 3rd Gen Core DRAM, Memory: 4096MB, Disk: 2 x 128GB SanDisk SD5SF212, Graphics: Intel HD 4000 (1150MHz), Audio: Realtek ALC269VB, Network: Intel Centrino Advanced-N 6235

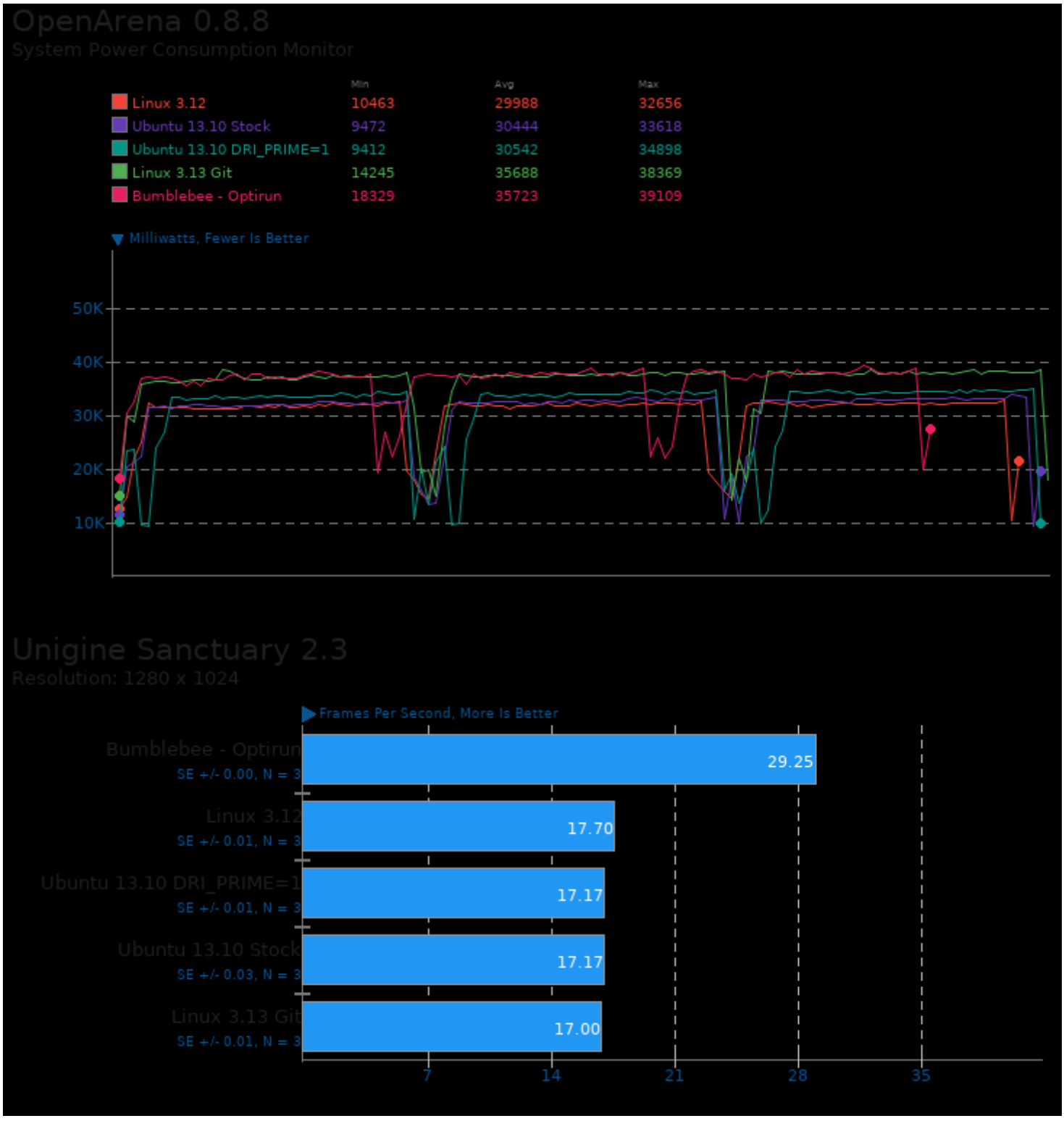
OS: Ubuntu 13.10, Kernel: 3.13.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.3, Display Driver: intel 2.99.904, OpenGL: 3.1 Mesa 9.2.1, Compiler: GCC 4.8, File-System: ext4, Screen Resolution: 1920x1080

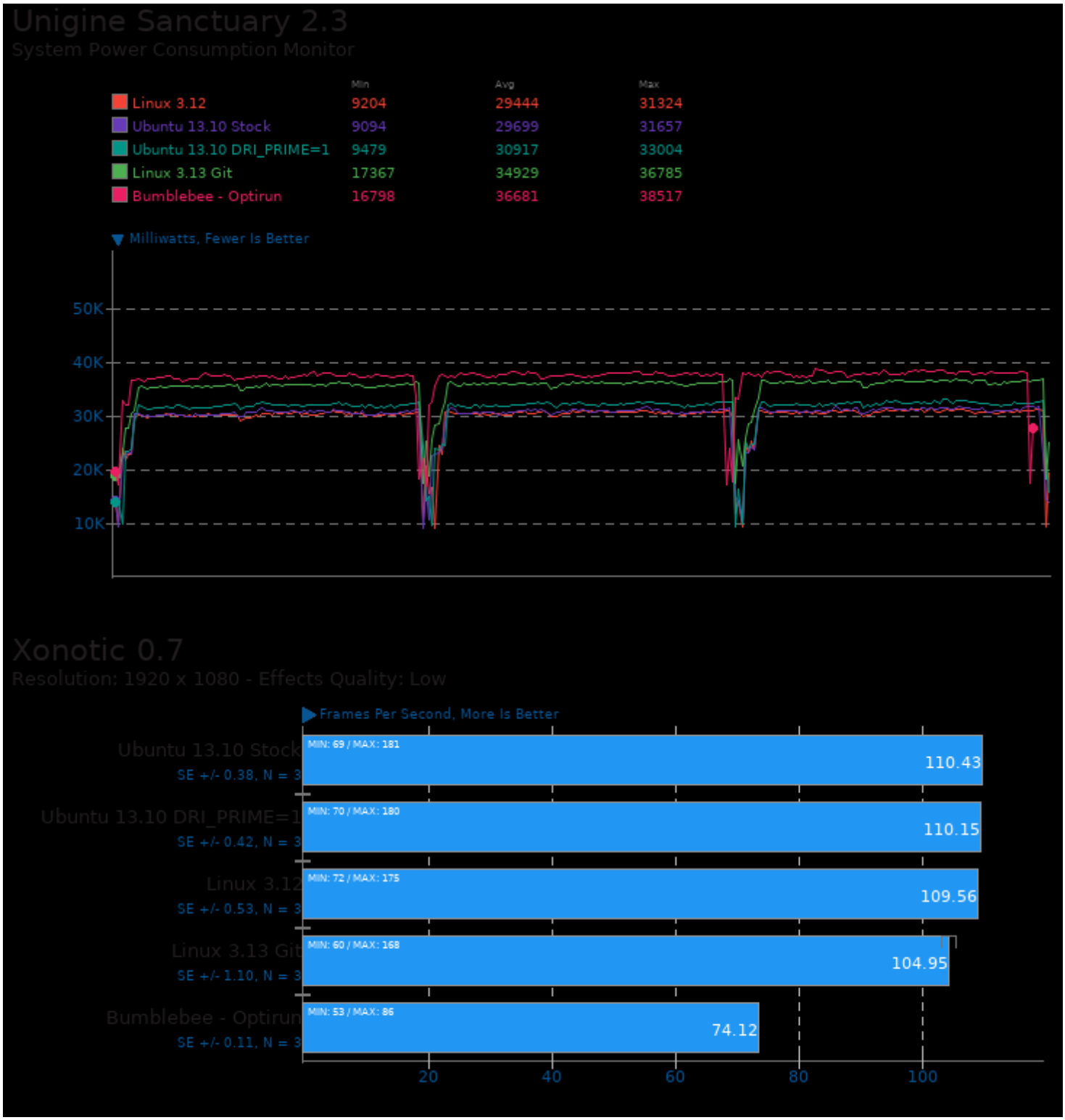
Graphics Notes: SNA
System Notes: This was running on battery power.

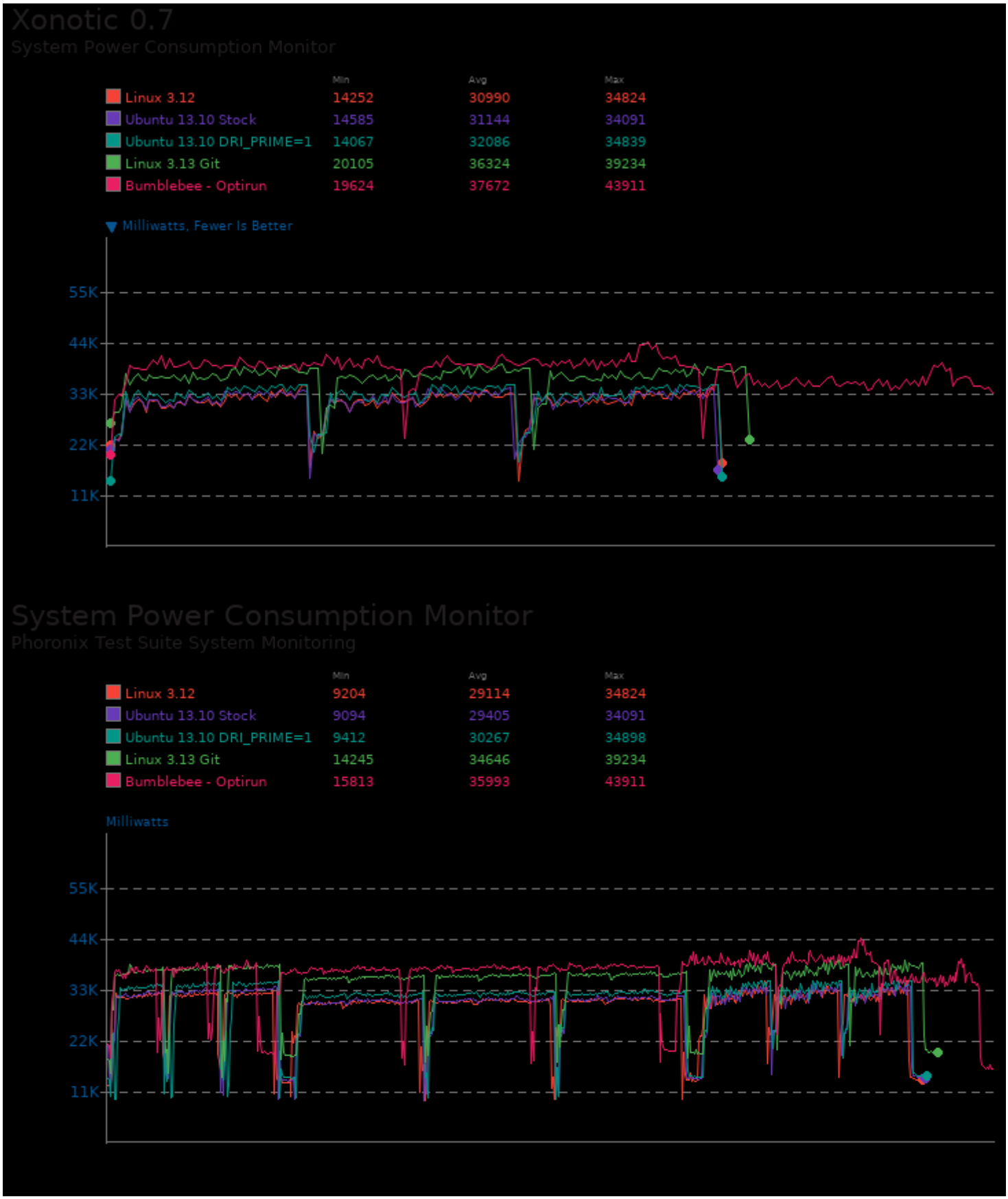
Optimus Power Testing + Linux 3.12/3.13 Kernels

	Ubuntu 13.10 Stock	Ubuntu 13.10 DRI_PRIME=1	Bumblebee - Optirun	Linux 3.12	Linux 3.13 Git
OpenArena - 1280 x 1024 (FPS)	45.87	49.93	**52.97**	46.97	**45.10**
Normalized	86.6%	94.26%	100%	88.67%	85.14%
Standard Deviation	0.5%	0.8%	0.3%	0.7%	0.2%
Unigine Sanctuary - 1280 x 1024 (FPS)	17.17	17.17	**29.25**	17.70	**17.00**
Normalized	58.7%	58.7%	100%	60.51%	58.12%
Standard Deviation	0.3%	0.1%	0%	0.1%	0.1%
Xonotic - 1920 x 1080 - Low	**110.43**	110.15	**74.12**	109.56	104.95
Normalized	100%	99.75%	67.12%	99.21%	95.04%
Standard Deviation	0.6%	0.7%	0.2%	0.8%	1.8%

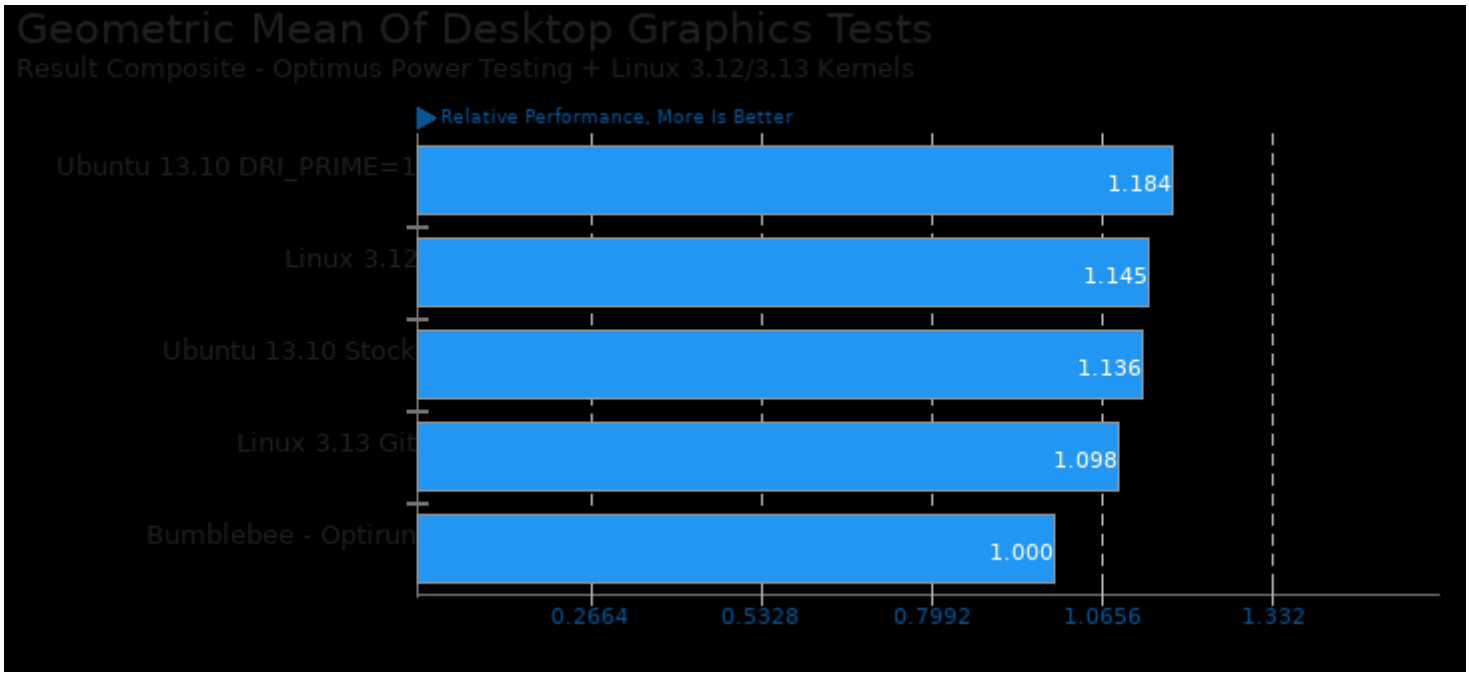

OpenArena 0.8.8
Resolution: 1280 x 1024
Frames Per Second, More Is Better
Bumblebee - Optirun
SE +/- 0.09, N = 3
MIN: 11
52.97
Ubuntu 13.10 DRI_PRIME=1
SE +/- 0.22, N = 3
MIN: 5
49.93
Linux 3.12
SE +/- 0.18, N = 3
MIN: 4 / MAX: 58
46.97
Ubuntu 13.10 Stock
SE +/- 0.12, N = 3
MIN: 5 / MAX: 54
45.87
Linux 3.13 Git
SE +/- 0.06, N = 3
MIN: 5 / MAX: 47
45.10
12
24
36
48
60
OpenArena 0.8.8
Resolution: 1280 x 1024 - Total Frame Time
Milliseconds, Fewer Is Better
Bumblebee - Optirun
Min: 12 / Avg: 18.72 / Max: 34
Ubuntu 13.10 DRI_PRIME=1
Min: 6 / Avg: 20.14 / Max: 45
Linux 3.12
Min: 4 / Avg: 21.1 / Max: 46
Ubuntu 13.10 Stock
Min: 5 / Avg: 21.83 / Max: 46
Linux 3.13 Git
Min: 5 / Avg: 22.15 / Max: 47
10
20
30
40
50


OpenArena 0.8.8
System Power Consumption Monitor
Min
Avg
Max
Linux 3.12 10463 29988 32656
Ubuntu 13.10 Stock 9472 30444 33618
Ubuntu 13.10 DRI_PRIME=1 9412 30542 34898
Linux 3.13 Git 14245 35688 38369
Bumblebee - Optirun 18329 35723 39109
Milliwatts, Fewer Is Better
50K
40K
30K
20K
10K
Unigine Sanctuary 2.3
Resolution: 1280 x 1024
Frames Per Second, More Is Better
Bumblebee - Optirun
SE +/- 0.00, N = 3
29.25
Linux 3.12
SE +/- 0.01, N = 3
17.70
Ubuntu 13.10 DRI_PRIME=1
SE +/- 0.01, N = 3
17.17
Ubuntu 13.10 Stock
SE +/- 0.03, N = 3
17.17
Linux 3.13 Git
SE +/- 0.01, N = 3
17.00
7
14
21
28
35


Unigine Sanctuary 2.3
System Power Consumption Monitor
Min
Avg
Max
Linux 3.12 9204 29444 31324
Ubuntu 13.10 Stock 9094 29699 31657
Ubuntu 13.10 DRI_PRIME=1 9479 30917 33004
Linux 3.13 Git 17367 34929 36785
Bumblebee - Optirun 16798 36681 38517
Milliwatts, Fewer Is Better
50K
40K
30K
20K
10K
Xonotic 0.7
Resolution: 1920 x 1080 - Effects Quality: Low
Frames Per Second, More Is Better
Ubuntu 13.10 Stock
SE +/- 0.38, N = 3
MIN: 69 / MAX: 181
110.43
Ubuntu 13.10 DRI_PRIME=1
SE +/- 0.42, N = 3
MIN: 70 / MAX: 180
110.15
Linux 3.12
SE +/- 0.53, N = 3
MIN: 72 / MAX: 175
109.56
Linux 3.13 Git
SE +/- 1.10, N = 3
MIN: 60 / MAX: 168
104.95
Bumblebee - Optirun
SE +/- 0.11, N = 3
MIN: 53 / MAX: 86
74.12
20
40
60
80
100


Xonotic 0.7
System Power Consumption Monitor
Min
Avg
Max
Linux 3.12 14252 30990 34824
Ubuntu 13.10 Stock 14585 31144 34091
Ubuntu 13.10 DRI_PRIME=1 14067 32086 34839
Linux 3.13 Git 20105 36324 39234
Bumblebee - Optirun 19624 37672 43911
Milliwatts, Fewer Is Better
55K
44K
33K
22K
11K
System Power Consumption Monitor
Phoronix Test Suite System Monitoring
Min
Avg
Max
Linux 3.12 9204 29114 34824
Ubuntu 13.10 Stock 9094 29405 34091
Ubuntu 13.10 DRI_PRIME=1 9412 30267 34898
Linux 3.13 Git 14245 34646 39234
Bumblebee - Optirun 15813 35993 43911
Milliwatts
55K
44K
33K
22K
11K

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



Geometric mean based upon tests: pts/xonotic and pts/openarena

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 19:17.