

ברגעים אלה אנשים מחפשים עסק כמו שלך.

Linux 4.17 Offers Some Promising Power-Savings Improvements

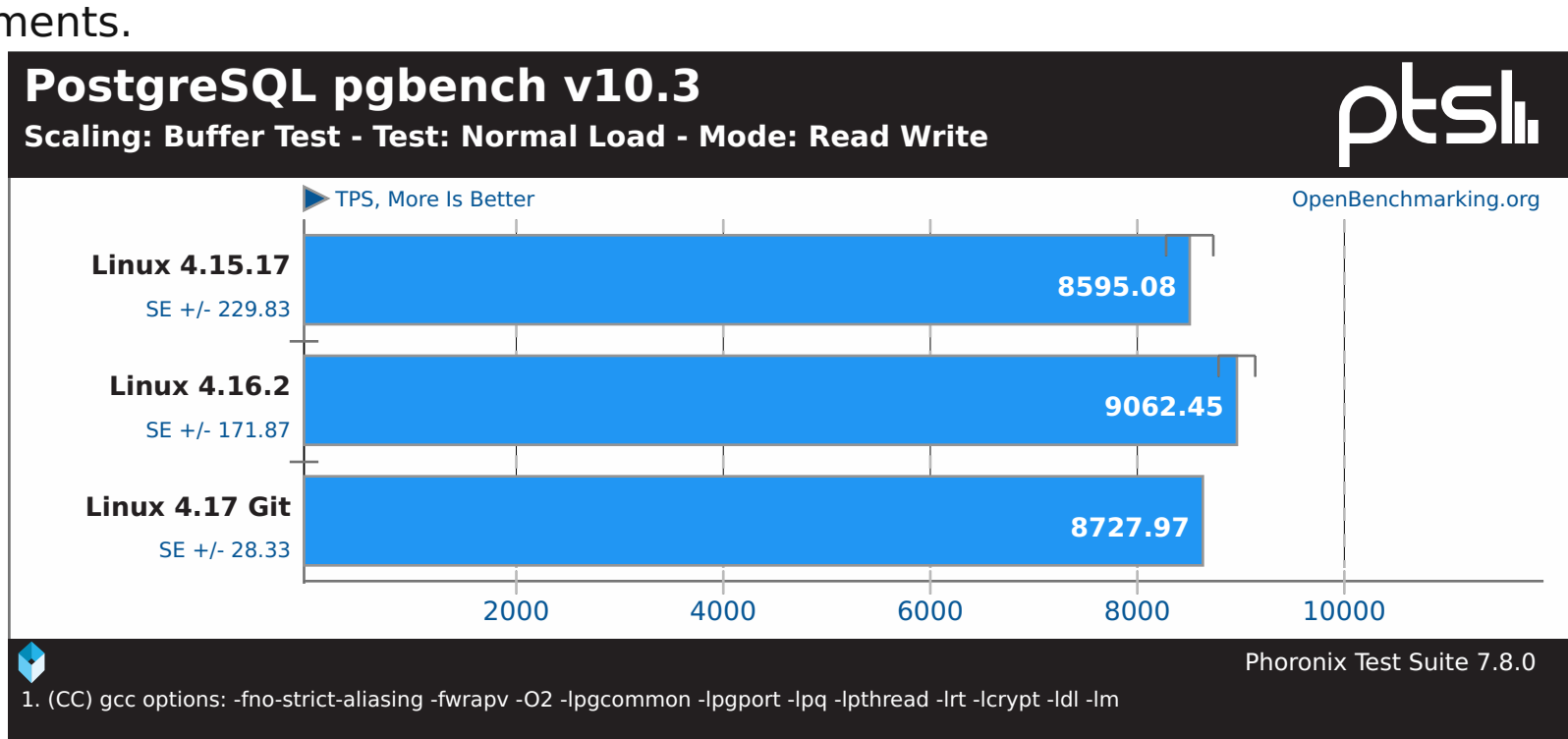
Written by Michael Larabel in Software on 15 April 2018. Page 3 of 3. 4 Comments



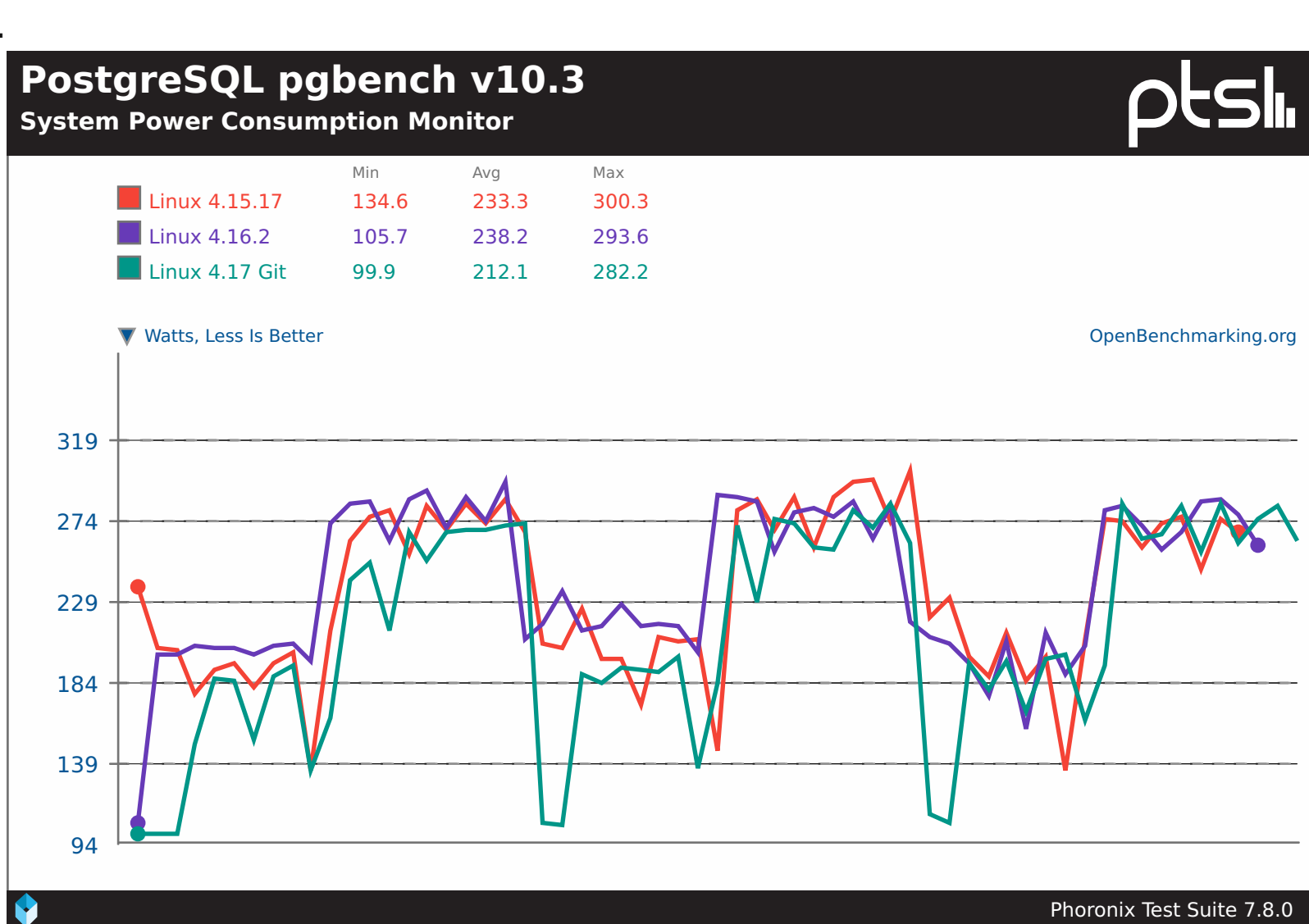
Then I decided to move to the other end of the spectrum... A dual-socket Intel Tyan Xeon Scalable server platform with two Xeon Gold 6138 processors. This system happened to be running Debian testing while again testing Linux 4.15 and 4.16 stable and then Linux 4.17 Git as of today.

Linux 4.17 Intel Xeon Power Usage	
OpenBenchmarking.org	Phoronix Test Suite 7.8.0
2 x Intel Xeon Gold 6138 @ 3.70GHz (40 Cores / 80 Threads)	
TYAN S7106 (V1.00 BIOS)	
Intel Sky Lake-E DMI3 Registers	
12 x 8192 MB DDR4-2666MT/s Micron 9ASF1G72PZ-2G6B1	
256GB Samsung SSD 850 + 2000GB Seagate ST2000DM006-2DM1 + 2 x 120GB TOSHIBA-TR150	
llvmpipe 95360MB	
VE228	
Intel I210 Gigabit Connection	
Debian testing	
4.15.17-041517-generic (x86_64)	
4.16.2-041602-generic (x86_64)	
4.16.0-999-generic (x86_64) 20180414	
GNOME Shell 3.28.0	
X Server 1.19.6	
3.3 Mesa 17.3.8 (LLVM 5.0 256 bits)	
GCC 7.3.0	
ext4	
1920x1080	
Linux 4.17 Intel Xeon Power Usage Benchmarks	
<pre>--build=x86_64-linux-gnu --disable-utal-verify --disable-werror --enable-checking=release --enable-ccolled-gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdc++-debug --enable-libstdc++-time-saves --enable-multilib --enable-multilib --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abt=m64 --with-arch=32 --with-default-libstdc++-abi=new --with-gcc-major-version-only --with-multilib-list=x86_64-linux32 --with-target-system-zlib --with-tune=generic --without-cs-compiler-v</pre>	
<pre>- Linux 4.15.17: CFQ / data=ordered,errors=recount-ro,relatime,rw - Linux 4.16.2: CFQ / data=ordered,errors=recount-ro,relatime,rw - Linux 4.17 Git: CFQ / errors=recount-ro,relatime,rw - Scaling Governor: intel_pstate performance - Python 2.7.14+ + Python 3.6.5rc1 - KPTI + _user pointer sanitization + Full generic retpoline Protection</pre>	
System Logs	
OPC Classification	

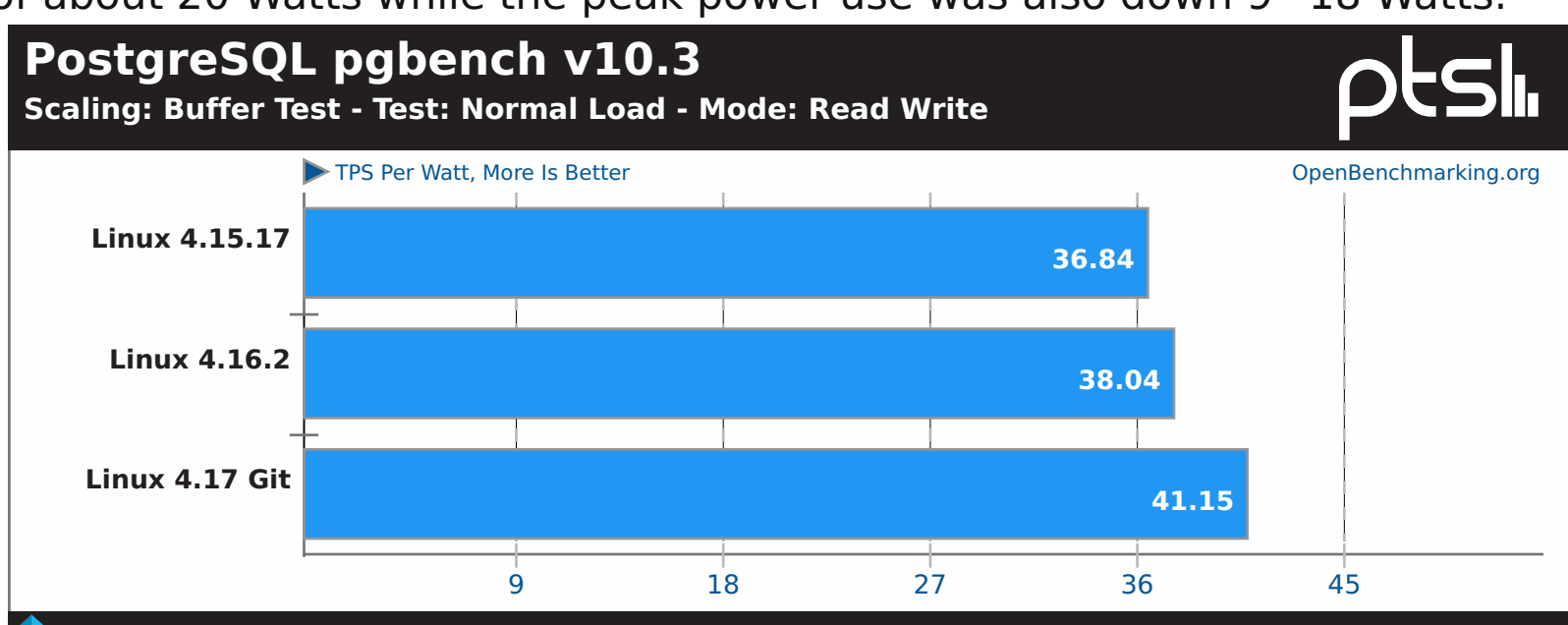
On this Tyan server, the idle power usage ended up being the same across these three most recent kernel branches. However, the power usage under load was found to have some nice improvements.



The PostgreSQL performance was within its margin of error between the three tested kernels...

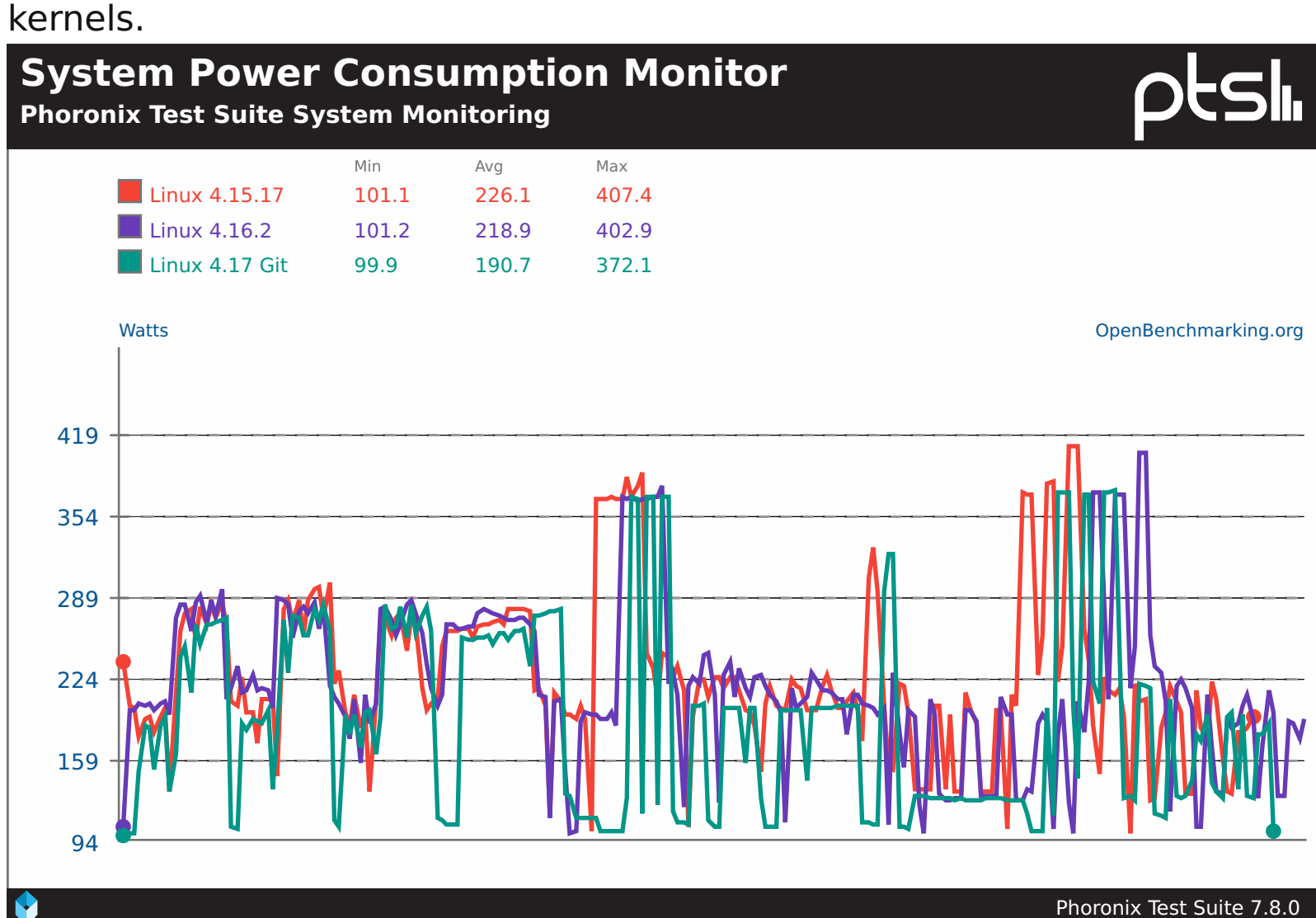


But the power usage was found to be noticeably better with Linux 4.17... An average savings of about 20 Watts while the peak power use was also down 9-18 Watts.



So on a performance-per-Watt basis, it's a fairly significant jump with Linux 4.17

For a variety of other Linux benchmarks, it ended up being a similar situation of seeing slightly lower power use under load while delivering roughly the same performance as the previous kernels.



Here's a look at the AC system power consumption for this dual Xeon Gold server over the course of many benchmarks. The average power use when running on Linux 4.17 was on average around thirty Watts lower than with Linux 4.15 or 4.16. The peak power use was also about 30 Watts less on Linux 4.17 while running all of the same workloads in a fully-standardized and automated manner using the Phoronix Test Suite.

I did run some quick tests on AMD Ryzen too, but at least there the results were indifferent. Anyhow, I have more tests planned over the days ahead and so stay tuned. I'm optimistic that these Linux 4.17 improvements may help close the gap I've been seeing for years where Windows -- especially on laptops -- has remained much more power efficient than Linux systems. I'll be doing some Windows vs. Linux (and potentially macOS) power comparisons on each platform's latest software as soon as time allows. If you enjoy all of the testing I do on Phoronix every single day, please consider showing your support by going premium or tips are welcome as well.

See our Linux 4.17 feature overview to learn about all of the other great features coming with this kernel that should be introduced as stable in June.

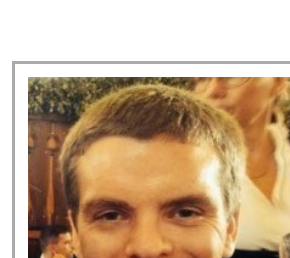
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About The Author



Michael Larabel is the principal author of Phoronix.com and founded the site in 2004 with a focus on enriching the Linux hardware experience. Michael has written more than 10,000 articles covering the state of Linux hardware support, Linux performance, graphics drivers, and other topics. Michael is also the lead developer of the Phoronix Test Suite, Phoromatic, and OpenBenchmarking.org automated benchmarking software. He can be followed via [Twitter](#) or contacted via [MichaelLarabel.com](#).

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