



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Nettrix

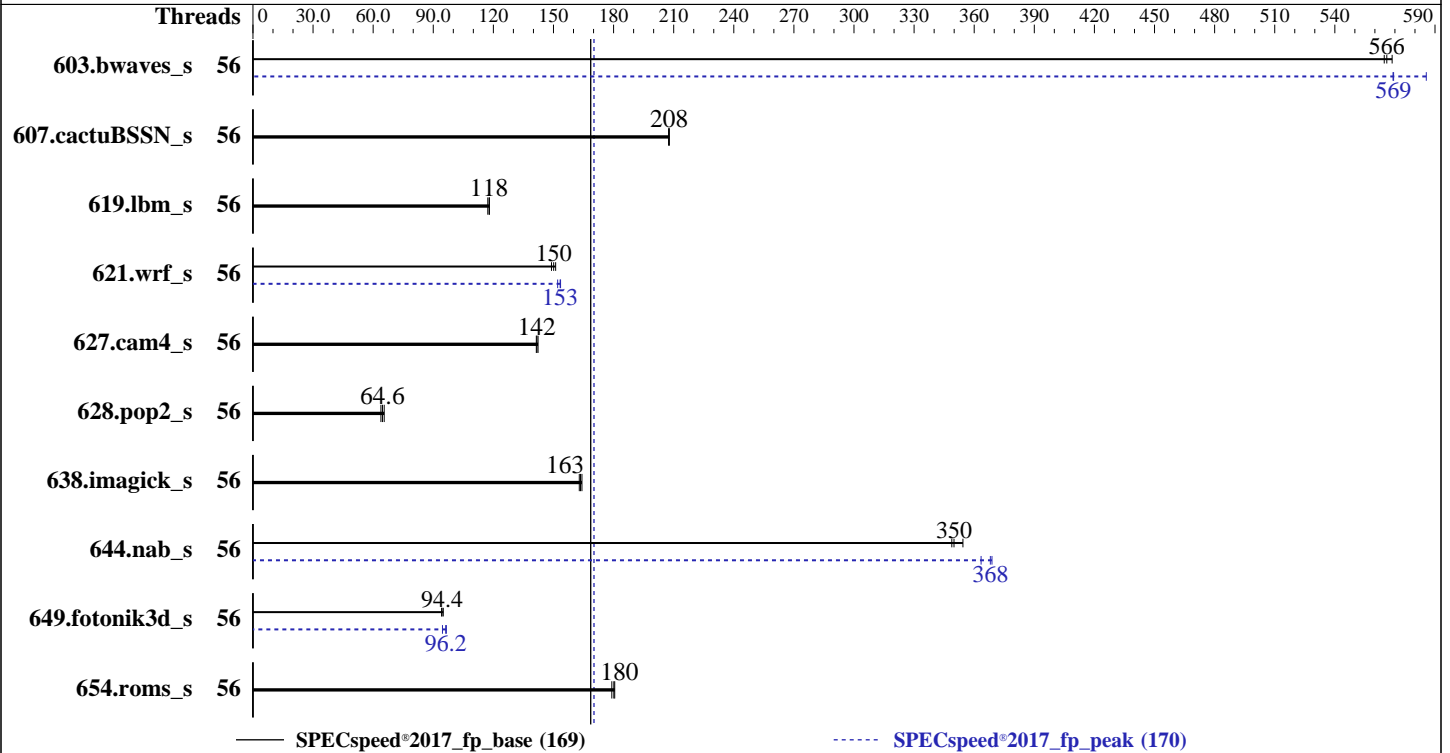
SPECspeed®2017_fp_base = 169

R620 G30 (Intel Xeon Platinum 8280)

SPECspeed®2017_fp_peak = 170

CPU2017 License: 6138
Test Sponsor: Nettrix
Tested by: Nettrix

Test Date: Jun-2020
Hardware Availability: May-2020
Software Availability: Apr-2020



Hardware

CPU Name: Intel Xeon Platinum 8280
 Max MHz: 4000
 Nominal: 2700
 Enabled: 56 cores, 2 chips
 Orderable: 1,2 chips
 Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 38.5 MB I+D on chip per chip
 Other: None
 Memory: 384 GB (24 x 16 GB 2Rx8 PC4-3200AA-R, running at 2667)
 Storage: 1x 960 GB SATA SSD
 Other: None

Software

OS: Red Hat Enterprise Linux release 8.0 (Ootpa) 4.18.0-80.el8.x86_64
 Compiler: C/C++: Version 19.1.1.217 of Intel C/C++ Compiler for Linux Build 20200306; Fortran: Version 19.1.1.217 of Intel Fortran Compiler for Linux Build 20200306;
 Parallel: Yes
 Firmware: Nettrix BIOS Version NJGS041227 released May-2020
 File System: xfs
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 Other: jemalloc memory allocator V5.0.1
 Power Management: BIOS set to prefer performance at the cost of additional power usage.



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Nettrix

SPECSpeed®2017_fp_base = 169

R620 G30 (Intel Xeon Platinum 8280)

SPECSpeed®2017_fp_peak = 170

CPU2017 License: 6138
Test Sponsor: Nettrix
Tested by: Nettrix

Test Date: Jun-2020
Hardware Availability: May-2020
Software Availability: Apr-2020

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	56	104	569	104	565	104	566	56	104	569	101	586	104	569
607.cactuBSSN_s	56	80.2	208	80.4	207	80.2	208	56	80.2	208	80.4	207	80.2	208
619.lbm_s	56	44.4	118	44.4	118	44.7	117	56	44.4	118	44.4	118	44.7	117
621.wrf_s	56	87.5	151	88.8	149	88.1	150	56	86.3	153	87.0	152	86.1	154
627.cam4_s	56	62.7	141	62.5	142	62.3	142	56	62.7	141	62.5	142	62.3	142
628.pop2_s	56	186	63.9	181	65.5	184	64.6	56	186	63.9	181	65.5	184	64.6
638.imagick_s	56	87.8	164	88.6	163	88.2	163	56	87.8	164	88.6	163	88.2	163
644.nab_s	56	50.1	349	49.3	354	49.9	350	56	48.1	363	47.4	369	47.5	368
649.fotonik3d_s	56	96.8	94.1	96.0	95.0	96.6	94.4	56	94.4	96.5	96.4	94.6	94.7	96.2
654.roms_s	56	87.4	180	87.2	181	87.9	179	56	87.4	180	87.2	181	87.9	179

SPECSpeed®2017_fp_base = **169**

SPECSpeed®2017_fp_peak = **170**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Compiler Notes

The inconsistent Compiler version information under Compiler Version section is due to a discrepancy in Intel Compiler. The correct version of C/C++ compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux
The correct version of Fortran compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"
Tuning Kernel Parameters:
sched_migration_cost_ns=600000
sched_rt_runtime_us=950000
sched_latency_ns=24000000
sched_min_granularity_ns=8000000
dirty_background_ratio=10
dirty_ratio=20
dirty_writeback_centisecs=400
dirty_expire_centisecs=5000
swappiness=10
numa_balancing=0

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH =
"/home/admin/benchmarks/cpu2017/lib/intel64:/home/admin/benchmarks/cpu2017/je5.0.1-64"
MALLOC_CONF = "retain:true"

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Nettrix

SPECspeed®2017_fp_base = 169

R620 G30 (Intel Xeon Platinum 8280)

SPECspeed®2017_fp_peak = 170

CPU2017 License: 6138
Test Sponsor: Nettrix
Tested by: Nettrix

Test Date: Jun-2020
Hardware Availability: May-2020
Software Availability: Apr-2020

Environment Variables Notes (Continued)

OMP_STACKSIZE = "192M"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Redhat Enterprise Linux 8.0
NA : The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3> /proc/sys/vm/drop_caches
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
sources available from jemalloc.net or <https://github.com/jemalloc/jemalloc/releases>

Platform Notes

Application Performance Profile Set to Computing Latency Mode
Hyper-Threading set to Disabled
MONITOR/MWAIT set to Enabled
Autonomous Core C-State set to Enabled
SNC set to Disabled
IMC set to Auto
XPT Prefetch set to Enabled
KTI Prefetch set to Disabled
Stale AtoS set to Enabled
Patrol Scrub set to Disabled
LLC Dead Line Allocation set to Disabled
BMC Settings:
Cooling Policy set to Manual Mode
Fan Duty set to 95

Sysinfo program /home/admin/benchmarks/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edble6e46a485a0011
running on localhost.localdomain Sun Jun 7 01:12:01 2020

SUT (System Under Test) info as seen by some common utilities.
For more information on this section, see
<https://www.spec.org/cpu2017/Docs/config.html#sysinfo>

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Nettrix

SPECspeed®2017_fp_base = 169

R620 G30 (Intel Xeon Platinum 8280)

SPECspeed®2017_fp_peak = 170

CPU2017 License: 6138
Test Sponsor: Nettrix
Tested by: Nettrix

Test Date: Jun-2020
Hardware Availability: May-2020
Software Availability: Apr-2020

Platform Notes (Continued)

From /proc/cpuinfo

```
model name : Intel(R) Xeon(R) Platinum 8280 CPU @ 2.70GHz
 2 "physical id"s (chips)
 56 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following
excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
  cpu cores : 28
  siblings  : 28
 physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
                28 29 30
 physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
                28 29 30
```

From lscpu:

```
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                56
On-line CPU(s) list:  0-55
Thread(s) per core:    1
Core(s) per socket:    28
Socket(s):              2
NUMA node(s):          2
Vendor ID:              GenuineIntel
CPU family:             6
Model:                  85
Model name:             Intel(R) Xeon(R) Platinum 8280 CPU @ 2.70GHz
Stepping:               6
CPU MHz:                3159.405
CPU max MHz:           4000.0000
CPU min MHz:           1000.0000
BogoMIPS:               5400.00
Virtualization:        VT-x
L1d cache:              32K
L1i cache:              32K
L2 cache:               1024K
L3 cache:               39424K
NUMA node0 CPU(s):     0-27
NUMA node1 CPU(s):     28-55
Flags:                  fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmpperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cdp_l3
invpcid_single intel_ppin ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi
flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm
```

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Nettrix

SPECspeed®2017_fp_base = 169

R620 G30 (Intel Xeon Platinum 8280)

SPECspeed®2017_fp_peak = 170

CPU2017 License: 6138
Test Sponsor: Nettrix
Tested by: Nettrix

Test Date: Jun-2020
Hardware Availability: May-2020
Software Availability: Apr-2020

Platform Notes (Continued)

```
cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd
avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
cqm_mbm_local dtherm ida arat pln pts pku ospke avx512_vnni flush_lld
arch_capabilities
```

```
/proc/cpuinfo cache data
cache size : 39424 KB
```

```
From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.
available: 2 nodes (0-1)
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
node 0 size: 191859 MB
node 0 free: 191187 MB
node 1 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
53 54 55
node 1 size: 193505 MB
node 1 free: 192833 MB
node distances:
node 0 1
0: 10 21
1: 21 10
```

```
From /proc/meminfo
MemTotal: 394613372 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

```
From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux"
VERSION="8.0 (Ootpa)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="8.0"
PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.0 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.0 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.0 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.0:ga
```

```
uname -a:
Linux localhost.localdomain 4.18.0-80.el8.x86_64 #1 SMP Wed Mar 13 12:02:46 UTC 2019
x86_64 x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Nettrix

SPECspeed®2017_fp_base = 169

R620 G30 (Intel Xeon Platinum 8280)

SPECspeed®2017_fp_peak = 170

CPU2017 License: 6138
Test Sponsor: Nettrix
Tested by: Nettrix

Test Date: Jun-2020
Hardware Availability: May-2020
Software Availability: Apr-2020

Platform Notes (Continued)

CVE-2018-3620 (L1 Terminal Fault): Not affected
 Microarchitectural Data Sampling: No status reported
 CVE-2017-5754 (Meltdown): Not affected
 CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
 CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
 CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

run-level 3 Jun 7 01:04

SPEC is set to: /home/admin/benchmarks/cpu2017

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda5	xf	877G	109G	768G	13%	/home

From /sys/devices/virtual/dmi/id
 BIOS: American Megatrends Inc. NJGS041227 05/16/2020
 Vendor: Nettrix
 Product: R620 G30
 Product Family: Rack
 Serial: 302000666

Additional information from dmidecode follows. WARNING: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

Memory:
 24x Samsung M393A2K43DB2-CWE 16 GB 2 rank 3200

(End of data from sysinfo program)

Compiler Version Notes

```
=====
C          | 619.lbm_s(base, peak) 638.imagick_s(base, peak)
          | 644.nab_s(base, peak)
-----
```

```
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
-----
```

```
=====
C++, C, Fortran | 607.cactuBSSN_s(base, peak)
-----
```

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Nettrix

SPECspeed®2017_fp_base = 169

R620 G30 (Intel Xeon Platinum 8280)

SPECspeed®2017_fp_peak = 170

CPU2017 License: 6138
Test Sponsor: Nettrix
Tested by: Nettrix

Test Date: Jun-2020
Hardware Availability: May-2020
Software Availability: Apr-2020

Compiler Version Notes (Continued)

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.1.1.217 Build 20200306

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.1.1.217 Build 20200306

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.1.1.217 Build 20200306

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

=====
Fortran | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak)
| 654.roms_s(base, peak)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.1.1.217 Build 20200306

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

=====
Fortran, C | 621.wrf_s(base, peak) 627.cam4_s(base, peak)
| 628.pop2_s(base, peak)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.1.1.217 Build 20200306

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.1.1.217 Build 20200306

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Nettrix

SPECspeed®2017_fp_base = 169

R620 G30 (Intel Xeon Platinum 8280)

SPECspeed®2017_fp_peak = 170

CPU2017 License: 6138
Test Sponsor: Nettrix
Tested by: Nettrix

Test Date: Jun-2020
Hardware Availability: May-2020
Software Availability: Apr-2020

Base Portability Flags

```
603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG
628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
-assume byterecl
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64
```

Base Optimization Flags

C benchmarks:

```
-m64 -std=c11 -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-mbranches-within-32B-boundaries
```

Fortran benchmarks:

```
-m64 -Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX512 -ipo -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -qopenmp -nostandard-realloc-lhs
-mbranches-within-32B-boundaries -L/usr/local/jemalloc64-5.0.1/lib
-ljemalloc
```

Benchmarks using both Fortran and C:

```
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Benchmarks using Fortran, C, and C++:

```
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Peak Compiler Invocation

C benchmarks:
icc

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Nettrix

SPECspeed®2017_fp_base = 169

R620 G30 (Intel Xeon Platinum 8280)

SPECspeed®2017_fp_peak = 170

CPU2017 License: 6138
Test Sponsor: Nettrix
Tested by: Nettrix

Test Date: Jun-2020
Hardware Availability: May-2020
Software Availability: Apr-2020

Peak Compiler Invocation (Continued)

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

619.lbm_s: basepeak = yes

638.imagick_s: basepeak = yes

644.nab_s: -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Fortran benchmarks:

603.bwaves_s: -m64 -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)
-DSPEC_SUPPRESS_OPENMP -DSPEC_OPENMP -ipo -xCORE-AVX512
-O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -qopenmp -nostandard-realloc-lhs
-mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

649.fotonik3d_s: Same as 603.bwaves_s

654.roms_s: basepeak = yes

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Nettrix

SPECspeed®2017_fp_base = 169

R620 G30 (Intel Xeon Platinum 8280)

SPECspeed®2017_fp_peak = 170

CPU2017 License: 6138
Test Sponsor: Nettrix
Tested by: Nettrix

Test Date: Jun-2020
Hardware Availability: May-2020
Software Availability: Apr-2020

Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

```
621.wrf_s: -m64 -std=c11 -Wl,-z,muldefs -prof-gen(pass 1)
-prof-use(pass 2) -ipo -xCORE-AVX512 -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

627.cam4_s: basepeak = yes

628.pop2_s: basepeak = yes

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s: basepeak = yes

The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revA.html
<http://www.spec.org/cpu2017/flags/Nettrix-Platform-Settings-V3.0-CLX-revB.html>

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revA.xml
<http://www.spec.org/cpu2017/flags/Nettrix-Platform-Settings-V3.0-CLX-revB.xml>

SPEC CPU and SPECspeed are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU®2017 v1.1.0 on 2020-06-06 13:12:01-0400.
Report generated on 2020-06-23 18:03:50 by CPU2017 PDF formatter v6255.
Originally published on 2020-06-23.