



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS100-E10(P11C-M/4L) Server System
(3.50 GHz, Intel Xeon E-2146G)

SPECrate®2017_fp_base = 39.0

SPECrate®2017_fp_peak = 39.5

CPU2017 License: 9016

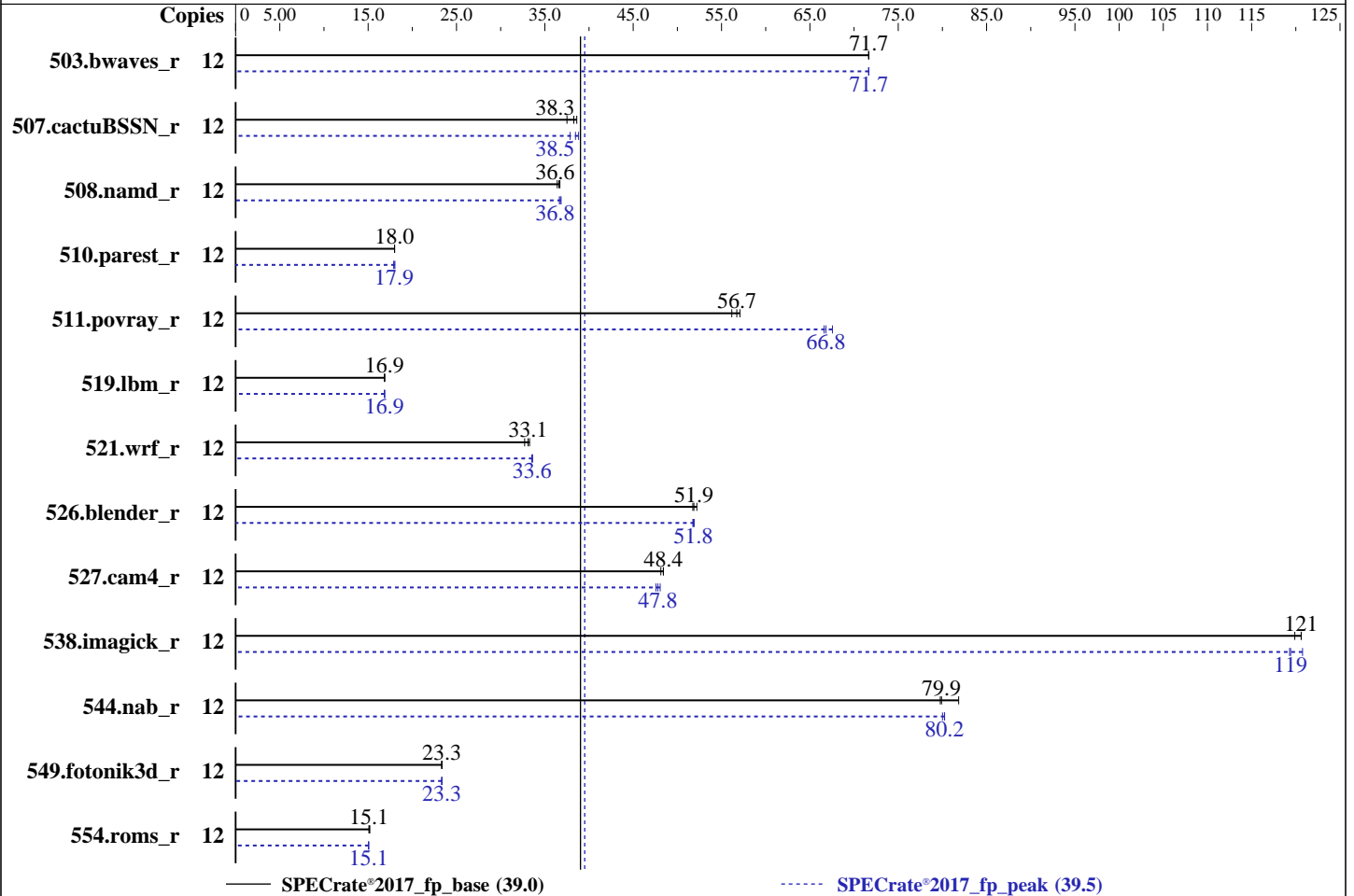
Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Jun-2019

Hardware Availability: Jun-2019

Software Availability: May-2019



Hardware

CPU Name: Intel Xeon E-2146G
 Max MHz: 4500
 Nominal: 3500
 Enabled: 6 cores, 1 chip, 2 threads/core
 Orderable: 1 chip
 Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 256 KB I+D on chip per core
 L3: 12 MB I+D on chip per chip
 Other: None
 Memory: 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E)
 Storage: 1 x 500 GB SATA HDD, 7200RPM
 Other: None

Software

OS: SUSE Linux Enterprise Server 15
 Kernel 4.12.14-150.17-default
 Compiler: C/C++: Version 19.0.1.144 of Intel C/C++ Compiler Build 20181018 for Linux;
 Fortran: Version 19.0.1.144 of Intel Fortran Compiler Build 20181018 for Linux
 Parallel: No
 Firmware: Version 0703 released Jun-2019
 File System: xfs
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 Other: None
 Power Management: --



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS100-E10(P11C-M/4L) Server System
(3.50 GHz, Intel Xeon E-2146G)

SPECrate®2017_fp_base = 39.0

SPECrate®2017_fp_peak = 39.5

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Jun-2019

Hardware Availability: Jun-2019

Software Availability: May-2019

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	12	1679	71.7	1679	71.7	1680	71.6	12	1679	71.7	1679	71.7	1679	71.7
507.cactuBSSN_r	12	405	37.5	393	38.6	397	38.3	12	401	37.9	395	38.5	391	38.8
508.namd_r	12	311	36.7	311	36.6	313	36.4	12	310	36.8	309	36.8	311	36.6
510.parest_r	12	1745	18.0	1744	18.0	1746	18.0	12	1741	18.0	1750	17.9	1754	17.9
511.povray_r	12	494	56.7	491	57.1	499	56.2	12	419	66.8	421	66.6	415	67.6
519.lbm_r	12	750	16.9	750	16.9	750	16.9	12	751	16.9	750	16.9	750	16.9
521.wrf_r	12	812	33.1	822	32.7	808	33.3	12	800	33.6	801	33.6	802	33.5
526.blender_r	12	352	51.9	350	52.2	353	51.8	12	353	51.8	353	51.8	352	51.9
527.cam4_r	12	436	48.1	433	48.4	433	48.4	12	441	47.6	437	48.1	439	47.8
538.imagick_r	12	247	121	247	121	249	120	12	250	119	250	119	247	121
544.nab_r	12	253	79.9	253	79.8	247	81.8	12	252	80.0	252	80.2	252	80.2
549.fotonik3d_r	12	2003	23.3	2004	23.3	2004	23.3	12	2004	23.3	2004	23.3	2004	23.3
554.roms_r	12	1263	15.1	1255	15.2	1262	15.1	12	1266	15.1	1269	15.0	1266	15.1

SPECrate®2017_fp_base = **39.0**

SPECrate®2017_fp_peak = **39.5**

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

Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

General Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/spec2017/lib/ia32:/spec2017/lib/intel64"

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
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

Yes: 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.

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS100-E10(P11C-M/4L) Server System
(3.50 GHz, Intel Xeon E-2146G)

SPECrate®2017_fp_base = 39.0

SPECrate®2017_fp_peak = 39.5

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Jun-2019

Hardware Availability: Jun-2019

Software Availability: May-2019

General Notes (Continued)

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.

Platform Notes

BIOS Configuration:

VT-d = Disabled

AES = Disabled

Race to Halt (RTH) = Disabled

 Sysinfo program /spec2017/bin/sysinfo

 Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9

 running on linux-ngvl Thu Jun 20 16:41:37 2019

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>

From /proc/cpuinfo

 model name : Intel(R) Xeon(R) E-2146G CPU @ 3.50GHz

 1 "physical id"s (chips)

 12 "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 : 6

 siblings : 12

 physical 0: cores 0 1 2 3 4 5

From lscpu:

 Architecture: x86_64

 CPU op-mode(s): 32-bit, 64-bit

 Byte Order: Little Endian

 CPU(s): 12

 On-line CPU(s) list: 0-11

 Thread(s) per core: 2

 Core(s) per socket: 6

 Socket(s): 1

 NUMA node(s): 1

 Vendor ID: GenuineIntel

 CPU family: 6

 Model: 158

 Model name: Intel(R) Xeon(R) E-2146G CPU @ 3.50GHz

 Stepping: 10

 CPU MHz: 3500.000

 CPU max MHz: 4500.0000

 CPU min MHz: 800.0000

 BogoMIPS: 7008.00

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS100-E10(P11C-M/4L) Server System
(3.50 GHz, Intel Xeon E-2146G)

SPECrate®2017_fp_base = 39.0

SPECrate®2017_fp_peak = 39.5

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Jun-2019

Hardware Availability: Jun-2019

Software Availability: May-2019

Platform Notes (Continued)

```

Virtualization:      VT-x
L1d cache:          32K
L1i cache:          32K
L2 cache:           256K
L3 cache:           12288K
NUMA node0 CPU(s):  0-11
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 tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3
sdbg fma cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer
xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb invpcid_single pti
ssbd ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1
hle avx2 smep bmi2 erms invpcid rtm mpx rdseed adx smap clflushopt intel_pt xsaveopt
xsavec xgetbv1 xsaves dtherm ida arat pln pts hwp hwp_notify hwp_act_window hwp_epp
flush_l1d

```

```

/proc/cpuinfo cache data
cache size : 12288 KB

```

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.

```

available: 1 nodes (0)
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11
node 0 size: 64320 MB
node 0 free: 63804 MB
node distances:
node 0
0: 10

```

From /proc/meminfo

```

MemTotal:      65864512 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

From /etc/*release* /etc/*version*

```

os-release:
NAME="SLES"
VERSION="15"
VERSION_ID="15"
PRETTY_NAME="SUSE Linux Enterprise Server 15"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15"

```

```
uname -a:
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS100-E10(P11C-M/4L) Server System
(3.50 GHz, Intel Xeon E-2146G)

SPECrate®2017_fp_base = 39.0

SPECrate®2017_fp_peak = 39.5

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Jun-2019

Hardware Availability: Jun-2019

Software Availability: May-2019

Platform Notes (Continued)

```
Linux linux-ngvl 4.12.14-150.17-default #1 SMP Thu May 2 15:15:46 UTC 2019 (bf13fb8)
x86_64 x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

```
CVE-2017-5754 (Meltdown): Mitigation: PTI
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Full generic retpoline, IBPB: conditional,
IBRS_FW, STIBP: conditional, RSB filling
```

run-level 3 Jun 20 16:38

SPEC is set to: /spec2017

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda4        xfs   442G   19G  423G   5% /
```

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.

BIOS American Megatrends Inc. 0703 06/13/2019

Memory:

4x Samsung M391A2K43BB1-CTD 16 GB 2 rank 2667, configured at 2666

(End of data from sysinfo program)

Compiler Version Notes

```
=====  
C | 519.lbm_r(base, peak) 538.imagick_r(base, peak)  
  | 544.nab_r(base, peak)  
-----
```

```
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.1.144 Build 20181018  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
-----
```

```
=====  
C++ | 508.namd_r(base, peak) 510.parest_r(base, peak)  
-----
```

```
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.1.144 Build 20181018  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
-----  
=====
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS100-E10(P11C-M/4L) Server System
(3.50 GHz, Intel Xeon E-2146G)

SPECrate®2017_fp_base = 39.0

SPECrate®2017_fp_peak = 39.5

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Jun-2019

Hardware Availability: Jun-2019

Software Availability: May-2019

Compiler Version Notes (Continued)

C++, C | 511.povray_r(base, peak) 526.blender_r(base, peak)

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

=====
C++, C, Fortran | 507.cactuBSSN_r(base, peak)

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

=====
Fortran | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak)
| 554.roms_r(base, peak)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

=====
Fortran, C | 521.wrf_r(base, peak) 527.cam4_r(base, peak)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS100-E10(P11C-M/4L) Server System
(3.50 GHz, Intel Xeon E-2146G)

SPECrate®2017_fp_base = 39.0

SPECrate®2017_fp_peak = 39.5

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Jun-2019

Hardware Availability: Jun-2019

Software Availability: May-2019

Base Compiler Invocation

C benchmarks:

```
icc -m64 -std=c11
```

C++ benchmarks:

```
icpc -m64
```

Fortran benchmarks:

```
ifort -m64
```

Benchmarks using both Fortran and C:

```
ifort -m64 icc -m64 -std=c11
```

Benchmarks using both C and C++:

```
icpc -m64 icc -m64 -std=c11
```

Benchmarks using Fortran, C, and C++:

```
icpc -m64 icc -m64 -std=c11 ifort -m64
```

Base Portability Flags

```
503.bwaves_r: -DSPEC_LP64
```

```
507.cactuBSSN_r: -DSPEC_LP64
```

```
508.namd_r: -DSPEC_LP64
```

```
510.parest_r: -DSPEC_LP64
```

```
511.povray_r: -DSPEC_LP64
```

```
519.lbm_r: -DSPEC_LP64
```

```
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
```

```
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
```

```
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
```

```
538.imagick_r: -DSPEC_LP64
```

```
544.nab_r: -DSPEC_LP64
```

```
549.fotonik3d_r: -DSPEC_LP64
```

```
554.roms_r: -DSPEC_LP64
```

Base Optimization Flags

C benchmarks:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=4
```

C++ benchmarks:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS100-E10(P11C-M/4L) Server System
(3.50 GHz, Intel Xeon E-2146G)

SPECrate®2017_fp_base = 39.0

SPECrate®2017_fp_peak = 39.5

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Jun-2019

Hardware Availability: Jun-2019

Software Availability: May-2019

Base Optimization Flags (Continued)

C++ benchmarks (continued):

-qopt-mem-layout-trans=4

Fortran benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only

-qopt-mem-layout-trans=4 -auto -nostandard-realloc-lhs

-align array32byte

Benchmarks using both Fortran and C:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only

-qopt-mem-layout-trans=4 -auto -nostandard-realloc-lhs

-align array32byte

Benchmarks using both C and C++:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only

-qopt-mem-layout-trans=4

Benchmarks using Fortran, C, and C++:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only

-qopt-mem-layout-trans=4 -auto -nostandard-realloc-lhs

-align array32byte

Peak Compiler Invocation

C benchmarks:

icc -m64 -std=c11

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

ifort -m64 icc -m64 -std=c11

Benchmarks using both C and C++:

icpc -m64 icc -m64 -std=c11

Benchmarks using Fortran, C, and C++:

icpc -m64 icc -m64 -std=c11 ifort -m64



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS100-E10(P11C-M/4L) Server System
(3.50 GHz, Intel Xeon E-2146G)

SPECrate®2017_fp_base = 39.0

SPECrate®2017_fp_peak = 39.5

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Jun-2019

Hardware Availability: Jun-2019

Software Availability: May-2019

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

519.lbm_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4

538.imagick_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4

544.nab_r: Same as 538.imagick_r

C++ benchmarks:

508.namd_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4

510.parest_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4

Fortran benchmarks:

503.bwaves_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -auto
-nonstandard-realloc-lhs -align array32byte

549.fotonik3d_r: Same as 503.bwaves_r

554.roms_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -auto -nonstandard-realloc-lhs
-align array32byte

Benchmarks using both Fortran and C:

-prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -auto -nonstandard-realloc-lhs
-align array32byte

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS100-E10(P11C-M/4L) Server System
(3.50 GHz, Intel Xeon E-2146G)

SPECrate®2017_fp_base = 39.0

SPECrate®2017_fp_peak = 39.5

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Jun-2019

Hardware Availability: Jun-2019

Software Availability: May-2019

Peak Optimization Flags (Continued)

Benchmarks using both C and C++:

```
511.povray_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3  
-no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=4
```

```
526.blender_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=4
```

Benchmarks using Fortran, C, and C++:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=4 -auto -nostandard-realloc-lhs  
-align array32byte
```

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

<http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-p11-V2.0-revB.html>

<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2019-04-02.html>

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

<http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-p11-V2.0-revB.xml>

<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2019-04-02.xml>

SPEC CPU and SPECrate 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 v1.0.5 on 2019-06-20 04:41:36-0400.

Report generated on 2019-09-17 16:06:21 by CPU2017 PDF formatter v6255.

Originally published on 2019-09-17.