SPEC® CPU2017 Floating Point Speed Result
Copyright 2017-2018 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS WS C621E SAGE Server System
(2.50 GHz, Intel Xeon Platinum 8180)

SPECspeed2017_fp_base =   134
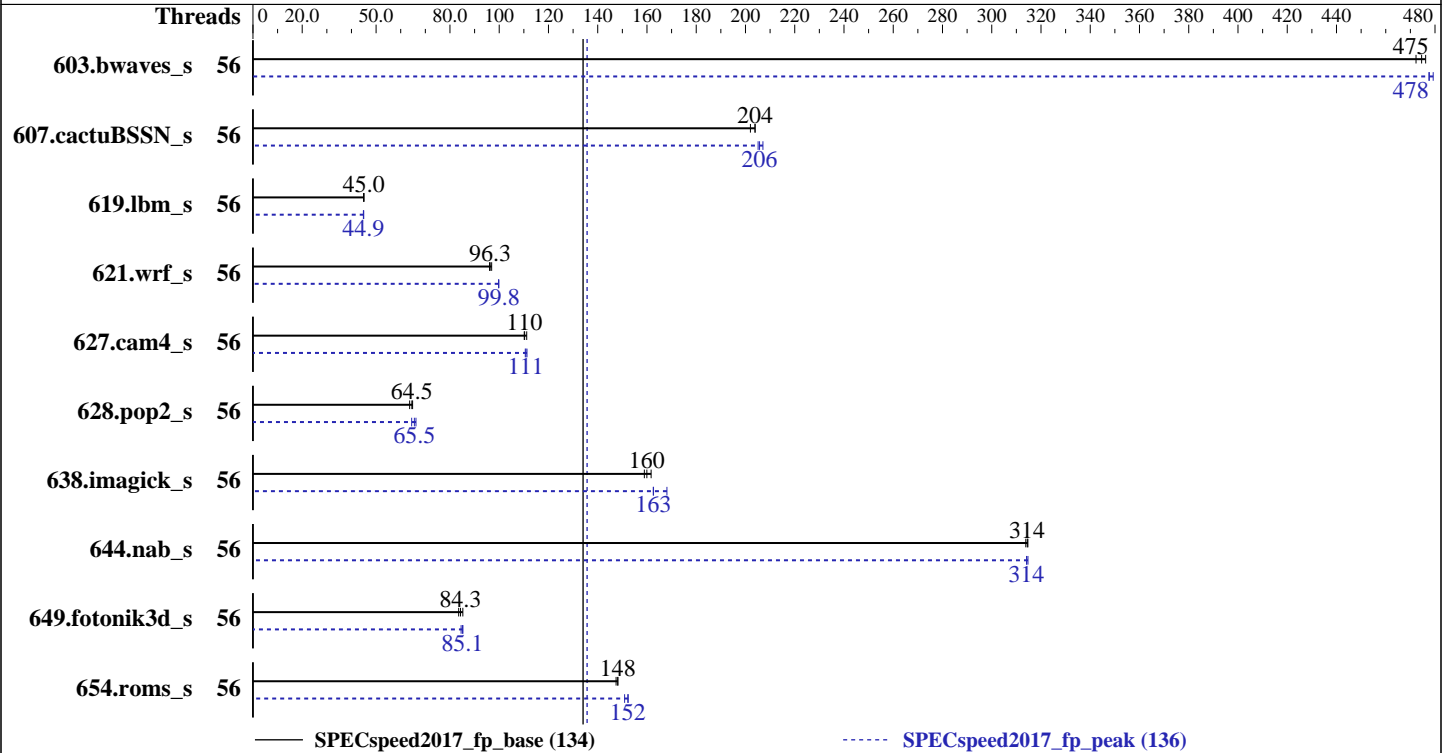
SPECspeed2017_fp_peak =   136

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2018

Hardware Availability: Sep-2017

Software Availability: Sep-2017

Threads

Benchmark	Threads	base	peak
603.bwaves_s	56	475	478
607.cactuBSSN_s	56	204	206
619.lbm_s	56	45.0	44.9
621.wrf_s	56	96.3	99.8
627.cam4_s	56	110	111
628.pop2_s	56	64.5	65.5
638.imagick_s	56	160	163
644.nab_s	56	314	314
649.fotonik3d_s	56	84.3	85.1
654.roms_s	56	148	152

SPECspeed2017_fp_base (134)   **SPECspeed2017_fp_peak (136)**

Hardware

CPU Name: Intel Xeon Platinum 8180

 Max MHz.:   3800

 Nominal: 2500

Enabled: 56 cores, 2 chips

Orderable: 1, 2 chip(s)

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 (12 x 32 GB 2Rx4 PC4-2666V-R)

Storage: 1 x 240 GB SATA SSD

Other: None

Software

OS: SUSE Linux Enterprise Server 12 (x86_64) SP2
Kernel 4.4.21-69-default

Compiler: C/C++: Version 18.0.0.128 of Intel C/C++
Compiler for Linux;
Fortran: Version 18.0.0.128 of Intel Fortran
Compiler for Linux

Parallel: Yes

Firmware: Version 0401 released Oct-2017

File System: btrfs

System State: Run level 3 (multi-user)

Base Pointers: 64-bit

Peak Pointers: 64-bit

Other: None

SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS WS C621E SAGE Server System
(2.50 GHz, Intel Xeon Platinum 8180)

SPECspeed2017_fp_base = 134

SPECspeed2017_fp_peak = 136

CPU2017 License: 9016	**Test Date:** Jan-2018
Test Sponsor: ASUSTeK Computer Inc.	**Hardware Availability:** Sep-2017
Tested by: ASUSTeK Computer Inc.	**Software Availability:** Sep-2017

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	56	125	472	**124**	**475**	124	476	56	**124**	**478**	124	478	123	479
607.cactuBSSN_s	56	**81.8**	**204**	81.8	204	82.5	202	56	**81.0**	**206**	80.5	207	81.3	205
619.lbm_s	56	116	45.1	117	44.9	**116**	**45.0**	56	116	45.0	117	44.8	**117**	**44.9**
621.wrf_s	56	**137**	**96.3**	138	96.1	136	96.9	56	133	99.8	**133**	**99.8**	133	99.7
627.cam4_s	56	80.5	110	**80.3**	**110**	79.7	111	56	**80.0**	**111**	80.2	111	79.6	111
628.pop2_s	56	**184**	**64.5**	187	63.6	183	64.8	56	179	66.2	**181**	**65.5**	184	64.4
638.imagick_s	56	**90.2**	**160**	90.8	159	89.2	162	56	88.7	163	85.8	168	**88.7**	**163**
644.nab_s	56	**55.6**	**314**	55.7	314	55.5	315	56	55.6	314	55.5	315	**55.6**	**314**
649.fotonik3d_s	56	**108**	**84.3**	107	85.2	109	83.5	56	108	84.5	107	85.3	**107**	**85.1**
654.roms_s	56	106	148	**106**	**148**	107	147	56	104	151	**103**	**152**	103	152
SPECspeed2017_fp_base =	**134**													
SPECspeed2017_fp_peak =	**136**													

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

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:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/spec2017/lib/ia32:/spec2017/lib/intel64:/spec2017/je5.0.1-32:/spec2017/je5.0.1-64"
OMP_STACKSIZE = "192M"

 Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
 memory using Redhat Enterprise Linux 7.4
 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
```
No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
No: 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.
No: 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.

```
This benchmark result is intended to provide perspective on
past performance using the historical hardware and/or
software described on this result page.

The system as described on this result page was formerly
```

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org) https://www.spec.org/

SPEC CPU2017 Floating Point Speed Result

ASUSTeK Computer Inc.

ASUS WS C621E SAGE Server System
(2.50 GHz, Intel Xeon Platinum 8180)

SPECspeed2017_fp_base = 134

SPECspeed2017_fp_peak = 136

CPU2017 License:	9016	**Test Date:**	Jan-2018
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Sep-2017
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Sep-2017

General Notes (Continued)

generally available. At the time of this publication, it may
not be shipping, and/or may not be supported, and/or may fail
to meet other tests of General Availability described in the
SPEC OSG Policy document, http://www.spec.org/osg/policy.html

This measured result may not be representative of the result
that would be measured were this benchmark run with hardware
and software available as of the publication date.

Platform Notes

```
BIOS Configuration:
SNC = Disabled
IMC interleaving = AUTO
Patrol Scrub = Disabled
VT-d = Disabled
HyperThreading = Disabled
 Sysinfo program /spec2017/bin/sysinfo
 Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
 running on linux-pmm5 Thu Jan 18 15:05:57 2018

 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) Platinum 8180 CPU @ 2.50GHz
       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
```

(Continued on next page)

       https://www.spec.org/

ASUSTeK Computer Inc.

ASUS WS C621E SAGE Server System
(2.50 GHz, Intel Xeon Platinum 8180)

SPECspeed2017_fp_base = 134

SPECspeed2017_fp_peak = 136

CPU2017 License:	9016	**Test Date:**	Jan-2018
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Sep-2017
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Sep-2017

Platform Notes (Continued)

```
      Socket(s):              2
      NUMA node(s):           2
      Vendor ID:              GenuineIntel
      CPU family:             6
      Model:                  85
      Model name:             Intel(R) Xeon(R) Platinum 8180 CPU @ 2.50GHz
      Stepping:               4
      CPU MHz:                2574.987
      BogoMIPS:               5149.97
      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
  aperfmperf eagerfpu 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 ida arat epb pln pts dtherm hwp_epp
  intel_pt tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2
  smep bmi2 erms invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb
  avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc

 /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: 192045 MB
    node 0 free: 187177 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: 193504 MB
    node 1 free: 189633 MB
    node distances:
    node   0   1
      0:  10  21
      1:  21  10

 From /proc/meminfo
    MemTotal:       394803024 kB
    HugePages_Total:        0
```

(Continued on next page)

ASUSTeK Computer Inc.

ASUS WS C621E SAGE Server System
(2.50 GHz, Intel Xeon Platinum 8180)

SPECspeed2017_fp_base = 134

SPECspeed2017_fp_peak = 136

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2018
Hardware Availability: Sep-2017
Software Availability: Sep-2017

Platform Notes (Continued)

```
    Hugepagesize:        2048 kB

 From /etc/*release* /etc/*version*
    SuSE-release:
       SUSE Linux Enterprise Server 12 (x86_64)
       VERSION = 12
       PATCHLEVEL = 2
       # This file is deprecated and will be removed in a future service pack or release.
       # Please check /etc/os-release for details about this release.
    os-release:
       NAME="SLES"
       VERSION="12-SP2"
       VERSION_ID="12.2"
       PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
       ID="sles"
       ANSI_COLOR="0;32"
       CPE_NAME="cpe:/o:suse:sles:12:sp2"

 uname -a:
    Linux linux-pmm5 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016 (9464f67)
    x86_64 x86_64 x86_64 GNU/Linux

 run-level 3 Jan 18 10:27

 SPEC is set to: /spec2017
    Filesystem      Type   Size  Used Avail Use% Mounted on
    /dev/sda2       btrfs  203G  140G   63G  70% /

 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. 0401 10/18/2017
   Memory:
    12x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666

 (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
 CC  619.lbm_s(base) 638.imagick_s(base, peak) 644.nab_s(base, peak)
------------------------------------------------------------------------------
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------
```

(Continued on next page)

ASUSTeK Computer Inc.

ASUS WS C621E SAGE Server System
(2.50 GHz, Intel Xeon Platinum 8180)

SPECspeed2017_fp_base = 134

SPECspeed2017_fp_peak = 136

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2018
Hardware Availability: Sep-2017
Software Availability: Sep-2017

Compiler Version Notes (Continued)

```
==============================================================================
CC    619.lbm_s(peak)
------------------------------------------------------------------------------
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
 FC   607.cactuBSSN_s(base)
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
FC    607.cactuBSSN_s(peak)
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
 FC   603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
FC    603.bwaves_s(peak) 649.fotonik3d_s(peak) 654.roms_s(peak)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
 CC   621.wrf_s(base) 627.cam4_s(base, peak) 628.pop2_s(base)
------------------------------------------------------------------------------
```

(Continued on next page)

ASUSTeK Computer Inc.

ASUS WS C621E SAGE Server System
(2.50 GHz, Intel Xeon Platinum 8180)

SPECspeed2017_fp_base = 134

SPECspeed2017_fp_peak = 136

CPU2017 License: 9016　　　　　　　　　　　　　　　　　　　**Test Date:**　　　　　Jan-2018
Test Sponsor:　　ASUSTeK Computer Inc.　　　　　　　**Hardware Availability:** Sep-2017
Tested by:　　　　ASUSTeK Computer Inc.　　　　　　　**Software Availability:**　Sep-2017

Compiler Version Notes (Continued)

```
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------


==============================================================================
CC   621.wrf_s(peak) 628.pop2_s(peak)
------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
```
icc -m64 -std=c11
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
ifort -m64 icc -m64 -std=c11
```

Benchmarks using Fortran, C, and C++:
```
icpc -m64 icc -m64 -std=c11 ifort -m64
```

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
```

SPEC CPU2017 Floating Point Speed Result

ASUSTeK Computer Inc.

ASUS WS C621E SAGE Server System
(2.50 GHz, Intel Xeon Platinum 8180)

SPECspeed2017_fp_base = 134

SPECspeed2017_fp_peak = 136

CPU2017 License:	9016	**Test Date:**	Jan-2018
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Sep-2017
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Sep-2017

Base Optimization Flags

C benchmarks:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
```

Fortran benchmarks:

```
-DSPEC_OPENMP -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-nostandard-realloc-lhs -align array32byte
```

Benchmarks using both Fortran and C:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte
```

Benchmarks using Fortran, C, and C++:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte
```

Peak Compiler Invocation

C benchmarks:
```
icc -m64 -std=c11
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
ifort -m64 icc -m64 -std=c11
```

Benchmarks using Fortran, C, and C++:
```
icpc -m64 icc -m64 -std=c11 ifort -m64
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Standard Performance Evaluation Corporation (info@spec.org) https://www.spec.org/

SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS WS C621E SAGE Server System
(2.50 GHz, Intel Xeon Platinum 8180)

SPECspeed2017_fp_base = 134

SPECspeed2017_fp_peak = 136

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2018

Hardware Availability: Sep-2017

Software Availability: Sep-2017

Peak Optimization Flags

C benchmarks:

 619.lbm_s: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-O2 -xCORE-AVX512`
`-qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div`
`-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp`
`-DSPEC_OPENMP`

 638.imagick_s: `-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch`
`-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp`
`-DSPEC_OPENMP`

 644.nab_s: `Same as 638.imagick_s`

Fortran benchmarks:
`-prof-gen`(pass 1) `-prof-use`(pass 2) `-DSPEC_SUPPRESS_OPENMP`
`-DSPEC_OPENMP -O2 -xCORE-AVX512 -qopt-prefetch -ipo -O3`
`-ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3 -qopenmp`
`-nostandard-realloc-lhs -align array32byte`

Benchmarks using both Fortran and C:

 621.wrf_s: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-O2 -xCORE-AVX512`
`-qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div`
`-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp`
`-DSPEC_OPENMP -nostandard-realloc-lhs -align array32byte`

 627.cam4_s: `-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch`
`-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp`
`-DSPEC_OPENMP -nostandard-realloc-lhs -align array32byte`

 628.pop2_s: `Same as 621.wrf_s`

Benchmarks using Fortran, C, and C++:
`-prof-gen`(pass 1) `-prof-use`(pass 2) `-O2 -xCORE-AVX512 -qopt-prefetch`
`-ipo -O3 -ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3`
`-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -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-z11-V2.0-revD.html
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-12-21.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-z11-V2.0-revD.xml
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-12-21.xml

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS WS C621E SAGE Server System
(2.50 GHz, Intel Xeon Platinum 8180)

SPECspeed2017_fp_base = 134

SPECspeed2017_fp_peak = 136

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2018
Hardware Availability: Sep-2017
Software Availability: Sep-2017

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

Tested with SPEC CPU2017 v1.0.2 on 2018-01-18 02:05:56-0500.
Report generated on 2018-10-31 16:42:15 by CPU2017 PDF formatter v6067.
Originally published on 2018-02-27.