### SPEC CPU®2017 Floating Point Speed Result

**ASUSTeK Computer Inc.**  
ASUS RS300-E10(P11C-C/4L) Server System  
(3.80 GHz, Intel Xeon E-2276G)

| Test Date: | Nov-2019 |
| Test Sponsor: | ASUSTeK Computer Inc. |
| Tested by: | ASUSTeK Computer Inc. |
| CPU2017 License: | 9016 |
| Hardware Availability: | Oct-2019 |
| Software Availability: | Sep-2019 |

#### Hardware

<table>
<thead>
<tr>
<th>Test</th>
<th>Threads</th>
<th>SPECspeed®2017_fp_base</th>
<th>SPECspeed®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>12</td>
<td>78.7</td>
<td>78.7</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>12</td>
<td>56.7</td>
<td>56.7</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>12</td>
<td>15.7</td>
<td>15.7</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>12</td>
<td>45.9</td>
<td>48.9</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>12</td>
<td>29.7</td>
<td>29.7</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>12</td>
<td>33.0</td>
<td>35.7</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>12</td>
<td>33.7</td>
<td>37.7</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>12</td>
<td>76.7</td>
<td>76.6</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>12</td>
<td>16.9</td>
<td>16.9</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>12</td>
<td>15.2</td>
<td>15.2</td>
</tr>
</tbody>
</table>

#### Software

| CPU Name: | Intel Xeon E-2276G |
| Max MHz: | 4900 |
| Nominal: | 3800 |
| 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 core |
| Other: | None |
| Memory: | 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E) |
| Storage: | 1 x 1 TB SATA SSD |
| Other: | None |

| OS: | SUSE Linux Enterprise Server 15 |
| Kernel: | 4.12.14-150.17-default |
| Compiler: | C++: Version 19.0.4.227 of Intel C++ Compiler Build 20190416 for Linux; Fortran: Version 19.0.4.227 of Intel Fortran Compiler Build 20190416 for Linux |
| Parallel: | Yes |
| Firmware: | Version 3102 released Oct-2019 |
| File System: | xfs |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 64-bit |
| Peak Pointers: | 64-bit |
| Other: | None |
| Power Management: | -- |
## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>12</td>
<td>749</td>
<td>78.7</td>
<td>749</td>
<td>78.7</td>
<td>749</td>
<td>78.7</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>12</td>
<td>295</td>
<td>56.5</td>
<td>294</td>
<td>56.7</td>
<td>293</td>
<td>56.9</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>12</td>
<td>334</td>
<td>15.7</td>
<td>333</td>
<td>15.7</td>
<td>334</td>
<td>15.7</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>12</td>
<td>287</td>
<td>46.0</td>
<td>288</td>
<td>45.9</td>
<td>289</td>
<td>45.7</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>12</td>
<td>299</td>
<td>29.7</td>
<td>298</td>
<td>29.7</td>
<td>299</td>
<td>29.7</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>12</td>
<td>360</td>
<td>33.0</td>
<td>365</td>
<td>32.6</td>
<td>359</td>
<td>33.1</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>12</td>
<td>124</td>
<td>33.7</td>
<td>124</td>
<td>33.7</td>
<td>124</td>
<td>33.7</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>12</td>
<td>228</td>
<td>76.7</td>
<td>228</td>
<td>76.7</td>
<td>228</td>
<td>76.6</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>12</td>
<td>358</td>
<td>16.9</td>
<td>358</td>
<td>16.9</td>
<td>358</td>
<td>16.9</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>12</td>
<td>1033</td>
<td>15.2</td>
<td>1035</td>
<td>15.2</td>
<td>1035</td>
<td>15.2</td>
</tr>
</tbody>
</table>

**SPECspeed®2017_fp_base = 34.1**  
**SPECspeed®2017_fp_peak = 34.4**

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"

### Environment Variables Notes

Environment variables set by runcpu before the start of the run:
- KMP_AFFINITY = "granularity=fine,compact"
- LD_LIBRARY_PATH = "/spec2017_110/lib/intel64"
- OMP_STACKSIZE = "192M"

### General Notes

Binaries compiled on a system with 1x Intel Core i9-799X 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.  
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.
ASUSTeK Computer Inc.
ASUS RS300-E10(P11C-C/4L) Server System
(3.80 GHz, Intel Xeon E-2276G)

SPEC CPU®2017 Floating Point Speed Result
Copyright 2017-2019 Standard Performance Evaluation Corporation

SPECspeed®2017_fp_base = 34.1
SPECspeed®2017_fp_peak = 34.4

ASUSTeK Computer Inc.
ASUS RS300-E10(P11C-C/4L) Server System
(3.80 GHz, Intel Xeon E-2276G)

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Test Date: Nov-2019
Tested by: ASUSTeK Computer Inc.
Hardware Availability: Oct-2019
Software Availability: Sep-2019

Platform Notes

BIOS Configuration:
Software Guard Extensions (SGX) = Disabled
AES = Disabled
VT-d = Disabled

Sysinfo program /spec2017_110/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7ed1b6e46a485a0011
running on linux-zeo2 Fri Nov 22 14:25:33 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-2276G CPU @ 3.80GHz
  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-2276G CPU @ 3.80GHz
Stepping: 10
CPU MHz: 3800.000
CPU max MHz: 4900.0000
CPU min MHz: 800.0000
BogoMIPS: 7584.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 256K
L3 cache: 12288K

(Continued on next page)
### SPEC CPU®2017 Floating Point Speed Result

**ASUSTeK Computer Inc.**

ASUS RS300-E10(P11C-C/4L) Server System  
(3.80 GHz, Intel Xeon E-2276G)

---

**CPU2017 License:** 9016  
**Test Sponsor:** ASUSTeK Computer Inc.  
**Tested by:** ASUSTeK Computer Inc.  
**Test Date:** Nov-2019  
**Hardware Availability:** Oct-2019  
**Software Availability:** Sep-2019

### SPECspeed®2017_fp_base = 34.1  
### SPECspeed®2017_fp_peak = 34.4

---

**Platform Notes (Continued)**

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 rdtsscp  
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid  
aperfmpref 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 bm1  
hle avx2 smep bmi2  
From /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: 64043 MB  
node 0 free: 61414 MB  
node distances:  
node 0  
0: 10  
From /proc/meminfo  
MemTotal: 65580920 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:  
Linux linux-zeo2 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:  

(Continued on next page)
ASUSTeK Computer Inc.  
ASUS RS300-E10(P11C-C/4L) Server System  
(3.80 GHz, Intel Xeon E-2276G)

SPEC speed

SPECspeed®2017_fp_base = 34.1  
SPECspeed®2017_fp_peak = 34.4

CPU2017 License: 9016  
Test Sponsor: ASUSTeK Computer Inc.  
Hardware Availability: Oct-2019  
Tested by: ASUSTeK Computer Inc.  
Software Availability: Sep-2019  
Test Date: Nov-2019

Platform Notes (Continued)

CVE-2018-3620 (L1 Terminal Fault): Mitigation: PTE Inversion; VMX: conditional cache flushes, SMT vulnerable
Microarchitectural Data Sampling: Mitigation: Clear CPU buffers; SMT vulnerable
CVE-2017-5754 (Meltdown): Mitigation: PTI
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: Full generic retprobe, IBPB: conditional, IBRS_FW, STIBP: conditional, RSB filling

run-level 3 Nov 21 19:05

SPEC is set to: /spec2017_110

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda4      xfs   929G   26G  904G   3% /

From /sys/devices/virtual/dmi/id
BIOS: American Megatrends Inc. 3102 10/04/2019
Vendor: ASUSTeK COMPUTER INC.
Product: P11C-C Series
Product Family: Server
Serial: System Serial Number

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

(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 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

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

(Continued on next page)
## Compiler Version Notes (Continued)

---

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
---

<table>
<thead>
<tr>
<th>Fortran</th>
<th>603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak) 654.roms_s(base, peak)</th>
</tr>
</thead>
</table>

---

<table>
<thead>
<tr>
<th>Fortran, C</th>
<th>621.wrf_s(base, peak) 627.cam4_s(base, peak) 628.pop2_s(base, peak)</th>
</tr>
</thead>
</table>

---

<table>
<thead>
<tr>
<th>Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copyright (C) 1985-2019 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Fortran 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copyright (C) 1985-2019 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Benchmark Notes</th>
</tr>
</thead>
</table>
| **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` |
SPEC CPU®2017 Floating Point Speed Result

ASUSTeK Computer Inc.
ASUS RS300-E10(P11C-C/4L) Server System
(3.80 GHz, Intel Xeon E-2276G)

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

SPECspeed®2017_fp_base = 34.1
SPECspeed®2017_fp_peak = 34.4

Test Date: Nov-2019
Hardware Availability: Oct-2019
Software Availability: Sep-2019

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

Fortran benchmarks:
-DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-nostandard-realloc-lhs

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs

Benchmarks using Fortran, C, and C++:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs

Peak Compiler Invocation

C benchmarks:
icc -m64 -std=c11

Fortran benchmarks:
ifort -m64

(Continued on next page)
SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS300-E10(P11C-C/4L) Server System
(3.80 GHz, Intel Xeon E-2276G)

SPECspeed®2017_fp_base = 34.1
SPECspeed®2017_fp_peak = 34.4

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

Test Date: Nov-2019
Hardware Availability: Oct-2019
Software Availability: Sep-2019

Peak Compiler Invocation (Continued)

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

Peak Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP

Fortran benchmarks:
603.bwaves_s: -prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPRESS_OPENMP
-DSPEC_OPENMP -O2 -xCORE-AVX2 -qopt-prefetch -ipo -O3
-ffinite-math-only -no-prec-div -qopt-mem-layout-trans=4
-qopenmp -nostandard-realloc-lhs

649.fotonik3d_s: Same as 603.bwaves_s

654.roms_s: -DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4
-qopenmp -nostandard-realloc-lhs

Benchmarks using both Fortran and C:
621.wrf_s: -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX2
-qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div
-qopt-mem-layout-trans=4 -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -nostandard-realloc-lhs

627.cam4_s: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -nostandard-realloc-lhs

628.pop2_s: Same as 621.wrf_s

(Continued on next page)
ASUSTeK Computer Inc.  
ASUS RS300-E10(P11C-C/4L) Server System  
(3.80 GHz, Intel Xeon E-2276G)

<table>
<thead>
<tr>
<th>CPU2017 License: 9016</th>
<th>Test Date: Nov-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tested by: ASUSTeK Computer Inc.</td>
<td>Software Availability: Sep-2019</td>
</tr>
</tbody>
</table>

**SPEC CPU®2017 Floating Point Speed Result**

**SPECspeed®2017_fp_base = 34.1**  
**SPECspeed®2017_fp_peak = 34.4**

**Peak Optimization Flags (Continued)**

Benchmarks using Fortran, C, and C++:
- `xCORE-AVX2`  
- `-ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only`  
- `-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP`  
- `-nostandard-realloc-lhs`

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


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


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 2019-11-22 01:25:33-0500.  
Report generated on 2019-12-26 11:36:19 by CPU2017 PDF formatter v6255.  
Originally published on 2019-12-24.