## SPEC® CPU2017 Floating Point Speed Result

### Dell Inc.
PowerEdge T340 (Intel Xeon E-2186G, 3.80GHz)

| SPECspeed2017_fp_base | 28.4 |
| SPECspeed2017_fp_peak | 26.7 |

**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** Dec-2018  
**Hardware Availability:** Dec-2018  
**Software Availability:** Apr-2018

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<tr>
<th>Threads</th>
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<th>SPECspeed2017_fp_peak (26.7)</th>
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<tr>
<td>654.roms_s 6</td>
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### Hardware
- **CPU Name:** Intel Xeon E-2186G  
- **Max MHz.:** 4700  
- **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-R)  
- **Storage:** 1 x 960 GB SATA SSD  
- **Other:** None

### Software
- **OS:** SUSE Linux Enterprise Server 12 SP3 kernel 4.4.126-94.22-default  
- **Compiler:** C/C++: Version 18.0.2.20180210 of Intel C/C++ Compiler for Linux; Fortran: Version 18.0.2.20180210 of Intel Fortran Compiler for Linux  
- **Parallel:** Yes  
- **Firmware:** Version 1.0.1 released Oct-2018  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** 64-bit  
- **Other:** None
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**SPECspeed2017_fp_base** = 28.4

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**Results Table**

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**SPECspeed2017_fp_base** = 28.4

**SPECspeed2017_fp_peak** = 26.7

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

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**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,1,0"
OMP_STACKSIZE = "192M"
LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.4
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.
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

---

**Platform Notes**

BIOS settings:
Virtualization Technology disabled
System Profile set to Custom

(Continued on next page)
Dell Inc.
PowerEdge T340 (Intel Xeon E-2186G, 3.80GHz)

SPECspeed2017_fp_base = 28.4
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CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Platform Notes (Continued)

CPU Performance set to Maximum Performance
C States set to Autonomous
C1E disabled
Uncore Frequency set to Dynamic
Energy Efficiency Policy set to Performance
Memory Patrol Scrub disabled
Logical Processor enabled
CPU Interconnect Bus Link Power Management disabled
PCI ASPM L1 Link Power Management disabled
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-icjc Thu Dec 6 19:05:07 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) E-2186G 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-2186G CPU @ 3.80GHz
  Stepping: 10
  CPU MHz: 4516.560
  CPU max MHz: 4700.0000
  CPU min MHz: 800.0000
  BogoMIPS: 7583.97
  Virtualization: VT-x

(Continued on next page)
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---

**Platform Notes (Continued)**

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 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 xtrr pdcm pcd sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3nowprefetch ida arat epb invpcid_single pln pts dtherm hwp hwp_act_window hwp_epp intel_pt rsb_ctxsw spec_ctrl stibp retopline kaiser tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 ersed invpcid rtm mpx rdseed adx smap clflushopt xsaveopt xsavec xgetbv1

```
/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: 64276 MB
  node 0 free: 55694 MB
  node distances:
  node 0
   0:  10

From /proc/meminfo
  MemTotal: 65818632 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
  SUSE Linux Enterprise Server 12 SP3

From /etc/*release* /etc/*version*
  SuSE-release:
    SUSE Linux Enterprise Server 12 (x86_64)
    VERSION = 12
    PATCHLEVEL = 3
    # 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-SP3"
    VERSION_ID="12.3"
```

(Continued on next page)
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Test Date: Dec-2018
Hardware Availability: Dec-2018
Software Availability: Apr-2018

Platform Notes (Continued)

PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp3"

uname -a:
    Linux linux-icjc 4.4.126-94.22-default #1 SMP Wed Apr 11 07:45:03 UTC 2018 (9649989)
    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: IBRS+IBPB

run-level 3 Dec 6 14:40 last=5

SPEC is set to: /home/cpu2017
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/sda2      xfs   301G   22G  279G   8% /

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 Dell Inc. 1.0.1 10/19/2018
    Memory:
        3x 00AD00000A02 HMA82GU7CJR8N-VK 16 GB 2 rank 2666
        1x 00AD00000A07 HMA82GU7CJR8N-VK 16 GB 2 rank 2666

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC  619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)
==============================================================================
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
==============================================================================

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CC  619.lbm_s(peak) 638.imagick_s(peak) 644.nab_s(peak)
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(Continued on next page)
Compiler Version Notes (Continued)

==============================================================================
FC  607.cactuBSSN_s(base)
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icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

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FC   607.cactuBSSN_s(peak)
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#### Compiler Version Notes (Continued)

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icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 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`

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#### Base Optimization Flags

- **C benchmarks**: `-xCORE-AVX2 -ipo -O3 -no-pref-div -qopt-prefetch -ffinite-math-only`

(Continued on next page)
**Base Optimization Flags (Continued)**

C benchmarks (continued):
- `-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP`

Fortran benchmarks:
- `-DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -nstandard-realloc-lhs`

Benchmarks using both Fortran and C:
- `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only`
- `-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP`
- `-nstandard-realloc-lhs`

Benchmarks using Fortran, C, and C++:
- `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only`
- `-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP`
- `-nstandard-realloc-lhs`

**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

**Peak Optimization Flags**

C benchmarks:
`-prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX2 -qopt-prefetch`

(Continued on next page)
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Peak Optimization Flags (Continued)

C benchmarks (continued):
- ipo -O3 -ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3
- DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP

Fortran benchmarks:
- 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=3 -qopenmp
- nostandard-realloc-lhs

Benchmarks using both Fortran and C:
- 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=3
- DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -nostandard-realloc-lhs

Benchmarks using Fortran, C, and C++:
- 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=3
- DSPEC_SUPPRESS_OPENMP -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:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-12-21.xml

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