**SPEC® CPU2017 Floating Point Speed Result**

**Dell Inc.**

PowerEdge T340 (Intel Xeon E-2134, 3.50GHz)

<table>
<thead>
<tr>
<th>NAME</th>
<th>VALUE</th>
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<tbody>
<tr>
<td>CPU2017 License</td>
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<td>Tested by</td>
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<tr>
<td>607.cactuBSSN_s</td>
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<td>619.lbm_s</td>
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<td>621.wrf_s</td>
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<td>628.pop2_s</td>
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<td>638.imagick_s</td>
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<td>644.nab_s</td>
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<td>649.fotonik3d_s</td>
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<tr>
<td>654.roms_s</td>
<td>4</td>
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**Hardware**

- **CPU Name:** Intel Xeon E-2134
- **Max MHz.:** 4500
- **Nominal:** 3500
- **Enabled:** 4 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:** 8 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
- **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

---

**SPECspeed2017_fp_base = 24.3**

**SPECspeed2017_fp_peak = 23.0**
Dell Inc. (Intel Xeon E-2134, 3.50GHz)

SPECspeed2017_fp_base = 24.3
SPECspeed2017_fp_peak = 23.0

Results Table

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<td>990</td>
<td>15.9</td>
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</tbody>
</table>

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,1,0"
LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/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
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)
SPEC CPU2017 Floating Point Speed Result

Dell Inc.
PowerEdge T340 (Intel Xeon E-2134, 3.50GHz)

SPECspeed2017_fp_base = 24.3
SPECspeed2017_fp_peak = 23.0

CPU2017 License: 55
Test Sponsor: Dell Inc.
Test Date: Jan-2019
Tested by: Dell Inc.
Hardware Availability: Dec-2018
Software Availability: Apr-2018

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 9bcede8f2999c33d61f64985e45859ea9
running on linux-icjc Thu Jan 10 14:11:35 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-2134 CPU @ 3.50GHz
  1 "physical id"s (chips)
  8 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following
exicpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores: 4
siblings: 8
physical 0: cores 0 1 2 3

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 8
On-line CPU(s) list: 0-7
Thread(s) per core: 2
Core(s) per socket: 4
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6
Model: 158
Model name: Intel(R) Xeon(R) E-2134 CPU @ 3.50GHz
Stepping: 10
CPU MHz: 4442.767
CPU max MHz: 4500.0000
CPU min MHz: 800.0000
BogoMIPS: 7007.98
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: 8192K
NUMA node0 CPU(s): 0-7
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov...

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
node 0 size: 64277 MB
node 0 free: 56640 MB
node distances:
node 0
0: 10

From /proc/meminfo
MemTotal: 65820248 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

SUSE Linux Enterprise Server 12 SP3

os-release:
NAME="SLES"
VERSION="12-SP3"
VERSION_ID="12.3"

(Continued on next page)
## Dell Inc.

**PowerEdge T340 (Intel Xeon E-2134, 3.50GHz)**

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### Test Sponsor:
Dell Inc.

### Hardware Availability:
Dec-2018

### Software Availability:
Apr-2018

### Test Date:
Jan-2019

### Tested by:
Dell Inc.

### 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 Jan 10 09:28 last=5

SPEC is set to: /home/cpu2017

```
Filesystem  Type Size  Used Avail Use% Mounted on
/dev/sda2   xfs  301G  22G  280G  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:
1x 00AD00000A00 HMA82GU7CJR8N-VK 16 GB 2 rank 2666
3x 00AD00000A02 HMA82GU7CJR8N-VK 16 GB 2 rank 2666

(End of data from sysinfo program)

### Compiler Version Notes

```
===============================================
CC  619.ibm_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.
```

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

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

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<td>icpc (ICC)</td>
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Copyright 2017-2019 Standard Performance Evaluation Corporation

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Compiler Version Notes (Continued)

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CC   621.wrf_s(peak) 627.cam4_s(peak) 628.pop2_s(peak)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
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.cactusBSSN_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

(Continued on next page)
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CPU2017 License: 55
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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
-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=3 -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=3 -qopenmp -DSPEC_OPENMP
-nostandard-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) -02 -xCORE-AVX2 -qopt-prefetch

(Continued on next page)
## 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: