Dell Inc.
PowerEdge R340 (Intel Xeon E-2186G, 3.80GHz)

SPECrate2017_fp_base = 38.2
SPECrate2017_fp_peak = 36.8

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 chip
Other: None
Memory: 64 GB (4 x 16 GB 2Rx8 PC4-2666V-R)
Storage: 1 x 960 GB SATA SSD
Other: None

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: No
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
## SPEC CPU2017 Floating Point Rate Result

### Dell Inc.
PowerEdge R340 (Intel Xeon E-2186G, 3.80GHz)

**SPECrate2017_fp_base = 38.2**
**SPECrate2017_fp_peak = 36.8**

<table>
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<th>Tested by: Dell Inc.</th>
<th>Test Date: Dec-2018</th>
<th>Hardware Availability: Dec-2018</th>
<th>Software Availability: Apr-2018</th>
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### Results Table

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<td>544.nab_r</td>
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<td>554.roms_r</td>
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<td>12.2</td>
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<td>12.2</td>
<td>1562</td>
</tr>
</tbody>
</table>

**SPECrate2017_fp_base = 38.2**
**SPECrate2017_fp_peak = 36.8**

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

### Submit Notes
The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl 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 = "/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

(Continued on next page)
### Dell Inc.

**PowerEdge R340 (Intel Xeon E-2186G, 3.80GHz)**

**SPECrate2017 fp_base** = 38.2

**SPECrate2017 fp_peak** = 36.8

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</tbody>
</table>

**General Notes (Continued)**

Filesystem page cache synced and cleared with:
```
sync; echo 3>/proc/sys/vm/drop_caches
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>
```

**Platform Notes**

- BIOS settings:
  - Virtualization Technology disabled
  - System Profile set to Custom
  - 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-bx7m Tue Dec 4 16:18:30 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](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
```

(Continued on next page)
## Platform Notes (Continued)

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>Vendor ID:</td>
<td>GenuineIntel</td>
</tr>
<tr>
<td>CPU family:</td>
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<tr>
<td>Model:</td>
<td>158</td>
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<tr>
<td>Model name:</td>
<td>Intel(R) Xeon(R) E-2186G CPU @ 3.80GHz</td>
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<td>Stepping:</td>
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<tr>
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<td>32K</td>
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<td>L1i cache:</td>
<td>32K</td>
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<tr>
<td>L2 cache:</td>
<td>256K</td>
</tr>
<tr>
<td>L3 cache:</td>
<td>12288K</td>
</tr>
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<td>NUMA node0 CPU(s):</td>
<td>0-11</td>
</tr>
<tr>
<td>Flags:</td>
<td>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 aperfmpref eagerfpu 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 aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epccmpcb single pln pts dtherm hwp hwp_act_window hwp_epp intel_pt rsb_ctxs w spec_ctrl stibp retoline kaiser tpr_shadow vnmie flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm mpx rdseed adx smap clflushopt xsaveopt xsavec xgetbv1</td>
</tr>
</tbody>
</table>

```
/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: 63799 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
```

(Continued on next page)
## Platform Notes (Continued)

From `/etc/*release* /etc/*version*`:

```plaintext
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"
- 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-bx7m 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 4 08:48 last=5

SPEC is set to: /home/cpu2017
  Filesystem     Type  Size  Used  Avail  Use% Mounted on
  /dev/sda2      xfs    300G  16G  285G   6% /

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)
Dell Inc.
PowerEdge R340 (Intel Xeon E-2186G, 3.80GHz)

SPECrat2017_fp_base = 38.2
SPECrat2017_fp_peak = 36.8

Compiler Version Notes

==============================================================================
CC  519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
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icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
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Dell Inc.
PowerEdge R340 (Intel Xeon E-2186G, 3.80GHz)

SPECrate2017_fp_base = 38.2
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CPU2017 License: 55
Test Sponsor: Dell Inc.
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Test Date: Dec-2018
Hardware Availability: Dec-2018
Software Availability: Apr-2018

Compiler Version Notes (Continued)

FC 507.cactuBSSN_r(base)

icpc (ICC) 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.
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

FC 507.cactuBSSN_r(peak)

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ifort (IFORT) 18.0.2 20180210
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FC 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)

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FC 503.bwaves_r(peak) 549.fotonik3d_r(peak) 554.roms_r(peak)

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CC 521.wrf_r(base) 527.cam4_r(base)

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**Dell Inc.**

PowerEdge R340 (Intel Xeon E-2186G, 3.80GHz)

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**Compiled Version Notes (Continued)**

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

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.paret_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.libm_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
Dell Inc.

PowerEdge R340 (Intel Xeon E-2186G, 3.80GHz)

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

**Base Optimization Flags**

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -auto -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 -auto -nostandard-realloc-lhs

Benchmarks using both C and C++:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3

**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 CPU2017 Floating Point Rate Result

Dell Inc.
PowerEdge R340 (Intel Xeon E-2186G, 3.80GHz)

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CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

- **Test Date**: Dec-2018
- **Hardware Availability**: Dec-2018
- **Software Availability**: Apr-2018

### Peak Portability Flags

Same as Base Portability Flags

### Peak Optimization Flags

**C benchmarks:**
- `-prof-gen(pass 1)`
- `-prof-use(pass 2)`
- `-ipo -xCORE-AVX2 -O3`
- `-no-prec-div -qopt-prefetch -ffinite-math-only`
- `-qopt-mem-layout-trans=3`

**C++ benchmarks:**
- `-prof-gen(pass 1)`
- `-prof-use(pass 2)`
- `-ipo -xCORE-AVX2 -O3`
- `-no-prec-div -qopt-prefetch -ffinite-math-only`
- `-qopt-mem-layout-trans=3`

**Fortran benchmarks:**
- `-prof-gen(pass 1)`
- `-prof-use(pass 2)`
- `-ipo -xCORE-AVX2 -O3`
- `-no-prec-div -qopt-prefetch -ffinite-math-only`
- `-qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs`

**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=3 -auto -nostandard-realloc-lhs`

**Benchmarks using both C 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=3`

**Benchmarks using Fortran, C, 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=3 -auto -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 CPU2017 Floating Point Rate Result

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<td>SPECrate2017_fp_peak = 36.8</td>
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<td>Software Availability: Apr-2018</td>
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