Dell Inc.

PowerEdge R240 (Intel Xeon E-2134)

**SPECrate2017_fp_base = 31.5**

**SPECrate2017_fp_peak = 30.4**

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

**Hardware**

- **CPU Name:** Intel Xeon E-2134
- **Max MHz.:** 4500
- **Nominal:** 3500
- **Enabled:** 4 cores, 1 chip, 2 threads/core
- **Orderable:** 1 chips
- **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 chip
- **Other:** None
- **Memory:** 64 GB (4 x 16 GB 2Rx8 PC4-2666V-R)
- **Storage:** 1 x 960 GB SATA SSD
- **Other:** None

**SPECrates**

<table>
<thead>
<tr>
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<th>SPECrate2017_fp_base (31.5)</th>
<th>SPECrate2017_fp_peak (30.4)</th>
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<td>507.cactuBSSN_r</td>
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<td>554.roms_r</td>
<td>8 12.3 72.4</td>
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**Software**

- **OS:** SUSE Linux Enterprise Server 12 SP3
  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:** 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 R240 (Intel Xeon E-2134)**

<table>
<thead>
<tr>
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### SPECrate2017_fp_base = 31.5

SPECrate2017_fp_peak = 30.4

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## Results Table

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</tbody>
</table>

### SPECrate2017_fp_base = 31.5

### SPECrate2017_fp_peak = 30.4

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/:/home/cpu2017/je5.0.1-32/:/home/cpu2017/je5.0.1-64"

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.

(Continued on next page)
Dell Inc.
PowerEdge R240 (Intel Xeon E-2134)

SPECrate2017_fp_peak = 30.4
SPECrate2017_fp_base = 31.5

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

General Notes (Continued)

Prior to runcpu invocation
Filesystem page cache synced and cleared with:
 sync; echo 3>/proc/sys/vm/drop_caches
runcpu command invoked through numacl 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-gw0u Mon Jan 21 15:48:55 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
excerpts 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

(Continued on next page)
Dell Inc.

PowerEdge R240 (Intel Xeon E-2134)

SPECrate2017_fp_base = 31.5
SPECrate2017_fp_peak = 30.4

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

Test Date: Jan-2019

Platform Notes (Continued)

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: 3858.323
CPU max MHz: 4500.0000
CPU min MHz: 800.0000
BogoMIPS: 7007.96
Virtualization: VT-x
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 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 eagerperf 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 epb invcpcid_single pknpx pts dtherm hwlp act_window hwp_epp intel_pt stibp retpoline kaiser tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm mpx rdseed adx smap clflushopt xsaveopt xsave c xstate

/cache data
cache size : 8192 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
node 0 size: 64277 MB
node 0 free: 63817 MB
node distances:
node 0
0: 10

From /proc/meminfo
MemTotal: 65820248 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*

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-gw0u 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 21 08:51 last=5

SPEC is set to: /home/cpu2017
- Filesystem Type Size Used Avail Use% Mounted on
  /dev/sda2 xfs 301G 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 R240 (Intel Xeon E-2134)

**SPEC CPU2017 Floating Point Rate Result**

- **SPECrate2017_fp_peak** = 30.4
- **SPECrate2017_fp_base** = 31.5

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**Compiler Version Notes**

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CC  519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
----------------------------------
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

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CC  519.lbm_r(peak) 538.imagick_r(peak) 544.nab_r(peak)
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CXXC 508.namd_r(base) 510.parest_r(base)
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icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

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CC  511.povray_r(base) 526.blender_r(base)
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icc (ICC) 18.0.2 20180210
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SPEC CPU2017 Floating Point Rate Result
Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.  PowerEdge R240 (Intel Xeon E-2134)  SPECrate2017_fp_base = 31.5
SPECrate2017_fp_peak = 30.4

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

Compiler 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.cactusBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.llvm_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
### SPEC CPU2017 Floating Point Rate Result

**Dell Inc.**  
**PowerEdge R240 (Intel Xeon E-2134)**  

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

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

### 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
Dell Inc.

PowerEdge R240 (Intel Xeon E-2134)

SPEC CPU2017 Floating Point Rate Result

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SPECrate2017 fp_base = 31.5
SPECrate2017 fp_peak = 30.4

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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:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-12-21.xml
### SPEC CPU2017 Floating Point Rate Result

**Dell Inc.**

**PowerEdge R240 (Intel Xeon E-2134)**

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<thead>
<tr>
<th>SPECrate2017_fp_base</th>
<th>SPECrate2017_fp_peak</th>
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</table>

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