## Dell Inc. PowerEdge R240 (Intel Xeon E-2124)

<table>
<thead>
<tr>
<th>Thread</th>
<th>SPECspeed2017 fp_base</th>
<th>SPECspeed2017 fp_peak</th>
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<tbody>
<tr>
<td>603.bwaves_s</td>
<td>37.9</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>7.03</td>
<td>37.7</td>
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<tr>
<td>619.lbm_s</td>
<td>7.03</td>
<td>30.3</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>17.3</td>
<td>32.0</td>
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<tr>
<td>627.cam4_s</td>
<td>16.8</td>
<td>28.5</td>
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<td>628.pop2_s</td>
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<td>29.8</td>
</tr>
<tr>
<td>638.imagick_s</td>
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<td>644.nab_s</td>
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<tr>
<td>649.fotonik3d_s</td>
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</tr>
<tr>
<td>654.roms_s</td>
<td>15.3</td>
<td>15.7</td>
</tr>
</tbody>
</table>

### Software
- **Operating System (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:** 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

### Hardware
- **CPU Name:** Intel Xeon E-2124
- **Max MHz.:** 4300
- **Nominal:** 3300
- **Enabled:** 4 cores, 1 chip
- **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
Dell Inc.
PowerEdge R240 (Intel Xeon E-2124)

SPECspeed2017_fp_base = 23.6
SPECspeed2017_fp_peak = 22.2

Results Table

<table>
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<th>Seconds</th>
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<td>1004</td>
<td>15.7</td>
<td>1006</td>
<td>15.6</td>
</tr>
</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"
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
## SPEC CPU2017 Floating Point Speed Result

**Dell Inc.**  
**PowerEdge R240 (Intel Xeon E-2124)**  

<table>
<thead>
<tr>
<th>SPEC Speed2017_fp_base</th>
<th>SPEC Speed2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.6</td>
<td>22.2</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 55  
**Test Date:** Mar-2019  
**Test Sponsor:** Dell Inc.  
**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  
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 9bcde8f29999c33d61f64985e45859ea9  
running on linux-gw0u Wed Mar 13 10:17:49 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-2124 CPU @ 3.30GHz  
  1 "physical id"s (chips)  
  4 "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 : 4  
  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): 4  
- On-line CPU(s) list: 0-3  
- Thread(s) per core: 1  
- 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-2124 CPU @ 3.30GHz  
- Stepping: 10  
- CPU MHz: 4045.719  
- CPU max MHz: 4300.0000  
- CPU min MHz: 800.0000  
- BogoMIPS: 6623.98  
- Virtualization: VT-x  
- L1d cache: 32K

(Continued on next page)
Dell Inc.

PowerEdge R240 (Intel Xeon E-2124)

**SPEC CPU2017 Floating Point Speed Result**

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**Software Availability:** Apr-2018

---

**Platform Notes (Continued)**

L1i cache: 32K  
L2 cache: 256K  
L3 cache: 8192K  
NUMA node0 CPU(s): 0-3  

Flags: fpu vme de pse tsc mtrr pge mca cmov pat pse36 clflush dtc acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good ntopology nonstop_tsc aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 sse3 sdbg fma cx16 xtrp pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb invpcid_single pln pts dtherm hwp_act_window hwp_epp intel_pt rsb_ctsw spec_ctrl 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 xsaves xgetbv1

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  
node 0 size: 64278 MB  
node 0 free: 55735 MB  
node distances:  
node 0  
0: 10

From /proc/meminfo  
MemTotal: 65820840 kB  
HugePages_Total: 0  
Hugepagesize: 2048 kB

From /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"  
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"

(Continued on next page)
Dell Inc.
PowerEdge R240 (Intel Xeon E-2124)

SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.
PowerEdge R240 (Intel Xeon E-2124)

SPECspeed2017_fp_base = 23.6
SPECspeed2017_fp_peak = 22.2

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

Test Date: Mar-2019
Hardware Availability: Dec-2018
Software Availability: Apr-2018

Platform Notes (Continued)

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 Mar 13 05:08 last=5

SPEC is set to: /home/cpu2017

filesystem     type  size  used  avail use% mounted on
/dev/sda2      xfs   301G   23G  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.
------------------------------------------------------------------------------

==============================================================================
CC 619.lbm_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)
**SPEC CPU2017 Floating Point Speed Result**

Dell Inc.  
PowerEdge R240 (Intel Xeon E-2124)

**SPECspeed2017_fp_base = 23.6**  
**SPECspeed2017_fp_peak = 22.2**

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

Test Date: Mar-2019  
Hardware Availability: Dec-2018  
Software Availability: Apr-2018

---

**Compiler Version Notes (Continued)**

```plaintext
FC 607.cactuBSSN_s(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.

---

```plaintext
FC 607.cactuBSSN_s(peak)
```

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.

---

```plaintext
FC 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
```

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

---

```plaintext
FC 603.bwaves_s(peak) 649.fotonik3d_s(peak) 654.roms_s(peak)
```

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

---

```plaintext
CC 621.wrf_s(base) 627.cam4_s(base) 628.pop2_s(base)
```

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

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(Continued on next page)
# SPEC CPU2017 Floating Point Speed Result

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**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
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**Test Date:** Mar-2019  
**Hardware Availability:** Dec-2018  
**Software Availability:** Apr-2018

## Compiler Version Notes (Continued)

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<th>621.wrf_s(peak) 627.cam4_s(peak) 628.pop2_s(peak)</th>
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<td>icc (ICC)</td>
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<tr>
<td>Copyright (C)</td>
<td>1985-2018 Intel Corporation. All rights reserved.</td>
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</tbody>
</table>

## 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 -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
  ```

(Continued on next page)
Dell Inc.
PowerEdge R240 (Intel Xeon E-2124)

SPECspeed2017_fp_peak = 22.2
SPECspeed2017_fp_base = 23.6

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

Test Date: Mar-2019
Hardware Availability: Dec-2018
Software Availability: Apr-2018

Base Optimization Flags (Continued)

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) -O2 -xCORE-AVX2 -qopt-prefetch
-ipo -O3 -ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3

(Continued on next page)
Dell Inc.
PowerEdge R240 (Intel Xeon E-2124)

SPECspeed2017_fp_base = 23.6
SPECspeed2017_fp_peak = 22.2

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

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

Peak Optimization Flags (Continued)

C benchmarks (continued):
-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.