## SPEC CPU 2017 Floating Point Rate Result

### Dell Inc.

**PowerEdge R740xd (Intel Xeon Gold 6240R, 2.40 GHz)**

**SPECrates:**
- SPECrate\textsuperscript{\textregistered}2017\_fp\_base = 257
- SPECrate\textsuperscript{\textregistered}2017\_fp\_peak = 273

### CPU2017 License:
- 55

### Test Sponsor:
- Dell Inc.

### Tested by:
- Dell Inc.

### Test Date:
- Jun-2020

### Hardware

- **CPU Name:** Intel Xeon Gold 6240R
- **Max MHz:** 4000
- **Nominal:** 2400
- **Enabled:** 48 cores, 2 chips, 2 threads/core
- **Orderable:** 1,2 chips
- **Cache L1:** 32 KB I + 32 KB D on chip per core
- **L2:** 1 MB I+D on chip per core
- **L3:** 35.75 MB I+D on chip per chip
- **Other:** None
- **Memory:** 768 GB (24 x 32 GB 2Rx4 PC4-2933V-R, running at 2933)
- **Storage:** 1 x 1.92 TB SATA SSD
- **Other:** None

### Software

- **OSType:** Red Hat Enterprise Linux 8.1
- **Kernel:** kernel 4.18.0-147.el8.x86_64
- **Compiler:** C/C++: Version 19.1.1.217 of Intel C/C++ Compiler for Linux;
  Fortran: Version 19.1.1.217 of Intel Fortran Compiler for Linux
- **Parallel:** No
- **Firmware:** Version 2.7.7 released May-2020
- **File System:** tmpfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** jemalloc memory allocator V5.0.1
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage.

### Test Results

<table>
<thead>
<tr>
<th>SPECrate\textsuperscript{\textregistered}2017_fp_base</th>
<th>SPECrate\textsuperscript{\textregistered}2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>257</td>
<td>273</td>
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</table>

### Performance Graph

- Copies (273)
- SPECrate\textsuperscript{\textregistered}2017\_fp\_base (257)
- SPECrate\textsuperscript{\textregistered}2017\_fp\_peak (273)
SPEC CPU®2017 Floating Point Rate Result

Dell Inc. PowerEdge R740xd (Intel Xeon Gold 6240R, 2.40 GHz)

SPECrate®2017_fp_base = 257
SPECrate®2017_fp_peak = 273

Results Table

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</tbody>
</table>

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

Compiler Notes
The inconsistent Compiler version information under Compiler Version section is due to a discrepancy in Intel Compiler. The correct version of C/C++ compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux
The correct version of Fortran compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux

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"

Environment Variables Notes
Environment variables set by runcpu before the start of the run:

```
LD_LIBRARY_PATH = 
"/mnt/ramdisk/cpu2017-ic19.1u1/lib/intel64:/mnt/ramdisk/cpu2017-ic19.1u1
/je5.0.1-64"

MALLOCONF = "retain:true"
```
General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM
memory using Redhat Enterprise Linux 8.0
NA: 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
runcpu command invoked through numacl i.e.:
numactl --interleave=all runcpu <etc>
Benchmark run from a 225 GB ramdisk created with the cmd; "mount -t tmpfs -o size=225G tmpfs /mnt/ramdisk"
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes

BIOS settings:
Sub NUMA Cluster enabled
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
Logical Processor enabled
CPU Interconnect Bus Link Power Management disabled
PCI ASPM L1 Link Power Management disabled
UPI Prefetch enabled
LLC Prefetch disabled
Dead Line LLC Alloc enabled
Directory AtoS disabled

Sysinfo program /mnt/ramdisk/cpu2017-ic19.1u1/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edeb1e6e46a485a0011
running on user-pc.spa.lab Thu Jun 11 16:33:06 2020

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
### Dell Inc.

**PowerEdge R740xd (Intel Xeon Gold 6240R, 2.40 GHz)**

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>Dell Inc.</th>
</tr>
</thead>
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<td>Test Sponsor:</td>
<td>Dell Inc.</td>
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<tr>
<td>Tested by:</td>
<td>Dell Inc.</td>
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**CPU2017 Floating Point Rate Result**

**SPECrater®2017_fp_base = 257**

**SPECrater®2017_fp_peak = 273**

**Test Date:** Jun-2020  
**Hardware Availability:** Jul-2020  
**Software Availability:** Apr-2020

### Platform Notes (Continued)

From `/proc/cpuinfo`

- **model name**: Intel(R) Xeon(R) Gold 6240R CPU @ 2.40GHz
- 2 "physical id"s (chips)
- 96 "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**: 24
- **siblings**: 48
- **physical 0**: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 25 26 27 28 29
- **physical 1**: cores 0 1 2 3 4 5 6 9 10 11 12 13 16 17 18 19 20 21 24 25 26 27 28 29

From `lscpu`:

- **Architecture**: x86_64
- **CPU op-mode(s)**: 32-bit, 64-bit
- **Byte Order**: Little Endian
- **CPU(s)**: 96
- **On-line CPU(s) list**: 0-95
- **Thread(s) per core**: 2
- **Core(s) per socket**: 24
- **Socket(s)**: 2
- **NUMA node(s)**: 4
- **Vendor ID**: GenuineIntel
- **CPU family**: 6
- **Model**: 85
- **Model name**: Intel(R) Xeon(R) Gold 6240R CPU @ 2.40GHz
- **Stepping**: 7
- **CPU MHz**: 2025.771
- **CPU max MHz**: 4000.0000
- **CPU min MHz**: 1000.0000
- **BogoMIPS**: 4800.00
- **Virtualization**: VT-x
- **L1d cache**: 32K
- **L1i cache**: 32K
- **L2 cache**: 1024K
- **L3 cache**: 36608K
- **NUMA node0 CPU(s)**: 0,4,8,12,16,20,24,28,32,36,40,44,48,52,56,60,64,68,72,76,80,84,88,92
- **NUMA node1 CPU(s)**: 1,5,9,13,17,21,25,29,33,37,41,45,49,53,57,61,65,69,73,77,81,85,89,93
- **NUMA node2 CPU(s)**: 2,6,10,14,18,22,26,30,34,38,42,46,50,54,58,62,66,70,74,78,82,86,90,94
- **NUMA node3 CPU(s)**: 3,7,11,15,19,23,27,31,35,39,43,47,51,55,59,63,67,71,75,79,83,87,91,95
- **Flags**: 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 cpuid

(Continued on next page)
SPEC CPU®2017 Floating Point Rate Result

Dell Inc.

PowerEdge R740xd (Intel Xeon Gold 6240R, 2.40 GHz)

SPECrater®2017_fp_base = 257
SPECrater®2017_fp_peak = 273

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

Test Date: Jun-2020
Hardware Availability: Jul-2020
Software Availability: Apr-2020

Platform Notes (Continued)

aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtrp pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abm 3nowprefetch cpuid_fault epb cat_l3 cdp_l3
invpcid_single intel_ppi snb mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnni
flexpriority ept vpid fsqsbased tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm
cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd
avx512bw avx512vl xsaveopt xsaves xsavec xgetbv1 xsavec cqm_llc cqm_occnum_1lc cqm_mbrr_total
cqm_mbr_local dtherm ida arat pln pts pkp ospke avx512_vnni md_clear flush_lld
arch_capabilities

/proc/cpuinfo cache data

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.

available: 4 nodes (0-3)
node 0 cpus: 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76 80 84 88 92
node 0 size: 192046 MB
node 0 free: 191538 MB
node 1 cpus: 1 5 9 13 17 21 25 29 33 37 41 45 49 53 57 61 65 69 73 77 81 85 89 93
node 1 size: 193531 MB
node 1 free: 184402 MB
node 2 cpus: 2 6 10 14 18 22 26 30 34 38 42 46 50 54 58 62 66 70 74 78 82 86 90 94
node 2 size: 193531 MB
node 2 free: 193243 MB
node 3 cpus: 3 7 11 15 19 23 27 31 35 39 43 47 51 55 59 63 67 71 75 79 83 87 91 95
node 3 size: 193530 MB
node 3 free: 192656 MB
node distances:
node 0 1 2 3
0: 10 21 11 21
1: 21 10 21 11
2: 11 21 10 21
3: 21 11 21 10

From /proc/meminfo

MemTotal: 791182528 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*

os-release:
NAME="Red Hat Enterprise Linux"
VERSION="8.1 (Ootpa)"
ID=rhel
ID_LIKE="fedora"
VERSION_ID="8.1"

(Continued on next page)
Dell Inc.
PowerEdge R740xd (Intel Xeon Gold 6240R, 2.40 GHz)

SPECrate®2017_fp_base = 257
SPECrate®2017_fp_peak = 273

CPU2017 License: 55
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Tested by: Dell Inc.

Test Date: Jun-2020
Hardware Availability: Jul-2020
Software Availability: Apr-2020

**Platform Notes (Continued)**

```plaintext
PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.1 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.1 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.1 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.1:ga

uname -a:
    Linux user-pc.spa.lab 4.18.0-147.el8.x86_64 #1 SMP Thu Sep 26 15:52:44 UTC 2019 x86_64
    x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

run-level 3 Jun 11 10:40 last=5

SPEC is set to: /mnt/ramdisk/cpu2017-ic19.1u1
    Filesystem Type Size Used Avail Use% Mounted on
tmpfs   tmpfs  225G  4.3G  221G  2% /mnt/ramdisk

From /sys/devices/virtual/dmi/id
    BIOS: Dell Inc. 2.7.7 05/04/2020
    Vendor: Dell Inc.
    Product: PowerEdge R740xd
    Product Family: PowerEdge
    Serial: F5BMCS2

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.

    Memory:
    19x 00AD00B300AD HMA84GR7CJR4N-WM 32 GB 2 rank 2933
    1x 00AD063200AD HMA84GR7CJR4N-WM 32 GB 2 rank 2933
    4x 00AD069D00AD HMA84GR7CJR4N-WM 32 GB 2 rank 2933

(End of data from sysinfo program)
```
Dell Inc.

PowerEdge R740xd (Intel Xeon Gold 6240R, 2.40 GHz)

Compiler Version Notes

==============================================================================
C               | 519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak)
------------------------------------------------------------------------------
Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++             | 508.namd_r(base, peak) 510.parest_r(base, peak)
------------------------------------------------------------------------------
Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++, C          | 511.povray_r(base) 526.blender_r(base, peak)
------------------------------------------------------------------------------
Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++, C          | 511.povray_r(peak)
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++, C          | 511.povray_r(base) 526.blender_r(base, peak)
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(Continued on next page)
Dell Inc. PowerEdge R740xd (Intel Xeon Gold 6240R, 2.40 GHz)

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CPU2017 License: 55
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Test Date: Jun-2020
Hardware Availability: Jul-2020
Software Availability: Apr-2020

Compiler Version Notes (Continued)

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------
C++, C          | 511.povray_r(peak)
------------------------------------------------------------------------------
Intel(R) C++     Intel(R) 64 Compiler for applications running on Intel(R) 64,
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Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) C      Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
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Intel(R) C++     Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) Fortran  Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
Fortran         | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran  Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
Fortran, C      | 521.wrf_r(base) 527.cam4_r(base, peak)
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Intel(R) Fortran  Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.1.1.217 Build 20200306
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(Continued on next page)
Dell Inc.
PowerEdge R740xd (Intel Xeon Gold 6240R, 2.40 GHz)

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

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CPU2017 License: 55
Test Sponsor: Dell Inc.
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Compiler Version Notes (Continued)

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Fortran, C | 521.wrf_r(peak)
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Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.1.1.217 Build 20200306
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Fortran, C | 521.wrf_r(base) 527.cam4_r(base, peak)
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Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.1.1.217 Build 20200306
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Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

(Continued on next page)
Dell Inc. PowerEdge R740xd (Intel Xeon Gold 6240R, 2.40 GHz)  

| SPECrate®2017_fp_base = 257 |  
| SPECrate®2017_fp_peak = 273 |  

| CPU2017 License: 55 | Test Date: Jun-2020 |  
| Test Sponsor: Dell Inc. | Hardware Availability: Jul-2020 |  
| Tested by: Dell Inc. | Software Availability: Apr-2020 |  

### Base Compiler Invocation (Continued)

- Benchmarks using both Fortran and C:
  - ifort icc
- Benchmarks using both C and C++:
  - icpc icc
- Benchmarks using Fortran, C, and C++:
  - icpc icc ifort

### Base Portability Flags

- 503.bwaves_r: -DSPEC_LP64
- 507.cactuBSSN_r: -DSPEC_LP64
- 508.namd_r: -DSPEC_LP64
- 510.parest_r: -DSPEC_LP64
- 511.povray_r: -DSPEC_LP64
- 519.lbm_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

### Base Optimization Flags

**C benchmarks:**
- -m64 -qnextgen -std=c11
- -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
- -fuse-ld=gold -xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse
- -funroll-loops -gopt-mem-layout-trans=4
- -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

**C++ benchmarks:**
- -m64 -qnextgen -Wl,-plugin-opt=-x86-branches-within-32B-boundaries
- -Wl,-z,muldefs -fuse-ld=gold -xCORE-AVX512 -Ofast -ffast-math -flto
- -mfpmath=sse -funroll-loops -gopt-mem-layout-trans=4
- -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

**Fortran benchmarks:**
- -m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs

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**Base Optimization Flags (Continued)**

Fortran benchmarks (continued):
- `--fused-ld=gold -xCORE-AVX512 -O3 -ipo -no-prec-div -qopt-prefetch`
- `--ffinite-math-only -qopt-multiple-gather-scatter-by-shuffles`
- `--qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte`
- `--auto -mbranches-within-32B-boundaries`
- `-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

Benchmarks using both Fortran and C:
- `--m64 -gnextgen -std=c11`
- `--Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs`
- `--fused-ld=gold -xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse`
- `--funroll-loops -qopt-mem-layout-trans=4 -O3 -ipo -no-prec-div`
- `--qopt-prefetch -ffinite-math-only`
- `--qopt-multiple-gather-scatter-by-shuffles -nostandard-realloc-lhs`
- `--align array32byte -auto -mbranches-within-32B-boundaries`
- `--L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

Benchmarks using both C and C++:
- `--m64 -gnextgen -std=c11`
- `--Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs`
- `--fused-ld=gold -xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse`
- `--funroll-loops -qopt-mem-layout-trans=4`
- `--L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

Benchmarks using Fortran, C, and C++:
- `--m64 -gnextgen -std=c11`
- `--Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs`
- `--fused-ld=gold -xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse`
- `--funroll-loops -qopt-mem-layout-trans=4 -O3 -ipo -no-prec-div`
- `--qopt-prefetch -ffinite-math-only`
- `--qopt-multiple-gather-scatter-by-shuffles -nostandard-realloc-lhs`
- `--align array32byte -auto -mbranches-within-32B-boundaries`
- `--L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

**Peak Compiler Invocation**

C benchmarks:
- `icc`

C++ benchmarks:
- `icpc`

Fortran benchmarks:
- `ifort`

(Continued on next page)
Dell Inc.  
PowerEdge R740xd (Intel Xeon Gold 6240R, 2.40 GHz)  

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Peak Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
ifort icc
Benchmarks using both C and C++:
icpc icc
Benchmarks using Fortran, C, and C++:
icpc icc ifort

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
519.lbm_r: basepeak = yes
538.imagick_r: basepeak = yes
544.nab_r: basepeak = yes

C++ benchmarks:
508.namd_r: basepeak = yes
510.parest_r: -m64 -qnextgen
-W1,-plugin-opt=-x86-branches-within-32B-boundaries
-W1,-z,muldefs -fused-ld=gold -xCORE-AVX512 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -L/usr/local/jemalloc64-5.0.1/lib
-ljemalloc

Fortran benchmarks:
503.bwaves_r: -m64 -W1,-plugin-opt=-x86-branches-within-32B-boundaries
-W1,-z,muldefs -fused-ld=gold -xCORE-AVX512 -O3 -ipo
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles

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

503.bwaves_r (continued):
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs
-align array32byte -auto -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

549.fotonik3d_r: basepeak = yes

554.roms_r: Same as 503.bwaves_r

Benchmarks using both Fortran and C:

521.wrf_r: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512 -03
-ipo -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

511.povray_r: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512 -03
-ipo -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:

507.cactuBSSN_r: basepeak = yes

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-ic19.1u1-official-linux64_revA.xml
## SPEC CPU®2017 Floating Point Rate Result

**Dell Inc.**

PowerEdge R740xd (Intel Xeon Gold 6240R, 2.40 GHz)

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

Tested with SPEC CPU®2017 v1.1.0 on 2020-06-11 17:33:05-0400.
Originally published on 2020-07-21.