Dell Inc.

PowerEdge R440 (Intel Xeon Gold 6222V, 1.80 GHz)

SPECrates®2017_fp_base = 180

SPECrates®2017_fp_peak = 190

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.
Test Date: Mar-2020
Hardware Availability: Dec-2019
Software Availability: Jun-2019

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECrate®2017_fp_base (180)</th>
<th>SPECrate®2017_fp_peak (190)</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>153</td>
<td>428</td>
</tr>
<tr>
<td>507.caCTuBSSN_r</td>
<td>153</td>
<td>440</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>142</td>
<td>426</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>130</td>
<td>425</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>206</td>
<td>425</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>103</td>
<td>305</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>187</td>
<td>425</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>175</td>
<td>305</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>211</td>
<td>425</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>216</td>
<td>425</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>137</td>
<td>99.8</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>137</td>
<td>428</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>83.1</td>
<td></td>
</tr>
</tbody>
</table>

Hardware

CPU Name: Intel Xeon Gold 6222V
Max MHz: 3600
Nominal: 1800
Enabled: 40 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: 27.5 MB I+D on chip per chip
Other: None
Memory: 384 GB (12 x 32 GB 2Rx8 PC4-2933V-R)
Storage: 1 x 960 GB SATA SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP1
Compiler: C/C++: Version 19.0.4.227 of Intel C/C++ Compiler Build 20190416 for Linux;
Fortran: Version 19.0.4.227 of Intel Fortran Compiler Build 20190416 for Linux
Parallel: No
Firmware: Version 2.4.8 released Nov-2019
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: None
Power Management: BIOS set to prefer performance at the cost of additional power usage.
Dell Inc. PowerEdge R440 (Intel Xeon Gold 6222V, 1.80 GHz)

SPECrate®2017_fp_base = 180
SPECrate®2017_fp_peak = 190

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>80</td>
<td>1873</td>
<td>428</td>
<td>1864</td>
<td>430</td>
<td>40</td>
<td>911</td>
<td>440</td>
<td>912</td>
<td>440</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>80</td>
<td>661</td>
<td>153</td>
<td>662</td>
<td>153</td>
<td>80</td>
<td>662</td>
<td>153</td>
<td>661</td>
<td>153</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>508.namd_r</td>
<td>80</td>
<td>535</td>
<td>142</td>
<td>535</td>
<td>142</td>
<td>80</td>
<td>535</td>
<td>142</td>
<td>533</td>
<td>142</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>510.parest_r</td>
<td>80</td>
<td>2056</td>
<td>102</td>
<td>2055</td>
<td>102</td>
<td>40</td>
<td>802</td>
<td>130</td>
<td>805</td>
<td>130</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>511.povray_r</td>
<td>80</td>
<td>906</td>
<td>206</td>
<td>909</td>
<td>206</td>
<td>80</td>
<td>800</td>
<td>234</td>
<td>796</td>
<td>235</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>80</td>
<td>818</td>
<td>103</td>
<td>817</td>
<td>103</td>
<td>80</td>
<td>817</td>
<td>103</td>
<td>817</td>
<td>103</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>80</td>
<td>959</td>
<td>187</td>
<td>925</td>
<td>194</td>
<td>40</td>
<td>434</td>
<td>206</td>
<td>434</td>
<td>206</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>526.blender_r</td>
<td>80</td>
<td>695</td>
<td>175</td>
<td>697</td>
<td>175</td>
<td>80</td>
<td>698</td>
<td>175</td>
<td>696</td>
<td>175</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>80</td>
<td>661</td>
<td>212</td>
<td>664</td>
<td>211</td>
<td>80</td>
<td>647</td>
<td>216</td>
<td>649</td>
<td>216</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>80</td>
<td>467</td>
<td>426</td>
<td>468</td>
<td>425</td>
<td>80</td>
<td>466</td>
<td>427</td>
<td>468</td>
<td>425</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>544.nab_r</td>
<td>80</td>
<td>441</td>
<td>305</td>
<td>440</td>
<td>306</td>
<td>80</td>
<td>440</td>
<td>306</td>
<td>442</td>
<td>305</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>80</td>
<td>2280</td>
<td>137</td>
<td>2279</td>
<td>137</td>
<td>80</td>
<td>2281</td>
<td>137</td>
<td>2281</td>
<td>137</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>554.roms_r</td>
<td>80</td>
<td>1529</td>
<td>83.1</td>
<td>1528</td>
<td>83.2</td>
<td>40</td>
<td>631</td>
<td>101</td>
<td>637</td>
<td>99.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM memory using Redhat Enterprise Linux 7.5
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.
General Notes (Continued)

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 numactl i.e.:
  numactl --interleave=all runcpu <etc>

Platform Notes

BIOS settings:
  Sub NUMA Cluster enabled
  Virtualization Technology disabled
  DCU Streamer Prefetcher 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 enabled
  PCI ASPM L1 Link Power Management enabled

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbb1e6e46a485a0011
running on linux-g3ob Wed Mar 11 12:49:35 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

From /proc/cpuinfo
  model name : Intel(R) Xeon(R) Gold 6222V CPU @ 1.80GHz
  2 "physical id"s (chips)
  80 "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 : 20
  siblings : 40
  physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
  physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28

From lscpu:

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

PowerEdge R440 (Intel Xeon Gold 6222V, 1.80 GHz)  

**SPECCrate®2017_fp_base = 180**  
**SPECCrate®2017_fp_peak = 190**

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

---

**Platform Notes (Continued)**

Architecture: x86_64  
CPU op-mode(s): 32-bit, 64-bit  
Byte Order: Little Endian  
Address sizes: 46 bits physical, 48 bits virtual  
CPU(s): 80  
On-line CPU(s) list: 0-79  
Thread(s) per core: 2  
Core(s) per socket: 20  
Socket(s): 2  
NUMA node(s): 4  
Vendor ID: GenuineIntel  
CPU family: 6  
Model: 85  
Model name: Intel(R) Xeon(R) Gold 6222V CPU @ 1.80GHz  
Stepping: 7  
CPU MHz: 1800.000  
CPU max MHz: 3600.0000  
CPU min MHz: 800.0000  
BogoMIPS: 3600.00  
Virtualization: VT-x  
L1d cache: 32K  
L1i cache: 32K  
L2 cache: 1024K  
L3 cache: 28160K  
NUMA node0 CPU(s): 0,4,8,12,16,20,24,28,32,36,40,44,48,52,56,60,64,68,72,76  
NUMA node1 CPU(s): 1,5,9,13,17,21,25,29,33,37,41,45,49,53,57,61,65,69,73,77  
NUMA node2 CPU(s): 2,6,10,14,18,22,26,30,34,38,42,46,50,54,58,62,66,70,74,78  
NUMA node3 CPU(s): 3,7,11,15,19,23,27,31,35,39,43,47,51,55,59,63,67,71,75,79  
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 pdelgb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cdp_l3 invpcid_single intel_prien ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vni flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erts invpcid rtm cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local dtherm ida arat pln pts pku ospke avx512_vnni md_clear flush_l1d arch_capabilities

/proc/cpuinfo cache data  
cache size : 28160 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.  
available: 4 nodes (0-3)

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

Dell Inc.

PowerEdge R440 (Intel Xeon Gold 6222V, 1.80 GHz)

SPECrates®2017_fp_base = 180
SPECrates®2017_fp_peak = 190

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.
Test Date: Mar-2020
Hardware Availability: Dec-2019
Software Availability: Jun-2019

Platform Notes (Continued)

node 0 cpus: 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76
node 0 size: 95146 MB
node 0 free: 94313 MB
node 1 cpus: 1 5 9 13 17 21 25 29 33 37 41 45 49 53 57 61 65 69 73 77
node 1 size: 96734 MB
node 1 free: 96336 MB
node 2 cpus: 2 6 10 14 18 22 26 30 34 38 42 46 50 54 58 62 66 70 74 78
node 2 size: 96764 MB
node 2 free: 96335 MB
node 3 cpus: 3 7 11 15 19 23 27 31 35 39 43 47 51 55 59 63 67 71 75 79
node 3 size: 96762 MB
node 3 free: 96353 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: 394657708 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release*/etc/*version*
os-release:
NAME="SLES"
VERSION="15-SP1"
VERSION_ID="15.1"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp1"

uname -a:
Linux linux-g3ob 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (8fba516)
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: __user pointer sanitization

(Continued on next page)
Dell Inc. 
PowerEdge R440 (Intel Xeon Gold 6222V, 1.80 GHz)

| SPECrate®2017_fp_base = 180 |
| SPECrate®2017_fp_peak = 190 |

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.
Test Date: Mar-2020
Hardware Availability: Dec-2019
Software Availability: Jun-2019

Platform Notes (Continued)

CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
run-level 3 Mar 11 05:31 last=5

SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 440G 34G 407G 8% /

From /sys/devices/virtual/dmi/id
BIOS: Dell Inc. 2.4.8 11/27/2019
Vendor: Dell Inc.
Product: PowerEdge R440
Product Family: PowerEdge
Serial: F9TD613

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:
12x 002C069D002C 36ASF4G72PZ-3G2E2 32 GB 2 rank 3200
4x Not Specified Not Specified

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
 C                    | 519.lbm_r(base, peak) 538.imagick_r(base, peak) 
                        | 544.nab_r(base, peak) 
==============================================================================
 Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, 
 Version 19.0.4.227 Build 20190416 
 Copyright (C) 1985-2019 Intel Corporation. All rights reserved. 
==============================================================================

==============================================================================
 C++                   | 508.namd_r(base, peak) 510.parest_r(base, peak) 
==============================================================================
 Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, 
 Version 19.0.4.227 Build 20190416 
 Copyright (C) 1985-2019 Intel Corporation. All rights reserved. 
==============================================================================

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

C++, C  |  511.povray_r(base, peak) 526.blender_r(base, peak)

------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, 
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, 
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

------------------------------------------
C++, C, Fortran  |  507.cactuBSSN_r(base, peak)

------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, 
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, 
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 
64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

------------------------------------------
Fortran  |  503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 
          |  554.roms_r(base, peak)

------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 
64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

------------------------------------------
Fortran, C  |  521.wrf_r(base, peak) 527.cam4_r(base, peak)

------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 
64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, 
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
Dell Inc.  
PowerEdge R440 (Intel Xeon Gold 6222V, 1.80 GHz)

SPECraten®2017_fp_base = 180  
SPECraten®2017_fp_peak = 190

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

Test Date: Mar-2020  
Hardware Availability: Dec-2019  
Software Availability: Jun-2019

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.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:
-xCORE-AVX512 -ipo -03 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=4

C++ benchmarks:
-xCORE-AVX512 -ipo -03 -no-prec-div -qopt-prefetch

(Continued on next page)
## Dell Inc.

**PowerEdge R440 (Intel Xeon Gold 6222V, 1.80 GHz)**

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base = 180</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak = 190</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU2017 License: 55</th>
<th>Test Date: Mar-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Dell Inc.</td>
<td>Hardware Availability: Dec-2019</td>
</tr>
<tr>
<td>Tested by: Dell Inc.</td>
<td>Software Availability: Jun-2019</td>
</tr>
</tbody>
</table>

### Base Optimization Flags (Continued)

#### C++ benchmarks (continued):
- `-ffinite-math-only -qopt-mem-layout-trans=4`

#### Fortran benchmarks:
- `-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-mem-layout-trans=4 -auto`
- `-nostandard-realloc-lhs -align array32byte`

#### Benchmarks using both Fortran and C:
- `-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-mem-layout-trans=4 -auto`
- `-nostandard-realloc-lhs -align array32byte`

#### Benchmarks using both C and C++:
- `-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-mem-layout-trans=4`

#### Benchmarks using Fortran, C, and C++:
- `-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-mem-layout-trans=4 -auto`
- `-nostandard-realloc-lhs -align array32byte`

### 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 CPU®2017 Floating Point Rate Result

Dell Inc.

PowerEdge R440 (Intel Xeon Gold 6222V, 1.80 GHz)

SPECrate®2017_fp_base = 180
SPECrate®2017_fp_peak = 190

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

Test Date: Mar-2020
Hardware Availability: Dec-2019
Software Availability: Jun-2019

Peak Portability Flags
Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
519.lbm_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512
-03 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4

538.imagick_r: -xCORE-AVX512 -ipo -03 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4

544.nab_r: Same as 538.imagick_r

C++ benchmarks:
508.namd_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512
-03 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4

510.parest_r: -xCORE-AVX512 -ipo -03 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4

Fortran benchmarks:
503.bwaves_r: -xCORE-AVX512 -ipo -03 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -auto
-nostandard-realloc-lhs -align array32byte

549.fotonik3d_r: Same as 503.bwaves_r

554.roms_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512 -03
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -auto -nostandard-realloc-lhs
-align array32byte

Benchmarks using both Fortran and C:
-prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512 -03
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -auto -nostandard-realloc-lhs
-align array32byte

(Continued on next page)
Dell Inc.

PowerEdge R440 (Intel Xeon Gold 6222V, 1.80 GHz)

SPECrate®2017_fp_base = 180
SPECrate®2017_fp_peak = 190

CPU2017 License: 55
Test Sponsor: Dell Inc.
Test Date: Mar-2020
Tested by: Dell Inc.
Hardware Availability: Dec-2019
Software Availability: Jun-2019

Peak Optimization Flags (Continued)

Benchmarks using both C and C++:

511.povray_r -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512
-O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4

526.blender_r -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4

Benchmarks using Fortran, C, and C++:

-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -auto
-nostandard-realloc-lhs -align array32byte

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 CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 2020-03-11 13:49:35-0400.
Originally published on 2020-03-31.