Dell Inc.
PowerEdge R750 xa (Intel Xeon Gold 6314U, 2.30 GHz)

| SPECrate\textsuperscript{\textregistered}2017\_fp\_base | 199 |
| SPECrate\textsuperscript{\textregistered}2017\_fp\_peak | 210 |

**Hardware**

<table>
<thead>
<tr>
<th>CPU Name: Intel Xeon Gold 6314U</th>
<th>OS: Red Hat Enterprise Linux 8.3 (Ootpa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz: 3400</td>
<td>Compiler: C/C++: Version 2021.1 of Intel oneAPI DPC++/C++</td>
</tr>
<tr>
<td>Nominal: 2300</td>
<td>Compiler Build 20201113 for Linux;</td>
</tr>
<tr>
<td>Enabled: 32 cores, 1 chip, 2 threads/core</td>
<td>Fortran: Version 2021.1 of Intel Fortran Compiler</td>
</tr>
<tr>
<td>Orderable: 1 chip</td>
<td>Classic Build 20201112 for Linux;</td>
</tr>
<tr>
<td>Cache L1: 32 KB I + 48 KB D on chip per core</td>
<td>C/C++: Version 2021.1 of Intel C/C++ Compiler</td>
</tr>
<tr>
<td>L2: 1.25 MB I+D on chip per core</td>
<td>Classic Build 20201112 for Linux</td>
</tr>
<tr>
<td>L3: 48 MB I+D on chip per chip</td>
<td>File System: tmpfs</td>
</tr>
<tr>
<td>Other: None</td>
<td>System State: Run level 5 (graphical multi-user)</td>
</tr>
<tr>
<td>Memory: 256 GB (8 x 32 GB 2Rx8 PC4-3200AA-R)</td>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>Storage: 225 GB on tmpfs</td>
<td>Peak Pointers: 64-bit</td>
</tr>
<tr>
<td>Other: None</td>
<td>Other: None</td>
</tr>
</tbody>
</table>

**Software**

<table>
<thead>
<tr>
<th>OS: Red Hat Enterprise Linux 8.3 (Ootpa)</th>
<th>Compiler: C/C++: Version 2021.1 of Intel oneAPI DPC++/C++</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler Build 20201113 for Linux;</td>
<td>Fortran: Version 2021.1 of Intel Fortran Compiler</td>
</tr>
<tr>
<td>Classic Build 20201112 for Linux;</td>
<td>C/C++: Version 2021.1 of Intel C/C++ Compiler</td>
</tr>
<tr>
<td>File System: tmpfs</td>
<td>Classic Build 20201112 for Linux</td>
</tr>
<tr>
<td>System State: Run level 5 (graphical multi-user)</td>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>Base Pointers: 64-bit</td>
<td>Peak Pointers: 64-bit</td>
</tr>
<tr>
<td>Other: None</td>
<td>Other: None</td>
</tr>
</tbody>
</table>

jemalloc memory allocator V5.0.1

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

Dell Inc.
PowerEdge R750 xa (Intel Xeon Gold 6314U, 2.30 GHz)
CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

SPECrate®2017_fp_base = 199
SPECrate®2017_fp_peak = 210

Test Date: Apr-2021
Hardware Availability: May-2021
Software Availability: Feb-2021

Software (Continued)
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.

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>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>64</td>
<td>1820</td>
<td>353</td>
<td>1820</td>
<td>353</td>
<td>32</td>
<td>896</td>
<td>358</td>
<td>210</td>
<td>358</td>
<td>210</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>64</td>
<td>281</td>
<td>282</td>
<td>287</td>
<td>282</td>
<td>64</td>
<td>281</td>
<td>288</td>
<td>282</td>
<td>288</td>
<td>282</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>64</td>
<td>362</td>
<td>363</td>
<td>168</td>
<td>168</td>
<td>64</td>
<td>362</td>
<td>168</td>
<td>363</td>
<td>168</td>
<td>363</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>64</td>
<td>1674</td>
<td>100</td>
<td>1672</td>
<td>100</td>
<td>32</td>
<td>650</td>
<td>129</td>
<td>365</td>
<td>129</td>
<td>365</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>64</td>
<td>608</td>
<td>46</td>
<td>608</td>
<td>46</td>
<td>64</td>
<td>531</td>
<td>281</td>
<td>530</td>
<td>282</td>
<td>530</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>64</td>
<td>505</td>
<td>133</td>
<td>505</td>
<td>133</td>
<td>64</td>
<td>505</td>
<td>133</td>
<td>505</td>
<td>133</td>
<td>505</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>64</td>
<td>868</td>
<td>165</td>
<td>869</td>
<td>165</td>
<td>32</td>
<td>417</td>
<td>172</td>
<td>413</td>
<td>173</td>
<td>413</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>64</td>
<td>438</td>
<td>222</td>
<td>437</td>
<td>223</td>
<td>64</td>
<td>438</td>
<td>222</td>
<td>437</td>
<td>223</td>
<td>437</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>64</td>
<td>520</td>
<td>215</td>
<td>518</td>
<td>216</td>
<td>64</td>
<td>520</td>
<td>215</td>
<td>518</td>
<td>216</td>
<td>518</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>64</td>
<td>268</td>
<td>594</td>
<td>268</td>
<td>595</td>
<td>64</td>
<td>268</td>
<td>594</td>
<td>268</td>
<td>595</td>
<td>268</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>64</td>
<td>285</td>
<td>377</td>
<td>289</td>
<td>373</td>
<td>64</td>
<td>280</td>
<td>385</td>
<td>282</td>
<td>381</td>
<td>282</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>64</td>
<td>2329</td>
<td>107</td>
<td>2331</td>
<td>107</td>
<td>64</td>
<td>2329</td>
<td>107</td>
<td>2331</td>
<td>107</td>
<td>2331</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>64</td>
<td>1403</td>
<td>72.5</td>
<td>1404</td>
<td>72.4</td>
<td>32</td>
<td>549</td>
<td>92.7</td>
<td>549</td>
<td>92.7</td>
<td>549</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 = "/mnt/ramdisk/cpu2017-1.1.5-ic2021.1/lib/intel64:/mnt/ramdisk/cpu2017-1.1.5-ic2021.1/je5.0.1-64"
MALLOC_CONF = "retain:true"
Dell Inc.  
PowerEdge R750 xa (Intel Xeon Gold 6314U, 2.30 GHz)  

**SPEC CPU®2017 Floating Point Rate Result**  
Copyright 2017-2021 Standard Performance Evaluation Corporation  

**SPECrate®2017_fp_base = 199**  
**SPECrate®2017_fp_peak = 210**  

<table>
<thead>
<tr>
<th>CPU2017 License</th>
<th>Test Date</th>
<th>Test Sponsor</th>
<th>Hardware Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>Apr-2021</td>
<td>Dell Inc.</td>
<td>May-2021</td>
</tr>
<tr>
<td>Test by: Dell Inc.</td>
<td></td>
<td></td>
<td>Feb-2021</td>
</tr>
</tbody>
</table>

**General Notes**

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Red Hat Enterprise Linux 8.1  
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>
  ```
  jemalloc, a general purpose malloc implementation  
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5  
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.  
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.  

Benchmark run from a 225 GB ramdisk created with the cmd: "mount -t tmpfs -o size=225G tmpfs /mnt/ramdisk"

**Platform Notes**

BIOS Settings:
- Sub NUMA Cluster: 2-Way Clustering  
- Virtualization Technology: Disabled  
- System Profile: Custom  
- CPU Power Management: Maximum Performance  
- C1E: Disabled  
- C States: Autonomous  
- Memory Patrol Scrub: Disabled  
- Energy Efficiency Policy: Performance  
- CPU Interconnect Bus Link Power Management: Disabled  

Sysinfo program /mnt/ramdisk/cpu2017-1.1.5-ic2021.1/bin/sysinfo  
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c  
running on localhost.localdomain Thu Apr 15 21:18:07 2021  

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)
SPEC CPU® 2017 Floating Point Rate Result

Dell Inc.
PowerEdge R750 xa (Intel Xeon Gold 6314U, 2.30 GHz)

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

SPECrate® 2017_fp_base = 199
SPECrate® 2017_fp_peak = 210

Test Date: Apr-2021
Hardware Availability: May-2021
Software Availability: Feb-2021

Platform Notes (Continued)

From /proc/cpuinfo

```
model name : Intel(R) Xeon(R) Gold 6314U CPU @ 2.30GHz
  1 "physical id"s (chips)
  64 "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 : 32
siblings : 64
physical 0: cores 0 1 2 3 4 5 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
28 29 30 31
```

From lscpu:

```
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 64
On-line CPU(s) list: 0-63
Thread(s) per core: 2
Core(s) per socket: 32
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 6314U CPU @ 2.30GHz
Stepping: 6
CPU MHz: 2909.500
BogoMIPS: 4600.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 49152K
NUMA node0 CPU(s): 0-63
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 arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtr 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 invpcid_single
intel_ppn ssbd mba ibrs ibpb stibp ibrs_enhanced fsgsbase tsc_adjust bmi1 hle avx2
smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma
clflushopt clwb intel_pt avx512cd sha_ha avx512bw avx512vl xsaveopt xsaves xsavec
xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local split_lock_detect
wbinvd dtlb_wd ida arat pfn pts avx512vbmi umip pku ospke avx512_vbmi2 gfni vaes
vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid md_clear
```

(Continued on next page)
Platform Notes (Continued)

```
arch_capabilities

/proc/cpuinfo cache data
  cache size : 49152 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 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
  28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56
  57 58 59 60 61 62 63
  node 0 size: 237018 MB
  node 0 free: 239785 MB
  node distances:
  node 0
  0: 10

From /proc/meminfo
  MemTotal:        263567980 kB
  HugePages_Total:       0
  Hugepagesize:        2048 kB

/sbin/tuned-adm active
  Current active profile: throughput-performance

From /etc/*release* /etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux"
    VERSION="8.3 (Ootpa)"
    ID="rhel"
    ID_LIKE="fedora"
    VERSION_ID="8.3"
    PLATFORM_ID="platform:el8"
    PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
    ANSI_COLOR="0;31"
    redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
    system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
    system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga

uname -a:
  Linux localhost.localdomain 4.18.0-240.15.1.el8_3.x86_64 #1 SMP Wed Feb 3 03:12:15 EST
  2021 x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit):           Not affected
CVE-2018-3620 (L1 Terminal Fault):        Not affected

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

Dell Inc.
PowerEdge R750 xa (Intel Xeon Gold 6314U, 2.30 GHz)

SpecRate® 2017_fp_base = 199
SpecRate® 2017_fp_peak = 210

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

Test Date: Apr-2021
Hardware Availability: May-2021
Software Availability: Feb-2021

Platform Notes (Continued)

Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass):
CVE-2017-5753 (Spectre variant 1):
CVE-2017-5715 (Spectre variant 2):
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 5 Apr 15 15:54
SPEC is set to: /mnt/ramdisk/cpu2017-1.1.5-ic2021.1

Filesystem Type Size Used Avail Use% Mounted on
tmpfs tmpfs 225G 6.9G 219G 4% /mnt/ramdisk

From /sys/devices/virtual/dmi/id
Vendor: Dell Inc.
Product: PowerEdge R750 xa
Product Family: PowerEdge
Serial: 1234567

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:
8x 002C069D002C 18ASF4G72FDZ-3G2E1 32 GB 2 rank 3200
24x Not Specified Not Specified

BIOS:
BIOS Vendor: Dell Inc.
BIOS Version: 1.1.2
BIOS Date: 04/09/2021
BIOS Revision: 1.1

(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)
==============================================================================

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

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
C++, C           | 508.namd_r(base, peak) 510.parest_r(base, peak)
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
C++, C           | 511.povray_r(peak)
Intel(R) C++ Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
C++, C           | 511.povray_r(base) 526.blender_r(base, peak)
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
C++, C           | 511.povray_r(peak)
Intel(R) C++ Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

(Continued on next page)
Dell Inc.
PowerEdge R750 xa (Intel Xeon Gold 6314U, 2.30 GHz)

---

Compiler Version Notes (Continued)

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

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

---

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

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113
Copyright (C) 1985-2020 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 Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

---

Fortran, C
| 521.wrf_r(peak)
---

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

---

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

(Continued on next page)
Dell Inc.
PowerEdge R750 xa (Intel Xeon Gold 6314U, 2.30 GHz)

SPECrate®2017_fp_base = 199
SPECrate®2017_fp_peak = 210

Compiler Version Notes (Continued)

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icx

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

Dell Inc.  
PowerEdge R750 xa (Intel Xeon Gold 6314U, 2.30 GHz)  

| SPECrate®2017_fp_base | = 199  
|-----------------------|-------  
| SPECrate®2017_fp_peak | = 210  

**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** Apr-2021  
**Hardware Availability:** May-2021  
**Software Availability:** Feb-2021

---

**Base Compiler Invocation (Continued)**

Benchmarks using both C and C++:

```
icpx icx  
```

Benchmarks using Fortran, C, and C++:

```
icpx icx 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:**

```
-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math  
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-mbranches-within-32B-boundaries -ljemalloc  
-L/usr/local/jemalloc64-5.0.1/lib  
```

**C++ benchmarks:**

```
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto  
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-mbranches-within-32B-boundaries -ljemalloc  
-L/usr/local/jemalloc64-5.0.1/lib  
```

**Fortran benchmarks:**

```
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -03 -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 -ljemalloc  
```

(Continued on next page)
### Base Optimization Flags (Continued)

Fortran benchmarks (continued):

\[-L/\text{usr/local/jemalloc64-5.0.1/lib} \]

Benchmarks using both Fortran and C:

\[-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flt -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -O3 -ipo
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-mbranches-within-32B-boundaries -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib\]

Benchmarks using both C and C++:

\[-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flt -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib\]

Benchmarks using Fortran, C, and C++:

\[-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flt -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-mbranches-within-32B-boundaries -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib\]

### Peak Compiler Invocation

C benchmarks:

\[\text{icx}\]

C++ benchmarks:

\[\text{icpx}\]

Fortran benchmarks:

\[\text{ifort}\]

Benchmarks using both Fortran and C:

\[521.wrf_r: \text{ifort} \text{ icc}\]

\[527.cam4_r: \text{ifort} \text{ icx}\]

Benchmarks using both C and C++:

(Continued on next page)
Dell Inc.  
PowerEdge R750 xa (Intel Xeon Gold 6314U, 2.30 GHz)  

SPECrate®2017 fp_base = 199  
SPECrate®2017 fp_peak = 210  

CPU2017 License: 55  
Test Sponsor: Dell Inc.  
Tested by: Dell Inc.  
Test Date: Apr-2021  
Hardware Availability: May-2021  
Software Availability: Feb-2021

Peak Compiler Invocation (Continued)

511.povray_r: icpc icc
526.blender_r: icpx icx

Benchmarks using Fortran, C, and C++:
icpx icx 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: -w -std=c11 -m64 -W1,-z,muldefs -xCORE-AVX512 -flto -Ofast -qopt-mem-layout-trans=4 -fimf-accuracy-bits=14:sqrt -mbranches-within-32B-boundaries -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

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

Fortran benchmarks:

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

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 -O3
-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 -O3
-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-ic2021-official-linux64_revA.xml

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 v1.1.5 on 2021-04-15 09:18:06-0400.
Originally published on 2021-05-18.