**Dell Inc.**

PowerEdge C6520 (Intel Xeon Gold 6338N, 2.20 GHz)

<table>
<thead>
<tr>
<th>Software</th>
<th>CPU Name:</th>
<th>OS:</th>
<th>Compiler:</th>
<th>Firmware:</th>
<th>System State:</th>
<th>Base Pointers:</th>
<th>Peak Pointers:</th>
<th>Power Management:</th>
</tr>
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<table>
<thead>
<tr>
<th>Hardware</th>
<th>Max MHz:</th>
<th>Nominal:</th>
<th>Enabled:</th>
<th>Orderable:</th>
<th>Cache L1:</th>
<th>Cache L2:</th>
<th>Cache L3:</th>
<th>Other:</th>
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<tbody>
<tr>
<td>SPECrate®2017_fp_peak = 382</td>
<td>3500</td>
<td>2200</td>
<td>64 cores, 2 chips, 2 threads/core</td>
<td>1.2 chips</td>
<td>32 KB I + 48 KB D on chip per core</td>
<td>1.25 MB I+D on chip per core</td>
<td>48 MB I+D on chip per core</td>
<td>None</td>
</tr>
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<table>
<thead>
<tr>
<th>CPU2017 License: 55</th>
<th>Test Sponsor: Dell Inc.</th>
<th>Test Date: May-2021</th>
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<tr>
<td>Tested by: Dell Inc.</td>
<td>Hardware Availability: Apr-2021</td>
<td></td>
</tr>
<tr>
<td>Software Availability: Dec-2020</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Copies | 0 | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 |
|---------|---|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 503.bwaves_r | 128 | 64 | 382 | 633 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 |
| 508.namd_r | 128 | 178 | 178 | 178 | 178 | 178 | 178 | 178 | 178 | 178 | 178 | 178 | 178 | 178 | 178 | 178 | 178 | 178 | 178 | 178 | 178 |
| 510.parest_r | 128 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 |
| 511.povray_r | 128 | 446 | 446 | 446 | 446 | 446 | 446 | 446 | 446 | 446 | 446 | 446 | 446 | 446 | 446 | 446 | 446 | 446 | 446 | 446 | 446 |
| 519.lbm_r | 128 | 352 | 352 | 352 | 352 | 352 | 352 | 352 | 352 | 352 | 352 | 352 | 352 | 352 | 352 | 352 | 352 | 352 | 352 | 352 | 352 |
| 521.wrf_r | 128 | 296 | 296 | 296 | 296 | 296 | 296 | 296 | 296 | 296 | 296 | 296 | 296 | 296 | 296 | 296 | 296 | 296 | 296 | 296 | 296 |
| 526.blender_r | 128 | 412 | 412 | 412 | 412 | 412 | 412 | 412 | 412 | 412 | 412 | 412 | 412 | 412 | 412 | 412 | 412 | 412 | 412 | 412 | 412 |
| 527.cam4_r | 128 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 |
| 544.nab_r | 128 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 | 635 |
| 549.fotonik3d_r | 128 | 199 | 199 | 199 | 199 | 199 | 199 | 199 | 199 | 199 | 199 | 199 | 199 | 199 | 199 | 199 | 199 | 199 | 199 | 199 | 199 |

<table>
<thead>
<tr>
<th>Hardware Details</th>
<th>Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R, running at 2666)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Storage: 125 GB on tmpfs</td>
</tr>
<tr>
<td>Other: None</td>
<td>Other: None</td>
</tr>
</tbody>
</table>

---

**Table:** Dell Inc. SPEC CPU®2017 Floating Point Rate Result

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

Dell Inc. PowerEdge C6520 (Intel Xeon Gold 6338N, 2.20 GHz)

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

SPECrate®2017_fp_base = 361
SPECrate®2017_fp_peak = 382

Results Table

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<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>636</td>
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<td>128</td>
<td>319</td>
<td>508</td>
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<tr>
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<td>473</td>
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<tr>
<td>527.cam4_r</td>
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<td>64</td>
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<td>170</td>
<td>596</td>
<td>171</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/cpu2017-1.1.7-ic2021.1/lib/intel64:/mnt/ramdisk/cpu2017-1.1.7-ic2021.1/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 Red Hat Enterprise Linux 8.1

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

PowerEdge C6520 (Intel Xeon Gold 6338N, 2.20 GHz)

**SPEC CPU®2017 Floating Point Rate Result**

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base = 361</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak = 382</td>
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</tbody>
</table>

**CPU2017 License:** 55

**Test Sponsor:** Dell Inc.

**Tested by:** Dell Inc.

**Test Date:** May-2021

**Hardware Availability:** Apr-2021

**Software Availability:** Dec-2020

**General Notes (Continued)**

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 numacli i.e.:
umacli --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

Benchmark run from a 125 GB ramdisk created with the cmd: "mount -t tmpfs -o size=125G 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/cpu2017-1.1.7-ic2021.1/bin/sysinfo
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c
running on localhost.localdomain Wed May 12 16:07:01 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

From /proc/cpuinfo
- model name : Intel(R) Xeon(R) Gold 6338N CPU @ 2.20GHz
- 2 "physical id"s (chips)

(Continued on next page)
Dell Inc.

PowerEdge C6520 (Intel Xeon Gold 6338N, 2.20 GHz)

CPU2017 License: 55
Test Sponsor: Dell Inc.
Test Date: May-2021

Tested by: Dell Inc.
Hardware Availability: Apr-2021
Software Availability: Dec-2020

SPECrate®2017_fp_base = 361
SPECrate®2017_fp_peak = 382

Platform Notes (Continued)

128 "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 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
physical 1: cores 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

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 128
On-line CPU(s) list: 0-127
Thread(s) per core: 2
Core(s) per socket: 32
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 6338N CPU @ 2.20GHz
Stepping: 6
CPU MHz: 1508.914
BogoMIPS: 4400.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 49152K
NUMA node0 CPU(s): 0-15,64-79
NUMA node1 CPU(s): 16-31,80-95
NUMA node2 CPU(s): 32-47,96-111
NUMA node3 CPU(s): 48-63,112-127
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
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtrn pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt dca pcd dtcdele_timer aes xsave
avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 invpcid_single ssbd
mba ibec stibp ibrs_enhanced tpr_shadow vmi flexpriority ept vpid fsgsbase
tsc_adjust bmi1 hel avx2 smep bmi2 ertns invpcid rtm cqm rdt_a avx512f avx512dq
rdseed adx smap avx512fma clflushopt clwb intel_pt avx512cd sha_ni avx512bw
avx512vl xsavesopt xsaves ecxetvbx xsaves cqm_l1c cqm_occup_l1c cqm_mbb_total
cqm_mbb_local wbnoinvd dtherm ida arat pln pts avx512vbmi umip pku ospke

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

**Dell Inc.**

**PowerEdge C6520** (Intel Xeon Gold 6338N, 2.20 GHz)

### SPECrate®2017_fp_base = 361

### SPECrate®2017_fp_peak = 382

<table>
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<th><strong>CPU2017 License:</strong></th>
<th>55</th>
<th><strong>Test Date:</strong></th>
<th>May-2021</th>
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<tbody>
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<td><strong>Test Sponsor:</strong></td>
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<td><strong>Hardware Availability:</strong></td>
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<td>Dell Inc.</td>
<td><strong>Software Availability:</strong></td>
<td>Dec-2020</td>
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</tbody>
</table>

### Platform Notes (Continued)

Avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq
1a57 rdpid md_clear pconfig flush_l1d 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: 4 nodes (0-3)
    node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 64 65 66 67 68 69 70 71 72 73 74 75
    76 77 78 79
    node 0 size: 257435 MB
    node 0 free: 240940 MB
    node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 80 81 82 83 84 85 86 87 88
    89 90 91 92 93 94 95
    node 1 size: 258013 MB
    node 1 free: 245882 MB
    node 2 cpus: 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 96 97 98 99 100 101 102
    103 104 105 106 107 108 109 110 111
    node 2 size: 258040 MB
    node 2 free: 245860 MB
    node 3 cpus: 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 112 113 114 115 116 117
    118 119 120 121 122 123 124 125 126 127
    node 3 size: 258038 MB
    node 3 free: 236403 MB
    node distances:
    node 0  1  2  3
    0: 10 11 20 20
    1: 11 10 20 20
    2: 20 20 10 11
    3: 20 20 11 10

From /proc/meminfo
    MemTotal: 1056284476 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="8.2 (Ootpa)"
        ID="rhel"
        ID_LIKE="fedora"
        VERSION_ID="8.2"

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

Dell Inc.

PowerEdge C6520 (Intel Xeon Gold 6338N, 2.20 GHz)

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

SPECratre®2017_fp_base = 361
SPECratre®2017_fp_peak = 382

Test Date: May-2021
Hardware Availability: Apr-2021
Software Availability: Dec-2020

Platform Notes (Continued)

PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.2 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.2:ga
uname -a:
    Linux localhost.localdomain 4.18.0-193.el8.x86_64 #1 SMP Fri Mar 27 14:35:58 UTC 2020
    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
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Mitigation: Speculative Store
    Bypass disabled via prctl and seccomp
CVE-2018-3639 (Speculative Store Bypass): Mitigation: usercopy/swapgs
    barriers and __user pointer
    sanitization
CVE-2017-5753 (Spectre variant 1): Mitigation: Enhanced IBRS, IBPB:
    conditional, RSB filling
CVE-2017-5715 (Spectre variant 2): No status reported
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 May 12 10:19

SPEC is set to: /mnt/ramdisk/cpu2017-1.1.7-ic2021.1
Filesystem Type Size Used Avail Use% Mounted on
tmpfs tmpfs 125G 55G 71G 44% /mnt/ramdisk

From /sys/devices/virtual/dmi/id
Vendor: Dell Inc.
Product: PowerEdge C6520
Product Family: PowerEdge
Serial: SDPT078

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:
    16x 00AD063200AD HMAA8GR7AJR4N-XN 64 GB 2 rank 3200, configured at 2666

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

Dell Inc.

PowerEdge C6520 (Intel Xeon Gold 6338N, 2.20 GHz)

SPECrate®2017_fp_base = 361
SPECrate®2017_fp_peak = 382

CPU2017 License: 55
Test Sponsor: Dell Inc.
Test Date: May-2021
Tested by: Dell Inc.
Hardware Availability: Apr-2021
Software Availability: Dec-2020

Platform Notes (Continued)

BIOS:
  BIOS Vendor: Dell Inc.
  BIOS Version: 1.1.3
  BIOS Date: 04/27/2021
  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)
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++             | 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 2020112_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 2020112_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
(Continued on next page)
### Compiler Version Notes (Continued)

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

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<th>511.povray_r(peak)</th>
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<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
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<th>507.cactuBSSN_r(base, peak)</th>
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<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</td>
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<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
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<tr>
<th>Fortran</th>
<th>503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base, peak)</th>
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<td>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
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Dell Inc.

PowerEdge C6520 (Intel Xeon Gold 6338N, 2.20 GHz)

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

SPECraten®2017_fp_base = 361
SPECraten®2017_fp_peak = 382

Test Date: May-2021
Hardware Availability: Apr-2021
Software Availability: Dec-2020

Compiler Version Notes (Continued)

--------------------------------------------------------------------------------------------------------------------
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.
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
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Dell Inc.
PowerEdge C6520 (Intel Xeon Gold 6338N, 2.20 GHz) SPECrate®2017_fp_peak = 382
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Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icx

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,-static -march=x86-64 -mcpu=core-avx512 -Ofast -ffast-math
-ffto -mfpmath=sse -funroll-loops -gopt-mem-layout-trans=4
-merases-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

(Continued on next page)
Dell Inc.
PowerEdge C6520 (Intel Xeon Gold 6338N, 2.20 GHz)

 SPEC CPU®2017 Floating Point Rate Result

SPECrated®2017_fp_base = 361  
SPECrated®2017_fp_peak = 382

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

CPU2017 License: 55
Test Date: May-2021
Hardware Availability: Apr-2021
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Base Optimization Flags (Continued)

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 -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 -ljemalloc
-L/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
-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
-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
-flto -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
-flto -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:
icx

C++ benchmarks:
icpx

(Continued on next page)
Dell Inc.  
PowerEdge C6520 (Intel Xeon Gold 6338N, 2.20 GHz)  

<table>
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**Peak Compiler Invocation (Continued)**

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

521.wrf_r: ifort icc
527.cam4_r: ifort icx

Benchmarks using both C and C++:

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 -Wl,-z,muldefs -xCORE-AVX512 -flto
-Ofast -gopt-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 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops

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

510.parest_r (continued):
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Fortran benchmarks:

503.bwaves_r: -w -m64 -Wl,-z,muldefs -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
-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

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
### SPEC CPU®2017 Floating Point Rate Result

**Dell Inc.**  
PowerEdge C6520 (Intel Xeon Gold 6338N, 2.20 GHz)  

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**Test Date:** May-2021  
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- **Tested by:** Dell Inc.  

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  

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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 v1.1.7 on 2021-05-12 16:06:59-0400.  
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