Dell Inc.

PowerEdge C6420 (Intel Xeon Gold 6230R, 2.10 GHz)

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

Test Date: Nov-2021
Hardware Availability: Apr-2019
Software Availability: May-2021

SPECrates:
SPECrates®2017_fp_base = 269
SPECrates®2017_fp_peak = 286

Copies
503.bwaves_r 104
507.caetuBSSN_r 104
508.namd_r 104
510.parest_r 104
511.povray_r 104
519.lbm_r 104
521.wrf_r 104
526.blender_r 104
527.cam4_r 104
538.imagick_r 104
544.nab_r 104
549.fotonik3d_r 104
554.roms_r 104

Hardware
CPU Name: Intel Xeon Gold 6230R
Max MHz: 4000
Nominal: 2100
Enabled: 52 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: 384 GB (12 x 32 GB 2Rx4 PC4-2933Y-R)
Storage: 125 GB on tmpfs
Other: None

Software
OS: Red Hat Enterprise Linux 8.4 (Ootpa)
Compiler: C/C++: Version 2021.1 of Intel oneAPI DPC++/C++
          Compiler Build 20201113 for Linux;
          Fortran: Version 2021.1 of Intel Fortran Compiler
          Classic Build 20201112 for Linux;
          C/C++: Version 2021.1 of Intel C/C++ Compiler
          Classic Build 20201112 for Linux
Parallel: No
Firmware: Version 2.11.2 released Apr-2021
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 and OS set to prefer performance
                  at the cost of additional power usage.
Dell Inc. PowerEdge C6420 (Intel Xeon Gold 6230R, 2.10 GHz)

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Results Table

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<td>1678</td>
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<td>696</td>
<td>119</td>
</tr>
</tbody>
</table>

SPECrate®2017_fp_base = 269
SPECrate®2017_fp_peak = 286

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/cpu2017-1.1.8-ic2021.1/lib/intel64:/mnt/ramdisk/cpu2017-1.1.8-ic2021.1/je5.0.1-64"
MALLOC_CONF = "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
Transparent Huge Pages enabled by default

(Continued on next page)
Dell Inc.

PowerEdge C6420 (Intel Xeon Gold 6230R, 2.10 GHz)

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

Dell Inc.  SPECrate®2017_fp_base = 269
PowerEdge C6420  SPECrate®2017_fp_peak = 286

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

General Notes (Continued)

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 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
  PCI ASPM L1 Link
    Power Management : Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.8-ic2021.1/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaefc64d
running on localhost.localdomain Fri Nov  5 20:38:38 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 6230R CPU @ 2.10GHz

(Continued on next page)
Dell Inc.

PowerEdge C6420 (Intel Xeon Gold 6230R, 2.10 GHz)

SPEC CPU®2017 Floating Point Rate Result

SPECrate®2017_fp_base = 269
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CPU2017 License: 55
Test Sponsor: Dell Inc.
Test Date: Nov-2021
Tested by: Dell Inc.
Hardware Availability: Apr-2019
Software Availability: May-2021

Platform Notes (Continued)

2 "physical id"s (chips)
104 "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 : 26
siblings : 52
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25 26 27 28 29
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25 26 27 28 29

From lscpu from util-linux 2.32.1:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 104
On-line CPU(s) list: 0-103
Thread(s) per core: 2
Core(s) per socket: 26
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
BIOS Vendor ID: Intel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6230R CPU @ 2.10GHz
BIOS Model name: Intel(R) Xeon(R) Gold 6230R CPU @ 2.10GHz
Stepping: 7
CPU MHz: 1727.312
CPU max MHz: 4000.0000
CPU min MHz: 1000.0000
BogoMIPS: 4200.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 36608K
NUMA node0 CPU(s):
0,4,8,12,16,20,24,28,32,36,40,44,48,52,56,60,64,68,72,76,80,84,88,92,96,100
NUMA node1 CPU(s):
1,5,9,13,17,21,25,29,33,37,41,45,49,53,57,61,65,69,73,77,81,85,89,93,97,101
NUMA node2 CPU(s):
2,6,10,14,18,22,26,30,34,38,42,46,50,54,58,62,66,70,74,78,82,86,90,94,98,102
NUMA node3 CPU(s):
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

(Continued on next page)
### Platform Notes (Continued)

- `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 xtrp 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_pms intel_pms kbi ibsr ibpb stibp ibrs_enhanced fsqsnbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid cmq mxm rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cmqm l1c cmq_uocc_l1c cmq_mbb_total cmq_mbb_local dtherm ida arat pln pts pkup ospke avx512_vnni md_clear flush_l1d arch_capabilities`

```
From /proc/cpuinfo cache data
  cache size : 36608 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 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76 80 84 88 92 96 100
  node 0 size: 95304 MB
  node 0 free: 76359 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 97 101
  node 1 size: 96725 MB
  node 1 free: 82559 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 98 102
  node 2 size: 96762 MB
  node 2 free: 82634 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 99 103
  node 3 size: 96761 MB
  node 3 free: 73523 MB
  node distances:
  node 0 1 2 3
  0: 10 21 11 21
  1: 21 10 11 21
  2: 11 21 11 21
  3: 21 11 21 10
```

```
From /proc/meminfo
  MemTotal: 394806520 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB
```

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

(Continued on next page)
Platform Notes (Continued)

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance

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

os-release:
  NAME="Red Hat Enterprise Linux"
  VERSION="8.4 (Ootpa)"
  ID="rhel"
  ID_LIKE="fedora"
  VERSION_ID="8.4"
  PLATFORM_ID="platform:el8"
  PRETTY_NAME="Red Hat Enterprise Linux 8.4 (Ootpa)"
  ANSI_COLOR="0;31"

redhat-release: Red Hat Enterprise Linux release 8.4 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.4 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.4:ga

uname -a:
  Linux localhost.localdomain 4.18.0-305.el8.x86_64 #1 SMP Thu Apr 29 08:54:30 EDT 2021
  x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit):                KVM: Mitigation: Split huge pages
  Not affected
CVE-2018-3620 (L1 Terminal Fault):             Not affected
  Not affected
Microarchitectural Data Sampling:              Not affected
  Mitigation: Speculative Store
CVE-2017-5754 (Meltdown):                      Bypass disabled via prctl and
  Not affected
    seccomp
CVE-2018-3639 (Speculative Store Bypass):      Mitigation: uservcopy/swaps
  Mitigation: uservcopy/swaps
    barriers and __user pointer
    sanitization
CVE-2017-5753 (Spectre variant 1):             Mitigation: Enhanced IBRS, IBPB:
    Mitigation: usercopy/swaps
    barriers and __user pointer
    sanitization
    conditional, RSB filling
CVE-2017-5715 (Spectre variant 2):             Not affected
CVE-2020-0543 (Special Register Buffer Data Sampling): Mitigation: TSX disabled
CVE-2019-11135 (TSX Asynchronous Abort):

run-level 3 Nov 4 14:45

SPEC is set to: /mnt/ramdisk/cpu2017-1.1.8-ic2021.1
  Filesystem     Type     Size  Used Avail Use% Mounted on
tmpfs          tmpfs     125G  63G   63G  51% /mnt/ramdisk

From /sys/devices/virtual/dmi/id
  Vendor: Dell Inc.
  Product: PowerEdge C6420

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

Dell Inc.
PowerEdge C6420 (Intel Xeon Gold 6230R, 2.10 GHz)

SPECrate®2017_fp_base = 269
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Test Sponsor: Dell Inc.
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Test Date: Nov-2021
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Platform Notes (Continued)

Product Family: PowerEdge

Additional information from dmidecode 3.2 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:
1x 002C069D002C 36ASF472PZ-2G9E2 32 GB 2 rank 2933
4x 00AD00B300AD HMA84GR7CJR4N-WM 32 GB 2 rank 2933
6x 00AD063200AD HMA84GR7CJR4N-WM 32 GB 2 rank 2933
1x 00AD069D00AD HMA84GR7CJR4N-WM 32 GB 2 rank 2933

BIOS:
BIOS Vendor: Dell Inc.
BIOS Version: 2.11.2
BIOS Date: 04/22/2021
BIOS Revision: 2.11

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
| C                   | 519.libm_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
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==============================================================================

| C++                  | 508.namd_r(base, peak) 510.parest_r(base, peak) |
==============================================================================

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Version 2021.1 Build 20201113
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==============================================================================

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

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-------------------------------------------------------------------
 C++, C       | 511.povray_r(base) 526.blender_r(base, peak)
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Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
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 C++, C       | 511.povray_r(peak)
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 C++, C       | 511.povray_r(base) 526.blender_r(base, peak)
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-------------------------------------------------------------------
 C++, C, Fortran | 507.cactuBSSN_r(base, peak)
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Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on  
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Compiler Version Notes (Continued)

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===============================================================================

Fortran  | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base, peak)
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Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
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===============================================================================

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

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Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
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===============================================================================

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

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===============================================================================

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
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Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
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===============================================================================
```

(Continued on next page)
## Dell Inc.

**PowerEdge C6420 (Intel Xeon Gold 6230R, 2.10 GHz)**

**SPECrate®2017_fp_base** = 269  
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<th>Software Availability</th>
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</table>

### Compiler Version Notes (Continued)

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

---------------------------------------------

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113
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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.ibm_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

(Continued on next page)
Dell Inc.

PowerEdge C6420 (Intel Xeon Gold 6230R, 2.10 GHz)

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

SPECrate®2017_fp_base = 269
SPECrate®2017_fp_peak = 286

Test Date: Nov-2021
Hardware Availability: Apr-2019
Software Availability: May-2021

Base Portability Flags (Continued)

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 -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

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Dell Inc.

PowerEdge C6420 (Intel Xeon Gold 6230R, 2.10 GHz)

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<tr>
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<td>Software Availability: May-2021</td>
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</tbody>
</table>

**SPECrate®2017_fp_base = 269**
**SPECrate®2017_fp_peak = 286**

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### Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):
- 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

**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

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### Peak Optimization Flags

**C benchmarks:**
- 519.lbm_r: basepeak = yes

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

Dell Inc.

PowerEdge C6420 (Intel Xeon Gold 6230R, 2.10 GHz)

SPECrate®2017_fp_base = 269

SPECrate®2017_fp_peak = 286

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

Test Date: Nov-2021
Hardware Availability: Apr-2019
Software Availability: May-2021

Peak Optimization Flags (Continued)

538.imagick_r: basepeak = yes

544.nab_r: -w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -flto
 Ofast -gopt-mem-layout-trans=4
 -finf-accuracy-bits=14:sqrt
 -mbranches-within-32B-boundaries -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
 -gopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
 -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 -gopt-prefetch -ffinite-math-only
 -gopt-multiple-gather-scatter-by-shuffles
 -gopt-mem-layout-trans=4 -nostandard-realloc-lhs
 -align array32byte -auto -mbranches-within-32B-boundaries
 -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 -gopt-prefetch -ffinite-math-only
 -gopt-multiple-gather-scatter-by-shuffles
 -gopt-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 -gopt-prefetch -ffinite-math-only
 -gopt-multiple-gather-scatter-by-shuffles

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### Peak Optimization Flags (Continued)

511.povray_r (continued):
- `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
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-ICX-rev1.4.xml