Dell Inc.

PowerEdge R440 (Intel Xeon Gold 5220, 2.20 GHz)

<table>
<thead>
<tr>
<th>threads</th>
<th>603.bwaves_s</th>
<th>607.cactuBSSN_s</th>
<th>619.ibm_s</th>
<th>621.wrf_s</th>
<th>627.cam4_s</th>
<th>628.pop2_s</th>
<th>638.imagick_s</th>
<th>644.nab_s</th>
<th>649.fotonik3d_s</th>
<th>654.roms_s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threads</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>SPECspeed®2017_fp_base</td>
<td>119</td>
<td>119</td>
<td>119</td>
<td>119</td>
<td>119</td>
<td>119</td>
<td>119</td>
<td>119</td>
<td>119</td>
<td>119</td>
</tr>
<tr>
<td>SPECspeed®2017_fp_peak</td>
<td>121</td>
<td>121</td>
<td>121</td>
<td>121</td>
<td>121</td>
<td>121</td>
<td>121</td>
<td>121</td>
<td>121</td>
<td>121</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon Gold 5220
- **Max MHz:** 3900
- **Nominal:** 2200
- **Enabled:** 36 cores, 2 chips
- **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:** 24.75 MB I+D on chip per chip
- **Other:** None
- **Memory:** 384 GB (12 x 16 GB 2Rx8 PC4-3200V-R, running at 2933)
- **Storage:** 1.8 TB GB SATA SSD
- **Other:** None

**Software**

- **OS:** Red Hat Enterprise Linux 8.1
- **Compiler:** C/C++: Version 19.1.1.217 of Intel C/C++ Compiler for Linux;
- **Fortran:** Version 19.1.1.217 of Intel Fortran Compiler for Linux
- **Parallel:** Yes
- **Firmware:** Version 2.7.7 released May-2020
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** jemalloc memory allocator V5.0.1
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage
Dell Inc.

PowerEdge R440 (Intel Xeon Gold 5220, 2.20 GHz)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>36</td>
<td>126</td>
<td>467</td>
<td>126</td>
<td>469</td>
<td>126</td>
<td>470</td>
<td>36</td>
<td>126</td>
<td>467</td>
<td>126</td>
<td>469</td>
<td>126</td>
<td>470</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>36</td>
<td>118</td>
<td>141</td>
<td>121</td>
<td>137</td>
<td>122</td>
<td>137</td>
<td>36</td>
<td>118</td>
<td>141</td>
<td>121</td>
<td>137</td>
<td>122</td>
<td>137</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>36</td>
<td>58.7</td>
<td>89.2</td>
<td>61.6</td>
<td>85.0</td>
<td>59.4</td>
<td>88.2</td>
<td>36</td>
<td>58.7</td>
<td>89.2</td>
<td>61.6</td>
<td>85.0</td>
<td>59.4</td>
<td>88.2</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>36</td>
<td>121</td>
<td>109</td>
<td>121</td>
<td>109</td>
<td>120</td>
<td>110</td>
<td>36</td>
<td>121</td>
<td>109</td>
<td>121</td>
<td>109</td>
<td>120</td>
<td>110</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>36</td>
<td>106</td>
<td>83.4</td>
<td>106</td>
<td>83.3</td>
<td>106</td>
<td>83.4</td>
<td>36</td>
<td>106</td>
<td>83.4</td>
<td>106</td>
<td>83.4</td>
<td>106</td>
<td>83.4</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>36</td>
<td>179</td>
<td>66.4</td>
<td>179</td>
<td>66.4</td>
<td>181</td>
<td>65.5</td>
<td>36</td>
<td>179</td>
<td>66.4</td>
<td>179</td>
<td>66.4</td>
<td>181</td>
<td>65.5</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>36</td>
<td>141</td>
<td>102</td>
<td>141</td>
<td>102</td>
<td>141</td>
<td>102</td>
<td>36</td>
<td>141</td>
<td>102</td>
<td>141</td>
<td>102</td>
<td>141</td>
<td>102</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>36</td>
<td>94.6</td>
<td>185</td>
<td>94.6</td>
<td>185</td>
<td>94.6</td>
<td>185</td>
<td>36</td>
<td>90.6</td>
<td>193</td>
<td>90.6</td>
<td>193</td>
<td>90.6</td>
<td>193</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>36</td>
<td>113</td>
<td>80.9</td>
<td>111</td>
<td>82.0</td>
<td>112</td>
<td>81.7</td>
<td>36</td>
<td>112</td>
<td>81.2</td>
<td>114</td>
<td>79.9</td>
<td>112</td>
<td>81.6</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>36</td>
<td>144</td>
<td>109</td>
<td>144</td>
<td>109</td>
<td>144</td>
<td>109</td>
<td>36</td>
<td>144</td>
<td>109</td>
<td>144</td>
<td>109</td>
<td>144</td>
<td>109</td>
</tr>
</tbody>
</table>

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

Compiler Notes

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

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"
Dell Inc.

PowerEdge R440 (Intel Xeon Gold 5220, 2.20 GHz)

**SPECspeed®2017_fp_base = 119**

**SPECspeed®2017_fp_peak = 121**

<table>
<thead>
<tr>
<th>General Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Binaries compiled on a system with 1x Intel Core i9-9900K CPU + 64GB RAM memory using Redhat Enterprise Linux 8.0</td>
</tr>
<tr>
<td>NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>Transparent Huge Pages enabled by default</td>
</tr>
<tr>
<td>Prior to runcpu invocation</td>
</tr>
<tr>
<td>Filesystem page cache synced and cleared with: sync; echo 3&gt;/proc/sys/vm/drop_caches</td>
</tr>
<tr>
<td>runcpu command invoked through numacll i.e.: numacll --interleave=all runcpu &lt;etc&gt;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Platform Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOS settings:</td>
</tr>
<tr>
<td>Virtualization Technology disabled</td>
</tr>
<tr>
<td>System Profile set to Custom</td>
</tr>
<tr>
<td>CPU Performance set to Maximum Performance</td>
</tr>
<tr>
<td>C States set to Autonomous</td>
</tr>
<tr>
<td>C1E disabled</td>
</tr>
<tr>
<td>Uncore Frequency set to Dynamic</td>
</tr>
<tr>
<td>Energy Efficiency Policy set to Performance</td>
</tr>
<tr>
<td>Memory Patrol Scrub set to standard</td>
</tr>
<tr>
<td>Logical Processor disabled</td>
</tr>
<tr>
<td>CPU Interconnect Bus Link Power Management disabled</td>
</tr>
<tr>
<td>PCI ASPM L1 Link Power Management disabled</td>
</tr>
<tr>
<td>UPI Prefetch enabled</td>
</tr>
<tr>
<td>LLC Prefetch disabled</td>
</tr>
<tr>
<td>Dead Line LLC Alloc enabled</td>
</tr>
<tr>
<td>Directory AtoS disabled</td>
</tr>
<tr>
<td>Sysinfo program /home/cpu2017/bin/sysinfo Rev: r6365 of 2019-08-21 295195f888a3d7edbb1e6e46a485a0011 running on localhost.localdomain Fri May 22 09:48:33 2020</td>
</tr>
<tr>
<td>SUT (System Under Test) info as seen by some common utilities. For more information on this section, see <a href="https://www.spec.org/cpu2017/Docs/config.html#sysinfo">https://www.spec.org/cpu2017/Docs/config.html#sysinfo</a></td>
</tr>
<tr>
<td>From /proc/cpuinfo</td>
</tr>
</tbody>
</table>

(Continued on next page)
SPEC CPU®2017 Floating Point Speed Result
Copyright 2017-2020 Standard Performance Evaluation Corporation

Dell Inc.
PowerEdge R440 (Intel Xeon Gold 5220, 2.20 GHz)

SPECspeed®2017_fp_base = 119
SPECspeed®2017_fp_peak = 121

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

Test Date: Apr-2020
Hardware Availability: Feb-2020
Software Availability: Apr-2020

Platform Notes (Continued)

model name : Intel(R) Xeon(R) Gold 5220 CPU @ 2.20GHz
2 "physical id"s (chips)
36 "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 : 18
siblings : 18
physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 36
On-line CPU(s) list: 0-35
Thread(s) per core: 1
Core(s) per socket: 18
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 5220 CPU @ 2.20GHz
Stepping: 6
CPU MHz: 2881.675
CPU max MHz: 3900.0000
CPU min MHz: 1000.0000
BogoMIPS: 4400.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 25344K
NUMA node0 CPU(s): 0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34
NUMA node1 CPU(s): 1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35
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
xtrnor 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_pti ssbd mba ibrs ibpb ibrs_enhanced tpr_shadow vnmi flexpriority
ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invvpid rtm
cqm mpx rd_t a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd
avx512bw avx512vl xsaves xsaveopt xsaves cqm_llc cqm_occu_pll cqm_mbm_total
cqm_mbm_local dtherm ida arat pln pts pku ospke avx512_vnni md_clear flush_l1d

(Continued on next page)
Dell Inc.
PowerEdge R440 (Intel Xeon Gold 5220, 2.20 GHz)

SPECspeed®2017_fp_base = 119
SPECspeed®2017_fp_peak = 121

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

Platform Notes (Continued)

arch_capabilities

/proc/cpuinfo cache data
    cache size : 25344 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.
    available: 2 nodes (0-1)
    node 0 cpus: 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34
    node 0 size: 192048 MB
    node 0 free: 191248 MB
    node 1 cpus: 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35
    node 1 size: 193531 MB
    node 1 free: 185674 MB
    node distances:
        node   0   1
        0:  10  21
        1:  21  10

From /proc/meminfo
    MemTotal:       394834568 kB
    HugePages_Total:       0
    Hugepagesize:       2048 kB

From /etc/*release*/etc/*version*
    os-release:
        NAME="Red Hat Enterprise Linux"
        VERSION="8.1 (Ootpa)"
        ID="rhel"
        ID_LIKE="fedora"
        VERSION_ID="8.1"
        PLATFORM_ID="platform:el8"
        PRETTY_NAME="Red Hat Enterprise Linux 8.1 (Ootpa)"
        ANSI_COLOR="0;31"
        redhat-release: Red Hat Enterprise Linux release 8.1 (Ootpa)
        system-release: Red Hat Enterprise Linux release 8.1 (Ootpa)
        system-release-cpe: cpe:/o:redhat:enterprise_linux:8.1:ga

uname -a:
    Linux localhost.localdomain 4.18.0-147.el8.x86_64 #1 SMP Thu Sep 26 15:52:44 UTC 2019
    x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Not affected

(Continued on next page)
Dell Inc.

PowerEdge R440 (Intel Xeon Gold 5220, 2.20 GHz)

SPECspeed®2017_fp_base = 119
SPECspeed®2017_fp_peak = 121

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

Test Date: Apr-2020
Hardware Availability: Feb-2020
Software Availability: Apr-2020

Platform Notes (Continued)

CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

run-level 3 May 22 05:33 last=5

SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 1.7T 29G 1.7T 2% /home

From /sys/devices/virtual/dmi/id
BIOS: Dell Inc. 2.7.7 05/06/2020
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

enguage 64 Compiler for applications running on Intel(R) 64, Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

C++, C, Fortran | 607.cactuBSSN_s(base, peak)

(Continued on next page)
Dell Inc.

PowerEdge R440 (Intel Xeon Gold 5220, 2.20 GHz)

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base</th>
<th>Dell Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>119</td>
<td>Dell Inc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_peak</th>
<th>Dell Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>121</td>
<td>Dell Inc.</td>
</tr>
</tbody>
</table>

CPU2017 License: 55

Test Date: Apr-2020

Test Sponsor: Dell Inc.

Hardware Availability: Feb-2020

Tested by: Dell Inc.

Software Availability: Apr-2020

Compiler Version Notes (Continued)

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

Intel (R) C Intel (R) 64 Compiler for applications running on Intel(R) 64,
Version 19.1.1.217 Build 20200306

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

Intel (R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.1.1.217 Build 20200306

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

Compiler Version Notes (Continued)

Base Compiler Invocation

C benchmarks:
icc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort
SPEC CPU®2017 Floating Point Speed Result

Dell Inc.
PowerEdge R440 (Intel Xeon Gold 5220, 2.20 GHz)  

SPECspeed®2017_fp_base = 119  
SPECspeed®2017_fp_peak = 121

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

Test Date: Apr-2020  
Hardware Availability: Feb-2020  
Software Availability: Apr-2020

Base Portability Flags

603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG
628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
-assume byterecl
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-m64 -std=c11 -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-mbranches-within-32B-boundaries

Fortran benchmarks:
-m64 -W1,-z,muldefs -DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-nostandard-realloc-lhs -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Benchmarks using both Fortran and C:
-m64 -std=c11 -W1,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Benchmarks using Fortran, C, and C++:
-m64 -std=c11 -W1,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Peak Compiler Invocation

C benchmarks:
icc

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

**PowerEdge R440 (Intel Xeon Gold 5220, 2.20 GHz)**

| SPECspeed®2017_fp_base = 119 |
| SPECspeed®2017_fp_peak = 121 |

**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Test Date:** Apr-2020  
**Tested by:** Dell Inc.  
**Hardware Availability:** Feb-2020  
**Software Availability:** Apr-2020

---

#### Peak Compiler Invocation (Continued)

Fortran benchmarks:

```plaintext
ifort
```

Benchmarks using both Fortran and C:

```plaintext
ifort icc
```

Benchmarks using Fortran, C, and C++:

```plaintext
icpc icc ifort
```

---

#### Peak Portability Flags

Same as Base Portability Flags

---

#### Peak Optimization Flags

**C benchmarks:**

- `619.lbm_s`: basepeak = yes
- `638.imagick_s`: basepeak = yes
- `644.nab_s`: -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3
  -no-prec-div -qopt-prefetch -ffinite-math-only
  -qopt-mem-layout-trans=4 -gopenmp -DSPEC_OPENMP
  -mbranches-within-32B-boundaries
  `-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

**Fortran benchmarks:**

- `603.bwaves_s`: -m64 -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)
  -DSPEC_SUPPRESS_OPENMP -DSPEC_OPENMP -ipo -xCORE-AVX2
  -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
  -qopt-mem-layout-trans=4 -gopenmp -nostandard-realloc-lhs
  -mbranches-within-32B-boundaries
  `-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`
- `649.fotonik3d_s`: Same as `603.bwaves_s`
- `654.roms_s`: basepeak = yes

Benchmarks using both Fortran and C:

(Continued on next page)
### Dell Inc. PowerEdge R440 (Intel Xeon Gold 5220, 2.20 GHz)

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base</th>
<th>SPECspeed®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>119</td>
<td>121</td>
</tr>
</tbody>
</table>

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

**Test Date:** Apr-2020  
**Hardware Availability:** Feb-2020  
**Software Availability:** Apr-2020

---

#### Peak Optimization Flags (Continued)

- **621.wrf_s:**  
  -m64 -std=c11 -Wl,-z,muldefs -prof-gen(pass 1)  
  -prof-use(pass 2) -ipo -xCORE-AVX2 -O3 -no-prec-div  
  -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4  
  -DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP  
  -mbranches-within-32B-boundaries -nostandard-realloc-lhs  
  -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

- **627.cam4_s:** basepeak = yes

- **628.pop2_s:** basepeak = yes

- **607.cactuBSSN_s:** basepeak = yes

---

You can also download the XML flags sources by saving the following links:

- [Intel ic19.1u1-official-linux64_revA.xml](http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revA.xml)
- [Dell Platform Flags PowerEdge revE10.xml](http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-revE10.xml)

---

**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 2020-05-22 10:48:32-0400.**  
**Report generated on 2020-06-09 16:09:05 by CPU2017 PDF formatter v6255.**  
**Originally published on 2020-06-09.**