## Dell Inc.

PowerEdge MX640 (Intel Xeon Gold 6226, 2.70GHz)

**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** Jul-2019  
**Hardware Availability:** Jun-2019  
**Software Availability:** Oct-2019

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECrate®2017_fp_base</th>
<th>SPECrate®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>48</td>
<td>124</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>48</td>
<td>113</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>48</td>
<td>102</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>48</td>
<td>102</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>48</td>
<td>174</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>48</td>
<td>96.0</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>48</td>
<td>182</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>48</td>
<td>164</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>48</td>
<td>164</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>48</td>
<td>173</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>48</td>
<td>144</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>48</td>
<td>82.6</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon Gold 6226  
- **Max MHz:** 3700  
- **Nominal:** 2700  
- **Enabled:** 24 cores, 2 chips, 2 threads/core  
- **Orderable:** 1,2 chips  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **Cache L2:** 1 MB I+D on chip per core  
- **Cache L3:** 19.25 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 384 GB (12 x 32 GB 2Rx4 PC4-2933Y-R)  
- **Storage:** 1 x 480 GB SATA SSD  
- **Other:** None

**Software**

- **OS:** Ubuntu 18.04.3 LTS  
- **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 2.3.10 released Aug-2019  
- **File System:** ext4  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** 64-bit  
- **Other:** None  
- **Power Management:** --
## 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>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>48</td>
<td>1055</td>
<td>456</td>
<td>1056</td>
<td>456</td>
<td>1057</td>
<td>456</td>
<td>1056</td>
<td>456</td>
<td>1056</td>
<td>456</td>
<td>1056</td>
<td>456</td>
<td>1056</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>48</td>
<td>488</td>
<td>125</td>
<td>492</td>
<td>124</td>
<td>492</td>
<td>124</td>
<td>48</td>
<td>123</td>
<td>30</td>
<td>124</td>
<td>30</td>
<td>124</td>
<td>30</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>48</td>
<td>406</td>
<td>112</td>
<td>404</td>
<td>113</td>
<td>405</td>
<td>113</td>
<td>48</td>
<td>114</td>
<td>30</td>
<td>113</td>
<td>30</td>
<td>113</td>
<td>30</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>48</td>
<td>1230</td>
<td>102</td>
<td>1236</td>
<td>102</td>
<td>1236</td>
<td>102</td>
<td>48</td>
<td>1237</td>
<td>102</td>
<td>1236</td>
<td>102</td>
<td>1236</td>
<td>102</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>48</td>
<td>641</td>
<td>175</td>
<td>644</td>
<td>174</td>
<td>642</td>
<td>174</td>
<td>48</td>
<td>174</td>
<td>30</td>
<td>173</td>
<td>30</td>
<td>173</td>
<td>30</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>48</td>
<td>527</td>
<td>95.9</td>
<td>527</td>
<td>96.0</td>
<td>526</td>
<td>96.2</td>
<td>48</td>
<td>96.2</td>
<td>30</td>
<td>96.2</td>
<td>30</td>
<td>96.2</td>
<td>30</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>48</td>
<td>591</td>
<td>182</td>
<td>580</td>
<td>185</td>
<td>595</td>
<td>181</td>
<td>48</td>
<td>181</td>
<td>30</td>
<td>181</td>
<td>30</td>
<td>181</td>
<td>30</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>48</td>
<td>445</td>
<td>164</td>
<td>445</td>
<td>164</td>
<td>446</td>
<td>164</td>
<td>48</td>
<td>164</td>
<td>30</td>
<td>164</td>
<td>30</td>
<td>164</td>
<td>30</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>48</td>
<td>485</td>
<td>173</td>
<td>487</td>
<td>173</td>
<td>479</td>
<td>175</td>
<td>48</td>
<td>175</td>
<td>30</td>
<td>175</td>
<td>30</td>
<td>175</td>
<td>30</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>48</td>
<td>314</td>
<td>380</td>
<td>320</td>
<td>373</td>
<td>315</td>
<td>379</td>
<td>48</td>
<td>379</td>
<td>30</td>
<td>379</td>
<td>30</td>
<td>379</td>
<td>30</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>48</td>
<td>307</td>
<td>263</td>
<td>304</td>
<td>266</td>
<td>307</td>
<td>263</td>
<td>48</td>
<td>263</td>
<td>30</td>
<td>263</td>
<td>30</td>
<td>263</td>
<td>30</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>48</td>
<td>1301</td>
<td>144</td>
<td>1300</td>
<td>144</td>
<td>1297</td>
<td>144</td>
<td>48</td>
<td>144</td>
<td>30</td>
<td>144</td>
<td>30</td>
<td>144</td>
<td>30</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>48</td>
<td>922</td>
<td>82.7</td>
<td>924</td>
<td>82.6</td>
<td>924</td>
<td>82.5</td>
<td>48</td>
<td>82.5</td>
<td>30</td>
<td>82.5</td>
<td>30</td>
<td>82.5</td>
<td>30</td>
</tr>
</tbody>
</table>

**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"

**General Notes**

Environment variables set by runcpu before the start of the run:

LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/lib/ia32:/home/cpu2017/je5.0.1-32"

Binaries compiled on a system with 1x Intel Core I9-799X 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.

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:

(Continued on next page)
Dell Inc. 

PowerEdge MX640 (Intel Xeon Gold 6226, 2.70GHz)

SPECralte®2017_fp_base = 165
SPECralte®2017_fp_peak = 170

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

General Notes (Continued)

sync; echo 3>       /proc/sys/vm/drop_caches
runcpu command invoked through numactl i.e.: 
numactl --interleave=all runcpu <etc>

Platform Notes

BIOS settings:
ADDDC setting disabled
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: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on intel-sut Tue Nov 19 04:15:51 2019

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 6226 CPU @ 2.70GHz
2 "physical id"'s (chips)
48 "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 : 12
siblings : 24
physical 0: cores 1 2 3 4 6 8 9 10 11 12 13 14
physical 1: cores 1 2 3 4 5 8 9 10 11 12 13 14

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 48
On-line CPU(s) list: 0-47

(Continued on next page)
## Dell Inc.

**PowerEdge MX640 (Intel Xeon Gold 6226, 2.70GHz)**

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base = 165</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak = 170</td>
</tr>
</tbody>
</table>

### CPU2017 License: 55

**Test Sponsor:** Dell Inc.  
**Test Date:** Jul-2019  
**Hardware Availability:** Jun-2019  
**Tested by:** Dell Inc.  
**Software Availability:** Oct-2019

### Platform Notes (Continued)

<table>
<thead>
<tr>
<th>Thread(s) per core:</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core(s) per socket:</td>
<td>12</td>
</tr>
<tr>
<td>Socket(s):</td>
<td>2</td>
</tr>
<tr>
<td>NUMA node(s):</td>
<td>4</td>
</tr>
<tr>
<td>Vendor ID:</td>
<td>GenuineIntel</td>
</tr>
<tr>
<td>CPU family:</td>
<td>6</td>
</tr>
<tr>
<td>Model:</td>
<td>85</td>
</tr>
<tr>
<td>Model name:</td>
<td>Intel(R) Xeon(R) Gold 6226 CPU @ 2.70GHz</td>
</tr>
<tr>
<td>Stepping:</td>
<td>7</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>1245.068</td>
</tr>
<tr>
<td>BogoMIPS:</td>
<td>5400.00</td>
</tr>
<tr>
<td>Virtualization:</td>
<td>VT-x</td>
</tr>
<tr>
<td>L1d cache:</td>
<td>32K</td>
</tr>
<tr>
<td>L1i cache:</td>
<td>32K</td>
</tr>
<tr>
<td>L2 cache:</td>
<td>1024K</td>
</tr>
<tr>
<td>L3 cache:</td>
<td>19712K</td>
</tr>
<tr>
<td>NUMA node0 CPU(s):</td>
<td>0,4,8,12,16,20,24,28,32,36,40,44</td>
</tr>
<tr>
<td>NUMA node1 CPU(s):</td>
<td>1,5,9,13,17,21,25,29,33,37,41,45</td>
</tr>
<tr>
<td>NUMA node2 CPU(s):</td>
<td>2,6,10,14,18,22,26,30,34,38,42,46</td>
</tr>
<tr>
<td>NUMA node3 CPU(s):</td>
<td>3,7,11,15,19,23,27,31,35,39,43,47</td>
</tr>
<tr>
<td>Flags:</td>
<td>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_tcb 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 abtm cpuid(tm) epb cat_l3 cdp_l3 invpcid_single intel_pni ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaves opt xsave xsaveopt xsaves cqm llc cqm_occup_llc cqm_mbm_total cqm_mbm_local dtherm ida arat плn pts pkp ospke avx512_vnni md_clear flush_lld arch_capabilities</td>
</tr>
</tbody>
</table>

**/proc/cpuinfo cache data**

| cache size : 19712 KB |

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

PowerEdge MX640 (Intel Xeon Gold 6226, 2.70GHz)

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base = 165</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak = 170</td>
</tr>
</tbody>
</table>

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

Test Date: Jul-2019
Hardware Availability: Jun-2019
Software Availability: Oct-2019

Platform Notes (Continued)

node 2 free: 96364 MB
node 3 cpus: 3 7 11 15 19 23 27 31 35 39 43 47
node 3 size: 96743 MB
node 3 free: 96299 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: 394671360 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
  Ubuntu 18.04.3 LTS

From /etc/*release* /etc/*version*
debian_version: buster/sid
os-release:
  NAME="Ubuntu"
  VERSION="18.04.3 LTS (Bionic Beaver)"
  ID=ubuntu
  ID_LIKE=debian
  PRETTY_NAME="Ubuntu 18.04.3 LTS"
  VERSION_ID="18.04"
  HOME_URL="https://www.ubuntu.com/"
  SUPPORT_URL="https://help.ubuntu.com/"

uname -a:
  Linux intel-sut 4.15.0-66-generic #75-Ubuntu SMP Tue Oct 1 05:24:09 UTC 2019 x86_64
  x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2017-5754 (Meltdown): Not affected
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 Nov 18 20:27

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on

(Continued on next page)
Dell Inc.

PowerEdge MX640 (Intel Xeon Gold 6226, 2.70GHz)

SPECrates®2017_fp_base = 165
SPECrates®2017_fp_peak = 170

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

Test Date: Jul-2019
Hardware Availability: Jun-2019
Software Availability: Oct-2019

Platform Notes (Continued)
/dev/sda2 ext4 439G 33G 385G 8% /

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.

BIOS Dell Inc. 2.3.10 08/15/2019
Memory:
6x 00AD00B300AD HMA84GR7CJRA-NWM 32 GB 2 rank 2933
3x 00AD063200AD HMA84GR7CJRA-NWM 32 GB 2 rank 2933
3x 00AD069D00AD HMA84GR7CJRA-NWM 32 GB 2 rank 2933
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.
==============================================================================
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.

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

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.
------------------------------------------------------------------------------
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

(Continued on next page)
Base Compiler Invocation (Continued)

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-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4

Fortran benchmarks:
-xCORE-AVX2 -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-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -auto -nostandard-realloc-lhs

(Continued on next page)
Dell Inc.  

PowerEdge MX640 (Intel Xeon Gold 6226, 2.70GHz)  

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base = 165</th>
<th>SPECrate®2017_fp_peak = 170</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2017 License: 55</td>
<td>Test Date: Jul-2019</td>
</tr>
<tr>
<td>Test Sponsor: Dell Inc.</td>
<td>Hardware Availability: Jun-2019</td>
</tr>
<tr>
<td>Tested by: Dell Inc.</td>
<td>Software Availability: Oct-2019</td>
</tr>
</tbody>
</table>

**Base Optimization Flags (Continued)**

Benchmarks using both Fortran and C (continued):
- -align array32byte

Benchmarks using both C and C++:
- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
- -qopt-mem-layout-trans=4

Benchmarks using Fortran, C, and C++:
- -xCORE-AVX2 -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:
i cc -m64 -std=c11

C++ benchmarks:
i cpc -m64

Fortran benchmarks:
i fort -m64

Benchmarks using both Fortran and C:
i fort -m64 i cc -m64 -std=c11

Benchmarks using both C and C++:
i cpc -m64 i cc -m64 -std=c11

Benchmarks using Fortran, C, and C++:
i cpc -m64 i cc -m64 -std=c11 i fort -m64

**Peak Portability Flags**

Same as Base Portability Flags

**Peak Optimization Flags**

C benchmarks:

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

**PowerEdge MX640 (Intel Xeon Gold 6226, 2.70GHz)**

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base = 165</th>
<th>SPECrate®2017_fp_peak = 170</th>
</tr>
</thead>
</table>

**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Test Date:** Jul-2019  
**Tested by:** Dell Inc.  
**Hardware Availability:** Jun-2019  
**Software Availability:** Oct-2019

---

#### Peak Optimization Flags (Continued)

- **519.lbm_r:** `-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`

- **538.imagick_r:** `-ipo -O3 -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-AVX2 -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4`

- **510.parest_r:** `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4`

**Fortran benchmarks:**

- **503.bwaves_r:** `-xCORE-AVX2 -ipo -O3 -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-AVX2 -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:**

- `-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 -auto -nostandard-realloc-lhs -align array32byte`

**Benchmarks using both C and C++:**

- **511.povray_r:** `-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`

- **526.blender_r:** `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4`

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

**PowerEdge MX640 (Intel Xeon Gold 6226, 2.70GHz)**

<table>
<thead>
<tr>
<th><strong>CPU2017 License:</strong></th>
<th>55</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test Sponsor:</strong></td>
<td>Dell Inc.</td>
</tr>
<tr>
<td><strong>Tested by:</strong></td>
<td>Dell Inc.</td>
</tr>
</tbody>
</table>

**SPECrate®2017_fp_base = 165**

**SPECrate®2017_fp_peak = 170**

<table>
<thead>
<tr>
<th><strong>Test Date:</strong></th>
<th>Jul-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hardware Availability:</strong></td>
<td>Jun-2019</td>
</tr>
<tr>
<td><strong>Software Availability:</strong></td>
<td>Oct-2019</td>
</tr>
</tbody>
</table>

---

**Peak Optimization Flags (Continued)**

Benchmarks using Fortran, C, and C++:
-`-xCORE-AVX2 -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 v1.0.5 on 2019-11-18 23:15:50-0500.
Originally published on 2019-12-10.