### Dell Inc.

**PowerEdge R740xd (Intel Xeon Gold 6230R, 2.10 GHz)**

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base = 236</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak = 254</td>
</tr>
</tbody>
</table>

#### CPU2017 License
55

**Test Date:** Jan-2020

**Test Sponsor:** Dell Inc.

**Tested by:** Dell Inc.

**Hardware Availability:** Feb-2020

**Software Availability:** Jun-2019

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECrate®2017_fp_base (236)</th>
<th>SPECrate®2017_fp_peak (254)</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>104</td>
<td>52</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>104</td>
<td>52</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>104</td>
<td>52</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>104</td>
<td>52</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>104</td>
<td>52</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>104</td>
<td>52</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>104</td>
<td>52</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>104</td>
<td>52</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>104</td>
<td>52</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>104</td>
<td>52</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>104</td>
<td>52</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>104</td>
<td>52</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>104</td>
<td>52</td>
</tr>
</tbody>
</table>

**Tested 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
- **Cache L2:** 1 MB I+D on chip per core
- **Cache L3:** 35.75 MB I+D on chip per chip
- **Other:** None
- **Memory:** 384 GB (24 x 16 GB 2Rx8 PC4-2933V-R, running at 2933)
- **Storage:** 1 x 1.92 TB SATA SSD
- **Other:** None
- **Software:**
  - **OS:** SUSE Linux Enterprise Server 15 SP1
  - **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 2.5.4 released Jan-2020
  - **File System:** xfs
  - **System State:** Run level 3 (multi-user)
  - **Base Pointers:** 64-bit
  - **Peak Pointers:** 64-bit
  - **Other:** None
  - **Power Management:** BIOS set to prefer performance at the cost of additional power usage.
SPEC CPU®2017 Floating Point Rate Result

Dell Inc.

PowerEdge R740xd (Intel Xeon Gold 6230R, 2.10 GHz)

SPECrate®2017_fp_base = 236
SPECrate®2017_fp_peak = 254

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>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>104</td>
<td>1976</td>
<td>528</td>
<td>1979</td>
<td>527</td>
<td>1979</td>
<td>527</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>104</td>
<td>614</td>
<td>214</td>
<td>613</td>
<td>215</td>
<td>613</td>
<td>215</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>104</td>
<td>521</td>
<td>190</td>
<td>524</td>
<td>188</td>
<td>524</td>
<td>188</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>104</td>
<td>2203</td>
<td>124</td>
<td>2198</td>
<td>124</td>
<td>2198</td>
<td>124</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>104</td>
<td>860</td>
<td>282</td>
<td>859</td>
<td>283</td>
<td>859</td>
<td>283</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>104</td>
<td>890</td>
<td>123</td>
<td>890</td>
<td>123</td>
<td>890</td>
<td>123</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>104</td>
<td>1050</td>
<td>222</td>
<td>1020</td>
<td>228</td>
<td>1020</td>
<td>228</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>104</td>
<td>604</td>
<td>262</td>
<td>603</td>
<td>263</td>
<td>603</td>
<td>263</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>104</td>
<td>655</td>
<td>278</td>
<td>657</td>
<td>277</td>
<td>657</td>
<td>277</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>104</td>
<td>418</td>
<td>619</td>
<td>418</td>
<td>619</td>
<td>418</td>
<td>619</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>104</td>
<td>387</td>
<td>452</td>
<td>391</td>
<td>448</td>
<td>391</td>
<td>448</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>104</td>
<td>2342</td>
<td>173</td>
<td>2352</td>
<td>172</td>
<td>2352</td>
<td>172</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>104</td>
<td>1671</td>
<td>98.9</td>
<td>1679</td>
<td>98.4</td>
<td>1679</td>
<td>98.4</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 = "/home/cpu2017/lib/intel64"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7900X 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.

(Continued on next page)
Dell Inc.

PowerEdge R740xd (Intel Xeon Gold 6230R, 2.10 GHz)

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

SPECrate®2017_fp_base = 236
SPECrate®2017_fp_peak = 254

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.
Test Date: Jan-2020
Hardware Availability: Feb-2020
Software Availability: Jun-2019

General Notes (Continued)

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 numactl i.e.:
umactl --interleave=all runcpu <etc>

Platform Notes

BIOS settings:
Sub NUMA Cluster enabled
Virtualization Technology 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 set to standard
Logical Processor enabled
CPU Interconnect Bus Link Power Management disabled
PCI ASPM L1 Link Power Management disabled
UPI Prefetch enabled
LLC Prefetch disabled
Dead Line LLC Alloc enabled
Directory AtoS disabled

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7ed6e6e46a485a0011
running on linux-g3ob Tue Jan 21 23:27:11 2020

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
  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

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

PowerEdge R740xd (Intel Xeon Gold 6230R, 2.10 GHz)

### SPECrate®2017_fp_base = 236

### SPECrate®2017_fp_peak = 254

<table>
<thead>
<tr>
<th>CPU2017 License: 55</th>
<th>Test Date: Jan-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Dell Inc.</td>
<td>Hardware Availability: Feb-2020</td>
</tr>
<tr>
<td>Tested by: Dell Inc.</td>
<td>Software Availability: Jun-2019</td>
</tr>
</tbody>
</table>

**Platform Notes (Continued)**

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:

Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
Address sizes: 46 bits physical, 48 bits virtual
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
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6230R CPU @ 2.10GHz
Stepping: 7
CPU MHz: 2100.000
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
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
xtrm 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_c13
invpcid_single intel_ppnin ssbd mba ibrs ibpb stibp ibrs enhanced tpr_shadow vnmi
flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 emms invpcid rtm
cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd
avx512bw avx512vl xsavesopt xsavec xgetbv1 xsaveav cqm_llc cqm_occup_llc cqm_mbb_total
cqm_mbb_local dtherm ida arat pln pts pku ospke avx512_vnni md_clear flush_lld
arch_capabilities

(Continued on next page)
## Dell Inc.

**PowerEdge R740xd (Intel Xeon Gold 6230R, 2.10 GHz)**

<table>
<thead>
<tr>
<th>CPU2017 License: 55</th>
<th>Test Date: Jan-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Dell Inc.</td>
<td>Hardware Availability: Feb-2020</td>
</tr>
<tr>
<td>Tested by: Dell Inc.</td>
<td>Software Availability: Jun-2019</td>
</tr>
</tbody>
</table>

### SPEC CPU 2017 Floating Point Rate Result

**SPECrates**:  
- **SPECrates®2017_fp_base = 236**
- **SPECrates®2017_fp_peak = 254**

### Platform Notes (Continued)

/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: 95273 MB
- node 0 free: 94646 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: 96763 MB
- node 1 free: 96322 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: 96763 MB
- node 2 free: 96056 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: 96321 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: 394815036 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

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

- os-release:
- NAME="SLES"
- VERSION="15-SP1"
- VERSION_ID="15.1"
- PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
- ID="sles"
- ID_LIKE="suse"
- ANSI_COLOR="0;32"
- CPE_NAME="cpe:/o:suse:sles:15:sp1"

uname -a:

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

Dell Inc.

PowerEdge R740xd (Intel Xeon Gold 6230R, 2.10 GHz)

<table>
<thead>
<tr>
<th><strong>CPU2017 License:</strong></th>
<th>55</th>
<th><strong>Test Date:</strong></th>
<th>Jan-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test Sponsor:</strong></td>
<td>Dell Inc.</td>
<td><strong>Hardware Availability:</strong></td>
<td>Feb-2020</td>
</tr>
<tr>
<td><strong>Tested by:</strong></td>
<td>Dell Inc.</td>
<td><strong>Software Availability:</strong></td>
<td>Jun-2019</td>
</tr>
</tbody>
</table>

**SPECrate®2017_fp_base = 236**

**SPECrate®2017_fp_peak = 254**

---

**Platform Notes (Continued)**

Linux linux-g3ob 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (8fba516)
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
- **CVE-2018-3639 (Speculative Store Bypass):** Mitigation: Speculative Store Bypass disabled via prctl and seccomp
- **CVE-2017-5753 (Spectre variant 1):** Mitigation: __user pointer sanitization
- **CVE-2017-5715 (Spectre variant 2):** Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

run-level 3 Jan 21 10:35 last=5

SPEC is set to: /home/cpu2017

From /sys/devices/virtual/dmi/id

- **BIOS:** Dell Inc. 2.5.4 01/13/2020
- **Vendor:** Dell Inc.
- **Product:** PowerEdge R740xd
- **Product Family:** PowerEdge
- **Serial:** F5BMCS2

Additional information from dmiidecode follows. WARNING: Use caution when you interpret this section. The 'dmiidecode' 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 18ASF2G72PDZ-2G9E1 16 GB 2 rank 2933
- 7x 00AD00B300AD HMA82GR7CJR8N-WM 16 GB 2 rank 2933
- 5x 00AD063200AD HMA82GR7CJR8N-WM 16 GB 2 rank 2933

(End of data from sysinfo program)

---

**Compiler Version Notes**

```
C                  519.ibm_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

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

Dell Inc.

PowerEdge R740xd (Intel Xeon Gold 6230R, 2.10 GHz)

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base = 236</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak = 254</td>
</tr>
</tbody>
</table>

---

**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Test Date:** Jan-2020  
**Hardware Availability:** Feb-2020  
**Tested by:** Dell Inc.  
**Software Availability:** Jun-2019

---

**Compiler Version Notes (Continued)**

Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

---

<table>
<thead>
<tr>
<th>C++</th>
<th>508.namd_r(base, peak) 510.parest_r(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416</td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2019 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>C++, C</th>
<th>511.povray_r(base, peak) 526.blender_r(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416</td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2019 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
<tr>
<td>Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416</td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2019 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>C++, C, Fortran</th>
<th>507.cactuBSSN_r(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416</td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2019 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
<tr>
<td>Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416</td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2019 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
<tr>
<td>Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416</td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2019 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Fortran</th>
<th>503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416</td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2019 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Fortran, C</th>
<th>521.wrf_r(base, peak) 527.cam4_r(base, peak)</th>
</tr>
</thead>
</table>
| (Continued on next page)
SPEC CPU®2017 Floating Point Rate Result

Dell Inc.
PowerEdge R740xd (Intel Xeon Gold 6230R, 2.10 GHz)

SPECrate®2017_fp_base = 236
SPECrate®2017_fp_peak = 254

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

Compiler Version Notes (Continued)

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

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.cactusBSSN_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
549.fotonik3d_r: -DSPEC_LP64

(Continued on next page)
Dell Inc. PowerEdge R740xd (Intel Xeon Gold 6230R, 2.10 GHz)

SPEC CPU®2017 Floating Point Rate Result

SPECrate®2017_fp_base = 236
SPECrate®2017_fp_peak = 254

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

Test Date: Jan-2020
Hardware Availability: Feb-2020
Software Availability: Jun-2019

Base Portability Flags (Continued)

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
-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

Peak Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

(Continued on next page)
## Peak Compiler Invocation (Continued)

- Benchmarks using both Fortran and C:
  ```
  ifort -m64 icc -m64 -std=c11
  ```

- 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
  ```

## Peak Portability Flags

- Same as Base Portability Flags

## Peak Optimization Flags

### C benchmarks:

- 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: 
  ```
  -xCORE-AVX2 -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
  ```

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

549.fotonik3d_r: basepeak = yes

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: basepeak = yes

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: