Dell Inc.

PowerEdge C6420 (Intel Xeon Gold 5118, 2.30 GHz)

SPECrate2017_fp_base = 124

SPECrate2017_fp_peak = Not Run

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

Test Date: Nov-2017
Hardware Availability: Sep-2017
Software Availability: Sep-2017

| Copies | 0 | 15.0 | 30.0 | 45.0 | 60.0 | 75.0 | 90.0 | 105.0 | 120.0 | 135.0 | 150.0 | 165.0 | 180.0 | 195.0 | 210.0 | 225.0 | 240.0 | 255.0 | 270.0 | 285.0 | 300.0 | 315.0 | 330.0 | 345.0 | 360.0 | 375.0 |
|--------|---|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 503.bwaves_r | 48 | 507.cactuBSSN_r | 48 | 508.namd_r | 48 | 510.parest_r | 48 | 511.povray_r | 48 | 519.lbm_r | 48 | 521.wrf_r | 48 | 526.blender_r | 48 | 527.cam4_r | 48 | 538.imagick_r | 48 | 544.nab_r | 48 | 549.fotonik3d_r | 48 | 554.roms_r | 48 | |
|        |   | 112  |      |      | 93.3 |      |      | 79.2  |      | 83.5  |      |      |      |      |      |      | 151   |      |      |      |      |      |      |      |      |

---

### Hardware

- **CPU Name:** Intel Xeon Gold 5118
- **Max MHz.:** 3200
- **Nominal:** 2300
- **Enabled:** 24 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:** 16.5 MB I+D on chip per chip
- **Other:** None
- **Memory:** 192 GB (12 x 16 GB 2Rx8 PC4-2666V-R, running at 2400)
- **Storage:** 480GB SATA SSD
- **Other:** None

### Software

- **OS:** CentOS Linux release 7.4.1708 (Core)
- **Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux;
  Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux
- **Parallel:** No
- **Firmware:** Version 1.0.8 released Jul-2017
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** None
SPEC CPU2017 Floating Point Rate Result

Dell Inc.
PowerEdge C6420 (Intel Xeon Gold 5118, 2.30 GHz)

<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>48</td>
<td>1315</td>
<td>366</td>
<td>1315</td>
<td>366</td>
<td>1315</td>
<td>366</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>48</td>
<td>545</td>
<td>111</td>
<td>544</td>
<td>112</td>
<td>544</td>
<td>112</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>48</td>
<td>488</td>
<td>93.4</td>
<td>489</td>
<td>93.3</td>
<td>490</td>
<td>93.1</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>48</td>
<td>1581</td>
<td>79.4</td>
<td>1596</td>
<td>78.7</td>
<td>1586</td>
<td>79.2</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>48</td>
<td>744</td>
<td>151</td>
<td>744</td>
<td>151</td>
<td>739</td>
<td>152</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>48</td>
<td>606</td>
<td>83.5</td>
<td>606</td>
<td>83.5</td>
<td>609</td>
<td>83.1</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>48</td>
<td>731</td>
<td>147</td>
<td>719</td>
<td>149</td>
<td>721</td>
<td>149</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>48</td>
<td>576</td>
<td>127</td>
<td>577</td>
<td>127</td>
<td>576</td>
<td>127</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>48</td>
<td>736</td>
<td>114</td>
<td>735</td>
<td>114</td>
<td>736</td>
<td>114</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>48</td>
<td>653</td>
<td>183</td>
<td>653</td>
<td>183</td>
<td>653</td>
<td>183</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>48</td>
<td>498</td>
<td>162</td>
<td>503</td>
<td>161</td>
<td>499</td>
<td>162</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>48</td>
<td>1717</td>
<td>109</td>
<td>1717</td>
<td>109</td>
<td>1716</td>
<td>109</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>48</td>
<td>1168</td>
<td>65.3</td>
<td>1167</td>
<td>65.3</td>
<td>1169</td>
<td>65.2</td>
</tr>
</tbody>
</table>

SPECrate2017_fp_base = 124
SPECrate2017_fp_peak = Not Run

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"

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

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.4
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.:
numactl --interleave=all runcpu <etc>
No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

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

No: 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.
No: 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.

This benchmark result is intended to provide perspective on past performance using the historical hardware and/or software described on this result page.

The system as described on this result page was formerly generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC OSG Policy document, [http://www.spec.org/osg/policy.html](http://www.spec.org/osg/policy.html)

This measured result may not be representative of the result that would be measured were this benchmark run with hardware and software available as of the publication date.

### Platform Notes

**BIOS settings:**
- Virtualization Technology disabled
- System Profile set to Custom
- CPU Power Management set to Maximum Performance
- Memory Frequency set to Maximum Performance
- Turbo Boost enabled
- C States disabled
- Memory Patrol Scrub disabled
- PCI ASPM L1 Link Power Management disabled

**Sysinfo program /root/cpu2017/bin/sysinfo**

Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on localhost.localdomain Thu Nov 30 04:30:53 2017

**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 5118 CPU @ 2.30GHz
- 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

(Continued on next page)
SPEC CPU2017 Floating Point Rate Result

Dell Inc.

PowerEdge C6420 (Intel Xeon Gold 5118, 2.30 GHz)

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

SPECrate2017_fp_base = 124
SPECrate2017_fp_peak = Not Run

Test Date: Nov-2017
Hardware Availability: Sep-2017
Software Availability: Sep-2017

Platform Notes (Continued)

physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13

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
- Thread(s) per core: 2
- Core(s) per socket: 12
- Socket(s): 2
- NUMA node(s): 4
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 85
- Model name: Intel(R) Xeon(R) Gold 5118 CPU @ 2.30GHz
- Stepping: 4
- CPU MHz: 2300.000
- BogoMIPS: 4600.00
- Virtualization: VT-x
- L1d cache: 32K
- L1i cache: 32K
- L2 cache: 1024K
- L3 cache: 16896K
- NUMA node0 CPU(s): 0,4,8,12,16,20,24,28,32,36,40,44
- NUMA node1 CPU(s): 1,5,9,13,17,21,25,29,33,37,41,45
- NUMA node2 CPU(s): 2,6,10,14,18,22,26,30,34,38,42,46
- NUMA node3 CPU(s): 3,7,11,15,19,23,27,31,35,39,43,47
- Flags: fpu vme de pse tsc msr pae mce cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtsscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 fma cx16 xtpre pdccl pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch epb cat _13 cdp _13 intel _pt tpr_shadow vmmi flexpriority ept vsid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erness invpcid rtm cqm mpx md mx rdt a avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsavesc xgetbv1 cqm _llc cqm _occup _llc cqm _mbm _total cqm _mbm _local dtherm ida arat pln pts

/proc/cpuinfo cache data
- cache size: 16896 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

(Continued on next page)
Dell Inc.  
PowerEdge C6420 (Intel Xeon Gold 5118, 2.30 GHz)

SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate2017_fp_peak = Not Run
SPECrate2017_fp_base = 124

Platform Notes (Continued)

node 0 size: 47813 MB
node 0 free: 46408 MB
node 1 cpus: 1 5 9 13 17 21 25 29 33 37 41 45
node 1 size: 49152 MB
node 1 free: 47607 MB
node 2 cpus: 2 6 10 14 18 22 26 30 34 38 42 46
node 2 size: 49152 MB
node 2 free: 47770 MB
node 3 cpus: 3 7 11 15 19 23 27 31 35 39 43 47
node 3 size: 49152 MB
node 3 free: 47825 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:       196689516 kB
HugePages_Total:     128
Hugepagesize:       2048 kB

From /etc/*release*/etc/*version*
centos-release: CentOS Linux release 7.4.1708 (Core)
centos-release-upstream: Derived from Red Hat Enterprise Linux 7.4 (Source)
os-release:
  NAME="CentOS Linux"
  VERSION="7 (Core)"
  ID="centos"
  ID_LIKE="rhel fedora"
  VERSION_ID="7"
  PRETTY_NAME="CentOS Linux 7 (Core)"
  ANSI_COLOR="0;31"
  CPE_NAME="cpe:/o:centos:centos:7"
redhat-release: CentOS Linux release 7.4.1708 (Core)
system-release: CentOS Linux release 7.4.1708 (Core)
system-release-cpe: cpe:/o:centos:centos:7

uname -a:
Linux localhost.localdomain 3.10.0-693.5.2.el7.x86_64 #1 SMP Fri Oct 20 20:32:50 UTC 2017 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 29 23:07

SPEC is set to: /root/cpu2017

Filesystem   Type   Size   Used Avail Use% Mounted on

(Continued on next page)
**SPEC CPU2017 Floating Point Rate Result**

**Dell Inc.**

PowerEdge C6420 (Intel Xeon Gold 5118, 2.30 GHz)

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base</th>
<th>124</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_fp_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** Nov-2017  
**Hardware Availability:** Sep-2017  
**Software Availability:** Sep-2017

**Platform Notes (Continued)**

```
/dev/sda2     xfs  433G  18G  415G  5% /
```

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. 1.0.8 07/12/2017  
Memory:  
12x 002C00B3002C 18ASF2G72PDZ-2G6D1 16 GB 2 rank 2666, configured at 2400  
4x Not Specified Not Specified

(End of data from sysinfo program)

**Compiler Version Notes**

```
CC  519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
```

icc (ICC) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

```
CXXC 508.namd_r(base) 510.parest_r(base)
```

icpc (ICC) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

```
CC  511.povray_r(base) 526.blender_r(base)
```

icpc (ICC) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.  
icc (ICC) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

```
FC  507.cactuBSSN_r(base)
```

icpc (ICC) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.  
icc (ICC) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.  
ifort (IFORT) 18.0.0 20170811

(Continued on next page)
Dell Inc.

PowerEdge C6420 (Intel Xeon Gold 5118, 2.30 GHz)

SPECrate2017_fp_peak = Not Run
SPECrate2017_fp_base = 124

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

Test Date: Nov-2017
Hardware Availability: Sep-2017
Software Availability: Sep-2017

Compiler Version Notes (Continued)

Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

 FC  503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)

 ifort (IFORT) 18.0.0 20170811
 Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

 CC  521.wrf_r(base) 527.cam4_r(base)

 ifort (IFORT) 18.0.0 20170811
 Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using both C and C++:
icpc icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64

(Continued on next page)
**SPEC CPU2017 Floating Point Rate Result**

**Dell Inc.**

PowerEdge C6420 (Intel Xeon Gold 5118, 2.30 GHz)

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base</th>
<th>124</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_fp_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

**Test Date:** Nov-2017  
**Hardware Availability:** Sep-2017  
**Software Availability:** Sep-2017

---

**Base Portability Flags (Continued)**

- 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=3

**C++ benchmarks:**

- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
- -qopt-mem-layout-trans=3

**Fortran benchmarks:**

- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
- -qopt-mem-layout-trans=3 -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=3 -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=3

**Benchmarks using Fortran, C, and C++:**

- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
- -qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

---

**Base Other Flags**

**C benchmarks:**

- -m64 -std=c11
SPEC CPU2017 Floating Point Rate Result

Dell Inc.
PowerEdge C6420 (Intel Xeon Gold 5118, 2.30 GHz)

SPECrate2017_fp_base = 124
SPECrate2017_fp_peak = Not Run

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

Test Date: Nov-2017
Hardware Availability: Sep-2017
Software Availability: Sep-2017

Base Other Flags (Continued)

C++ benchmarks:
- m64

Fortran benchmarks:
- m64

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

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

Benchmarks using Fortran, C, and C++:
- m64 -std=c11

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 is a registered trademark 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 CPU2017 v1.0.2 on 2017-11-30 05:30:53-0500.
Originally published on 2018-02-27.