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

<table>
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<tr>
<th>SPECrate2017_int_base = 118</th>
</tr>
</thead>
</table>

### SPECrate2017_int_base = 118

<table>
<thead>
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</table>

**CPU2017 License:** 55

**Test Sponsor:** Dell Inc.

**Tested by:** Dell Inc.

**Test Date:** Nov-2017

**Hardware Availability:** Sep-2017

**Software Availability:** Sep-2017

### 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:** 32/64-bit
- **Other:** jemalloc: jemalloc memory allocator library V5.0.1;

### 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

### Benchmark Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Peak</th>
<th>Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench_r</td>
<td>48</td>
<td>97</td>
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</tr>
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<td>gcc_r</td>
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<td>106</td>
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<tr>
<td>mcf_r</td>
<td>48</td>
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<tr>
<td>omnetpp_r</td>
<td>48</td>
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<td>75.3</td>
</tr>
<tr>
<td>xalancbmk_r</td>
<td>48</td>
<td>119</td>
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<tr>
<td>x264_r</td>
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<tr>
<td>deepsjeng_r</td>
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<tr>
<td>leela_r</td>
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<td>94.8</td>
<td>94.8</td>
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<tr>
<td>exchange2_r</td>
<td>48</td>
<td>225</td>
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<tr>
<td>xz_r</td>
<td>48</td>
<td>81.8</td>
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SPECrate2017_int_base = 118
SPECrate2017_int_peak = Not Run

CPU2017 License: 55
Test Sponsor: Dell Inc.
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
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<th>Seconds</th>
<th>Ratio</th>
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<td>502.gcc_r</td>
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<td>105</td>
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<td>505.mcf_r</td>
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<tr>
<td>520.omnetpp_r</td>
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<tr>
<td>557.xz_r</td>
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<td>628</td>
<td>82.6</td>
<td>634</td>
<td>81.8</td>
<td>635</td>
<td>81.7</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"

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>
jemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets;
jemalloc: built with the RedHat Enterprise 7.4,
and the system compiler gcc 4.8.5;

(Continued on next page)
Dell Inc.  

PowerEdge C6420 (Intel Xeon Gold 5118, 2.30 GHz)  

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SPECrate2017_int_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

---

General Notes (Continued)

jemalloc: sources available via jemalloc.net

No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

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

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 Wed Nov 29 23:12:36 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"
**SPEC CPU2017 Integer Rate Result**

**Dell Inc.**

**PowerEdge C6420 (Intel Xeon Gold 5118, 2.30 GHz)**

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---

**Platform Notes (Continued)**

cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

```plaintext
cpu cores : 12  
siblings : 24  
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:

```plaintext
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 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 aperfmperf eagerfpu pni pclmulqdq dtes64monitor ds_cpl vmx smx est tm2 ssse3 fma cx16 xtpre pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ebpx cat_x35 cdpe_l3 intel_pt tpr_shadow vmm vflexpriority ept vpid fsgsbase tsc_adjust bm11 hle avx2 smep bmi2 erms ivpcid rtm cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local dtherm ida arat pin pts  
```

/proc/cpuinfo cache data

```
cache size : 16896 KB
```

(Continued on next page)
**SPEC CPU2017 Integer Rate Result**

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PowerEdge C6420 (Intel Xeon Gold 5118, 2.30 GHz)  

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**SPECrate2017_int_base =**  118  
**SPECrate2017_int_peak =**  Not Run

---

**Platform Notes (Continued)**

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
- node 0 size: 47813 MB
- node 0 free: 46469 MB
- node 1 cpus: 1 5 9 13 17 21 25 29 33 37 41 45
- node 1 size: 49152 MB
- node 1 free: 47668 MB
- node 2 cpus: 2 6 10 14 18 22 26 30 34 38 42 46
- node 2 size: 49152 MB
- node 2 free: 47787 MB
- node 3 cpus: 3 7 11 15 19 23 27 31 35 39 43 47
- node 3 size: 49152 MB
- node 3 free: 47859 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
```

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

run-level 3 Nov 29 23:07

SPEC is set to: /root/cpu2017

```
Filesystem  Type  Size  Used  Avail  Use%  Mounted on
/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 | 500.perlbench_r(base) | 502.gcc_r(base) | 505.mcf_r(base) | 525.x264_r(base) | 557.xz_r(base) |
------------------------------------------------------------------

icc (ICC) 18.0.0 20170811

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

------------------------------------------------------------------
| CXXC | 520.omnetpp_r(base) | 523.xalancbmk_r(base) | 531.deepsjeng_r(base) | 541.leela_r(base) |
------------------------------------------------------------------

icpc (ICC) 18.0.0 20170811

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

------------------------------------------------------------------
| FC | 548.exchange2_r(base) |
------------------------------------------------------------------

ifort (IFORT) 18.0.0 20170811

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Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Base Portability Flags

500.perlbmk_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalanchbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-W1, -z, muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-W1, -z, muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-W1, -z, muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc
## SPEC CPU2017 Integer Rate Result

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- **Test Sponsor:** Dell Inc.
- **Tested by:** Dell Inc.

### Base Other Flags

**C benchmarks:**
- `-m64 -std=c11`

**C++ benchmarks:**
- `-m64`

**Fortran benchmarks:**
- `-m64`

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:

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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 00:12:36-0500.
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