**SPEC® CPU2017 Integer Rate Result**

Dell Inc.  
PowerEdge C6420 (Intel Xeon Platinum 8164, 2.00Ghz)  

**SPECrater2017_int_base = 194**  
SPECrater2017_int_peak = Not Run

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECrate2017_int_base</th>
<th>CPU Name</th>
<th>Max MHz.</th>
<th>Nominal</th>
<th>Enabled</th>
<th>Orderable</th>
<th>Cache L1</th>
<th>Cache L2</th>
<th>Cache L3</th>
<th>Other</th>
<th>Memory</th>
<th>Storage</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>104</td>
<td>Intel Xeon Platinum 8164</td>
<td>3700</td>
<td>2000</td>
<td>52 cores, 2 chips, 2 threads/core</td>
<td>32 KB I + 32 KB D on chip per core</td>
<td>1 MB I+D on chip per core</td>
<td>35.75 MB I+D on chip per chip</td>
<td>None</td>
<td>192 GB</td>
<td>480 GB SATA SSD</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>502.gcc_r</td>
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<tr>
<td>505.mcf_r</td>
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</tr>
<tr>
<td>520.omnetpp_r</td>
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</tr>
<tr>
<td>523.xalanco_bmk_r</td>
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</tr>
<tr>
<td>525.x264_r</td>
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</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>104</td>
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<tr>
<td>541.leela_r</td>
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<tr>
<td>548.exchange2_r</td>
<td>104</td>
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<tr>
<td>557.xz_r</td>
<td>104</td>
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</tbody>
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**Software**

- **OS:** CentOS Linux release 7.4.1708 (Core) 3.10.0-693.5.2.el7.x86_64
- **Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++  
  Fortran: Version 18.0.0.128 of Intel Fortran
- **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;
SPEC CPU2017 Integer Rate Result

Dell Inc.
PowerEdge C6420 (Intel Xeon Platinum 8164, 2.00Ghz)

SPECrate2017_int_base = 194
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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tr>
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<td>155</td>
<td>1088</td>
<td>152</td>
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<td>104</td>
<td>804</td>
<td>183</td>
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<td>505.mcf_r</td>
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<td>520.omnetpp_r</td>
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<td>525.x264_r</td>
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<td>410</td>
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<td>407</td>
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<tr>
<td>531.deepsjeng_r</td>
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<td>705</td>
<td>169</td>
<td>709</td>
<td>168</td>
<td>711</td>
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<td>541.leela_r</td>
<td>104</td>
<td>1136</td>
<td>152</td>
<td>1131</td>
<td>152</td>
<td>1132</td>
<td>152</td>
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<tr>
<td>548.exchange2_r</td>
<td>104</td>
<td>753</td>
<td>362</td>
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<td>362</td>
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</tr>
<tr>
<td>557.xz_r</td>
<td>104</td>
<td>791</td>
<td>142</td>
<td>791</td>
<td>142</td>
<td>794</td>
<td>141</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)
## SPEC CPU2017 Integer Rate Result

### Dell Inc.

PowerEdge C6420 (Intel Xeon Platinum 8164, 2.00Ghz)

<table>
<thead>
<tr>
<th>SPECrate2017_int_base</th>
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</thead>
<tbody>
<tr>
<td>SPECrate2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

### 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 Fri Nov 17 20:52:59 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) Platinum 8164 CPU @ 2.00GHz
  2 "physical id"s (chips)
  104 "processors"
```

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

**PowerEdge C6420 (Intel Xeon Platinum 8164, 2.00Ghz)**

<table>
<thead>
<tr>
<th>CPU2017 License</th>
<th>Dell Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor</td>
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</tr>
</tbody>
</table>

**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 : 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 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
- 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) Platinum 8164 CPU @ 2.00GHz
- Stepping: 4
- CPU MHz: 2000.000
- BogoMIPS: 4000.00
- 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 dtsc acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant tsc arch_perfmon pebs bts rep_good nopl xapic msr_write ds_cpl vmx smx est tm2 ssse3 fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch epb cat13 cdp13 intel_pt tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 ertime invpcid rtm cqm mpx rdtr_a avx512 f avx512d rdseed adx smap clflushopt clwb...
**SPEC CPU2017 Integer Rate Result**

**Dell Inc.**

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**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)**

avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc  
cqm_mbm_total cqm_mbm_local dtherm arat pln pts

/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: 47813 MB  
node 0 free: 46383 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: 49152 MB  
node 1 free: 47841 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: 49152 MB  
node 2 free: 47562 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: 49152 MB  
node 3 free: 47778 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)"

(Continued on next page)
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---

**Platform Notes (Continued)**

```
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 17 20:24

SPEC is set to: /root/cpu2017
```

Filesystem     Type  Size  Used Avail Use% Mounted on  
/dev/sda2      xfs   433G   36G  398G   9% /

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 00CE063200CE M393A2K43BB1-CTD 16 GB 2 rank 2666  
  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.
```

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(Continued on next page)
SPEC CPU2017 Integer Rate Result

Dell Inc.
PowerEdge C6420 (Intel Xeon Platinum 8164, 2.00Ghz)

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CPU2017 License: 55
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Compiler Version Notes (Continued)

FC 548.exchange2_r(base)
------------------------------------------------------------------------------
ifort (IFORT) 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

Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_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

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### Base Optimization Flags (Continued)

**Fortran benchmarks:**
- `-Wl,-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`

### 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 2017-11-17 21:52:58-0500.  
Report generated on 2018-10-31 16:40:00 by CPU2017 PDF formatter v6067.  
Originally published on 2018-02-27.