### Dell Inc.

PowerEdge C6420 (Intel Xeon Gold 5115, 2.40 GHz)

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
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<tbody>
<tr>
<td>7.45</td>
<td>7.65</td>
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**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** Feb-2018  
**Hardware Availability:** Sep-2017  
**Software Availability:** Sep-2017

<table>
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<th>SPECspeed2017_int_peak (7.65)</th>
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<tr>
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<td>602.gcc_s 40</td>
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<td>620.omnetpp_s 40</td>
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<tr>
<td>623.xalancbmk_s 40</td>
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<td>9.72</td>
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<tr>
<td>625.x264_s 40</td>
<td>8.79</td>
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<tr>
<td>631.deepsjeng_s 40</td>
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<tr>
<td>641.leela_s 40</td>
<td>3.72</td>
<td>9.72</td>
</tr>
<tr>
<td>648.exchange2_s 40</td>
<td>3.71</td>
<td>9.72</td>
</tr>
<tr>
<td>657.xz_s 40</td>
<td></td>
<td>11.6</td>
</tr>
</tbody>
</table>

**CPU Name:** Intel Xeon Gold 5115  
**Max MHz.:** 3200  
**Nominal:** 2400  
**Enabled:** 20 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:** 13.75 MB I+D on chip per core  
**Other:** None  
**Memory:** 192 GB (12 x 16 GB 2Rx8 PC4-2666V-R, running at 2400)  
**Storage:** 1 TB SATA SSD  
**Other:** None

**OS:** SUSE Linux Enterprise Server 12 SP3 (x86_64)  
**Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++  
**Compiler for Linux:** Fortran: Version 18.0.0.128 of Intel Fortran  
**Firmware:** Version 1.3.7 released Feb-2018  
**File System:** xfs  
**System State:** Run level 3 (multi-user)  
**Base Pointers:** 64-bit  
**Peak Pointers:** 32/64-bit  
**Other:** jemalloc memory allocator library V5.0.1
Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th></th>
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<td>3.72</td>
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<td>648.exchange2_s</td>
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<td>11.6</td>
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<tr>
<td>657.xz_s</td>
<td>40</td>
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<td>332</td>
<td>18.6</td>
<td>334</td>
<td>18.5</td>
<td>40</td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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:
KMP_AFFINITY = "granularity=fine,scatter"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.4
Yes: 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.
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;
jemalloc: sources available via jemalloc.net
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
Dell Inc.
PowerEdge C6420 (Intel Xeon Gold 5115, 2.40 GHz)

SPECspeed2017_int_base = 7.45
SPECspeed2017_int_peak = 7.65

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

Platform Notes

BIOS settings:
Sub NUMA Cluster disabled
Virtualization Technology disabled
System Profile set to Custom
CPU Performance set to Maximum Performance
C States set to Autonomous
C1EE 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 disabled
PCI ASPM L1 Link Power Management disabled
Sysinfo program /root/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on linux-sru3 Fri Feb 16 20:11:17 2018

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 5115 CPU @ 2.40GHz
  2 "physical id"s (chips)
  40 "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 : 10
  siblings : 20
  physical 0: cores 0 1 2 3 4 8 9 10 11 12
  physical 1: cores 0 1 2 3 4 8 9 10 11 12

From lscpu:
  Architecture: x86_64
  CPU op-mode(s): 32-bit, 64-bit
  Byte Order: Little Endian
  CPU(s): 40
  On-line CPU(s) list: 0-39
  Thread(s) per core: 2
  Core(s) per socket: 10
  Socket(s): 2
  NUMA node(s): 2
  Vendor ID: GenuineIntel
  CPU family: 6
  Model: 85
  Model name: Intel(R) Xeon(R) Gold 5115 CPU @ 2.40GHz
  Stepping: 4

(Continued on next page)
SPEC CPU2017 Integer Speed Result

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Dell Inc.

PowerEdge C6420 (Intel Xeon Gold 5115, 2.40 GHz)

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Platform Notes (Continued)

CPU MHz: 2394.488
BogoMIPS: 4788.97
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 14080K
NUMA node0 CPU(s): 0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38
NUMA node1 CPU(s): 1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39
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 rdtsscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmpref eagerfpu pni pclmulqdq dtex64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fma cx16 xptr pdcm pcd dca ses4_1 ses4_2 x2apic movbe popcnt tsc_deadline_timer aes
xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb invpcid_single pni pts
dtherm intel_pt rsb_ctxsw spec_ctrl retpoline kaiser tpr_shadow vmx flexpriority
ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 3dnow invpcid rtm cqm mpx
avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt
xsavec xgetbv1 cqm_llc cqm_occup_llc pku ospke

/proc/cpuinfo cache data
    cache size : 14080 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
    physical chip.
    available: 2 nodes (0-1)
    node 0 cpus: 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38
    node 0 size: 95353 MB
    node 0 free: 94462 MB
    node 1 cpus: 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39
    node 1 size: 96748 MB
    node 1 free: 96026 MB
    node distances:
    node 0 1
    0: 10 21
    1: 21 10

From /proc/meminfo
    MemTotal: 196712160 kB
    HugePages_Total: 0
    Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
    SuSE-release:
        SUSE Linux Enterprise Server 12 (x86_64)
        VERSION = 12
        PATCHLEVEL = 3

(Continued on next page)
SPEC CPU2017 Integer Speed Result

Dell Inc.
PowerEdge C6420 (Intel Xeon Gold 5115, 2.40 GHz)

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Platform Notes (Continued)

# This file is deprecated and will be removed in a future service pack or release.
# Please check /etc/os-release for details about this release.

os-release:
NAME="SLES"
VERSION="12-SP3"
VERSION_ID="12.3"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp3"

uname -a:
Linux linux-sru3 4.4.114-94.11-default #1 SMP Thu Feb 1 19:28:26 UTC 2018 (4309ff9)
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Feb 14 18:31

SPEC is set to: /root/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 462G 25G 438G 6% /

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. 1.3.7 02/09/2018
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  600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base, peak) 657.xz_s(base)
==============================================================================
icc (ICC) 18.0.0 20170811
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==============================================================================

==============================================================================
CC  600.perlbench_s(peak) 602.gcc_s(peak) 605.mcf_s(peak) 657.xz_s(peak)
==============================================================================
icc (ICC) 18.0.0 20170811

(Continued on next page)
# SPEC CPU2017 Integer Speed Result

**Dell Inc.**  
PowerEdge C6420 (Intel Xeon Gold 5115, 2.40 GHz)  

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## SPECspeed2017_int_base = 7.45

## SPECspeed2017_int_peak = 7.65

### Compiler Version Notes (Continued)

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---

CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)  
641.leela_s(base)

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

---

CXXC 620.omnetpp_s(peak) 623.xalancbmk_s(peak) 631.deepsjeng_s(peak)  
641.leela_s(peak)

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

---

FC 648.exchange2_s(base, peak)

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

- 600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
- 602.gcc_s: -DSPEC_LP64
- 605.mcf_s: -DSPEC_LP64
- 620.omnetpp_s: -DSPEC_LP64

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Base Portability Flags (Continued)

- 623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
- 625.x264_s: -DSPEC_LP64
- 631.deepsjeng_s: -DSPEC_LP64
- 641.leela_s: -DSPEC_LP64
- 648.exchange2_s: -DSPEC_LP64
- 657.xz_s: -DSPEC_LP64

Base Optimization Flags

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

C++ benchmarks:
- -Wl,-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:
- -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

Peak Compiler Invocation

C benchmarks:
- icc

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

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---

**Peak Compiler Invocation (Continued)**

C++ benchmarks:

icpc

Fortran benchmarks:

ifort

---

**Peak Portability Flags**

- `600.perlbench_s`:
  - `-DSPEC_LP64`
  - `-DSPEC_LINUX_X64`

- `602.gcc_s`:
  - `-DSPEC_LP64`

- `605.mcf_s`:
  - `-DSPEC_LP64`

- `620.omnetpp_s`:
  - `-DSPEC_LP64`

- `623.xalancbmk_s`:
  - `-D_FILE_OFFSET_BITS=64`
  - `-DSPEC_LINUX`

- `625.x264_s`:
  - `-DSPEC_LP64`

- `631.deepsjeng_s`:
  - `-DSPEC_LP64`

- `641.leela_s`:
  - `-DSPEC_LP64`

- `648.exchange2_s`:
  - `-DSPEC_LP64`

- `657.xz_s`:
  - `-DSPEC_LP64`

---

**Peak Optimization Flags**

C benchmarks:

- `600.perlbench_s`:
  - `-Wl,-z,muldefs`
  - `-prof-gen(pass 1)`
  - `-prof-use(pass 2)`
  - `-O2`
  - `-xCORE-AVX2`
  - `-qopt-mem-layout-trans=3`
  - `-ipo`
  - `-no-prec-div`

- `602.gcc_s`:
  - `-Wl,-z,muldefs`
  - `-prof-gen(pass 1)`
  - `-prof-use(pass 2)`
  - `-O2`
  - `-xCORE-AVX2`
  - `-qopt-mem-layout-trans=3`
  - `-ipo`
  - `-no-prec-div`

- `605.mcf_s`:
  - `-prof-gen(pass 1)`
  - `-prof-use(pass 2)`
  - `-ipo`
  - `-xCORE-AVX2`
  - `-qopt-mem-layout-trans=3`

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

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---

**Peak Optimization Flags (Continued)**

657.xz_s: Same as 602.gcc_s

**C++ benchmarks:**

620.omnetpp_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX2 -03 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

623.xalancbmk_s: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-xCORE-AVX2 -03 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-32/lib -ljemalloc

631.deepsjeng_s: Same as 620.omnetpp_s

641.leela_s: Same as 620.omnetpp_s

**Fortran benchmarks:**

623.xalancbmk_s: -m32

The flags files that were used to format this result can be browsed at


---

**Peak Other Flags**

**C benchmarks:**

-std=c11

**C++ benchmarks (except as noted below):**

-std=c++11

623.xalancbmk_s: -m32

**Fortran benchmarks:**

-std=f2008
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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.

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