## SPEC® CPU2017 Integer Speed Result

**Dell Inc.**

PowerEdge R740xd (Intel Xeon Gold 6132, 2.60GHz)

<table>
<thead>
<tr>
<th>threads</th>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
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<td>28</td>
<td>21.1</td>
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### Hardware

- **CPU Name:** Intel Xeon Gold 6132
- **Max MHz.:** 3700
- **Nominal:** 2600
- **Enabled:** 28 cores, 2 chips
- **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:** 19.25 MB I+D on chip per chip
- **Other:** None
- **Memory:** 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)
- **Storage:** 480 GB SATA SSD
- **Other:** None

### Software

- **OS:** SUSE Linux Enterprise Server 12 SP2
- **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:** Yes
- **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
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SPECspeed2017_int_base = 8.62
SPECspeed2017_int_peak = 8.88

Results Table

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<tr>
<th>Benchmark</th>
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</table>

SPECspeed2017_int_base = 8.62
SPECspeed2017_int_peak = 8.88

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 R740xd (Intel Xeon Gold 6132, 2.60GHz)

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</tbody>
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- **CPU2017 License**: 55
- **Test Sponsor**: Dell Inc.
- **Tested by**: Dell Inc.
- **Test Date**: Mar-2018
- **Hardware Availability**: Sep-2017
- **Software Availability**: Feb-2018

#### 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
- C1E disabled
- Uncore Frequency set to Dynamic
- Energy Efficiency Policy set to Performance
- Memory Patrol Scrub disabled
- Logical Processor disabled
- CPU Interconnect Bus Link Power Management disabled
- PCI ASPM L1 Link Power Management disabled
- Sysinfo program /home/cpu2017rev5/cpu2017/bin/sysinfo
- Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
- running on linux-bgfp Wed Mar 28 10:49:53 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 6132 CPU @ 2.60GHz
  - 2 "physical id"s (chips)
  - 28 "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: 14
    - siblings: 14
    - physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
    - physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14

- From lscpu:
  - Architecture: x86_64
  - CPU op-mode(s): 32-bit, 64-bit
  - Byte Order: Little Endian
  - CPU(s): 28
  - On-line CPU(s) list: 0-27
  - Thread(s) per core: 1
  - Core(s) per socket: 14
  - Socket(s): 2
  - NUMA node(s): 2
  - Vendor ID: GenuineIntel
  - CPU family: 6
  - Model: 85
  - Model name: Intel(R) Xeon(R) Gold 6132 CPU @ 2.60GHz
  - Stepping: 4

(Continued on next page)
SPEC CPU2017 Integer Speed Result

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Platform Notes (Continued)

CPU MHz: 2593.924
BogoMIPS: 5187.84
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 19712K
NUMA node0 CPU(s): 0,2,4,6,8,10,12,14,16,18,20,22,24,26
NUMA node1 CPU(s): 1,3,5,7,9,11,13,15,17,19,21,23,25,27
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
aperfmpref eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
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 ida arat epb invpcid_single pln pts
dtherm intel_pt rsb_ctxtsw spec_ctrl retpoline kaiser tpr_shadow vmx flexpriority
epi vpd fsapsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mxp
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 : 19712 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
  node 0 size: 191989 MB
  node 0 free: 191585 MB
  node 1 cpus: 1 3 5 7 9 11 13 15 17 19 21 23 25 27
  node 1 size: 193517 MB
  node 1 free: 193138 MB
  node distances:
    node 0 1
      0: 10 21
      1: 21 10

From /proc/meminfo
  MemTotal: 394758444 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
  SUSE Linux Enterprise Server 12 SP2

From /etc/*release* /etc/*version*
  SuSE-release:

(Continued on next page)
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Platform Notes (Continued)

SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 2
# 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-SP2"
VERSION_ID="12.2"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
Linux linux-bgfp 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 Mar 28 10:47

SPEC is set to: /home/cpu2017rev5/cpu2017

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 02/08/2018
Memory:
22x 00AD00B300AD HMA82GR7AFR8N-VK 16 GB 2 rank 2666
2x 00CE063200CE M393A2K43BB1-CTD 16 GB 2 rank 2666

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

==============================================================================

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**Dell Inc.**  
PowerEdge R740xd (Intel Xeon Gold 6132, 2.60GHz)  

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**Tested by:** Dell Inc.  
**Software Availability:** Feb-2018

### Compiler Version Notes (Continued)

**C**  
600.perlbench_s(peak) 602.gcc_s(peak) 605.mcf_s(peak) 657.xz_s(peak)

---

icc (ICC) 18.0.0 20170811  
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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

(Continued on next page)
**Base Portability Flags (Continued)**

602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
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-AVX512 -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-AVX512 -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-AVX512 -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
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**Peak Compiler Invocation**

C benchmarks:
- icc

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

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Test Date: Mar-2018  
Hardware Availability: Sep-2017  
Software Availability: Feb-2018

Peak Optimization Flags (Continued)

625. x264_s: -Wl, -z, muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

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-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc


631.deepsjeng_s: Same as 620.omnetpp_s

641.leela_s: Same as 620.omnetpp_s

Fortran benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

Peak Other Flags

C benchmarks:
-m64 -std=c11

C++ benchmarks (except as noted below):
-m64

623.xalancbmk_s: -m32

Fortran benchmarks:
-m64
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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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