### Dell Inc.

**PowerEdge R740xd (Intel Xeon Gold 6126, 2.60GHz)**

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU2017 License:</strong> 55</td>
<td><strong>CPU Name:</strong> Intel Xeon Gold 6126</td>
</tr>
<tr>
<td><strong>Test Sponsor:</strong> Dell Inc.</td>
<td><strong>OS:</strong> SUSE Linux Enterprise Server 12 SP2</td>
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<td><strong>Tested by:</strong> Dell Inc.</td>
<td><strong>Compiler:</strong> 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</td>
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</table>

#### SPECspeed2017_int_base = 8.60

#### SPECspeed2017_int_peak = 8.86

### Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
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<tr>
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<td>gcc_s</td>
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<td>xalancbmk_s</td>
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<td>x264_s</td>
<td>24</td>
<td>5.05</td>
<td>13.4</td>
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<td>deepsjeng_s</td>
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<tr>
<td>leela_s</td>
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<td>4.34</td>
<td>20.8</td>
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<td>exchange2_s</td>
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<td>5.05</td>
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<tr>
<td>xz_s</td>
<td>24</td>
<td>5.05</td>
<td>13.4</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon Gold 6126
- **Max MHz.:** 3700
- **Nominal:** 2600
- **Enabled:** 24 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 core
- **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
SPEC CPU2017 Integer Speed Result
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Dell Inc.
PowerEdge R740xd (Intel Xeon Gold 6126, 2.60GHz)

SPECspeed2017_int_base = 8.60
SPECspeed2017_int_peak = 8.86

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>657.xz_s</td>
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<td>20.8</td>
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<td>20.8</td>
<td>300</td>
<td>20.6</td>
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</tbody>
</table>

SPECspeed2017_int_base = 8.60
SPECspeed2017_int_peak = 8.86

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 6126, 2.60GHz)

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Test Sponsor: Dell Inc.
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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 96c45e4568ad54c135fd618bccc091c0f
running on linux-bgfp Tue Feb 13 17:11:13 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 6126 CPU @ 2.60GHz
 2 "physical id"s (chips)
24 "processors"
core, 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 : 12
physical 0: cores 0 1 3 4 5 6 8 9 10 11 12 13
physical 1: cores 1 2 3 4 5 6 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): 24
On-line CPU(s) list: 0-23
Thread(s) per core: 1
Core(s) per socket: 12
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6126 CPU @ 2.60GHz
Stepping: 4

(Continued on next page)
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Test Date: Feb-2018
Hardware Availability: Sep-2017
Software Availability: Feb-2018

Platform Notes (Continued)

CPU MHz: 2593.921
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
NUMA node1 CPU(s): 1,3,5,7,9,11,13,15,17,19,21,23
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 ntop 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 spec_ctrl kaiser tpr_shadow vnumi flexpriority ept vpid fsgsbase
tsc_adjust bmi1 hle avx2 smep bmi2 3dnowprefetch ida arat epb invpcid_single pln pts
adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 cqm_llc
ckm_occup_llc kpu 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
node 0 size: 191989 MB
node 0 free: 191545 MB
node 1 cpus: 1 3 5 7 9 11 13 15 17 19 21 23
node 1 size: 193517 MB
node 1 free: 193161 MB
node distances:
node  0  1
  0:  10  21
  1:  21  10

From /proc/meminfo
MemTotal: 394759008 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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Software Availability: Feb-2018

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 4.4.103-6.38-default #1 SMP Mon Dec 25 20:44:33 UTC 2017 (e4b9067)
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Feb 13 17:09

SPEC is set to: /home/cpu2017rev5/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 405G 53G 353G 14% /home

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.

(Continued on next page)
Compiler Version Notes (Continued)

CC   600.perlbench_s(peak) 602.gcc_s(peak) 605.mcf_s(peak) 657.xz_s(peak)
-----------------------------------------------
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-----------------------------------------------

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

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Base Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64

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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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Tested by: Dell Inc.
Hardware Availability: Sep-2017
Software Availability: Feb-2018

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

(Continued on next page)
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Peak Optimization Flags (Continued)

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

623.xalancbmk_s: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-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 -gopenmp -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

Peak Other Flags

C benchmarks:

-m64 -std=c11

C++ benchmarks (except as noted below):

-m64

623.xalancbmk_s: -m32

Fortran benchmarks:

-m64
Dell Inc.

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<thead>
<tr>
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<th>SPECs speed2017_int_peak</th>
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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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