**CPU2017 Integer Speed Result**

**Dell Inc.**
PowerEdge MX740c (Intel Xeon Gold 6146, 3.20GHz)

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**SPECspeed2017_int_base** = 9.63

**SPECspeed2017_int_peak** = 9.88

**Hardware**

- **CPU Name:** Intel Xeon Gold 6146
- **Max MHz:** 4200
- **Nominal:** 3200
- **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:** 24.75 MB I+D on chip per core
- **Other:** None
- **Memory:** 384 GB (12 x 32 GB 2Rx4 PC4-2666V-R)
- **Storage:** 960 GB SAS SSD
- **Other:** None

**Software**

- **OS:** SUSE Linux Enterprise Server 12 SP3 4.4.114-94.11-default
- **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 0.4.4 released May-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
Dell Inc.

PowerEdge MX740c (Intel Xeon Gold 6146, 3.20GHz)

SPEC CPU2017 Integer Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

SPECspeed2017_int_base = 9.63
SPECspeed2017_int_peak = 9.88

CPU2017 License: 55
Test Date: Jun-2018
Test Sponsor: Dell Inc.
Hardware Availability: Sep-2018
Tested by: Dell Inc.
Software Availability: Feb-2018

Results Table

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</table>

SPECspeed2017_int_base = 9.63
SPECspeed2017_int_peak = 9.88

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 MX740c (Intel Xeon Gold 6146, 3.20GHz)

| SPECspeed2017_int_base = 9.63 |
| SPECspeed2017_int_peak = 9.88 |

**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 Disabled
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-5y3r Fri Jun 1 17:35:03 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 6146 CPU @ 3.20GHz
    2 "physical id"s (chips)
    24 "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 : 12
siblings : 12
physical 0: cores 0 1 2 3 4 9 10 16 18 19 25 26
physical 1: cores 0 1 2 3 4 9 10 16 18 19 25 26

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 6146 CPU @ 3.20GHz
Stepping:           4

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

- **CPU MHz:** 3192.481
- **BogoMIPS:** 6384.96
- **Virtualization:** VT-x
- **L1d cache:** 32K
- **L1i cache:** 32K
- **L2 cache:** 1024K
- **L3 cache:** 25344K
- **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 cskin dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nol32 tsc_deadline_timer nonstop_tsc aperf perf_event pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpre pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abrm 3dnowprefetch ida arat epb invpcid_single pln pts dtherm intel_pt rsb_ctxsw spec_ctrl retpoline kaiser tpr_shadow vnumm flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc pkp kpm

/proc/cpuinfo cache data
- **cache size:** 25344 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:** 192122 MB
- **node 0 free:** 191692 MB
- **node 1 cpus:** 1 3 5 7 9 11 13 15 17 19 21 23
- **node 1 size:** 193517 MB
- **node 1 free:** 193157 MB

From /proc/meminfo
- **MemTotal:** 394895024 KB
- **HugePages_Total:** 0
- **Hugepagesize:** 2048 KB

/usr/bin/lsb_release -d
- **SUSE Linux Enterprise Server 12 SP3**

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

(Continued on next page)
Dell Inc.
PowerEdge MX740c (Intel Xeon Gold 6146, 3.20GHz)

SPEC CPU2017 Integer Speed Result

**SPECspeed2017_int_base** = 9.63
**SPECspeed2017_int_peak** = 9.88

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<tr>
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<td>Tested by:</td>
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<tr>
<td><strong>Software Availability:</strong></td>
<td>Feb-2018</td>
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</table>

Platform Notes (Continued)

```
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 3
# 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-5y3r 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 Jun 1 17:33

SPEC is set to: /root/cpu2017

```

Filesystem   Type  Size  Used  Avail  Use% Mounted on
/dev/sda3     xfs   882G   18G  865G   2%  /

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. 0.4.4 05/22/2018
Memory:
  6x 00AD00B300AD HMA84GR7AFR4N-VK 32 GB 2 rank 2666
  6x 00AD063200AD HMA84GR7AFR4N-VK 32 GB 2 rank 2666
  12x 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
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

(Continued on next page)
### Dell Inc.
PowerEdge MX740c (Intel Xeon Gold 6146, 3.20GHz)

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<th>SPECspeed2017_int_base</th>
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- **CPU2017 License:** 55
- **Test Sponsor:** Dell Inc.
- **Tested by:** Dell Inc.
- **Test Date:** Jun-2018
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- **Software Availability:** Feb-2018

### Compiler Version Notes (Continued)

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**Base Compiler Invocation**

- **C benchmarks:**
  - icc

- **C++ benchmarks:**
  - icpc

- **Fortran benchmarks:**
  - ifort
**SPEC CPU2017 Integer Speed Result**

**Dell Inc.**  
PowerEdge MX740c (Intel Xeon Gold 6146, 3.20GHz)  

| SPECspeed2017_int_base | 9.63  
| SPECspeed2017_int_peak | 9.88  

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

**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  
- 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
Dell Inc.
PowerEdge MX740c (Intel Xeon Gold 6146, 3.20GHz)

SPECspeed2017_int_base = 9.63
SPECspeed2017_int_peak = 9.88

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

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

Peak Optimization Flags

C benchmarks:
600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512 -qopt-mem-layout-trans=3 -ipo -O3 -no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -fno-strict-overflow -L/usr/local/je5.0.1-64/lib -ljemalloc

602.gcc_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512 -qopt-mem-layout-trans=3 -ipo -O3 -no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

605.mcf_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

(Continued on next page)
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 
-std=c11

Peak Other Flags

C benchmarks:

-mp64 -std=c11

C++ benchmarks (except as noted below):

-mp64

623.xalancbmk_s: -m32

Fortran benchmarks:

-mp64
Dell Inc.
PowerEdge MX740c (Intel Xeon Gold 6146, 3.20GHz)  

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**SPECspeed2017_int_base = 9.63**  
**SPECspeed2017_int_peak = 9.88**

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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Tested with SPEC CPU2017 v1.0.2 on 2018-06-01 05:35:02-0400.
Originally published on 2018-10-16.