## SPEC CPU®2017 Integer Speed Result

**Dell Inc.**

PowerEdge MX740c (Intel Xeon Gold 6242, 2.80GHz)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>10.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>10.8</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon Gold 6242
- **Max MHz:** 3900
- **Nominal:** 2800
- **Enabled:** 32 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:** 22 MB I+D on chip per chip
- **Other:** None
- **Memory:** 768 GB (24 x 32 GB 2Rx4 PC4-2933Y-R)
- **Storage:** 1 x 960 GB SATA SSD
- **Other:** None

### Software

- **OS:** Red Hat Enterprise Linux 8.1
- **Compiler:** C/C++: Version 19.1.1.217 of Intel C/C++ Compiler for Linux;
  Fortran: Version 19.1.1.217 of Intel Fortran Compiler for Linux
- **Parallel:** Yes
- **Firmware:** Version 2.7.1 released Feb-2020
- **File System:** tmpfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** jemalloc memory allocator V5.0.1
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage

### Performance

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Value (Threads)</th>
<th>SPECspeed®2017 int_base</th>
<th>SPECspeed®2017 int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>64</td>
<td>6.31</td>
<td>7.48</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>64</td>
<td>9.72</td>
<td>18.5</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>64</td>
<td>10.1</td>
<td>13.4</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>64</td>
<td>6.44</td>
<td>15.5</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>64</td>
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<td>13.4</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>64</td>
<td></td>
<td>16.0</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>64</td>
<td>5.76</td>
<td></td>
</tr>
<tr>
<td>641.leela_s</td>
<td>64</td>
<td>4.78</td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>64</td>
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<td>16.9</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>64</td>
<td></td>
<td>23.2</td>
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</tbody>
</table>

**Test Date:** Jun-2020  
**Hardware Availability:** Apr-2019  
**Software Availability:** Apr-2020
SPEC CPU®2017 Integer Speed Result

Dell Inc.

PowerEdge MX740c (Intel Xeon Gold 6242, 2.80GHz)

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Seconds</th>
<th>Ratio</th>
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<td>64</td>
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<td>266</td>
<td>23.3</td>
<td>266</td>
<td>23.2</td>
</tr>
</tbody>
</table>

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

Compiler Notes

The inconsistent Compiler version information under Compiler Version section is due to a discrepancy in Intel Compiler. The correct version of C/C++ compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux
The correct version of Fortran compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux

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"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/dev/shm/cpu2017-ic19.1u1/lib/intel64:/dev/shm/cpu2017-ic19.1u1/je5.0.1
OMP_STACKSIZE = "192M"
General Notes

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
NA: 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.
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, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes

BIOS settings:
Sub NUMA Cluster enabled
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 set to standard
Logical Processor enabled
CPU Interconnect Bus Link Power Management disabled
PCI ASPM L1 Link Power Management disabled
UPI Prefetch enabled
LLC Prefetch disabled
Dead Line LLC Alloc enabled
Directory AtoS disabled
Sysinfo program /dev/shm/cpu2017-ic19.1u1/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7eddb1e6e46a485a0011
running on localhost.localdomain Sat Jun  6 19:31:27 2020

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

(Continued on next page)
SPEC CPU®2017 Integer Speed Result

Dell Inc.

PowerEdge MX740c (Intel Xeon Gold 6242, 2.80GHz)

Dell Inc.

Copyright 2017-2020 Standard Performance Evaluation Corporation

SPECspeed®2017_int_base = 10.5
SPECspeed®2017_int_peak = 10.8

CPU2017 License: 55
Test Sponsor: Dell Inc.
Test Date: Jun-2020
Tested by: Dell Inc.
Hardware Availability: Apr-2019
Software Availability: Apr-2020

Platform Notes (Continued)

From /proc/cpuinfo

- model name: Intel(R) Xeon(R) Gold 6242 CPU @ 2.80GHz
- 2 "physical id"s (chips)
- 64 "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: 16
  - siblings: 32
  - physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
  - physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lscpu:
- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit
- Byte Order: Little Endian
- CPU(s): 64
- On-line CPU(s) list: 0-63
- Thread(s) per core: 2
- Core(s) per socket: 16
- Socket(s): 2
- NUMA node(s): 4
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 85
- Model name: Intel(R) Xeon(R) Gold 6242 CPU @ 2.80GHz
- Stepping: 6
- CPU MHz: 1218.992
- CPU max MHz: 3900.0000
- CPU min MHz: 1200.0000
- BogoMIPS: 5600.00
- Virtualization: VT-x
- L1d cache: 32K
- L1i cache: 32K
- L2 cache: 1024K
- L3 cache: 22528K
- NUMA node0 CPU(s): 0,4,8,12,16,20,24,28,32,36,40,44,48,52,56,60
- NUMA node1 CPU(s): 1,5,9,13,17,21,25,29,33,37,41,45,49,53,57,61
- NUMA node2 CPU(s): 2,6,10,14,18,22,26,30,34,38,42,46,50,54,58,62
- NUMA node3 CPU(s): 3,7,11,15,19,23,27,31,35,39,43,47,51,55,59,63
- 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 cpuid
- aperfmpref perf 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 3nowprefetch cpuid_fault epb cat_l3 cdp_l3
- invpcid_single intel_patin ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vni
- flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm

(Continued on next page)
<table>
<thead>
<tr>
<th>Platform Notes (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsavc xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local dtherm ida arat pln pts pku ospke avx512_vnni md_clear flush_l1d arch_capabilities</td>
</tr>
<tr>
<td>/proc/cpuinfo cache data</td>
</tr>
<tr>
<td>cache size : 22528 KB</td>
</tr>
<tr>
<td>From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.</td>
</tr>
<tr>
<td>available: 4 nodes (0-3)</td>
</tr>
<tr>
<td>node 0 cpus: 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60</td>
</tr>
<tr>
<td>node 0 size: 192048 MB</td>
</tr>
<tr>
<td>node 0 free: 182433 MB</td>
</tr>
<tr>
<td>node 1 cpus: 1 5 9 13 17 21 25 29 33 37 41 45 49 53 57 61</td>
</tr>
<tr>
<td>node 1 size: 193532 MB</td>
</tr>
<tr>
<td>node 1 free: 193146 MB</td>
</tr>
<tr>
<td>node 2 cpus: 2 6 10 14 18 22 26 30 34 38 42 46 50 54 58 62</td>
</tr>
<tr>
<td>node 2 size: 193532 MB</td>
</tr>
<tr>
<td>node 2 free: 192378 MB</td>
</tr>
<tr>
<td>node 3 cpus: 3 7 11 15 19 23 27 31 35 39 43 47 51 55 59 63</td>
</tr>
<tr>
<td>node 3 size: 193532 MB</td>
</tr>
<tr>
<td>node 3 free: 193078 MB</td>
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<tr>
<td>node distances:</td>
</tr>
<tr>
<td>node 0 1 2 3</td>
</tr>
<tr>
<td>0: 10 21 11 21</td>
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<tr>
<td>1: 21 10 21 11</td>
</tr>
<tr>
<td>2: 11 21 10 21</td>
</tr>
<tr>
<td>3: 21 11 21 10</td>
</tr>
<tr>
<td>From /proc/meminfo</td>
</tr>
<tr>
<td>MemTotal: 791188960 kB</td>
</tr>
<tr>
<td>HugePages_Total: 0</td>
</tr>
<tr>
<td>Hugepagesize: 2048 kB</td>
</tr>
<tr>
<td>From /etc/<em>release</em> /etc/<em>version</em></td>
</tr>
<tr>
<td>os-release:</td>
</tr>
<tr>
<td>NAME=&quot;Red Hat Enterprise Linux&quot;</td>
</tr>
<tr>
<td>VERSION=&quot;8.1 (Ootpa)&quot;</td>
</tr>
<tr>
<td>ID=&quot;rhel&quot;</td>
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<tr>
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<tr>
<td>PLATFORM_ID=&quot;platform:el8&quot;</td>
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<tr>
<td>ANSI_COLOR=&quot;0;31&quot;</td>
</tr>
<tr>
<td>redhat-release: Red Hat Enterprise Linux release 8.1 (Ootpa)</td>
</tr>
<tr>
<td>system-release: Red Hat Enterprise Linux release 8.1 (Ootpa)</td>
</tr>
</tbody>
</table>

(Continued on next page)
SPEC CPU®2017 Integer Speed Result

Dell Inc.  

PowerEdge MX740c (Intel Xeon Gold 6242, 2.80GHz)  

| SPECspeed®2017_int_base = 10.5 |
| SPECspeed®2017_int_peak = 10.8 |

CPU2017 License: 55  
Test Sponsor: Dell Inc.  
Test Date: Jun-2020  
CPU2017 License: 55  
Test Sponsor: Dell Inc.  
Test Date: Jun-2020  

Platform Notes (Continued)

```
uname -a:
Linux localhost.localdomain 4.18.0-147.el8.x86_64 #1 SMP Thu Sep 26 15:52:44 UTC 2019
x86_64 x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

- CVE-2018-3620 (L1 Terminal Fault): Not affected
- Microarchitectural Data Sampling: Not affected
- CVE-2017-5754 (Meltdown): Not affected
- CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
- CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swapgs barriers and __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

run-level 3 Jun 5 10:50

SPEC is set to: /dev/shm/cpu2017-ic19.1u1

```
Filesystem     Type   Size  Used Avail Use% Mounted on
/tmpfs          tmpfs  378G  4.2G  374G   2% /dev/shm
```

From /sys/devices/virtual/dmi/id  
BIOS: Dell Inc. 2.7.1 02/14/2020  
Vendor: Dell Inc.  
Product: PowerEdge MX740c  
Product Family: PowerEdge  
Serial: 1234567

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.

Memory:
```
21x 00AD00B300AD HMA84GR7CJR4N-WM 32 GB 2 rank 2933
1x 00AD063200AD HMA84GR7CJR4N-WM 32 GB 2 rank 2933
2x 00AD069D00AD HMA84GR7CJR4N-WM 32 GB 2 rank 2933
```

(End of data from sysinfo program)

Compiler Version Notes

```
C        | 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak)
```

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

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<td>Intel(R) C</td>
<td>Compiler for applications running on Intel(R) 64, Version 2021.1</td>
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<tr>
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<td>NextGen Build 20200304</td>
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<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
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<tr>
<td></td>
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<td>Intel(R) Fortran</td>
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PowerEdge MX740c (Intel Xeon Gold 6242, 2.80GHz)

SPECspeed®2017_int_base = 10.5
SPECspeed®2017_int_peak = 10.8

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

Test Date: Jun-2020
Hardware Availability: Apr-2019
Software Availability: Apr-2020

Compiler Version Notes (Continued)

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
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

(Continued on next page)
Dell Inc.
PowerEdge MX740c (Intel Xeon Gold 6242, 2.80GHz)

SPECspeed®2017_int_base = 10.5
SPECspeed®2017_int_peak = 10.8

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<th>Test Date:</th>
<th>Jun-2020</th>
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<td>Hardware Availability:</td>
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<td>Software Availability:</td>
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### Base Optimization Flags (Continued)

Fortran benchmarks:
- `m64` `-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -xCORE-AVX2`
- `O3` `-ipo` `-no-prec-div` `-qopt-mem-layout-trans=4`
- `-nostandard-realloc-lhs` `-align array32byte`
- `-mbranches-within-32B-boundaries`

### 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(*) -DSPEC_LP64`
605.mcf_s: `-DSPEC_LP64`
620.ommnetpp_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`

(*) Indicates a portability flag that was found in a non-portability variable.

### Peak Optimization Flags

C benchmarks:
- `m600.perlbench_s:  -Wl, -z, muldefs -prof-gen(pass 1) -prof-use(pass 2)
  -xCORE-AVX2 -ipo -O3 -no-prec-div`

(Continued on next page)
SPEC CPU®2017 Integer Speed Result
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Dell Inc.
PowerEdge MX740c (Intel Xeon Gold 6242, 2.80GHz)

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Peak Optimization Flags (Continued)

600.perlbench_s (continued):
-qopt-mem-layout-trans=4 -fno-strict-overflow
-mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

602.gcc_s: -m64 -qnextgen -std=c11 -fuse-ld=gold
-W1,-plugin-opt=-x86-branches-within-32B-boundaries
-W1,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2 -flto
-Ofast(pass 1) -O3 -ffast-math -qopt-mem-layout-trans=4
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

605.mcf_s: basepeak = yes

625.x264_s: -m64 -qnextgen -std=c11
-W1,-plugin-opt=-x86-branches-within-32B-boundaries
-W1,-z,muldefs -xCORE-AVX2 -flto -O3 -ffast-math
-fuse-ld=gold -qopt-mem-layout-trans=4 -fno-alias
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:

620.omnetpp_s: basepeak = yes

623.xalancbmk_s: basepeak = yes

631.deepsjeng_s: basepeak = yes

641.leela_s: basepeak = yes

Fortran benchmarks:

648.exchange2_s: basepeak = yes

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:
http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revA.xml
### SPEC CPU®2017 Integer Speed Result

**Dell Inc.**

PowerEdge MX740c (Intel Xeon Gold 6242, 2.80GHz)

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Tested with SPEC CPU®2017 v1.1.0 on 2020-06-06 19:31:26-0400.
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