**Dell Inc.**

PowerEdge MX740c (Intel Xeon Gold 6212U, 2.40GHz)

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 141</th>
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</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak = 147</td>
</tr>
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</table>

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

---

### Hardware

- **CPU Name:** Intel Xeon Gold 6212U  
- **Max MHz:** 3900  
- **Nominal:** 2400  
- **Enabled:** 24 cores, 1 chip, 2 threads/core  
- **Orderable:** 1 chips  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **L2:** 1 MB I+D on chip per core  
- **L3:** 35.75 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 192 GB (6 x 32 GB 2Rx4 PC4-2933Y-R)  
- **Storage:** 1 x 480 GB SATA SSD  
- **Other:** None

### Software

- **OS:** Ubuntu 18.04.2 LTS  
- **Compiler:** C/C++: Version 19.0.4.227 of Intel C/C++ Compiler Build 20190416 for Linux; Fortran: Version 19.0.4.227 of Intel Fortran Compiler Build 20190416 for Linux  
- **Parallel:** No  
- **Firmware:** Version 2.2.7 released Apr-2019  
- **File System:** ext4  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** 32/64-bit  
- **Other:** jemalloc memory allocator V5.0.1  
- **Power Management:** --

---

### SPEC® CPU®2017 Integer Rate Result

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 141</th>
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<tbody>
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### Copies

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SPEC CPU®2017 Integer Rate Result

Dell Inc.

PowerEdge MX740c (Intel Xeon Gold 6212U, 2.40GHz)

SPECRate®2017_int_base = 141

SPECRate®2017_int_peak = 147

Results Table

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<td>554</td>
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</tr>
</tbody>
</table>

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"

General Notes

Environment variables set by runcpu before the start of the run:

LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/je5.0.1-64"
OMP_STACKSIZE = "192M"

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
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

(Continued on next page)
Dell Inc.

PowerEdge MX740c (Intel Xeon Gold 6212U, 2.40GHz)

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

SPECrate®2017_int_base = 141

SPECrate®2017_int_peak = 147

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

Test Date: Aug-2019
Hardware Availability: Apr-2019
Software Availability: Aug-2019

General Notes (Continued)


Platform Notes

BIOS settings:
ADDDC setting disabled
Sub NUMA Cluster disabled
Virtualization Technology disabled
DCU Streamer Prefetcher 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 enabled
CPU Interconnect Bus Link Power Management disabled
PCI ASPM L1 Link Power Management disabled
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9

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 6212U CPU @ 2.40GHz
1 "physical id"s (chips)
48 "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 : 24
siblings : 48
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 25 26 27 28 29

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 48
On-line CPU(s) list: 0-47
Thread(s) per core: 2
Core(s) per socket: 24
Socket(s): 1

(Continued on next page)
Dell Inc. PowerEdge MX740c (Intel Xeon Gold 6212U, 2.40GHz)

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Test Sponsor: Dell Inc.
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SPECCpu2017_int_base = 141
SPECCpu2017_int_peak = 147

Test Date: Aug-2019
Hardware Availability: Apr-2019
Software Availability: Aug-2019

Platform Notes (Continued)

NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6212U CPU @ 2.40GHz
Stepping: 6
CPU MHz: 3381.544
BogoMIPS: 4800.00
Virtualization: VT-x
L1c cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 36608K
NUMA node0 CPU(s): 0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46
NUMA node1 CPU(s): 1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47
Flags: fpu vme de pse tsc mshr 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 aperfmperf 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 cpuid_fault epb cat_l3 cdp_l3 invpcid_single intel_pcip ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 rome invpcid rtm cmq mxr rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaeopt xsaveopt xsavec xsavec xsavec qmmi l1c qmmi l1c qmmi l1c qmmi l1c qmmi l1c qmmi l1c arch_capabilities

/proc/cpuinfo cache data
cache size: 36608 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 40 42 44 46
node 0 size: 95146 MB
node 0 free: 94472 MB
node 1 cpus: 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47
node 1 size: 96741 MB
node 1 free: 96224 MB
node distances:
node 0 1
  0: 10 11
  1: 11 10

(Continued on next page)
Dell Inc. PowerEdge MX740c (Intel Xeon Gold 6212U, 2.40GHz)

SPEC CPU®2017 Integer Rate Result
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Test Date: Aug-2019
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Platform Notes (Continued)

From /proc/meminfo
MemTotal: 196492936 kB
 HugePages_Total: 0
 Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
 Ubuntu 18.04.2 LTS

From /etc/*release* /etc/*version*
debian_version: buster/sid
 os-release:
 NAME="Ubuntu"
 VERSION="18.04.2 LTS (Bionic Beaver)"
 ID=ubuntu
 ID_LIKE=debian
 PRETTY_NAME="Ubuntu 18.04.2 LTS"
 VERSION_ID="18.04"
 HOME_URL="https://www.ubuntu.com/
 SUPPORT_URL="https://help.ubuntu.com/

uname -a:
 Linux intel-sut 4.15.0-58-generic #64-Ubuntu SMP Tue Aug 6 11:12:41 UTC 2019 x86_64
 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2017-5754 (Meltdown): Not affected
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 Aug 20 21:31

SPEC is set to: /home/cpu2017
 Filesystem Type Size Used Avail Use% Mounted on
 /dev/sda2 ext4 439G 32G 385G 8% /

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. 2.2.7 04/23/2019
  Memory:
  5x 00AD00B300AD HMA84GR7CJR4N-WM 32 GB 2 rank 2933
  1x 00AD063200AD HMA84GR7CJR4N-WM 32 GB 2 rank 2933
  18x Not Specified Not Specified

(Continued on next page)
Dell Inc.

PowerEdge MX740c (Intel Xeon Gold 6212U, 2.40GHz)

SPEC CPU®2017 Integer Rate Result

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Platform Notes (Continued)

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C       | 502.gcc_r(peak)
-----------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on IA-32, Version
19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------------

C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak)
| 525.x264_r(base, peak) 557.xz_r(base, peak)
-----------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------------

C       | 502.gcc_r(peak)
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Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------------

C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak)
| 525.x264_r(base, peak) 557.xz_r(base, peak)
-----------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------------

C++     | 523.xalancbmk_r(peak)
-----------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on IA-32, Version
19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------------

(Continued on next page)
## Dell Inc. PowerEdge MX740c (Intel Xeon Gold 6212U, 2.40GHz)

**SPEC CPU®2017 Integer Rate Result**

<table>
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<th>Specification</th>
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**Test Sponsor:** Dell Inc.  
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**Test Date:** Aug-2019  
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### Compiler Version Notes (Continued)

<table>
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<tr>
<th>Language</th>
<th>Compiler</th>
<th>Notes</th>
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<tr>
<td>C++</td>
<td>icc -m64 -std=c11</td>
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<tr>
<td>C++</td>
<td>icpc -m64</td>
<td></td>
</tr>
<tr>
<td>Fortran</td>
<td>ifort -m64</td>
<td></td>
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---

### Base Compiler Invocation

- **C benchmarks:**
  - icc -m64 -std=c11

- **C++ benchmarks:**
  - icpc -m64

- **Fortran benchmarks:**
  - ifort -m64
## SPEC CPU®2017 Integer Rate Result

**Dell Inc.**

### PowerEdge MX740c (Intel Xeon Gold 6212U, 2.40GHz)

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### Base Portability Flags

- 500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
- 502.gcc_r: -DSPEC_LP64
- 505.mcf_r: -DSPEC_LP64
- 520.omnetpp_r: -DSPEC_LP64
- 523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
- 525.x264_r: -DSPEC_LP64
- 531.deepsjeng_r: -DSPEC_LP64
- 541.leela_r: -DSPEC_LP64
- 548.exchange2_r: -DSPEC_LP64
- 557.xz_r: -DSPEC_LP64

### Base Optimization Flags

C benchmarks:
- -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
- -qopt-mem-layout-trans=4
- -L/usr/local/Intel Compiler 19/lib/intel64
- -lqkmalloc

C++ benchmarks:
- -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
- -qopt-mem-layout-trans=4
- -L/usr/local/Intel Compiler 19/lib/intel64
- -lqkmalloc

Fortran benchmarks:
- -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
- -qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
- -L/usr/local/Intel Compiler 19/lib/intel64
- -lqkmalloc

### Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc -m64 -std=c11
```

```
502.gcc_r: icc -m32 -std=c11 -L/usr/local/Intel Compiler 19/lib/intel64
```

C++ benchmarks (except as noted below):
```
icpc -m64
```
# SPEC CPU®2017 Integer Rate Result

## Dell Inc.

PowerEdge MX740c (Intel Xeon Gold 6212U, 2.40GHz)

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### SPECrate®2017_int_base = 141
**SPECrate®2017_int_peak = 147**

---

## Peak Compiler Invocation (Continued)

523.xalancbmk_r: icpc -m32 -L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/ia32_lin

Fortran benchmarks:
ifort -m64

---

## Peak Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
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<td>502.gcc_r</td>
<td>-D_FILE_OFFSET_BITS=64</td>
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</tr>
<tr>
<td>557.xz_r</td>
<td>-DSPEC_LP64</td>
</tr>
</tbody>
</table>

---

## Peak Optimization Flags

### C benchmarks:

500.perlbench_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=4
-fno-strict-overflow
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

502.gcc_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=4
-L/usr/local/je5.0.1-32/lib -ljemalloc

505.mcf_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

525.x264_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -fno-alias
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

(Continued on next page)
Dell Inc.

PowerEdge MX740c (Intel Xeon Gold 6212U, 2.40GHz)

\[
\begin{align*}
\text{SPECrate®2017\_int\_base} &= 141 \\
\text{SPECrate®2017\_int\_peak} &= 147
\end{align*}
\]

\begin{tabular}{|l|l|}
\hline
\text{CPU2017 License:} & 55 \\
\text{Test Sponsor:} & Dell Inc. \\
\text{Tested by:} & Dell Inc. \\
\hline
\end{tabular}

\text{Test Date: Aug-2019} \quad \text{Hardware Availability: Apr-2019} \\
\text{Software Availability: Aug-2019}

\section*{Peak Optimization Flags (Continued)}

\begin{itemize}
\item 557.xz\_r: Same as 505.mcf\_r
\item C++ benchmarks:
\begin{itemize}
\item 520.omnetpp\_r:\ -Wl,-z,muldefs \ -xCORE-AVX512 \ -ipo \ -O3 \ -no-prec-div \ -qopt-mem-layout-trans=4
\item -L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
\item -lqkmalloc
\item 523.xalancbmk\_r:\ -Wl,-z,muldefs \ -prof-gen(pass 1) \ -prof-use(pass 2) \ -ipo
\item -xCORE-AVX512 \ -O3 \ -no-prec-div \ -qopt-mem-layout-trans=4
\item -L/usr/local/je5.0.1-32/lib \ -ljemalloc
\item 531.deepsjeng\_r: Same as 520.omnetpp\_r
\item 541.leela\_r: Same as 520.omnetpp\_r
\item Fortran benchmarks:
\begin{itemize}
\item -Wl,-z,muldefs \ -xCORE-AVX512 \ -ipo \ -O3 \ -no-prec-div
\item -qopt-mem-layout-trans=4 \ -nostandard-realloc-lhs \ -align array32byte
\item -L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
\item -lqkmalloc
\end{itemize}
\end{itemize}
\end{itemize}

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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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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