### Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 5317, 3.00 GHz)

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS: Red Hat Enterprise Linux 8.2 (Ootpa)</td>
<td>CPU Name: Intel Xeon Gold 5317</td>
</tr>
<tr>
<td>Compiler: C/C++: Version 2021.1 of Intel oneAPI DPC++/C++ Compiler Build 20201113 for Linux; Fortran: Version 2021.1 of Intel Fortran Compiler Classic Build 20201112 for Linux; C/C++: Version 2021.1 of Intel C/C++ Compiler Classic Build 20201112 for Linux</td>
<td>Max MHz: 3600</td>
</tr>
<tr>
<td>Firmware: Version 1.1.3 released Apr-2021</td>
<td>Nominal: 3000</td>
</tr>
<tr>
<td>File System: tmpfs</td>
<td>Enabled: 24 cores, 2 chips</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
<td>Orderable: 1.2 chips</td>
</tr>
<tr>
<td>Base Pointers: 64-bit</td>
<td>Cache L1: 32 KB I + 48 KB D on chip per core</td>
</tr>
<tr>
<td>Peak Pointers: 64-bit</td>
<td>L2: 1.25 MB I+D on chip per core</td>
</tr>
<tr>
<td>Other: jemalloc memory allocator V5.0.1</td>
<td>L3: 18 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.</td>
<td>Other: None</td>
</tr>
</tbody>
</table>

### SPEC CPU®2017 Integer Speed Result

<table>
<thead>
<tr>
<th>Test Date: May-2021</th>
<th>CPU2017 License: 55</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Dell Inc.</td>
<td>Test Date: May-2021</td>
</tr>
<tr>
<td>Tested by: Dell Inc.</td>
<td>Hardware Availability: Apr-2021</td>
</tr>
<tr>
<td>Software Availability: Dec-2020</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed®2017_int_base = 11.5</th>
<th>SPECspeed®2017_int_peak = 11.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>8.39</td>
<td>10.5</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>10.9</td>
<td>19.6</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>8.55</td>
<td>13.8</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>6.06</td>
<td>17.1</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>4.99</td>
<td>17.8</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>24</td>
<td>19.9</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>24</td>
<td>21.4</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>24</td>
<td>21.4</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>24</td>
<td>21.4</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>24</td>
<td>21.4</td>
</tr>
</tbody>
</table>

**Thread Count:** 24

**SPECspeed®2017_int_base** = 11.5

**SPECspeed®2017_int_peak** = 11.7

---

**CPU Name:** Intel Xeon Gold 5317

**Max MHz:** 3600

**Nominal:** 3000

**Enabled:** 24 cores, 2 chips

**Orderable:** 1.2 chips

**Cache L1:** 32 KB I + 48 KB D on chip per core

**L2:** 1.25 MB I+D on chip per core

**L3:** 18 MB I+D on chip per chip

**Other:** None

**Memory:** 512 GB (16 x 32 GB 2Rx8 PC4-3200AA-R, running at 2933)

**Storage:** 125 GB on tmpfs

**Other:** None

---

**Firmware:** Version 1.1.3 released Apr-2021

**Power Management:** BIOS and OS set to prefer performance at the cost of additional power usage.

---

**OS:** Red Hat Enterprise Linux 8.2 (Ootpa)

**Compiler:** C/C++: Version 2021.1 of Intel oneAPI DPC++/C++ Compiler Build 20201113 for Linux; Fortran: Version 2021.1 of Intel Fortran Compiler Classic Build 20201112 for Linux; C/C++: Version 2021.1 of Intel C/C++ Compiler Classic Build 20201112 for Linux

---

**Software Availability:** Dec-2020

---

**Test Sponsor:** Dell Inc.

---

**Hardware Availability:** Apr-2021

---

**Test Date:** May-2021

---

**CPU2017 License:** 55

---

**Tested by:** Dell Inc.
SPEC CPU®2017 Integer Speed Result

Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 5317, 3.00 GHz)

SPECspeed®2017_int_base = 11.5
SPECspeed®2017_int_peak = 11.7

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
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<td>19.6</td>
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<tr>
<td>623.xalancbmk_s</td>
<td>24</td>
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<td>13.9</td>
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<td>13.8</td>
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</tr>
<tr>
<td>631.deepsjeng_s</td>
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<tr>
<td>641.leeu_s</td>
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<td>147</td>
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<td>19.9</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>24</td>
<td>290</td>
<td>21.4</td>
<td>289</td>
<td>21.4</td>
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<td>21.4</td>
<td>289</td>
<td>21.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 = "/mnt/ramdisk/cpu2017-1.1.7-ic2021.1/lib/intel64:/mnt/ramdisk/cpu2017-1.1.7-ic2021.1/jep5.0.1-64"" MALLOC_CONF = "retain:true" OMP_STACKSIZE = "192M"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Redhat Enterprise Linux 8.0

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

(Continued on next page)
Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 5317, 3.00 GHz)

| SPECspeed®2017_int_base = 11.5 |
| SPECspeed®2017_int_peak = 11.7 |

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

---

**General Notes (Continued)**

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  

Benchmark run from a 125 GB ramdisk created with the cmd: "mount -t tmpfs -o size=125G tmpfs /mnt/ramdisk"

---

**Platform Notes**

**BIOS Settings:**
- Logical Processor: Disabled
- Virtualization Technology: Disabled

**System Profile:** Custom  
**CPU Power Management:** Maximum Performance  
**C1E:** Disabled  
**C States:** Autonomous  
**Memory Patrol Scrub:** Disabled  
**Energy Efficiency Policy:** Performance  
**CPU Interconnect Bus Link Power Management:** Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.7-ic2021.1/bin/sysinfo  
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c  
runtime on localhost.localdomain Wed May 12 23:00:05 2021

**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 5317 CPU @ 3.00GHz
  - 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 5 6 7 8 9 10 11
  - physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11

From lscpu:
- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit

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

## Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 5317, 3.00 GHz)  

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>55</th>
<th>Test Date:</th>
<th>May-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Dell Inc.</td>
<td>Hardware Availability:</td>
<td>Apr-2021</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Dell Inc.</td>
<td>Software Availability:</td>
<td>Dec-2020</td>
</tr>
</tbody>
</table>

### SPECspeed®2017_int_base = 11.5  
### SPECspeed®2017_int_peak = 11.7

### Platform Notes (Continued)

- **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:** 106
- **Model name:** Intel(R) Xeon(R) Gold 5317 CPU @ 3.00GHz
- **Stepping:** 6
- **CPU MHz:** 801.351
- **BogoMIPS:** 6000.00
- **Virtualization:** VT-x
- **L1d cache:** 48K
- **L1i cache:** 32K
- **L2 cache:** 1280K
- **L3 cache:** 18432K
- **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 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 f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault ebti cat_l3 invpcid_single ssmbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vmm灵活性 practically vptid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 2erms invpcid rtm qcm rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt xsaves xsave xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local wbinvd dtstream ida arat pln pts avx512vbmi umip pku ospke avx512_vbmi2 gfin vaes vpcmldq vg avx512_vnni avx512_big emit avx512_vpopcntdq la57 rdpid md_clear pconf gs flush_l1d arch_capabilities

```
/pro�/cpuinfo cache data
  cache size : 18432 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: 257438 MB
  node 0 free: 256782 MB
  node 1 cpus: 1 3 5 7 9 11 13 15 17 19 21 23
  node 1 size: 258015 MB
  node 1 free: 248468 MB
```

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

Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 5317, 3.00 GHz)

SPECspeed®2017_int_base = 11.5

SPECspeed®2017_int_peak = 11.7

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

Test Date: May-2021  
Hardware Availability: Apr-2021  
Software Availability: Dec-2020

Platform Notes (Continued)

node distances:
node  0  1
  0: 10  20
  1: 20  10

From /proc/meminfo
  MemTotal: 527824916 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

/sbin/tuned-adm active
  Current active profile: throughput-performance

From /etc/*release* /etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux"
    VERSION="8.2 (Ootpa)"
    ID="rheil"
    ID_LIKE="fedora"
    VERSION_ID="8.2"
    PLATFORM_ID="platform:el8"
    PRETTY_NAME="Red Hat Enterprise Linux 8.2 (Ootpa)"
    ANSI_COLOR="0;31"
  redhat-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
  system-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
  system-release-cpe: cpe:/o:redhat:enterprise_linux:8.2:ga

uname -a:
  Linux localhost.localdomain 4.18.0-193.el8.x86_64 #1 SMP Fri Mar 27 14:35:58 UTC 2020
  x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit): Not affected
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/swaps barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): No status reported
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

(Continued on next page)
<table>
<thead>
<tr>
<th>Platform Notes (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>run-level 3 May 12 23:03</td>
</tr>
<tr>
<td>SPEC is set to: /mnt/ramdisk/cpu2017-1.1.7-ic2021.1</td>
</tr>
<tr>
<td>Filesystem</td>
</tr>
<tr>
<td>tmpfs</td>
</tr>
<tr>
<td>From /sys/devices/virtual/dmi/id</td>
</tr>
<tr>
<td>Vendor:</td>
</tr>
<tr>
<td>Product:</td>
</tr>
<tr>
<td>Product Family:</td>
</tr>
<tr>
<td>Serial:</td>
</tr>
</tbody>
</table>

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:
1x 002C00B3002C 18ASF4G72FDZ-3G2E1 32 GB 2 rank 3200, configured at 2933
15x 00AD063200AD HMAA4GR7A8R8N-XN 32 GB 2 rank 3200, configured at 2933
16x Not Specified Not Specified

BIOS:
BIOS Vendor: | Dell Inc. |
BIOS Version: | 1.1.3 |
BIOS Date: | 04/27/2021 |
BIOS Revision: | 1.1 |

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
<p>| C | 600.perlbench_s(peak) |
|-----------------------------------------------|
| Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000 |</p>
<table>
<thead>
<tr>
<th>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</td>
</tr>
</tbody>
</table>

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## Dell Inc.

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### Compiler Version Notes (Continued)

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---

#### C

<table>
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<tr>
<th>600.perlbench_s(peak)</th>
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Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000

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#### C

<table>
<thead>
<tr>
<th>600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(base, peak)</th>
</tr>
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113

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---

#### C++

<table>
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<tr>
<th>620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)</th>
</tr>
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113

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---

#### Fortran

<table>
<thead>
<tr>
<th>648.exchange2_s(base, peak)</th>
</tr>
</thead>
</table>

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000

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### Base Compiler Invocation

**C benchmarks:**

icx

**C++ benchmarks:**

icpx

(Continued on next page)
Dell Inc.
PowerEdge MX750c (Intel Xeon Gold 5317, 3.00 GHz)

SPECspeed®2017_int_base = 11.5
SPECspeed®2017_int_peak = 11.7

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

Test Date: May-2021
Hardware Availability: Apr-2021
Software Availability: Dec-2020

Base Compiler Invocation (Continued)

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

Base Optimization Flags

C benchmarks:
-DSPEC_OPENMP -std=c11 -m64 -fiopenmp -Wl,-z,muldefs -xCORE-AVX512
-O3 -ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:
-DSPEC_OPENMP -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin/
-ljgmalloc

Fortran benchmarks:
-m64 -xCORE-AVX512 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-mbranches-within-32B-boundaries

Peak Compiler Invocation

C benchmarks (except as noted below):
icx
### Peak Compiler Invocation (Continued)

600.perlbench_s: icc

C++ benchmarks:
- icpx

Fortran benchmarks:
- ifort

### Peak Portability Flags

Same as Base Portability Flags

### Peak Optimization Flags

C benchmarks:

600.perlbench_s: -W1, -z, muldefs -prof-gen(pass 1) -prof-use(pass 2)
-xCORE-AVX512 -ipo -O3 -no-prec-div
-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 -std=c11 -W1, -z, muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profddata(pass 2) -xCORE-AVX512 -flto
-Ofast(pass 1) -O3 -ffast-math -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

605.mcf_s: basepeak = yes

625.x264_s: -DSPEC_OPENMP -fiopenmp -std=c11 -m64 -W1, -z, muldefs
-xCORE-AVX512 -flto -O3 -ffast-math
-qopt-mem-layout-trans=4 -fno-alias
-mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

657.xz_s: basepeak = yes

C++ benchmarks:

(Continued on next page)
Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 5317, 3.00 GHz)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
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<td>11.5</td>
<td>11.7</td>
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**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** May-2021  
**Hardware Availability:** Apr-2021  
**Software Availability:** Dec-2020

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Peak Optimization Flags (Continued)

- 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-ic2021-official-linux64_revA.xml

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