SPEC CPU®2017 Integer Speed Result

Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 6342, 2.80 GHz)

SPECspeed®2017_int_base = 11.9
SPECspeed®2017_int_peak = 12.1

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

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

Hardware

CPU Name: Intel Xeon Gold 6342
Max MHz: 3500
Nominal: 2800
Enabled: 48 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: 36 MB I+D on chip per chip
Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R)
Storage: 125 GB on tmpfs
Other: None

Software

OS: Red Hat Enterprise Linux 8.3 (Ootpa)
4.18.0-240.el8.x86_64
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
Parallel: Yes
Firmware: Version 1.1.2 released Apr-2021
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 and OS set to prefer performance at the cost of additional power usage.
SPEC CPU®2017 Integer Speed Result

Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 6342, 2.80 GHz)

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

SPECspeed®2017_int_base = 11.9
SPECspeed®2017_int_peak = 12.1

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

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>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>48</td>
<td>246</td>
<td>7.22</td>
<td>246</td>
<td>7.21</td>
<td>212</td>
<td>8.36</td>
<td>213</td>
<td>8.32</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>48</td>
<td>361</td>
<td>11.0</td>
<td>362</td>
<td>11.0</td>
<td>348</td>
<td>11.4</td>
<td>348</td>
<td>11.5</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>48</td>
<td>233</td>
<td>20.2</td>
<td>233</td>
<td>20.3</td>
<td>233</td>
<td>20.2</td>
<td>233</td>
<td>20.3</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>48</td>
<td>143</td>
<td>11.4</td>
<td>139</td>
<td>11.7</td>
<td>143</td>
<td>11.4</td>
<td>139</td>
<td>11.7</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>48</td>
<td>104</td>
<td>13.6</td>
<td>105</td>
<td>13.6</td>
<td>104</td>
<td>13.6</td>
<td>105</td>
<td>13.6</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>48</td>
<td>103</td>
<td>17.1</td>
<td>103</td>
<td>17.1</td>
<td>99.0</td>
<td>17.8</td>
<td>99.2</td>
<td>17.8</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>48</td>
<td>241</td>
<td>5.95</td>
<td>241</td>
<td>5.94</td>
<td>241</td>
<td>5.94</td>
<td>241</td>
<td>5.94</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>48</td>
<td>351</td>
<td>4.86</td>
<td>351</td>
<td>4.86</td>
<td>351</td>
<td>4.86</td>
<td>351</td>
<td>4.86</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>48</td>
<td>152</td>
<td>19.4</td>
<td>152</td>
<td>19.4</td>
<td>152</td>
<td>19.4</td>
<td>152</td>
<td>19.4</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>48</td>
<td>261</td>
<td>23.7</td>
<td>261</td>
<td>23.7</td>
<td>261</td>
<td>23.7</td>
<td>261</td>
<td>23.7</td>
</tr>
</tbody>
</table>

SPECspeed®2017_int_base = 11.9
SPECspeed®2017_int_peak = 12.1

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/je5.0.1-64"
MALLOCS_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)
## SPEC CPU®2017 Integer Speed Result

### Dell Inc.

**PowerEdge MX750c (Intel Xeon Gold 6342, 2.80 GHz)**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_base</td>
<td>11.9</td>
</tr>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>12.1</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 55

**Test Sponsor:** Dell Inc.

**Test Date:** May-2021

**Tested by:** Dell Inc.

**Hardware Availability:** Apr-2021

**Software Availability:** Dec-2020

---

**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 e8664e6dd2d7080afeaa89d4b38e2f1c
running on localhost.localdomain Tue May  4 03:37:05 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 6342 CPU @ 2.80GHz
- 2 "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 : 24
- physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
- physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

From lscpu:

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

---

(Continued on next page)
Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 6342, 2.80 GHz)

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

SPECspeed®2017_int_base = 11.9
SPECspeed®2017_int_peak = 12.1

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

---

Platform Notes (Continued)

Byte Order: Little Endian
CPU(s): 48
On-line CPU(s) list: 0-47
Thread(s) per core: 1
Core(s) per socket: 24
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 6342 CPU @ 2.80GHz
Stepping: 6
CPU MHz: 3079.627
BogoMIPS: 5600.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 36864K
NUMA node0 CPU(s): 0-23
NUMA node1 CPU(s): 24-47
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 pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtr pr 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 invpcid_single
intel_pinn ssbd mba ibrs ibpb ibrs Enhanced fsqsbge tsc_adjust bmi1 hle avx2
smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma
clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl xsxaveopt xsxave xgetbv1
xsave xsave cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local split_lock_detect
wbinvd dtherm ida arat pln pts avx512vbm1 umip pku ospke avx512_vbmi2 gfni vaes
vpcm luid avx512_vnni avx512_bitalg tme avx512 vpoppcntdq la57 rdpid md_clear
pconfig flush_l1d
arch_capabilities

/proc/cpuinfo cache data
  cache size: 36864 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 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
  node 0 size: 494771 MB
  node 0 free: 505608 MB
  node 1 cpus: 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
  node 1 size: 493917 MB
  node 1 free: 515219 MB

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

Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 6342, 2.80 GHz)

SPECspeed®2017_int_base = 11.9
SPECspeed®2017_int_peak = 12.1

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: 1056291644 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="8.3 (Ootpa)"
    ID="rheil"
    ID_LIKE="fedora"
    VERSION_ID="8.3"
    PLATFORM_ID="platform:el8"
    PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
    ANSI_COLOR="0;31"
  redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga

uname -a:
Linux localhost.localdomain 4.18.0-240.el8.x86_64 #1 SMP Wed Sep 23 05:13:10 EDT 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/swapsgs 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): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

(Continued on next page)
Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 6342, 2.80 GHz)

SPEC CPU®2017 Integer Speed Result
Copyright 2017-2021 Standard Performance Evaluation Corporation

SPECspeed®2017_int_base = 11.9
SPECspeed®2017_int_peak = 12.1

CPU2017 License: 55
Test Sponsor: Dell Inc.
Test Date: May-2021
CPU2017 License: 55
Test by: Dell Inc.
Hardware Availability: Apr-2021
Software Availability: Dec-2020

Platform Notes (Continued)

run-level 3 May 4 03:31
SPEC is set to: /mnt/ramdisk/cpu2017-1.1.7-ic2021.1
Filesystem Type Size Used Avail Use% Mounted on
tmpfs tmpfs 125G 4.4G 121G 4% /mnt/ramdisk

From /sys/devices/virtual/dmi/id
Vendor: Dell Inc.
Product: PowerEdge MX750c
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:
16x 00AD063200AD HMAA8GR7AJR4N-XN 64 GB 2 rank 3200
16x Not Specified Not Specified

BIOS:
BIOS Vendor: Dell Inc.
BIOS Version: 1.1.2
BIOS Date: 04/09/2021
BIOS Revision: 1.1

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
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
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================

==============================================================================
C | 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak)
625.x264_s(base, peak) 657.xz_s(base, peak)
==============================================================================
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

(Continued on next page)
Dell Inc.  

PowerEdge MX750c (Intel Xeon Gold 6342, 2.80 GHz)  

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base = 11.9</th>
<th>SPECspeed®2017_int_peak = 12.1</th>
</tr>
</thead>
</table>

CPU2017 License: 55  
Test Sponsor: Dell Inc.  
Test Date: May-2021  
Hardware Availability: Apr-2021  
Tested by: Dell Inc.  
Software Availability: Dec-2020

### Compiler Version Notes (Continued)

---

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  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

---

C  
---

| 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(base, peak) |  
---

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

---

C++  
---

| 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak) 641.leela_s(base, peak) |  
---

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

---

Fortran  
---

| 648.exchange2_s(base, peak) |  
---

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

---

### Base Compiler Invocation

C benchmarks:  
- icx

C++ benchmarks:  
- icpx

Fortran benchmarks:  
- ifort
Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 6342, 2.80 GHz)

**SPEC CPU®2017 Integer Speed Result**

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.9</td>
<td>12.1</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 55

**Test Sponsor:** Dell Inc.

**Test Date:** May-2021

**Hardware Availability:** Apr-2021

**Tested by:** Dell Inc.

**Software Availability:** Dec-2020

### 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/
  -lqkmalloc

**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
- 600.perlbench_s: icc

**C++ benchmarks:**
- icpx

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

Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 6342, 2.80 GHz)

SPECspeed®2017_int_base = 11.9
SPECspeed®2017_int_peak = 12.1

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

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

Peak Compiler Invocation (Continued)

Fortran benchmarks:
ifort

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

600.perlbench_s: -Wl,-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
-1/usr/local/jemalloc64-5.0.1/lib -ljemalloc

602.gcc_s: -m64 -std=c11 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX512 -flto
-Ofast(pass 1) -O3 -ffast-math -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-1/usr/local/jemalloc64-5.0.1/lib -ljemalloc

605.mcf_s: basepeak = yes

625.x264_s: -DSPEC_OPENMP -fiopenmp -std=c11 -m64 -Wl,-z,muldefs
-xCORE-AVX512 -flto -O3 -ffast-math
-qopt-mem-layout-trans=4 -fno-alias
-mbranches-within-32B-boundaries
-1/usr/local/jemalloc64-5.0.1/lib -ljemalloc

657.xz_s: basepeak = yes

C++ benchmarks:

620.omnetpp_s: basepeak = yes

623.xalancbmk_s: basepeak = yes

631.deepsjeng_s: basepeak = yes

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

**Dell Inc.**

PowerEdge MX750c (Intel Xeon Gold 6342, 2.80 GHz)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.9</td>
<td>12.1</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** May-2021  
**Hardware Availability:** Apr-2021  
**Software Availability:** Dec-2020

## Peak Optimization Flags (Continued)

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: