Dell Inc.  

PowerEdge MX750c (Intel Xeon Gold 6330N, 2.20 GHz)  

SPECspeed®2017_int_base = 11.5  

SPECspeed®2017_int_peak = 11.8  

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

Threads  

<table>
<thead>
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<th>Benchmark</th>
<th>Threads</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
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<tr>
<td>602.gcc_s</td>
<td>56</td>
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<tr>
<td>605.mcf_s</td>
<td>56</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>56</td>
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<tr>
<td>623.xalancbmk_s</td>
<td>56</td>
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<tr>
<td>625.x264_s</td>
<td>56</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>56</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>56</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>56</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>56</td>
</tr>
</tbody>
</table>

CPU Name: Intel Xeon Gold 6330N  
Max MHz: 3400  
Nominal: 2200  
Enabled: 56 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: 42 MB I+D on chip per chip  
Other: None  
Memory: 512 GB (16 x 32 GB 2Rx8 PC4-3200AA-R, running at 2666)  
Storage: 125 GB on tmpfs  
Other: None  

Software  

OS: Red Hat Enterprise Linux 8.3 (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  
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.
Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<tr>
<td>641.leela_s</td>
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<td>648.exchange2_s</td>
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</tr>
</tbody>
</table>

**SPECspeed®2017_int_base = 11.5**

**SPECspeed®2017_int_peak = 11.8**

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

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"
- 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 6330N, 2.20 GHz)**

<table>
<thead>
<tr>
<th>CPU2017 License</th>
<th>Test Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>Apr-2021</td>
</tr>
</tbody>
</table>

**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.

### SPEC CPU®2017 Integer Speed Result

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>11.5</td>
<td>11.8</td>
</tr>
</tbody>
</table>

### General Notes (Continued)

Filesystem page cache synced and cleared with:

```sh
csync; echo 3>/proc/sys/vm/drop_caches
```


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 e8664e66d2d7080af4a89d4b38e2f1c
running on localhost.localdomain Sun Apr 18 19:41:06 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`

```plaintext
model name : Intel(R) Xeon(R) Gold 6330N CPU @ 2.20GHz
  2 "physical id"s (chips)
  56 "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 : 28
siblings : 28
physical 0: cores 0 1 2 3 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
physical 1: cores 0 1 2 3 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
```
Dell Inc. PowerEdge MX750c (Intel Xeon Gold 6330N, 2.20 GHz)

SPECspeed®2017_int_base = 11.5
SPECspeed®2017_int_peak = 11.8

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

CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 56
On-line CPU(s) list: 0-55
Thread(s) per core: 1
Core(s) per socket: 28
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 6330N CPU @ 2.20GHz
Stepping: 6
CPU MHz: 2889.096
BogoMIPS: 4400.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 43008K
NUMA node0 CPU(s): 0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48,50,52,54
NUMA node1 CPU(s): 1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,53,55
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 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 xtrp pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault ebp cat_l3 invpcid_single intel_pppin ssbd mba ibrs ibpb stibp ibrs_enhanced fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erva invpcid cmq rdtd a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl xsaveopt xsaves cgq llc cgq_occup_llc cgq_mbm_total cgq_mbm_local split_lock_detect wbnoinvd dtherm ida arat pln pts avx512vbmi umip pkku ospke avx512_vbmi2 gfnl vaes vclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid md_clear pconfig flush_lid arch_capabilities

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 48 50 52 54
node 0 size: 245910 MB

(Continued on next page)
**SPEC CPU®2017 Integer Speed Result**  
Copyright 2017-2021 Standard Performance Evaluation Corporation

**Dell Inc.**

**PowerEdge MX750c (Intel Xeon Gold 6330N, 2.20 GHz)**

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_peak</th>
<th>SPECspeed®2017_int_base</th>
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<tbody>
<tr>
<td>11.8</td>
<td>11.5</td>
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**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** Apr-2021  
**Hardware Availability:** Apr-2021  
**Software Availability:** Feb-2021

---

### Platform Notes (Continued)

```plaintext
node 0 free: 247589 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 49 51 53 55
node 1 size: 246747 MB
node 1 free: 257519 MB
node distances:
node 0 1
  0: 10 20
  1:  20 10
```

From `/proc/meminfo`

- **MemTotal:** 527808924 kB
- **HugePages_Total:** 0
- **Hugepagesize:** 2048 kB

```
s/bin/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="rhel"
  - 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
  Mitigation: usencrypt/swaps barriers and __user pointer
- **CVE-2017-5753 (Spectre variant 1):**

(Continued on next page)
Dell Inc.

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Platform Notes (Continued)

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

run-level 3 Apr 18 19:39

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 002C0632002C 18ASF4G72PDZ-3G2E1 32 GB 2 rank 3200, configured at 2666
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)

(Continued on next page)
Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 6330N, 2.20 GHz)

SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

SPECspeed®2017_int_base = 11.5

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Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 6330N, 2.20 GHz)

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Tested by: Dell Inc.

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Compiler Version Notes (Continued)

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</tbody>
</table>

Base Compiler Invocation

C benchmarks:
icx

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

### Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 6330N, 2.20 GHz)

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**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** Apr-2021  
**Hardware Availability:** Apr-2021  
**Software Availability:** Feb-2021

## Base Compiler Invocation (Continued)

- **C++ benchmarks:** icpx
- **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` `-ftopenmp` `-Wl,-z,muldefs` `-xCORE-AVX512`
- `-O3` `-ffast-math` `-flto` `-m64` `-Wl,-m64` `-flto` `-m64` `-m64` `-Wl,-z,muldefs` `-funroll-loops` `-qopt-mem-layout-trans=4` `-mbranches-within-32B-boundaries` `-L/usr/local/jemalloc64-5.0.1/lib` `-ljemalloc`

### C++ benchmarks:


### 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`
SPEC CPU®2017 Integer Speed Result

Dell Inc.

PowerEdge MX750c (Intel Xeon Gold 6330N, 2.20 GHz)

| SPECspeed®2017_int_base = 11.5 |
| SPECspeed®2017_int_peak = 11.8 |

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

Test Date: Apr-2021
Hardware Availability: Apr-2021
Software Availability: Feb-2021

Peak Compiler Invocation

C benchmarks (except as noted below):
icx

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: -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  
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

602.gcc_s: -m64 -std=c11 -Wl,-z,muldefs -fprofile-generate(pass 1)  
-fprofile-use=default.profdatalogdata(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 -fopenmp -std=c11 -m64 -Wl,-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

(Continued on next page)
Peak Optimization Flags (Continued)

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-ic2021-official-linux64_revA.xml