Dell Inc. PowerEdge C6520 (Intel Xeon Gold 6348, 2.60 GHz)

SPECspeed®2017_int_base = 11.9

SPECspeed®2017_int_peak = 12.2

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

Threads

<table>
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<tr>
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</tr>
<tr>
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<td>56</td>
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<tr>
<td>625.x264_s</td>
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<tr>
<td>631.deepsjeng_s</td>
<td>56</td>
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<tr>
<td>641.leela_s</td>
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<tr>
<td>648.exchange2_s</td>
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<tr>
<td>657.xz_s</td>
<td>56</td>
</tr>
</tbody>
</table>

SPECspeed®2017_int_base = 11.9

SPECspeed®2017_int_peak = 12.2

Hardware
CPU Name: Intel Xeon Gold 6348
Max MHz: 3500
Nominal: 2600
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: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R)
Storage: 125 GB on tmpfs
Other: None

Software
OS: Red Hat Enterprise Linux 8.2 (Ootpa)
4.18.0-193.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.
Dell Inc.  
PowerEdge C6520 (Intel Xeon Gold 6348, 2.60 GHz)  

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

Results Table

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<th>Seconds</th>
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</tr>
</tbody>
</table>

SPECspeed®2017_int_base = 11.9  
SPECspeed®2017_int_peak = 12.2

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/lib/intel64:
1.7-ic2021.1/jemalloc-5.0.1-64"
MALLOCONF = "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

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)
## SPEC CPU®2017 Integer Speed Result

**Dell Inc.**

PowerEdge C6520 (Intel Xeon Gold 6348, 2.60 GHz)

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

### General Notes (Continued)

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.

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  
running on localhost.localdomain Wed May 5 19:27:26 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 6348 CPU @ 2.60GHz
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 4 5 6 7 8 9 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 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
```

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

**Dell Inc.**

PowerEdge C6520 (Intel Xeon Gold 6348, 2.60 GHz)

**SPECspeed®2017_int_base = 11.9**

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**Test Date:** May-2021  
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**Software Availability:** Dec-2020

**Platform Notes (Continued)**

From lscpu:
- **Architecture:** x86_64  
- **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 6348 CPU @ 2.60GHz  
- **Stepping:** 6  
- **CPU MHz:** 1331.472  
- **BogoMIPS:** 5200.00  
- **Virtualization:** VT-x  
- **L1d cache:** 48K  
- **L1i cache:** 32K  
- **L2 cache:** 1280K  
- **L3 cache:** 43008K  
- **NUMA node0 CPU(s):** 0-27  
- **NUMA node 0 size:** 28-55  
- **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_error tarc 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 ebpx cat_13 invpcid_single ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid fsgsbse tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt x saves xsaveopt xsaveic xsavec cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local wbnoinvd dtgmm ida arat pln pts avx512vmbmi umip pkup osppke avx512_vbmi2 gfnl vae vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid md_clear pconf vflags flush_lld 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 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27  
- **node 0 size:** 515483 MB  
- **node 0 free:** 515117 MB

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

**Dell Inc.**

PowerEdge C6520 (Intel Xeon Gold 6348, 2.60 GHz)

**SPECspeed®2017_int_base = 11.9**

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</table>

### Platform Notes (Continued)

```plaintext
node 1 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55
node 1 size: 516059 MB
node 1 free: 506145 MB
node distances:
node 0 1
  0: 10 20
  1: 20 10
```

From `/proc/meminfo`

```
MemTotal: 1056300440 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="rhel"
  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
```

(Continued on next page)
Dell Inc.

PowerEdge C6520 (Intel Xeon Gold 6348, 2.60 GHz)

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</table>

**Platform Notes (Continued)**

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

run-level 3 May 5 19:25

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 C6520
Product Family: PowerEdge
Serial: SDPT078

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

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) |

(Continued on next page)
Dell Inc.  
PowerEdge C6520 (Intel Xeon Gold 6348, 2.60 GHz)  

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

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PowerEdge C6520 (Intel Xeon Gold 6348, 2.60 GHz)  

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**Compiler Version Notes (Continued)**  
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 | 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  

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

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### Base Compiler Invocation (Continued)

Fortran benchmarks:
ifort

### Base Portability Flags

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<th>Forth benchmarks:</th>
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<tbody>
<tr>
<td>ifort</td>
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<tr>
<td>600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64</td>
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### Base Optimization Flags

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<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>-DSPEC_OPENMP -std=c11 -m64 -fopenmp -Wl,-z,muldefs -xCORE-AVX512</td>
</tr>
<tr>
<td>-O3 -ffast-math</td>
</tr>
<tr>
<td>-ipo</td>
</tr>
<tr>
<td>-nostandard-realloc-lhs -align array32byte -auto</td>
</tr>
<tr>
<td>-mbranches-within-32B-boundaries</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Fortran benchmarks:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-m64 -xCORE-AVX512 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4</td>
</tr>
<tr>
<td>-mbranches-within-32B-boundaries</td>
</tr>
</tbody>
</table>
Dell Inc.
PowerEdge C6520 (Intel Xeon Gold 6348, 2.60 GHz)

SPECspeed®2017_int_base = 11.9
SPECspeed®2017_int_peak = 12.2

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

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
   -fprofile-use=default.profdata(pass 2) -xCORE-AVX512 -flto
   -Ofast(pass 2) -O3 -ffast-math -qopt-mem-layout-trans=4
   -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.profdata(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 -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)
SPEC CPU®2017 Integer Speed Result

Dell Inc.
PowerEdge C6520 (Intel Xeon Gold 6348, 2.60 GHz)

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SPECspeed®2017_int_base = 11.9
SPECspeed®2017_int_peak = 12.2

CPU2017 License: 55
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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

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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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