**SPEC CPU®2017 Integer Speed Result**

Dell Inc.  
PowerEdge C6520 (Intel Xeon Platinum 8358P, 2.60 GHz)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base = 11.7</th>
<th>SPECspeed®2017_int_peak = 11.9</th>
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**CPU2017 License:** 55  
**Test Date:** May-2021  
**Hardware Availability:** Apr-2021

**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Software Availability:** Dec-2020

---

| Threads | 0 | 1.00 | 3.00 | 5.00 | 7.00 | 9.00 | 11.0 | 13.0 | 15.0 | 17.0 | 19.0 | 21.0 | 23.0 | 25.0 | 27.0 | 29.0 | 31.0 | 33.0 | 35.0 | 37.0 | 39.0 | 41.0 |
|---------|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 600.perlbench_s 64 | 8.12 | 10.7 |
| 602.gcc_s 64 | 11.1 |
| 605.mcf_s 64 | 19.4 |
| 620.omnetpp_s 64 | 11.8 |
| 623.xalancbmk_s 64 | 13.2 |
| 625.x264_s 64 | 16.7 |
| 631.deepsjeng_s 64 | 5.77 |
| 641.leela_s 64 | 4.71 |
| 648.exchange2_s 64 | 18.7 |
| 657.xz_s 64 | 24.0 |

---

**Hardware**

- **CPU Name:** Intel Xeon Platinum 8358P  
- **Max MHz:** 3400  
- **Nominal:** 2600  
- **Enabled:** 64 cores, 2 chips  
- **Orderable:** 1.2 chips  
- **Cache L1:** 32 KB I + 48 KB D on chip per core  
- **Cache L2:** 1.25 MB I+D on chip per core  
- **Cache L3:** 48 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)  
- **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;  
- **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.
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Results Table

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SPECspeed®2017_int_base = 11.7
SPECspeed®2017_int_peak = 11.9

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"
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 Platinum 8358P, 2.60 GHz)

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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

---

### 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 Tue May 4 14:16:56 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](https://www.spec.org/cpu2017/Docs/config.html#sysinfo)

From /proc/cpuinfo
- model name : Intel(R) Xeon(R) Platinum 8358P CPU @ 2.60GHz
- 2 "physical id"s (chips)
- 64 "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 : 32
- siblings : 32
- 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 28 29 30 31
- 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 28 29 30 31

(Continued on next page)
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### Platform Notes (Continued)

From `lscpu`:
- **Architecture:** x86_64
- **CPU op-mode(s):** 32-bit, 64-bit
- **Byte Order:** Little Endian
- **CPU(s):** 64
- **On-line CPU(s) list:** 0-63
- **Thread(s) per core:** 1
- **Core(s) per socket:** 32
- **Socket(s):** 2
- **NUMA node(s):** 2
- **Vendor ID:** GenuineIntel
- **CPU family:** 6
- **Model:** 106
- **Model name:** Intel(R) Xeon(R) Platinum 8358P CPU @ 2.60GHz
- **Stepping:** 6
- **CPU MHz:** 3300.000
- **BogoMIPS:** 5200.00
- **Virtualization:** VT-x
- **L1d cache:** 48K
- **L1i cache:** 32K
- **L2 cache:** 1280K
- **L3 cache:** 49152K
- **NUMA node0 CPU(s):** 0-31
- **NUMA node1 CPU(s):** 32-63

**Flags:**
- `fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 cli flush 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 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 invpcid_single ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bm1 hle avx2 smep bmi2 erts invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha归纳 avx512bw

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 28 29 30 31
node 0 size: 515455 MB

(Continued on next page)
Dell Inc.  
PowerEdge C6520 (Intel Xeon Platinum 8358P, 2.60 GHz)

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Platform Notes (Continued)

node 0 free: 505491 MB  
node 1 cpus: 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63  
node 1 size: 516086 MB  
node 1 free: 515765 MB  
node distances:  
  node 0 1  
  0: 10 20  
  1: 20 10

From /proc/meminfo  
MemTotal: 1056298740 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

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

CVE-2017-5715 (Spectre variant 2): sanitization
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 4 14:09
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)
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Test Sponsor: Dell Inc.
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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
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------------------------------------------------------------------------------
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

(Continued on next page)
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### Base Compiler Invocation (Continued)

C++ benchmarks:

- icpx

Fortran benchmarks:

- ifort

### Base Portability Flags

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<td>600.perlbench_s</td>
<td>-DSPEC_LP64 -DSPEC_LINUX_X64</td>
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<td>657.xz_s</td>
<td>-DSPEC_LP64</td>
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</table>

### Base Optimization Flags

#### C benchmarks:

-DSPEC_OPENMP -std=c11 -m64 -flopenmp -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
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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.profdatalib -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)
Dell Inc.  
PowerEdge C6520 (Intel Xeon Platinum 8358P, 2.60 GHz)  

SPEC CPU®2017 Integer Speed Result  

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SPECspeed®2017_int_base = 11.7  
SPECspeed®2017_int_peak = 11.9  

Dell Inc.  
GHz)  

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

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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