**SPEC CPU®2017 Integer Speed Result**

**Dell Inc.**

PowerEdge C6520 (Intel Xeon Platinum 8352S, 2.20 GHz)

---

**SPECspeed®2017_int_base = 11.6**

**SPECspeed®2017_int_peak = 11.9**

---

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

---

**Threads**

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base (11.6)</th>
<th>SPECspeed®2017_int_peak (11.9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threads</td>
<td></td>
</tr>
<tr>
<td>600.perlbench_s 64</td>
<td></td>
</tr>
<tr>
<td>602.gcc_s 64</td>
<td></td>
</tr>
<tr>
<td>605.mcf_s 64</td>
<td></td>
</tr>
<tr>
<td>620.omnetpp_s 64</td>
<td></td>
</tr>
<tr>
<td>623.xalancbmk_s 64</td>
<td></td>
</tr>
<tr>
<td>625.x264_s 64</td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s 64</td>
<td></td>
</tr>
<tr>
<td>641.leela_s 64</td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s 64</td>
<td></td>
</tr>
<tr>
<td>657.xz_s 64</td>
<td></td>
</tr>
</tbody>
</table>

---

**Hardware**

<table>
<thead>
<tr>
<th>CPU Name: Intel Xeon Platinum 8352S</th>
<th>OS: Red Hat Enterprise Linux 8.3 (Ootpa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz: 3400</td>
<td>4.18.0-240.el8.x86_64</td>
</tr>
<tr>
<td>Nominal: 2200</td>
<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>
</tr>
<tr>
<td>Enabled: 64 cores, 2 chips</td>
<td>Parallel: Yes</td>
</tr>
<tr>
<td>Orderable: 1.2 chips</td>
<td>Firmware: Version 1.1.2 released Apr-2021</td>
</tr>
<tr>
<td>Cache L1: 32 KB I + 48 KB D on chip per core</td>
<td>File System: tmpfs</td>
</tr>
<tr>
<td>L2: 1.25 MB I+D on chip per core</td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>L3: 48 MB I+D on chip per chip</td>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>Other: None</td>
<td>Peak Pointers: 64-bit</td>
</tr>
<tr>
<td>Memory: 512 GB (16 x 32 GB 2Rx8 PC4-3200AA-R)</td>
<td>Other: jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td>Storage: 125 GB on tmpfs</td>
<td>Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.</td>
</tr>
<tr>
<td>Other: None</td>
<td></td>
</tr>
</tbody>
</table>

---

**Software**

---
Dell Inc.
PowerEdge C6520 (Intel Xeon Platinum 8352S, 2.20 GHz)

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>64</td>
<td>258</td>
<td>6.89</td>
<td>252</td>
<td>7.03</td>
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<td>602.gcc_s</td>
<td>64</td>
<td>369</td>
<td>10.8</td>
<td>374</td>
<td>10.6</td>
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<td>605.mcf_s</td>
<td>64</td>
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<td>19.5</td>
<td>245</td>
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<tr>
<td>620.omnetpp_s</td>
<td>64</td>
<td>137</td>
<td>11.9</td>
<td>139</td>
<td>11.7</td>
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<tr>
<td>623.xalancbmk_s</td>
<td>64</td>
<td>108</td>
<td>13.2</td>
<td>107</td>
<td>13.2</td>
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<tr>
<td>625.x264_s</td>
<td>64</td>
<td>106</td>
<td>16.7</td>
<td>106</td>
<td>16.7</td>
<td></td>
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<tr>
<td>631.deepsjeng_s</td>
<td>64</td>
<td>248</td>
<td>5.77</td>
<td>248</td>
<td>5.77</td>
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<td></td>
<td></td>
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<tr>
<td>641.leela_s</td>
<td>64</td>
<td>364</td>
<td>4.69</td>
<td>362</td>
<td>4.72</td>
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<tr>
<td>648.exchange2_s</td>
<td>64</td>
<td>157</td>
<td>18.7</td>
<td>156</td>
<td>18.8</td>
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<tr>
<td>657.xz_s</td>
<td>64</td>
<td>262</td>
<td>23.6</td>
<td>260</td>
<td>23.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SPECspeed®2017_int_base = 11.6
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"
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

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)
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 e8664e66d2d7080afeea89d4b38e2f1c
running on localhost.localdomain Tue May  4 05:38:02 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) Platinum 8352S CPU @ 2.20GHz
- 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 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 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)
SPEC CPU®2017 Integer Speed Result

Dell Inc.
PowerEdge C6520 (Intel Xeon Platinum 8352S, 2.20 GHz)

SPECspeed®2017_int_base = 11.6
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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

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 8352S CPU @ 2.20GHz
Stepping: 6
CPU MHz: 1967.195
BogoMIPS: 4400.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 49152K
NUMA node0 CPU(s):
0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48,50,52,54,56,58
,60,62
NUMA node1 CPU(s):
1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,53,55,57,59
,61,63
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov

From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
physical chip.

/proc/cpuinfo cache data
cache size : 49152 KB

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

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 56 58 60 62
node 0 size: 243401 MB
node 0 free: 250531 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 57 59 61 63
node 1 size: 244856 MB
node 1 free: 254734 MB
node distances:
node  0   1
  0: 10 20
  1: 20 10

From /proc/meminfo
MemTotal: 527806188 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="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

(Continued on next page)
Dell Inc.  
PowerEdge C6520 (Intel Xeon Platinum 8352S, 2.20 GHz)  

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Copyright 2017-2021 Standard Performance Evaluation Corporation  

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**Platform Notes (Continued)**

- **CVE-2017-5753 (Spectre variant 1):** Mitigation: usercopy/swapgs barriers and __user pointer sanitation  
- **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 May 4 05:35**

**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

**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:**

- 6x 00AD063200AD HMA84GR7CJR4N-XN 32 GB 2 rank 3200  
- 10x 00AD063200AD HMAA4GR7AJR8N-XN 32 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.

(Continued on next page)
## Compiler Version Notes (Continued)

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<thead>
<tr>
<th>Compiler</th>
<th>Test Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(base, peak)</td>
</tr>
<tr>
<td></td>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</td>
</tr>
<tr>
<td></td>
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</tbody>
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</tbody>
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<table>
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<tr>
<th>C++</th>
<th>620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)</th>
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<table>
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<tr>
<th>Fortran</th>
<th>648.exchange2_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R)</td>
<td>Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
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Base Compiler Invocation
C benchmarks:
ic

C++ benchmarks:
icx

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/
-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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CPU2017 License: 55  
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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.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)
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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.

Tested with SPEC CPU®2017 v1.1.7 on 2021-05-04 06:38:02-0400.
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