### SPEC CPU®2017 Integer Speed Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL580 Gen10  
(2.50 GHz, Intel Xeon Gold 5215L)  

**CPU2017 License:** 3  
**Test Sponsor:** HPE  
**Tested by:** HPE  

<table>
<thead>
<tr>
<th>Tests</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>5.90</td>
<td>Not Run</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>7.98</td>
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</tr>
<tr>
<td>605.mcf_s</td>
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<tr>
<td>620.omnetpp_s</td>
<td>5.66</td>
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</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>10.8</td>
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</tr>
<tr>
<td>625.x264_s</td>
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<tr>
<td>631.deepsjeng_s</td>
<td>4.74</td>
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<tr>
<td>641.leela_s</td>
<td>4.14</td>
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<tr>
<td>648.exchange2_s</td>
<td>12.2</td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td>18.9</td>
<td></td>
</tr>
</tbody>
</table>

**Software**  
**OS:** SUSE Linux Enterprise Server 15 (x86_64)  
**Kernel:** 4.12.14-23-default  
**Compiler:** C/C++: Version 19.0.2.187 of Intel C/C++  
**Compiler Build:** 20190117 for Linux;  
**Fortran:** Version 19.0.2.187 of Intel Fortran  
**Compiler Build:** 20190117 for Linux  
**Parallel:** Yes  
**Firmware:** HPE BIOS Version U34 05/21/2019 released Apr-2019  
**File System:** xfs  
**System State:** Run level 3 (multi-user)  
**Base Pointers:** 64-bit  
**Peak Pointers:** Not Applicable  
**Other:** jemalloc memory allocator V5.0.1  
**Power Management:** --

**Hardware**  
**CPU Name:** Intel Xeon Gold 5215L  
**Max MHz:** 3400  
**Nominal:** 2500  
**Enabled:** 40 cores, 4 chips  
**Orderable:** 1, 2, 3, 4 chip(s)  
**Cache L1:** 32 KB I + 32 KB D on chip per core  
**L2:** 1 MB I+D on chip per core  
**L3:** 13.75 MB I+D on chip per chip  
**Other:** None  
**Memory:** 768 GB (24 x 32 GB 2Rx8 PC4-2666V-R)  
**Storage:** 1 x 960 GB SAS SSD, RAID 0  
**Other:** None  

**Test Date:** Aug-2018  
**Oak Date:** Apr-2019  
**Test Sponsor:** HPE  
**Tested by:** HPE  

**Software Availability:** Feb-2019  
**Hardware Availability:** Apr-2019  
**Test Date:** Aug-2018  
**Test Sponsor:** HPE  
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SPEC CPU®2017 Integer Speed Result

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SPECspeed®2017_int_base = 8.43
SPECspeed®2017_int_peak = Not Run

CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<tbody>
<tr>
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</table>

SPECspeed®2017_int_base = 8.43
SPECspeed®2017_int_peak = Not Run

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"
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

General Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2017_u2/lib/ia32:/home/cpu2017_u2/lib/intel64:
/home/cpu2017_u2/je5.0.1-32:/home/cpu2017_u2/je5.0.1-64"
OMP_STACKSIZE = "192M"
Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM memory using Redhat Enterprise Linux 7.5
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.
**Hewlett Packard Enterprise**

**(Test Sponsor: HPE)**

ProLiant DL580 Gen10

**(2.50 GHz, Intel Xeon Gold 5215L)**

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**CPU2017 License:** 3  
**Test Date:** Aug-2018  
**Tested by:** HPE

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**Platform Notes**

- BIOS Configuration:
  - Hyper-Threading set to Disabled
  - Thermal Configuration set to Maximum Cooling
  - Memory Patrol Scrubbing set to Disabled
  - LLC Prefetch set to Enabled
  - LLC Dead Line Allocation set to Disabled
  - Enhanced Processor Performance set to Enabled
  - Workload Profile set to General Peak Frequency Compute
  - Minimum Processor Idle Power Core C-State set to C1E State
  - Energy/Performance Bias set to Balanced Power
  - Workload Profile set to Custom
  - Numa Group Size Optimization set to Flat
  - Advanced Memory Protection set to Advanced ECC

- Sysinfo program `/home/cpu2017_u2/bin/sysinfo`
  
- Rev: r5974 of 2018-05-19 9bce8f2999c33d61f64985e45859ea9
  
- running on linux-sypg Wed Aug 29 22:11:09 2018

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**From /proc/cpuinfo**

- model name: Intel(R) Xeon(R) Gold 5215L CPU @ 2.50GHz
- 4 "physical id"s (chips)
- 40 "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: 10
  - siblings: 10
  - physical 0: cores 0 1 2 3 4 8 9 10 11 12
  - physical 1: cores 0 1 2 3 4 8 9 10 11 12
  - physical 2: cores 0 1 2 3 4 8 9 10 11 12
  - physical 3: cores 0 1 2 3 4 8 9 10 11 12

---

**From lscpu:**

- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit
- Byte Order: Little Endian
- CPU(s): 40
- On-line CPU(s) list: 0-39
- Thread(s) per core: 1
- Core(s) per socket: 10
- Socket(s): 4
- NUMA node(s): 4
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 85

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

Model name:          Intel(R) Xeon(R) Gold 5215L CPU @ 2.50GHz
Stepping:            6
CPU MHZ:             2500.000
BogoMIPS:            5000.00
Virtualization:      VT-x
L1d cache:           32K
L1i cache:           32K
L2 cache:            1024K
L3 cache:            14080K
NUMA node0 CPU(s):   0-9
NUMA node1 CPU(s):   10-19
NUMA node2 CPU(s):   20-29
NUMA node3 CPU(s):   30-39
Flags:               fpu vme de pse tsc msr pae 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
aperfmxprof tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3
sdbg fma cx16 xtrm pdcm pclid 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 cdp_l3 invpcid_single intel_puin mba tpr_shadow vmni flexpriority ept
vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdt_a
avx512f avx512dq rdseed adx clflushopt clwb intel_pt avx512cd avx512bw avx512vl
xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_ocppc1_llc cqm_mbb_total cqm_mbb_local
ibpb ibrs stibp dtherm ida arat pln pts pku ospke avx512_vnni arch_capabilities ssbd

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

   available: 4 nodes (0-3)
   node 0 cpus: 0 1 2 3 4 5 6 7 8 9
   node 0 size: 193120 MB
   node 0 free: 192823 MB
   node 1 cpus: 10 11 12 13 14 15 16 17 18 19
   node 1 size: 193504 MB
   node 1 free: 193176 MB
   node 2 cpus: 20 21 22 23 24 25 26 27 28 29
   node 2 size: 193533 MB
   node 2 free: 193166 MB
   node 3 cpus: 30 31 32 33 34 35 36 37 38 39
   node 3 size: 193532 MB
   node 3 free: 193391 MB
   node distances:
   node 0 1 2 3
   0: 10 21 21 21
   1: 21 10 21 21

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Hardware Availability: Apr-2019  
Software Availability: Feb-2019

Platform Notes (Continued)

2:  21  21  10  21  
3:  21  21  21  10

From /proc/meminfo
MemTotal: 792260564 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
os-release:
NAME="SLES"
VERSION="15"
VERSION_ID="15"
PRETTY_NAME="SUSE Linux Enterprise Server 15"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15"

uname -a:
Linux linux-sypg 4.12.14-23-default #1 SMP Tue May 29 21:04:44 UTC 2018 (cd0437b)
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2017-5754 (Meltdown): Not affected
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted Speculation, IBPB, IBRS_PW

run-level 3 Aug 29 22:09

SPEC is set to: /home/cpu2017_u2
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda1 xfs 894G 79G 816G 9% /home

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.

BIOS HPE U34 05/21/2019
Memory:
24x UNKNOWN NOT AVAILABLE
24x UNKNOWN NOT AVAILABLE 32 GB 2 rank 2666

(End of data from sysinfo program)
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Compiler Version Notes

==============================================================================
C       | 600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base)
       | 625.x264_s(base) 657.xz_s(base)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.2.187 Build 20190117  
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
==============================================================================
C++     | 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
       | 641.leela_s(base)
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.2.187 Build 20190117  
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
==============================================================================
Fortran | 648.exchange2_s(base)
==============================================================================
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)  
64, Version 19.0.2.187 Build 20190117  
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:  
icc -m64 -std=c11

C++ benchmarks:  
icpc -m64

Fortran benchmarks:  
ifort -m64

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

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Base Portability Flags (Continued)

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:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-L/home/cpu2017_u2/je5.0.1-64/ -ljemalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

Fortran benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/HPE-ic19.0u1-flags-linux64.2019-12-10.html
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-CLX-revB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/HPE-ic19.0u1-flags-linux64.2019-12-10.xml
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-CLX-revB.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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