### SPEC CPU®2017 Integer Speed Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL360 Gen10  
(2.50 GHz, Intel Xeon Gold 5215M)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>8.40</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 3  
**Test Sponsor:** HPE  
**Tested by:** HPE  
**Test Date:** May-2019  
**Hardware Availability:** Apr-2019  
**Software Availability:** Feb-2019

**Threads**

<table>
<thead>
<tr>
<th>SpecID</th>
<th>Description</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>perlbench_s</td>
<td>40</td>
<td>8.17</td>
<td></td>
</tr>
<tr>
<td>602</td>
<td>gcc_s</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>605</td>
<td>mcf_s</td>
<td>40</td>
<td>11.2</td>
<td></td>
</tr>
<tr>
<td>620</td>
<td>omnetpp_s</td>
<td>40</td>
<td>5.64</td>
<td></td>
</tr>
<tr>
<td>623</td>
<td>xalancbmk_s</td>
<td>40</td>
<td></td>
<td>10.9</td>
</tr>
<tr>
<td>625</td>
<td>x264_s</td>
<td>40</td>
<td></td>
<td>11.8</td>
</tr>
<tr>
<td>631</td>
<td>deepsjeng_s</td>
<td>40</td>
<td></td>
<td>4.93</td>
</tr>
<tr>
<td>641</td>
<td>leela_s</td>
<td>40</td>
<td>4.14</td>
<td></td>
</tr>
<tr>
<td>648</td>
<td>exchange2_s</td>
<td>40</td>
<td></td>
<td>12.1</td>
</tr>
<tr>
<td>657</td>
<td>xz_s</td>
<td>40</td>
<td></td>
<td>18.7</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon Gold 5215M  
- **Max MHz:** 3400  
- **Nominal:** 2500  
- **Enabled:** 20 cores, 2 chips, 2 threads/core  
- **Orderable:** 1, 2 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  
- **Memory:** 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)  
- **Storage:** 1 x 400 GB SAS SSD, RAID 0  
- **Other:** None  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** Not Applicable  
- **Power Management:** --

**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 U32 02/02/2019 released Apr-2019  
- **Other:** jemalloc memory allocator V5.0.1
## SPEC CPU®2017 Integer Speed Result

### Hewlett Packard Enterprise

**Test Sponsor:** HPE  
**ProLiant DL360 Gen10**  
**(2.50 GHz, Intel Xeon Gold 5215M)**

**CPU2017 License:** 3  
**Test Date:** May-2019

**Test Sponsor:** HPE  
**Hardware Availability:** Apr-2019

**Tested by:** HPE  
**Software Availability:** Feb-2019

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600 perkbench_s</td>
<td>40</td>
<td>303</td>
<td>5.86</td>
<td>307</td>
<td>5.79</td>
<td>302</td>
<td>5.88</td>
</tr>
<tr>
<td>602 gcc_s</td>
<td>40</td>
<td>488</td>
<td>8.15</td>
<td>486</td>
<td>8.19</td>
<td>487</td>
<td>8.17</td>
</tr>
<tr>
<td>605 mcf_s</td>
<td>40</td>
<td>423</td>
<td>11.2</td>
<td>422</td>
<td>11.2</td>
<td>423</td>
<td>11.2</td>
</tr>
<tr>
<td>620 omnetpp_s</td>
<td>40</td>
<td>292</td>
<td>5.59</td>
<td>287</td>
<td>5.69</td>
<td>289</td>
<td>5.64</td>
</tr>
<tr>
<td>623 xalancbmk_s</td>
<td>40</td>
<td>131</td>
<td>10.9</td>
<td>130</td>
<td>10.9</td>
<td>131</td>
<td>10.8</td>
</tr>
<tr>
<td>625 x264_s</td>
<td>40</td>
<td>150</td>
<td>11.7</td>
<td>150</td>
<td>11.8</td>
<td>150</td>
<td>11.8</td>
</tr>
<tr>
<td>631 deepsjeng_s</td>
<td>40</td>
<td>297</td>
<td>4.83</td>
<td>296</td>
<td>4.83</td>
<td>297</td>
<td>4.83</td>
</tr>
<tr>
<td>641 leela_s</td>
<td>40</td>
<td>413</td>
<td>4.13</td>
<td>412</td>
<td>4.14</td>
<td>412</td>
<td>4.14</td>
</tr>
<tr>
<td>648 exchange2_s</td>
<td>40</td>
<td>240</td>
<td>12.2</td>
<td>242</td>
<td>12.1</td>
<td>242</td>
<td>12.1</td>
</tr>
<tr>
<td>657 xz_s</td>
<td>40</td>
<td>331</td>
<td>18.7</td>
<td>331</td>
<td>18.7</td>
<td>331</td>
<td>18.7</td>
</tr>
</tbody>
</table>

**SPECspeed®2017_int_base = 8.40**  
**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.

<table>
<thead>
<tr>
<th>Platform Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOS Configuration:</td>
</tr>
<tr>
<td>Thermal Configuration set to Maximum Cooling</td>
</tr>
<tr>
<td>Memory Patrol Scrubbing set to Disabled</td>
</tr>
<tr>
<td>LLC Prefetch set to Enabled</td>
</tr>
<tr>
<td>LLC Dead Line Allocation set to Disabled</td>
</tr>
<tr>
<td>Enhanced Processor Performance set to Enabled</td>
</tr>
<tr>
<td>Workload Profile set to General Peak Frequency Compute</td>
</tr>
<tr>
<td>Minimum Processor Idle Power Core C-State set to C1E State</td>
</tr>
<tr>
<td>Energy/Performance Bias set to Balanced Power</td>
</tr>
<tr>
<td>Workload Profile set to Custom</td>
</tr>
<tr>
<td>Numa Group Size Optimization set to Flat</td>
</tr>
<tr>
<td>Sysinfo program /home/cpu2017_u2/bin/sysinfo</td>
</tr>
<tr>
<td>Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9</td>
</tr>
<tr>
<td>running on linux-pe3i Wed May 29 02:44:06 2019</td>
</tr>
</tbody>
</table>

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 5215M CPU @ 2.50GHz
- 2 "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 : 20
  - 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

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: 2
- Core(s) per socket: 10
- Socket(s): 2
- NUMA node(s): 2
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 85
- Model name: Intel(R) Xeon(R) Gold 5215M CPU @ 2.50GHz
- Stepping: 6
- CPU MHz: 2500.000
- BogoMIPS: 5000.00
SPEC CPU®2017 Integer Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(2.50 GHz, Intel Xeon Gold 5215M)

<table>
<thead>
<tr>
<th>CPU2017 License: 3</th>
<th>Test Date: May-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: HPE</td>
<td>Hardware Availability: Apr-2019</td>
</tr>
<tr>
<td>Tested by: HPE</td>
<td>Software Availability: Feb-2019</td>
</tr>
</tbody>
</table>

| SPECspeed®2017_int_base = 8.40 |
| SPECspeed®2017_int_peak = Not Run |

### Platform Notes (Continued)

- Virtualization: VT-x
- L1d cache: 32K
- L1i cache: 32K
- L2 cache: 1024K
- L3 cache: 14080K
- NUMA node0 CPU(s): 0-9,20-29
- NUMA node1 CPU(s): 10-19,30-39
- Flags: fpu vme de pse tsc msr pae mce 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 aperfmperf tsc_known_freq 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 cdp_l3 invpcid_single intel_patin mba tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsaves xsavec xgetbv1 xsavec xsaveopt cerebral cqm_llc cqm_occuir_llc cqm_mbm_total cqm_mbm_local ibpb ibrs stibp dtherm ida arat pin 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: 2 nodes (0-1)
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 20 21 22 23 24 25 26 27 28 29
node 0 size: 193118 MB
node 0 free: 192554 MB
node 1 cpus: 10 11 12 13 14 15 16 17 18 19 30 31 32 33 34 35 36 37 38 39
node 1 size: 193502 MB
node 1 free: 193292 MB
node distances:
  node 0 1
  0: 10 21
  1: 21 10
```

From `/proc/meminfo`

```
MemTotal: 3959000000 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

From `/etc/*release*/` and `/etc/*version*/`

```
os-release:
  NAME="SLES"
  VERSION="15"
  VERSION_ID="15"
  PRETTY_NAME="SUSE Linux Enterprise Server 15"
```

(Continued on next page)
Platform Notes (Continued)

ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15"

uname -a:
    Linux linux-pe3i 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_FW

run-level 3 May 29 02:41

SPEC is set to: /home/cpu2017_u2
    Filesystem Type Size Used Avail Use% Mounted on
    /dev/sda3 xfs 476G 42G 435G 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 U32 02/02/2019
    Memory:
        24x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2666

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
<table>
<thead>
<tr>
<th>C</th>
<th>600.perlbench_s(base)</th>
<th>602.gcc_s(base)</th>
<th>605.mcf_s(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>625.x264_s(base)</td>
<td>657.xz_s(base)</td>
<td></td>
</tr>
</tbody>
</table>

==============================================================================

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.

==============================================================================

<table>
<thead>
<tr>
<th>C++</th>
<th>620.omnetpp_s(base)</th>
<th>623.xalancbmk_s(base)</th>
<th>631.deepsjeng_s(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>641.leela_s(base)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Continued on next page)
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL360 Gen10  
(2.50 GHz, Intel Xeon Gold 5215M)  

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>8.40</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

---

### Compiler Version Notes (Continued)

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  
602.gcc_s: -DSPEC_LP64  
605.mcf_s: -DSPEC_LP64  
620.omnetpp_s: -DSPEC_LP64  
623.xalanchmk_s: -DSPEC_LP64  
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
SPECSpeed\textsuperscript{2017\hspace{1pt}int\hspace{1pt}base} = 8.40
SPECSpeed\textsuperscript{2017\hspace{1pt}int\hspace{1pt}peak} = \text{Not Run}

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(2.50 GHz, Intel Xeon Gold 5215M)

CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE
Test Date: May-2019
Hardware Availability: Apr-2019
Software Availability: Feb-2019

Base Optimization Flags

C benchmarks:
-\texttt{-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -qopenmp -DSPEC\_OPENMP}
-\texttt{-L/home/cpu2017\_u2/je5.0.1-64/ \_ljemalloc}

C++ benchmarks:
-\texttt{-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4}
-\texttt{-L/usr/local/IntelCompiler19/compilers\_and\_libraries\_2019.1.144/linux/compiler/lib/intel64\_lqkmalloc}

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

The flags files that were used to format this result can be browsed at
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-Platform-Flags-Intel-V1.2-CLX-revB.xml
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2019-04-03.xml

SPEC CPU and SPECspeed are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU\textsuperscript{\textcopyright2017 v1.0.5 on 2019-05-29 02:44:06-0400.}
Originally published on 2019-11-04.