# SPEC® CPU2017 Integer Speed Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
Synergy 480 Gen10  
(2.00 GHz, Intel Xeon Gold 6138)

<table>
<thead>
<tr>
<th>Tests</th>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>8.52</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 3  
**Test Sponsor:** HPE  
**Tested by:** HPE  
**Test Date:** Nov-2017  
**Hardware Availability:** Oct-2017  
**Software Availability:** Sep-2017

## Hardware

- **CPU Name:** Intel Xeon Gold 6138  
- **Max MHz.:** 3700  
- **Nominal:** 2000  
- **Enabled:** 40 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:** 27.5 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)  
- **Storage:** 1 x 960 GB SATA SSD, RAID 0  
- **Other:** None

## Software

- **OS:** SUSE Linux Enterprise Server 12 (x86_64) SP2  
- **Kernel:** 4.4.21-69-default  
- **Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++  
- **Compiler for Linux:**  
- **Fortran:** Version 18.0.0.128 of Intel Fortran  
- **Compiler for Linux:**  
- **Parallel:** Yes  
- **Firmware:** HPE BIOS Version I42 released Oct-2017 (tested with I42 9/27/2017)  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** Not Applicable  
- **Other:** jemalloc: jemalloc memory allocator library V5.0.1;  
  jemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets;  
  jemalloc: built with the RedHat Enterprise 7.4, and the system compiler gcc 4.8.5;  
  jemalloc: sources available from jemalloc.net or releases
## SPEC CPU2017 Integer Speed Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
Synergy 480 Gen10  
(2.00 GHz, Intel Xeon Gold 6138)

**SPECspeed2017_int_base = 8.52**

**SPECspeed2017_int_peak = Not Run**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench_s</td>
<td>80</td>
<td>292</td>
<td>6.07</td>
<td>293</td>
<td>6.06</td>
<td>292</td>
<td>6.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gcc_s</td>
<td>80</td>
<td>451</td>
<td>8.83</td>
<td>455</td>
<td>8.75</td>
<td>455</td>
<td>8.74</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mcf_s</td>
<td>80</td>
<td>425</td>
<td>11.1</td>
<td>428</td>
<td>11.0</td>
<td>436</td>
<td>10.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>omnetpp_s</td>
<td>80</td>
<td>293</td>
<td>5.57</td>
<td>318</td>
<td>5.13</td>
<td>297</td>
<td>5.49</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>xalancbmk_s</td>
<td>80</td>
<td>154</td>
<td>9.19</td>
<td>153</td>
<td>9.26</td>
<td>153</td>
<td>9.27</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x264_s</td>
<td>80</td>
<td>157</td>
<td>11.2</td>
<td>157</td>
<td>11.2</td>
<td>157</td>
<td>11.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>deepsjeng_s</td>
<td>80</td>
<td>281</td>
<td>5.10</td>
<td>281</td>
<td>5.10</td>
<td>280</td>
<td>5.11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>leela_s</td>
<td>80</td>
<td>398</td>
<td>4.28</td>
<td>399</td>
<td>4.27</td>
<td>402</td>
<td>4.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>exchange2_s</td>
<td>80</td>
<td>221</td>
<td>13.3</td>
<td>220</td>
<td>13.4</td>
<td>220</td>
<td>13.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>xz_s</td>
<td>80</td>
<td>299</td>
<td>20.6</td>
<td>298</td>
<td>20.8</td>
<td>298</td>
<td>20.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SPECspeed2017_int_base = 8.52**

**SPECspeed2017_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  
IRQ balance service was stop using "service irqbalance stop"  
Tuned-adm profile was set to Throughtput-Performance

### General Notes

Environment variables set by runcpu before the start of the run:  
KMP_AFFINITY = "granularity=fine,compact"  
LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/jre5.0.1-32:/home/cpu2017/jre5.0.1-64"  
OMP_STACKSIZE = "192M"  

Binaries compiled on a system with 1x Intel Core i7-4790K CPU + 32GB RAM memory using Redhat Enterprise Linux 7.4

### Platform Notes

BIOS Configuration:  
Thermal Configuration set to Maximum Cooling  
LLC Prefetch set to Enabled  
LLC Dead Line Allocation set to Disabled  
Memory Patrol Scrubbing set to Disabled  
Workload Profile set to General Peak Frequency Compute  
Energy/Performance Bias set to Maximum Performance

(Continued on next page)
SPEC/cpu2017 Integer Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
Synergy 480 Gen10
(2.00 GHz, Intel Xeon Gold 6138)

SPECspeed2017_int_base = 8.52
SPECspeed2017_int_peak = Not Run

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

Platform Notes (Continued)

Workload Profile set to Custom
NUMA Group Size Optimization set to Flat
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bca091c0f
running on linux-0f29 Mon Nov 20 11:35:49 2017

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 6138 CPU @ 2.00GHz
  2 "physical id"s (chips)
  80 "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 : 20
siblings : 40
physical 0: cores 0 1 2 3 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
physical 1: cores 0 1 2 3 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 80
On-line CPU(s) list: 0-79
Thread(s) per core: 2
Core(s) per socket: 20
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6138 CPU @ 2.00GHz
Stepping: 4
CPU MHz: 1995.310
BogoMIPS: 3990.62
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 28160K
NUMA node0 CPU(s): 0-9,40-49
NUMA node1 CPU(s): 10-19,50-59
NUMA node2 CPU(s): 20-29,60-69
NUMA node3 CPU(s): 30-39,70-79

(Continued on next page)
SPEC CPU2017 Integer Speed Result  
Copyright 2017-2018 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
Synergy 480 Gen10  
(2.00 GHz, Intel Xeon Gold 6138)  

SPECspeed2017_int_base =  8.52  
SPECspeed2017_int_peak =  Not Run

Platform Notes (Continued)

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 rdtsscp  
  lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc  
  aperfmperf eagerfpu 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 ida arat epb pln pts dtherm intel_pt  
  tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2  
  erms invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd  
  avx512bw avx512vl xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc  

/proc/cpuinfo cache data  
  cache size : 28160 KB

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 40 41 42 43 44 45 46 47 48 49  
node 0 size: 96348 MB  
node 0 free: 95559 MB  
node 1 cpus: 10 11 12 13 14 15 16 17 18 19 50 51 52 53 54 55 56 57 58 59  
node 1 size: 96756 MB  
node 1 free: 96061 MB  
node 2 cpus: 20 21 22 23 24 25 26 27 28 29 60 61 62 63 64 65 66 67 68 69  
node 2 size: 96756 MB  
node 2 free: 96520 MB  
node 3 cpus: 30 31 32 33 34 35 36 37 38 39 70 71 72 73 74 75 76 77 78 79  
node 3 size: 96763 MB  
node 3 free: 96520 MB  
node distances:  
  node 0 1 2 3  
  0: 10 21 31 31  
  1: 21 10 31 31  
  2: 31 31 10 21  
  3: 31 31 21 10

From /proc/meminfo  
  MemTotal: 395921388 kB  
  HugePages_Total: 0  
  Hugepagesize: 2048 kB

/usr/bin/lsb_release -d  
  SUSE Linux Enterprise Server 12 SP2

From /etc/*release*  
  SuSE-release:  
    SUSE Linux Enterprise Server 12 (x86_64)  
    VERSION = 12

(Continued on next page)
**SPEC CPU2017 Integer Speed Result**

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
Synergy 480 Gen10  
(2.00 GHz, Intel Xeon Gold 6138)

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>8.52</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

**Platform Notes (Continued)**

```
PATCHLEVEL = 2
# This file is deprecated and will be removed in a future service pack or release.
# Please check /etc/os-release for details about this release.

os-release:
  NAME="SLES"
  VERSION="12-SP2"
  VERSION_ID="12.2"
  PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
  ID="sles"
  ANSI_COLOR="0;32"
  CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
  Linux linux-0f29 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016 (9464f67)
  x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 17 16:30

SPEC is set to: /home/cpu2017
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/sda4      xfs   852G   44G  808G   6% /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 I42 09/27/2017
  Memory:
    24x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2666

(End of data from sysinfo program)
```

**Compiler Version Notes**

```
==============================================================================
CC  600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base)
   657.xz_s(base)
==============================================================================
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
   641.leela_s(base)
==============================================================================
```

(Continued on next page)
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
Synergy 480 Gen10  
(2.00 GHz, Intel Xeon Gold 6138)  

SPECspeed2017_int_base = 8.52  
SPECspeed2017_int_peak = Not Run

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

Test Date: Nov-2017  
Hardware Availability: Oct-2017  
Software Availability: Sep-2017

Compiler Version Notes (Continued)

icpc (ICC) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------
FC 648.exchange2_s(base)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
iccc

C++ benchmarks:
icpc

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:
-W1, -z, muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div  
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP  
-L/usr/local/je5.0.1-64/lib -ljemalloc

(Continued on next page)
Hewlett Packard Enterprise  
(2.00 GHz, Intel Xeon Gold 6138)

**SPECspeed2017_int_base = 8.52**

**SPECspeed2017_int_peak = Not Run**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2017 License</td>
<td>3</td>
</tr>
<tr>
<td>Test Date</td>
<td>Nov-2017</td>
</tr>
<tr>
<td>Test Sponsor: HPE</td>
<td></td>
</tr>
<tr>
<td>Hardware Availability: Oct-2017</td>
<td></td>
</tr>
<tr>
<td>Tested by: HPE</td>
<td></td>
</tr>
<tr>
<td>Software Availability: Sep-2017</td>
<td></td>
</tr>
</tbody>
</table>

**Base Optimization Flags (Continued)**

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div  
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div  
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte 
-L/usr/local/je5.0.1-64/lib -ljemalloc

**Base Other Flags**

C benchmarks:
-m64  -std=c11

C++ benchmarks:
-m64

Fortran benchmarks:
-m64

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-SKX-revG.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-SKX-revG.xml

SPEC is a registered trademark 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.