## SPEC® CPU2017 Integer Speed Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)

**Synergy 480 Gen10**  
(2.10 GHz, Intel Xeon Gold 6130)

<table>
<thead>
<tr>
<th>Program</th>
<th>Threads</th>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>32</td>
<td>6.54</td>
<td>Not Run</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>32</td>
<td>8.89</td>
<td>10.9</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>32</td>
<td>6.07</td>
<td></td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>32</td>
<td>9.38</td>
<td>11.4</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>32</td>
<td>5.09</td>
<td>13.4</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>32</td>
<td>4.30</td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>32</td>
<td></td>
<td>20.4</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td>32</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon Gold 6130  
- **Max MHz.:** 3700  
- **Nominal:** 2100  
- **Enabled:** 32 cores, 2 chips  
- **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:** 22 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 SSD SATA, 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 U32 9/29/2017)  
- **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 via jemalloc.net
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SPECspeed2017_int_base = 8.65  
SPECspeed2017_int_peak = Not Run  

Results Table  

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
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<th>Ratio</th>
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<tbody>
<tr>
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<td>6.10</td>
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<td>6.06</td>
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<td>6.07</td>
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<td>623.xalancbmk_s</td>
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<tr>
<td>625.x264_s</td>
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<td>11.4</td>
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<td>11.4</td>
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<tr>
<td>631.deepsjeng_s</td>
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<td>5.09</td>
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<td>641.leela_s</td>
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<tr>
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<td>32</td>
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<td>13.4</td>
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<tr>
<td>657.xz_s</td>
<td>32</td>
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<td>20.2</td>
<td>304</td>
<td>20.4</td>
<td>304</td>
<td>20.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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
Filesysten 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/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32"
  LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017/je5.0.1-64"
  OMP_STACKSIZE = "192M"

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

Platform Notes

BIOS Configuration:
  Intel Hyperthreading set to Disabled
  Thermal Configuration set to Maximum Cooling
  Memory Patrol Scrubbing set to Disabled
  LLC Prefetcher set to Enabled
  LLC Dead Line Allocation set to Disabled
  Stale A to S set to Disabled
  Workload Profile set to General Peak Frequency Compute

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SPECspeed2017_int_base = 8.65
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CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE
Test Date: Oct-2017
Hardware Availability: Oct-2017
Software Availability: Sep-2017

Platform Notes (Continued)

Energy/Performance Bias set to Maximum Performance
Uncore Frequency Scaling set to Auto
Workload Profile set to General Peak Frequency Compute
NUMA Group Size Optimization set to Flat

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bce091c0f
running on linux-0f29 Fri Oct 20 12:50:50 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 6130 CPU @ 2.10GHz
  2 "physical id"s (chips)
  32 "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 : 16
siblings : 16
  physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
  physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 32
On-line CPU(s) list: 0-31
Thread(s) per core: 1
Core(s) per socket: 16
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6130 CPU @ 2.10GHz
Stepping: 4
CPU MHz: 2095.082
BogoMIPS: 4190.16
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 22528K
NUMA node0 CPU(s): 0-15

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Platform Notes (Continued)

NUMA node1 CPU(s): 16-31
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 rdtscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmperf eagerfpu npi pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fма cx16 xtrr pdcm pcd cda 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 vmmi flexpriority ept vpid fsgsbase tsc_adjust bni hle avx2 smep bmi2
erms invpcid rtm cmq mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd
avx512bw avx512vl xsaveopt xsavec xgetbv1 cqm_llc cqm_occupa llc

/platform/cpulinfo cache data
  cache size : 22528 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.
available: 2 nodes (0-1)
nodе 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
node 0 size: 193117 MB
node 0 free: 192399 MB
node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
node 1 size: 193533 MB
node 1 free: 192946 MB
node distances:
node 0 1
0: 10 21
1: 21 10

From /proc/meminfo
MemTotal: 395929796 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

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

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

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**Platform Notes (Continued)**

```plaintext
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp2"
```

```plaintext
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
```

```plaintext
run-level 3 Oct 20 12:50
```

SPEC is set to: /home/cpu2017

Filesystem    Type  Size  Used Avail Use% Mounted on
/dev/sda4      xfs   852G  26G  826G   4% /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 08/19/2017
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)
==============================================================================
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
==============================================================================
FC  648.exchange2_s(base)
```

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

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

Base Compiler Invocation

C benchmarks:
icc

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

C++ benchmarks:
-W1, -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:
-W1, -z, muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div

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#### Software Availability: Sep-2017

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**Base Optimization Flags (Continued)**

Fortran benchmarks (continued):  
- `-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-SKK-revD.html](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-SKK-revD.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-SKK-revD.xml](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-SKK-revD.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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