Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant BL460c Gen10  
(2.60 GHz, Intel Xeon Gold 6240Y)

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

Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>36</td>
<td>9.27</td>
<td>Not Run</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>36</td>
<td>6.79</td>
<td>0</td>
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<tr>
<td>605.mcf_s</td>
<td>36</td>
<td>7.78</td>
<td>12.2</td>
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<tr>
<td>620.omnetpp_s</td>
<td>36</td>
<td>12.6</td>
<td>14.0</td>
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<tr>
<td>623.xalancbmk_s</td>
<td>36</td>
<td>5.44</td>
<td>14.1</td>
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<tr>
<td>625.x264_s</td>
<td>36</td>
<td>4.75</td>
<td>22.1</td>
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<tr>
<td>631.deepsjeng_s</td>
<td>36</td>
<td>14.0</td>
<td>22.1</td>
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<tr>
<td>641.leela_s</td>
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<td>22.1</td>
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<tr>
<td>648.exchange2_s</td>
<td>36</td>
<td>14.0</td>
<td>22.1</td>
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<tr>
<td>657.xz_s</td>
<td>36</td>
<td>14.1</td>
<td>22.1</td>
</tr>
</tbody>
</table>

Hardware

CPU Name: Intel Xeon Gold 6240Y  
Max MHz: 3900  
Nominal: 2600  
Enabled: 36 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: 24.75 MB I+D on chip per chip  
Other: None  
Memory: 192 GB (12 x 16 GB 2Rx8 PC4-2933Y-R)  
Storage: 1 x 400 GB SAS SSD, RAID 0  
Other: None

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 i41 02/02/2019 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: --
SPEC CPU®2017 Integer Speed Result

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(2.60 GHz, Intel Xeon Gold 6240Y)

SPECspeed®2017_int_base = 9.84
SPECspeed®2017_int_peak = Not Run

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<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
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.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Submitted_by: "Bucek, James" <james.bucek@hpe.com>
Submitted: Tue Oct 15 17:05:54 EDT 2019

(Continued on next page)
SPEC CPU®2017 Integer Speed Result
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Hewlett Packard Enterprise
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ProLiant BL460c Gen10
(2.60 GHz, Intel Xeon Gold 6240Y)

SPECspeed®2017_int_base = 9.84
SPECspeed®2017_int_peak = Not Run

General Notes (Continued)
Submission: cpu2017-20190819-16817.sub

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
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
Sysinfo program /home/cpu2017_u2/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on bl460-sles15-6244 Thu Apr 25 02:54:22 2019

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 6240C CPU @ 2.60GHz
  2 "physical id"s (chips)
  36 "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 : 18
siblings : 18
physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 36
On-line CPU(s) list: 0-35
Thread(s) per core: 1
Core(s) per socket: 18
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6

(Continued on next page)
## SPEC CPU®2017 Integer Speed Result

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<tbody>
<tr>
<td>9.84</td>
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</tr>
</tbody>
</table>

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

### Platform Notes (Continued)

- **Model:** 85  
- **Model name:** Intel(R) Xeon(R) Gold 6240C CPU @ 2.60GHz  
- **Stepping:** 6  
- **CPU MHz:** 2600.000  
- **BogoMIPS:** 5200.00  
- **Virtualization:** VT-x  
- **L1d cache:** 32K  
- **L1i cache:** 32K  
- **L2 cache:** 1024K  
- **L3 cache:** 25344K  
- **NUMA node0 CPU(s):** 0-17  
- **NUMA node1 CPU(s):** 18-35  
- **Flags:** fpu vme de pse ts mce msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush dtc acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc 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 mce msr aef pmca cmov mpx movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault ebpf cat_l3 cdp_l3 invpcid_single intel_pstate mtrr pge mca cmov popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault ebpf cat_l3 cdp_l3 invpcid_single intel_pstate mtrr pge mca cmov popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault ebpf cat_l3 cdp_l3 invpcid_single intel_pstate mtrr pge mca cmov popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault ebpf cat_l3 cdp_l3 invpcid_single intel_pstate mtrr pge mca cmov popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault ebpf cat_l3 cdp_l3 invpcid_single intel_pstate mtrr pge mca cmov popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault ebpf cat_l3 cdp_l3 invpcid_single intel_pstate mtrr pge mca cmov popcnt tsc

```
/proc/cpuinfo cache data  
cache size : 25344 KB
```

- **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 10 11 12 13 14 15 16 17  
  node 0 size: 96321 MB  
  node 0 free: 95878 MB  
  node 1 cpus: 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35  
  node 1 size: 96763 MB  
  node 1 free: 96427 MB  
  node distances:  
  node 0 1  
  0: 10 21  
  1: 21 10

- **From /proc/meminfo**  
  MemTotal: 197718704 KB  
  HugePages_Total: 0  
  Hugepagesize: 4096 KB

- **From /etc/*release* /etc/*version*
## SPEC CPU®2017 Integer Speed Result

### Platform Notes (Continued)

```
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 bl460-sles15-6244 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 Apr 25 02:53

SPEC is set to: /home/cpu2017_u2
```

**Filesystem**

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda3</td>
<td>xfs</td>
<td>144G</td>
<td>110G</td>
<td>35G</td>
<td>77%</td>
<td>/home</td>
</tr>
</tbody>
</table>

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 I41 02/02/2019
**Memory:**
- 4x UNKNOWN NOT AVAILABLE
- 12x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2933

(End of data from sysinfo program)

The marketing name for the processor in this result, which appears in the CPU name and hardware model areas, is different from sysinfo because a pre-production processor was used. The pre-production processor differs from the production processor in name only.

## Compiler Version Notes

```
C       | 600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base)
        | 625.x264_s(base) 657.xz_s(base)
```

(Continued on next page)
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SPECspeed®2017_int_peak = Not Run

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.

------------------------------------------------------------------------------
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_LINUX_X64  
602.gcc_s: -DSPEC_LINUX
605.mc1_s: -DSPEC_LINUX
620.omnetpp_s: -DSPEC_LINUX
623.xalancbmk_s: -DSPEC_LINUX
625.x264_s: -DSPEC_LINUX
631.deepsjeng_s: -DSPEC_LINUX

(Continued on next page)
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Test Date: Apr-2019
Hardware Availability: Apr-2019
Software Availability: Feb-2019

**Base Portability Flags (Continued)**

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-revB.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-revB.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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