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

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

<table>
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<th>Threads</th>
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<tr>
<td>603.bwaves_s</td>
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<tr>
<td>607.cactuBSSN_s</td>
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<tr>
<td>619.lbm_s</td>
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<tr>
<td>621.wrf_s</td>
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<tr>
<td>627.cam4_s</td>
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<tr>
<td>628.pop2_s</td>
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<tr>
<td>638.imagick_s</td>
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<tr>
<td>644.nab_s</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
</tr>
<tr>
<td>654.roms_s</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: None
Power Management: --
Hewlett Packard Enterprise
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Results Table

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<th>Seconds</th>
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<td>137</td>
<td>115</td>
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</tbody>
</table>

SPECspeed®2017_fp_base = 129
SPECspeed®2017_fp_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=core,compact"
  LD_LIBRARY_PATH = "/home/cpu2017_u2/lib/ia32:/home/cpu2017_u2/lib/intel64"
  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.

Submitted_by: "Bucek, James" <james.bucek@hpe.com>
Submitted: Tue Oct 15 17:05:54 EDT 2019
Submission: cpu2017-20190819-16816.sub
### SPEC CPU®2017 Floating Point Speed Result

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

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

#### 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  
- 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 Wed Apr 24 20:56:41 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](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
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
```

(Continued on next page)
Hewlett Packard Enterprise

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SPECspeed®2017_fp_base = 129

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Test Date: Apr-2019
Hardware Availability: Apr-2019
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Platform Notes (Continued)

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 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 cpuid
aperfmpref 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_puin mba tpr_shadow vmmi flexpriority ept
vpid fsgsbase tsc_adjust bmler hle avx2 smep bmi2 invpcid rtm cqm mpx rdtds
avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl
xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
tbp ibpb ibrs stibp dtherm ida arat pin pts pkun 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 10 11 12 13 14 15 16 17
node 0 size: 96321 MB
node 0 free: 95682 MB
node 1 cpus: 19 19 14 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
node 1 size: 96763 MB
node 1 free: 96605 MB
node distances:
node 0 1
   0: 10 21
   1: 21 10

From /proc/meminfo
MemTotal: 197718700 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"
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant BL460c Gen10
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SPECspeed®2017_fp_base = 129
SPECspeed®2017_fp_peak = Not Run

Platform Notes (Continued)

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 24 20:55

SPEC is set to: /home/cpu2017_u2
    Filesystem  Type  Size  Used Avail Use% Mounted on
    /dev/sda3    xfs   144G  101G   43G  71% /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 141 02/02/2019
Memory:
    4x UNKNOWN NOT AVAILABLE
    12x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2933

(End of data from syssinfo program)
The marketing name for the processor in this result, which appears in the CPU name and hardware model areas, is different from syssinfo because a pre-production processor was used. The pre-production processor differs from the production processor in name only.

Compiler Version Notes

==============================================================================
C            | 619.lbm_s(base) 638.imagick_s(base) 644.nab_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.
==============================================================================

(Continued on next page)
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SPECSpeed®2017_fp_peak = Not Run

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Tested by: HPE

Compiler Version Notes (Continued)

C++, C, Fortran | 607.cactuBSSN_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.

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.

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.

Fortran, C | 621.wrf_s(base) 627.cam4_s(base) 628.pop2_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

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
ifort -m64 icc -m64 -std=c11

Benchmarks using Fortran, C, and C++:
icpc -m64 icc -m64 -std=c11 ifort -m64
### SPEC CPU®2017 Floating Point Speed Result

#### Base Portability Flags

603.bwaves_s: -DSPEC_LP64  
607.cactuBSSN_s: -DSPEC_LP64  
619.hm_s: -DSPEC_LP64  
621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian  
627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG  
628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian -assume byterecl  
638.imagick_s: -DSPEC_LP64  
644.nab_s: -DSPEC_LP64  
649.fotonik3d_s: -DSPEC_LP64  
654.roms_s: -DSPEC_LP64

### Base Optimization Flags

**C benchmarks:**  

**Fortran benchmarks:**  

**Benchmarks using both Fortran and C:**  

**Benchmarks using Fortran, C, and C++:**  

---

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

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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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