**Hewlett Packard Enterprise**  
ProLiant DL360 Gen10  
(3.00 GHz, Intel Xeon Gold 6154)

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

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<thead>
<tr>
<th>SPECrate2017_fp_base</th>
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<tbody>
<tr>
<td>SPECrate2017_fp_peak</td>
<td>Not Run</td>
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</tbody>
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**Test Date:** Oct-2017  
**Hardware Availability:** Oct-2017  
**Software Availability:** Sep-2017


### Hardware

- **CPU Name:** Intel Xeon Gold 6154  
- **Max MHz.:** 3700  
- **Nominal:** 3000  
- **Enabled:** 36 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:** 24.75 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 192 GB (24 x 8 GB 2Rx8 PC4-2666V-R)  
- **Storage:** 1 x 480 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:** No  
- **Firmware:** HPE BIOS Version U32 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:** None

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**SPECrate2017_fp_base:** 196

**SPECrate2017_fp_peak:** Not Run

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**Copies (196)**  

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**SPECrate2017_fp_base (196)**

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**SPECrate2017_fp_base:** 196  
**SPECrate2017_fp_peak:** Not Run
SPEC CPU2017 Floating Point Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(3.00 GHz, Intel Xeon Gold 6154)

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

SPECrate2017_fp_base = 196
SPECrate2017_fp_peak = Not Run

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

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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"
Prior to runcpu invocation
Filesyste page cache synced and cleared with:
  sync; echo 3> /proc/sys/vm/drop_caches
runcpu command invoked through numactl i.e.:
  numactl --interleave=all runcpu <etc>
irqbalance disabled with "service irqbalance stop"
tuned profile set with "tuned-adm profile throughput-performance"
VM Dirty ratio was set to 40 using "echo 40 > /proc/sys/vm/dirty_ratio"
Numa balancing was disabled using "echo 0 > /proc/sys/kernel/numa_balancing"

General Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/specuser/cpu2017/lib/ia32:/home/specuser/cpu2017/lib/intel64"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/specuser/cpu2017/je5.0.1-32:/home/specuser/cpu2017/je5.0.1-64"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM

(Continued on next page)
SPEC CPU2017 Floating Point Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(3.00 GHz, Intel Xeon Gold 6154)

SPECrate2017_fp_base = 196
SPECrate2017_fp_peak = Not Run

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

General Notes (Continued)

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 Throughput Compute
Minimum Processor Idle Power Core C-State set to C1E
Sysinfo program /home/specuser/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618b0c091c0f
running on linux-0s5n Mon Oct 30 19:52:17 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 6154 CPU @ 3.00GHz
  2 "physical id"s (chips)
  72 "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: 36
physical 0: cores 0 1 2 3 8 9 10 11 16 17 18 19 20 24 25 26 27
physical 1: cores 0 1 2 3 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): 72
On-line CPU(s) list: 0-71
Thread(s) per core: 2
Core(s) per socket: 18
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6154 CPU @ 3.00GHz
Stepping: 4
CPU MHz: 2992.995

(Continued on next page)
### Platform Notes (Continued)

- **BogoMIPS:** 5985.99
- **Virtualization:** VT-x
- **L1d cache:** 32K
- **L1i cache:** 32K
- **L2 cache:** 1024K
- **L3 cache:** 25344K
- **NUMA node0 CPU(s):** 0-8, 36-44
- **NUMA node1 CPU(s):** 9-17, 45-53
- **NUMA node2 CPU(s):** 18-26, 54-62
- **NUMA node3 CPU(s):** 27-35, 63-71
- **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 aperfmpref 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 pni pts dtherm intel_pt tpr_shadow vt xsaveopt xsavecl xgetbv1 cqm_llc cqm_occup_llc /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:** 4 nodes (0-3)
- **node 0 cpus:** 0 1 2 3 4 5 6 7 8 36 37 38 39 40 41 42 43 44
- **node 0 size:** 47891 MB
- **node 0 free:** 41774 MB
- **node 1 cpus:** 9 10 11 12 13 14 15 16 17 45 46 47 48 49 50 51 52 53
- **node 1 size:** 48381 MB
- **node 1 free:** 44331 MB
- **node 2 cpus:** 18 19 20 21 22 23 24 25 26 54 55 56 57 58 59 60 61 62
- **node 2 size:** 48381 MB
- **node 2 free:** 44452 MB
- **node 3 cpus:** 27 28 29 30 31 32 33 34 35 63 64 65 66 67 68 69 70 71
- **node 3 size:** 48263 MB
- **node 3 free:** 44337 MB
- **node distances:**
  - 0: 10 21 31 31
  - 1: 21 10 31 31
  - 2: 31 31 10 21
  - 3: 31 31 21 10

From `/proc/meminfo`
- **MemTotal:** 197548380 KB

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(3.00 GHz, Intel Xeon Gold 6154)

**SPEC CPU2017 Floating Point Rate Result**

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

---

**SPECrate2017_fp_base = 196**

**SPECrate2017_fp_peak = Not Run**

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**Platform Notes (Continued)**

- **HugePages_Total:** 0
- **Hugepagesize:** 2048 kB

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

```bash
uname -a:
Linux linux-0s5n 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 Oct 30 15:18
```

SPEC is set to: `/home/specuser/cpu2017`

Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb3 xfs 407G 197G 211G 49% /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 SMIOS" standard.

- BIOS HPE U32 09/29/2017
- Memory:
  - 24x UNKNOWN NOT AVAILABLE 8 GB 2 rank 2666

**(End of data from sysinfo program)**

---

**Compiler Version Notes**

---

```bash
CC 519.ibm_r(base) 538.imagick_r(base) 544.nab_r(base)
```

---

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

**(Continued on next page)**
### SPEC CPU2017 Floating Point Rate Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL360 Gen10  
(3.00 GHz, Intel Xeon Gold 6154)  

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```latex
\end{verbatim}
```

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**SPECrate2017_fp_base = 196**  
**SPECrate2017_fp_peak = Not Run**

---

### Base Compiler Invocation

C benchmarks:
- icc

C++ benchmarks:
- icpc

Fortran benchmarks:
- ifort

Benchmarks using both Fortran and C:
- ifort icc

Benchmarks using both C and C++:
- icpc icc

Benchmarks using Fortran, C, and C++:
- icpc icc ifort

---

### Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64

---

### Base Optimization Flags

C benchmarks:
- xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
  -qopt-mem-layout-trans=3

C++ benchmarks:
- xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only

(Continued on next page)
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Base Optimization Flags (Continued)

C++ benchmarks (continued):
-qopt-mem-layout-trans=3

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

Benches using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

Benches using both C and C++:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

Bench using Fortran, C, and C++:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

Base Other Flags

C benchmarks:
-m64 -std=c11

C++ benchmarks:
-m64

Fortran benchmarks:
-m64

Benches using both Fortran and C:
-m64 -std=c11

Benches using both C and C++:
-m64 -std=c11

Benches using Fortran, C, and C++:
-m64 -std=c11

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-revF.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-Platform-Flags-Intel-V1.2-SEX-revF.xml

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

Tested with SPEC CPU2017 v1.0.2 on 2017-10-30 20:52:17-0400.  
Originally published on 2017-11-29.