Hewlett Packard Enterprise
Synergy 480 Gen10
(2.80 GHz, Intel Xeon Gold 6242)

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

Test Date: Apr-2019
Hardware Availability: Apr-2019
Software Availability: Feb-2019

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**Threads**

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>9.80</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon Gold 6242
- **Max MHz.:** 3900
- **Nominal:** 2800
- **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
- **Memory:** 384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R)
- **Storage:** 1 x 400 GB SAS SSD, RAID 0

**Software**

- **OS:** SUSE Linux Enterprise Server 15 (x86_64)
- **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
- **File System:** btrfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** Not Applicable
- **Other:** jemalloc memory allocator V5.0.1
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SPECspeed2017_int_base = 9.80  
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
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<tr>
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<td>14.3</td>
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<tr>
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<tr>
<td>641.leela_s</td>
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<td>657.xz_s</td>
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<td>22.2</td>
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<td></td>
<td></td>
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</table>

SPECspeed2017_int_base = 9.80  
SPECspeed2017_int_peak = Not Run

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  
### SPEC CPU2017 Integer Speed Result

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

**Test Date:** Apr-2019  
**Hardware Availability:** Apr-2019  
**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  
Enhanced Processor Performance set to Enabled  
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 sy480g10-2 Wed Apr 10 12:27:58 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 6242 CPU @ 2.80GHz
- `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 6242 CPU @ 2.80GHz
- `Stepping`: 6
- `CPU MHz`: 2800.000

(Continued on next page)
SPEC CPU2017 Integer Speed Result

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Platform Notes (Continued)

BogoMIPS: 5600.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 22528K
NUMA node0 CPU(s): 0-15
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 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
sdmb fma cx16 xtpmr 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_13 cdp_l3 invpcid_single intel_puin mba tpr_shadow vnmi flexpriority ept
vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 3dnow rtm cqm mpx rdt_a
avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl
xsavesopt xsavex xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
ibpb ibrs stibp dtherm ida arat pin pts pku ospke avx512_vnni arch_capabilities ssbd

/proc/cpuinfo 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)
  node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
  node 0 size: 193018 MB
  node 0 free: 192430 MB
  node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
  node 1 size: 193335 MB
  node 1 free: 193128 MB
  node distances:
  node  0  1
  0: 10  21
  1: 21  10

From /proc/meminfo
  MemTotal: 395626572 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
  os-release:
    NAME="SLES"
    VERSION="15"
    VERSION_ID="15"

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Platform Notes (Continued)

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 sy480g10-2 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 10 12:25

SPEC is set to: /home/cpu2017_u2
    Filesystem  Type  Size  Used Avail Use% Mounted on
    /dev/sdb2  btrfs  371G  88G  283G  24%  /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 142 02/02/2019
    Memory:
        24x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2933

(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)
------------------------------------------------------------------------------
CXXC 620.omnetpp_s(base)  623.xalancbmk_s(base)  631.deepsjeng_s(base)

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SPEC CPU2017 Integer Speed Result  

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Compiler Version Notes (Continued)

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.

==============================================================================
FC 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_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
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### 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:
- [HPE-Platform-Flags-Intel-V1.2-CLX-revA.html](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-CLX-revA.html)
- [Intel-ic18.0-official-linux64.2019-04-03.html](http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2019-04-03.html)

You can also download the XML flags sources by saving the following links:
- [HPE-Platform-Flags-Intel-V1.2-CLX-revA.xml](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-CLX-revA.xml)
- [Intel-ic18.0-official-linux64.2019-04-03.xml](http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2019-04-03.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 v1.0.5 on 2019-04-10 13:27:57-0400.