Hewlett Packard Enterprise
Synergy 480 Gen10
(1.90 GHz, Intel Xeon Bronze 3204)

HPE

SPECspeed2017_fp_base = 43.6
SPECspeed2017_fp_peak = Not Run

CPU2017 License: 3
Test Sponsor: HPE
Test Date: Jul-2019
Tested by: HPE
Software Availability: Feb-2019

Hardware

Hardware

Software

CPU: Intel Xeon Bronze 3204
Max MHz.: 1900
Enabled: 12 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: 8.25 MB I+D on chip per chip
Other: None
Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R, running at 2133)
Storage: 1 x 400 GB SAS SSD, RAID 0
Other: None

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 I42 05/22/2019 released May-2019
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
SPEC CPU2017 Floating Point Speed Result

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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>
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<tr>
<td>654.roms_s</td>
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<td>375</td>
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<td>374</td>
<td>42.1</td>
</tr>
</tbody>
</table>

SPECspeed2017_fp_base = 43.6
SPECspeed2017_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.

Platform Notes

BIOS Configuration:
Thermal Configuration set to Maximum Cooling

(Continued on next page)
Hewlett Packard Enterprise  
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SPEC CPU2017 Floating Point Speed Result  
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CPU2017 License: 3  
Test Sponsor: HPE  
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Test Date: Jul-2019  
Hardware Availability: May-2019  
Software Availability: Feb-2019

Platform Notes (Continued)

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  
Energy/Performance Bias set to Balanced Power  
Workload Profile set to Custom  
Numa Group Size Optimization set to Flat  
Intel UPI Link Power Management set to Enabled  

Sysinfo program /home/cpu2017_u2/bin/sysinfo  
Rev: r5974 of 2018-05-19 9b5cde8f2999c33d61f64985e45859ea9  
running on sy480g10-2 Tue Jul  2 05:52:39 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) Bronze 3204 CPU @ 1.90GHz  
  2 "physical id"s (chips)  
  12 "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 : 6  
  siblings : 6  
  physical 0: cores 0 1 2 3 4 5  
  physical 1: cores 0 1 2 3 4 5

From lscpu:  
Architecture: x86_64  
CPU op-mode(s): 32-bit, 64-bit  
Byte Order: Little Endian  
CPU(s): 12  
On-line CPU(s) list: 0-11  
Thread(s) per core: 1  
Core(s) per socket: 6  
Socket(s): 2  
NUMA node(s): 2  
Vendor ID: GenuineIntel  
CPU family: 6  
Model: 85  
Model name: Intel(R) Xeon(R) Bronze 3204 CPU @ 1.90GHz  
Stepping: 6  
CPU MHz: 1900.000  
BogoMIPS: 3800.00  
Virtualization: VT-x  
L1d cache: 32K

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

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Test Date: Jul-2019
Hardware Availability: May-2019
Software Availability: Feb-2019

Platform Notes (Continued)

L1i cache: 32K
L2 cache: 1024K
L3 cache: 8448K
NUMA node0 CPU(s): 0-2, 6-8
NUMA node1 CPU(s): 3-5, 9-11
Flags: fpu vme de pse tsc msr pae 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
aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3
sdkg 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 cpuid_single intel_pmin_mba tpr_shadow vnmi fpxrnorm ept
vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 3msm invpcid rdt_a
avx512f avx512dq rdseed adx xsaveopt xsave xsaveopt xsave xavt asx cqm_1c cqm_1c
cmq_1c cmq_1c cmq_1c cmq_1c cmq_1c cmq_1c cmq_1c cmq_1c cmq_1c cmq_1c cmq_1c cmq_1c
lmb ibrs stibp dtherm arat pln pts pkv ospe avx512_vnni arch_capabilities ssbd

From /proc/cpuinfo cache data
  cache size : 8448 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
  physical chip,
  available: 2 nodes (0-1)
  0:  10  21
  1:  21  10

From /proc/meminfo
  MemTotal:      395630908 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"
    ID_LIKE="suse"

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

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CPU2017 License: 3
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Tested by: HPE

Test Date: Jul-2019
Hardware Availability: May-2019
Software Availability: Feb-2019

Platform Notes (Continued)

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 Jul 2 05:50

SPEC is set to: /home/cpu2017_u2
    Filesystem     Type   Size  Used Avail Use% Mounted on
    /dev/sdb2      btrfs  371G   93G  277G  26% /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 05/22/2019
    Memory:
        24x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2933, configured at 2133

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
 CC  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.
------------------------------------------------------------------------------

==============================================================================
 FC  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.

(Continued on next page)
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SPECspeed2017_fp_base = 43.6
SPECspeed2017_fp_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.

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 CPU2017 Floating Point Speed Result

**Hewlett Packard Enterprise**  
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**CPU2017 License:** 3  
**Test Sponsor:** HPE  
**Tested by:** HPE

### 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:**  
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP  
-qopt-prefetch-issue-excl-hint -ansi-alias -complex-limited-range

**Fortran benchmarks:**  
-DSPEC_OPENMP -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp  
-qopt-prefetch-issue-excl-hint -ansi-alias -complex-limited-range  
-nostandard-realloc-lhs

**Benchmarks using both Fortran and C:**  
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP  
-qopt-prefetch-issue-excl-hint -ansi-alias -complex-limited-range  
-nostandard-realloc-lhs

**Benchmarks using Fortran, C, and C++:**  
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP  
-qopt-prefetch-issue-excl-hint -ansi-alias -complex-limited-range  
-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.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.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.

Tested with SPEC CPU2017 v1.0.5 on 2019-07-02 06:52:38-0400.