## Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL385 Gen10 Plus
(3.70 GHz, AMD EPYC 7F32)

### SPECspeed®2017_int_base = 9.52

### SPECspeed®2017_int_peak = 10.1

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>Apr-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Apr-2020</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Aug-2019</td>
</tr>
</tbody>
</table>

### CPU2017 License: 3

### Test Sponsor: HPE

### Tested by: HPE

### SPEC CPU®2017 Integer Speed Result

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>5.43</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>3.76</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>10.7</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>10.7</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>17.7</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>3.64</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>5.83</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>4.78</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>18.9</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>23.0</td>
</tr>
</tbody>
</table>

### Threads

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed®2017_int_base (9.52)</th>
<th>SPECspeed®2017_int_peak (10.1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.43</td>
<td>10.7</td>
</tr>
<tr>
<td>16</td>
<td>5.76</td>
<td>17.7</td>
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<td>16</td>
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<td>17.7</td>
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<td>4.78</td>
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<td>18.9</td>
<td>17.7</td>
</tr>
<tr>
<td>16</td>
<td>23.0</td>
<td>17.7</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>AMD EPYC 7F32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz:</td>
<td>3900</td>
</tr>
<tr>
<td>Nominal:</td>
<td>3700</td>
</tr>
<tr>
<td>Enabled:</td>
<td>16 cores, 2 chips</td>
</tr>
<tr>
<td>Orderable:</td>
<td>1, 2 chips</td>
</tr>
<tr>
<td>Cache L1:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Cache L2:</td>
<td>512 KB I+D on chip per core</td>
</tr>
<tr>
<td>Cache L3:</td>
<td>128 MB I+D on chip per chip, 16 MB per core</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R)</td>
</tr>
<tr>
<td>Storage:</td>
<td>1 x 800 GB SAS SSD, RAID 0</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>OS:</th>
<th>SUSE Linux Enterprise Server 15 (x86_64) SP1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++/Fortran: Version 2.0.0 of AOCC</td>
</tr>
<tr>
<td>Parallel:</td>
<td>Yes</td>
</tr>
<tr>
<td>Firmware:</td>
<td>HPE BIOS Version A42 04/09/2020 released Apr-2020</td>
</tr>
<tr>
<td>File System:</td>
<td>btrfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other:</td>
<td>jemalloc: jemalloc memory allocator library v5.2.0</td>
</tr>
<tr>
<td>Power Management:</td>
<td>BIOS set to prefer performance at the cost of additional power usage</td>
</tr>
</tbody>
</table>
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL385 Gen10 Plus
(3.70 GHz, AMD EPYC 7F32)

SPECspeed®2017_int_base = 9.52
SPECspeed®2017_int_peak = 10.1

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>
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<th>Seconds</th>
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<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
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<td>352</td>
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<td>602.gcc_s</td>
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<td>372</td>
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<td>657.xz_s</td>
<td>16</td>
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</tr>
</tbody>
</table>

SPECspeed®2017_int_base = 9.52
SPECspeed®2017_int_peak = 10.1

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

Compiler Notes

The AMD64 AOCC Compiler Suite is available at
http://developer.amd.com/amd-aocc/

Submit Notes

The config file option 'submit' was used.
'numactl' was used to bind copies to the cores.
See the configuration file for details.

Operating System Notes

'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2097152' was used to set environment locked pages in memory limit
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>

Set dirty_ratio=8 to limit dirty cache to 8% of memory
Set swappiness=1 to swap only if necessary
Set zone_reclaim_mode=1 to free local node memory and avoid remote memory
sync then drop_caches=3 to reset caches before invoking runcpu

dirty_ratio, swappiness, zone_reclaim_mode and drop_caches were all set using privileged echo (e.g. echo 1 > /proc/sys/vm/swappiness).

Transparent huge pages set to 'always' for this run (OS default)
SPEC CPU®2017 Integer Speed Result

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Environment Variables Notes

Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-15"
LD_LIBRARY_PATH = "/home/cpu2017-bbn/amd_speed_aocc200_rome_C_lib/64;/home/cpu2017-bbn/amd_speed_aocc200_rome_C_lib/32;"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "16"

Environment variables set by runcpu during the 600.perlbench_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 602.gcc_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 605.mcf_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 620.omnetpp_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 623.xalancbmk_s peak run:
GOMP_CPU_AFFINITY = "0"
OMP_STACKSIZE = "128M"

Environment variables set by runcpu during the 625.x264_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 631.deepsjeng_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 657.xz_s peak run:
GOMP_CPU_AFFINITY = "0-15"

General Notes

Binaries were compiled on a system with 2x AMD EPYC 7601 CPU + 512GB Memory using Fedora 26

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)
General Notes (Continued)

is mitigated in the system as tested and documented.

jemalloc: configured and built with GCC v9.1.0 in Ubuntu 19.04 with -O3 -znver2 -flto
jemalloc 5.2.0 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.2.0/jemalloc-5.2.0.tar.bz2

Platform Notes

BIOS Configuration
Thermal Configuration set to Maximum Cooling
AMD SMT Mode set to Disabled
Determinism Control set to Manual
Performance Determinism set to Power Deterministic
Minimum Processor Idle Power Core C-State set to C6 State
Memory Patrol Scrubbing set to Disabled
Workload Profile set to General Peak Frequency Compute
NUMA memory domains per socket set to Four memory domains per socket
C-State Efficiency set to Disabled

Sysinfo program /home/cpu2017-bbn/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbl1e6e46a485a0011
running on linux-30t0 Thu Apr 23 12:09:44 2020

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 : AMD EPYC 7F32 8-Core Processor
  "physical id"s (chips)
    16 "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 : 8
  siblings : 8
  physical 0: cores 0 4 8 12 16 20 24 28
  physical 1: cores 0 4 8 12 16 20 24 28

From lscpu:
  Architecture: x86_64
  CPU op-mode(s): 32-bit, 64-bit
  Byte Order: Little Endian
  Address sizes: 48 bits physical, 48 bits virtual
  CPU(s): 16

(Continued on next page)
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Test Sponsor: HPE
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Platform Notes (Continued)

On-line CPU(s) list: 0-15
Thread(s) per core: 1
Core(s) per socket: 8
Socket(s): 2
NUMA node(s): 8
Vendor ID: AuthenticAMD
CPU family: 23
Model: 49
Model name: AMD EPYC 7F32 8-Core Processor
Stepping: 0
CPU MHz: 3000.000
CPU max MHz: 3700.0000
CPU min MHz: 2500.0000
BogoMIPS: 7386.41
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 16384K
NUMA node0 CPU(s): 0,1
NUMA node1 CPU(s): 2,3
NUMA node2 CPU(s): 4,5
NUMA node3 CPU(s): 6,7
NUMA node4 CPU(s): 8,9
NUMA node5 CPU(s): 10,11
NUMA node6 CPU(s): 12,13
NUMA node7 CPU(s): 14,15
Flags: fpu vme de pse tsc msr pae mca cmov pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr opt pdpe1gb rdtscp lm constant_tsc rep_good nopl xtopology nonstop_tsc cpuid extd_apicid aperfmperf pni pclmulqdq monitor ssse3 fma cx16 sse4_1 sse4_2 movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bext perfctr_l2 mwaitx cpi cat_l3 cdp_l3 hw_pstate ssbd ibrs ibpb stibp vmmcall fsxgsbase bmi1 avx2 smep bmi2 cqm rdt_a rdsseed adx smap clflushopt clwb sha ni xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mmb_total cqm_mmb_local clzero irperf xsaveerptr arat npt lbv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassist pausefilter pfflush avic v_vmsave_vmload vgif umip rdpid overflow_reco v succor smca

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 8 nodes (0-7)
node 0 cpus: 0 1
node 0 size: 128712 MB

(Continued on next page)
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Platform Notes (Continued)

From /proc/meminfo
MemTotal: 1056594844 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
OS_RELEASE:
NAME="SLES"
VERSION="15-SP1"
VERSION_ID="15.1"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"

(Continued on next page)
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Test Sponsor: HPE
Tested by: HPE
Test Date: Apr-2020
Hardware Availability: Apr-2020
Software Availability: Aug-2019

Platform Notes (Continued)

uname -a:
    Linux linux-30t0 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (8fba516)
        x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBP: disabled, RSB filling

run-level 3 Apr 23 12:09

SPEC is set to: /home/cpu2017-bbn

From /sys/devices/virtual/dmi/id
    BIOS: HPE A42 04/09/2020
    Vendor: HPE
    Product: ProLiant DL385 Gen10 Plus
    Product Family: ProLiant
    Serial: CN79340HC5

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.

    Memory:
        16x Micron 36ASF8G72PZ-3G2B2 64 GB 2 rank 3200
        16x UNKNOWN NOT AVAILABLE

(End of data from sysinfo program)

Compiler Version Notes

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

(Continued on next page)
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Compiler Version Notes (Continued)

AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

C++ | 623.xalancbmk_s(peak)

AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

C++ | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base)
       | 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)

AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

C++ | 623.xalancbmk_s(peak)

AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

C++ | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base)
       | 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)

AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix

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

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL385 Gen10 Plus
(3.70 GHz, AMD EPYC 7F32)

SPECspeed®2017_int_base = 9.52
SPECspeed®2017_int_peak = 10.1

Compiler Version Notes (Continued)

InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

------------------------------------------------------------------------------
Fortran | 648.exchange2_s(base, peak)
------------------------------------------------------------------------------
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
  AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

Base Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang

Base Portability Flags

600.perlbench_s: -DSPEC_LINUX_X64 -DSPEC_LP64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalanchmk_s: -DSPEC_LINUX -DSPEC_LP64
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

Base Optimization Flags

C benchmarks:
-flto -Wl,-mllvm -Wl,-function-specialize

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

**Hewlett Packard Enterprise**
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<td>Software Availability: Aug-2019</td>
</tr>
</tbody>
</table>

![Base Optimization Flags (Continued)](image)

![Base Other Flags](image)

C benchmarks (continued):
- `-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC`  
- `-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -ffast-math`  
- `-march=znver2 -fstruct-layout=3 -mllvm -unroll-threshold=50`  
- `-fremap-arrays -mllvm -function-specialize -mllvm -enable-gvn-hoist`  
- `-mllvm -reduce-array-computations=3 -mllvm -global-vectorize-slp`  
- `-mllvm -vector-library=LIBMVEC -mllvm -inline-threshold=1000`  
- `-flv-function-specialization -z muldefs -DSPEC_OPENMP -fopenmp`  
- `-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang`

C++ benchmarks:
- `-flto -Wl,-mllvm -Wl,-function-specialize`  
- `-Wl,-mllvm -Wl,-reduce-array-computations=3`  
- `-Wl,-mllvm -Wl,-loop-unswitch-threshold=200000 -mllvm -vector-library=LIBMVEC`  
- `-mllvm -unroll-threshold=100 -flv-function-specialization`  
- `-mllvm -enable-partial-unswitch -z muldefs -DSPEC_OPENMP -fopenmp`  
- `-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang`

Fortran benchmarks:
- `-flto -Wl,-mllvm -Wl,-function-specialize`  
- `-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC`  
- `-Wl,-mllvm -Wl,-reduce-array-computations=3 -ffast-math`  
- `-Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop`  
- `-Wl,-mllvm -Wl,-enable-iv-split -O3 -march=znver2 -funroll-loops`  
- `-Mrecursive -mllvm -vector-library=LIBMVEC -z muldefs`  
- `-mllvm -disable-indvar-simplify -mllvm -unroll-aggressive`  
- `-mllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -DUSE_OPENMP`  
- `-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang`

**Base Other Flags**

C benchmarks:
- `-Wno-return-type`

C++ benchmarks:
- `-Wno-return-type`

Fortran benchmarks:
- `-Wno-return-type`
### SPEC CPU®2017 Integer Speed Result

**Hewlett Packard Enterprise**
(Test Sponsor: HPE)

**ProLiant DL385 Gen10 Plus**
(3.70 GHz, AMD EPYC 7F32)

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**CPU2017 License:** 3  
**Test Date:** Apr-2020  
**Test Sponsor:** HPE  
**Hardware Availability:** Apr-2020

**Tested by:** HPE  
**Software Availability:** Aug-2019  

### Peak Compiler Invocation

**C benchmarks:**
clang

**C++ benchmarks:**
clang++

**Fortran benchmarks:**
flang

### Peak Portability Flags

| `600.perlbench_s` | `-DSPEC_LINUX_X64 -DSPEC_LP64` |
| `602.gcc_s` | `-DSPEC_LP64` |
| `605.mcf_s` | `-DSPEC_LP64` |
| `620.omnetpp_s` | `-DSPEC_LP64` |
| `623.xalancbmk_s` | `-DSPEC_LINUX -D_FILE_OFFSET_BITS=64` |
| `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` |

### Peak Optimization Flags

**C benchmarks:**

```bash
```

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

602.gcc_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,--region-vectorize
-Wl,-mllvm -Wl,--vector-library=LIBMVEC
-Wl,-mllvm -Wl,--reduce-array-computations=3 -Ofast
-march=znver2 -mno-sse4a -fstruct-layout=5
-mllvm -vectorize-memory-aggressively
-mllvm -function-specialize -mllvm -enable-gvn-hoist
-mllvm -unroll-threshold=50 -fremap-arrays
-mllvm -vector-library=LIBMVEC
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp -mllvm -inline-threshold=1000
-flv-function-specialization -z muldefs -DSPEC_OPENMP
-fopenmp -DUSE_OPENMP -fgnu89-inline -fopenmp=libomp
-lomp -lpthread -ldl -ljemalloc
605.mcf_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,--region-vectorize
-Wl,-mllvm -Wl,--vector-library=LIBMVEC
-Wl,-mllvm -Wl,--reduce-array-computations=3 -Ofast
-march=znver2 -mno-sse4a -fstruct-layout=5
-mllvm -vectorize-memory-aggressively
-mllvm -function-specialize -mllvm -enable-gvn-hoist
-mllvm -unroll-threshold=50 -fremap-arrays
-mllvm -vector-library=LIBMVEC
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp -mllvm -inline-threshold=1000
-flv-function-specialization -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -lmvec -lamdlibm -fopenmp=libomp -lomp
-lpthread -ldl -ljemalloc -liflag
625.x264_s: Same as 600.perlbench_s
657.xz_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,--region-vectorize
-Wl,-mllvm -Wl,--vector-library=LIBMVEC
-Wl,-mllvm -Wl,--reduce-array-computations=3 -Ofast
-march=znver2 -mno-sse4a -fstruct-layout=5
-mllvm -vectorize-memory-aggressively
-mllvm -function-specialize -mllvm -enable-gvn-hoist
-mllvm -unroll-threshold=50 -fremap-arrays
-mllvm -vector-library=LIBMVEC
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp -mllvm -inline-threshold=1000
-flv-function-specialization -DSPEC_OPENMP -fopenmp
SPEC CPU® 2017 Integer Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL385 Gen10 Plus
(3.70 GHz, AMD EPYC 7F32)

SPECspeed® 2017_int_base = 9.52
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CPU2017 License: 3
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Peak Optimization Flags (Continued)

657.xz_s (continued):
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl
-llmvec -llamdlibm -ljemalloc -lflang

C++ benchmarks:
620.omnetpp_s: -flto -W1,-mllvm -W1,-region-vectorize
-W1,-mllvm -W1,-vector-library=LIBMVEC
-W1,-mllvm -W1,-reduce-array-computations=3 -Ofast
-march=znver2 -flv-function-specialization
-mllvm -unroll-threshold=100
-mllvm -enable-partial-unswitch
-mllvm -loop-unswitch-threshold=200000
-mllvm -vector-library=LIBMVEC
-mllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl
-llmvec -llamdlibm -ljemalloc -lflang

623.xalancbmk_s: -m32 -flto -W1,-mllvm -W1,-function-specialize
-W1,-mllvm -W1,-region-vectorize
-W1,-mllvm -W1,-vector-library=LIBMVEC
-W1,-mllvm -W1,-reduce-array-computations=3 -Ofast
-march=znver2 -flv-function-specialization
-mllvm -unroll-threshold=100
-mllvm -enable-partial-unswitch
-mllvm -loop-unswitch-threshold=200000
-mllvm -vector-library=LIBMVEC
-mllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl
-llmvec -llamdlibm -ljemalloc

631.deepsjeng_s: Same as 620.omnetpp_s

641.leela_s: basepeak = yes

Fortran benchmarks:
648.exchange2_s: basepeak = yes

Peak Other Flags

C benchmarks:
-Wno-return-type

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

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**Hewlett Packard Enterprise**

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ProLiant DL385 Gen10 Plus

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**SPECspeed®2017_int_base = 9.52**

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**CPU2017 License:** 3

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**Tested by:** HPE

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**Test Date:** Apr-2020

**Hardware Availability:** Apr-2020

**Software Availability:** Aug-2019

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**Peak Other Flags (Continued)**

C++ benchmarks (except as noted below):

- `-Wno-return-type`

623.xalancbmk.s: `-Wno-return-type`

- `-L/sppo/dev/cpu2017/v110/amd_speed_aocc200_rome_C_lib/32`

Fortran benchmarks:

- `-Wno-return-type`

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The flags files that were used to format this result can be browsed at


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You can also download the XML flags sources by saving the following links:


http://www.spec.org/cpu2017/flags/aocc200-flags-C1-HPE.xml

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Tested with SPEC CPU®2017 v1.1.0 on 2020-04-23 02:39:44-0400.

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