**SPEC CPU®2017 Floating Point Speed Result**

Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL385 Gen10 Plus v2  
(3.00 GHz, AMD EPYC 7313)

**Test Sponsor:** HPE  
**Hardware Availability:** Apr-2021  
**Software Availability:** Mar-2021

**CPU2017 License:** 3  
**Test Sponsor:** HPE  
**Tested by:** HPE  
**Test Date:** Apr-2021  
**Hardware Availability:** Apr-2021  
**Software Availability:** Mar-2021

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECspeed®2017_fp_base</th>
<th>SPECspeed®2017_fp_peak</th>
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<tr>
<td>603.bwaves_s</td>
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<td>621.wrf_s</td>
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<tr>
<td>627.cam4_s</td>
<td>172</td>
<td>181</td>
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<td>628.pop2_s</td>
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<td>644.nab_s</td>
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**Threads**

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**Hardware**

- **CPU Name:** AMD EPYC 7313  
- **Max MHz:** 3700  
- **Nominal:** 3000  
- **Enabled:** 32 cores, 2 chips, 2 threads/core  
- **Orderable:** 1, 2 chip(s)  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **L2:** 512 KB I+D on chip per core  
- **L3:** 128 MB I+D on chip per chip, 32 MB shared / 4 cores  
- **Other:** None  
- **Memory:** 2 TB (16 x 128 GB 4Rx4 PC4-3200AA-L)  
- **Storage:** 1 x 182 GB SATA SSD, RAID 0  
- **Other:** None

**Software**

- **OS:** Ubuntu 20.04.1 LTS (x86_64)  
- **Kernel:** 5.4.0-42-generic  
- **Compiler:** C/C++/Fortran: Version 3.0.0 of AOCC  
- **Parallel:** Yes  
- **Firmware:** HPE BIOS Version A42 v2.40 02/15/2021 released Feb-2021  
- **File System:** ext4  
- **System State:** Run level 5 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** 64-bit  
- **Other:** jemalloc: jemalloc memory allocator library v5.1.0  
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage
## Results Table

<table>
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<tr>
<th>Benchmark</th>
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<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>89.8</td>
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<td>76.9</td>
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<td>32</td>
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<td>649.fotonik3d_s</td>
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<td>32</td>
<td>82.9</td>
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<td>112</td>
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<td>249</td>
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<td>62.8</td>
</tr>
</tbody>
</table>

**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 -1 2097152' was used to set environment locked pages in memory limit

runcpu command invoked through numacli i.e.:
numacli --interleave=all runcpu <etc>

'echo 8 > /proc/sys/vm/dirty_ratio' run as root to limit dirty cache to 8% of memory.
'echo 1 > /proc/sys/vm/swappiness' run as root to limit swap usage to minimum necessary.
'echo 1 > /proc/sys/vm/zone_reclaim_mode' run as root to free node-local memory and avoid remote memory usage.
'sync; echo 3 > /proc/sys/vm/drop_caches' run as root to reset filesystem caches.
'sysctl -w kernel.randomize_va_space=0' run as root to disable address space layout randomization (ASLR) to reduce run-to-run variability.

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Operating System Notes (Continued)

To enable Transparent Hugepages (THP) for all allocations,
'echo always > /sys/kernel/mm/transparent_hugepage/enable' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
To enable THP only on request for peak runs of 628.pop2_s, and 638.imagick_s,
'echo madvise > /sys/kernel/mm/transparent_hugepage/enable' run as root.
To disable THP for peak runs of 627.cam4_s, 644.nab_s, 649.fotonik3d_s, and 654.roms_s,
'echo never > /sys/kernel/mm/transparent_hugepage/enable' run as root.

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-63"
LD_LIBRARY_PATH =
"/home/cpu2017_B1/amd_speed_aocc300_milan_B_lib/64;/home/cpu2017_B1/amd_speed_aocc300_milan_B_lib/32;"
MALLOCONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULER = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "64"

Environment variables set by runcpu during the 619.lbm_s peak run:
GOMP_CPU_AFFINITY = "0-31"

Environment variables set by runcpu during the 644.nab_s peak run:
GOMP_CPU_AFFINITY = "0 32 1 33 2 34 3 35 4 36 5 37 6 38 7 39 8 40 9 41 10 42 11 43 12 44 13 45 14 46 15 47 16 48 17 49 18 50 19 51 20 52 21 53 22 54 23 55 24 25 26 27 58 28 29 30 62 31 63"

Environment variables set by runcpu during the 654.roms_s peak run:
GOMP_CPU_AFFINITY = "0-31"

General Notes

Binaries were compiled on a system with 2x AMD EPYC 7742 CPU + 1TiB Memory using openSUSE 15.2

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.
General Notes (Continued)

jemalloc: configured and built with GCC v4.8.2 in RHEL 7.4
jemalloc 5.1.0 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.1.0/jemalloc-5.1.0.tar.bz2

Platform Notes

BIOS Configuration
Workload Profile set to General Peak Frequency Compute
Determinism Control set to Manual
Performance Determinism set to Power Deterministic
Last-Level Cache (LLC) as NUMA Node set to Enabled
NUMA memory domains per socket set to One memory domain per socket
Thermal Configuration set to Maximum Cooling
Workload Profile set to Custom
Infinity Fabric Power Management set to Disabled
Infinity Fabric Performance State set to P0
Power Regulator set to OS Control Mode

Sysinfo program /home/cpu2017_B1/bin/sysinfo
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c
running on dl385g10v2 Tue Apr 20 21:09:00 2021

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 7313 16-Core Processor
  2. "physical id"s (chips)
  64 "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 : 16
  siblings : 32
  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: LittleEndian
Address sizes: 48 bits physical, 48 bits virtual
CPU(s): 64
On-line CPU(s) list: 0-63
Thread(s) per core: 2
Core(s) per socket: 16

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SPECspeed®2017_fp_base = 172
SPECspeed®2017_fp_peak = 181

CPU2017 License: 3
Test Date: Apr-2021
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Hardware Availability: Apr-2021
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Platform Notes (Continued)

Socket(s): 2
NUMA node(s): 8
Vendor ID: AuthenticAMD
CPU family: 25
Model: 1
Model name: AMD EPYC 7313 16-Core Processor
Stepping: 1
Frequency boost: enabled
CPU MHz: 2992.142
CPU max MHz: 3000.0000
CPU min MHz: 1500.0000
BogoMIPS: 5988.68
Virtualization: AMD-V
L1d cache: 1 MiB
L1i cache: 1 MiB
L2 cache: 16 MiB
L3 cache: 256 MiB
NUMA node0 CPU(s): 0-3,32-35
NUMA node1 CPU(s): 4-7,36-39
NUMA node2 CPU(s): 8-11,40-43
NUMA node3 CPU(s): 12-15,44-47
NUMA node4 CPU(s): 16-19,48-51
NUMA node5 CPU(s): 20-23,52-55
NUMA node6 CPU(s): 24-27,56-59
NUMA node7 CPU(s): 28-31,60-63
Vulnerability Itlb multihit: Not affected
Vulnerability L1f: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and __user pointer sanitization
Vulnerability Spectre v2: Mitigation; Full AMD retpoline, IBPB conditional, IBRS_FW, STIBP always-on, RSB filling
Vulnerability Srbds: Not affected
Vulnerability Tsx async abort: Not affected
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdelpgb rdtsscp lm constant_tsc rep_good nopl nonstop_tsc cpuid extd_apicid aperfmperf pni pclmulqdq monitor ssse3 fma cx16 pcid sse4_1 sse4_2 movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extatic cr8_legacy abm sse4a misalognsse 3nowprefetch osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bext perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate ssbd mba ibrs ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2 invpcid cqm rdt_a rdseed adx smap clflushopt clwb sha ni xsaveopt xsavec xgetbv1 xsaves cgml lc qm_occup_llc qm_mbb_total qm_mbb_local clzero irperf xsaveerptr wbnoinvd arat npt lbrv svm_lock

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Platform Notes (Continued)

nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter pfthreshold
v_vmsave_vmload vgif umip pk uc ospke vaes vpclmulqdq rdpid overflow_recov succor smca

/proc/cpuinfo cache data
  cache size : 512 KB

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 2 3 32 33 34 35
  node 0 size: 257799 MB
  node 0 free: 257496 MB
  node 1 cpus: 4 5 6 7 36 37 38 39
  node 1 size: 258046 MB
  node 1 free: 257862 MB
  node 2 cpus: 8 9 10 11 40 41 42 43
  node 2 size: 258021 MB
  node 2 free: 257715 MB
  node 3 cpus: 12 13 14 15 44 45 46 47
  node 3 size: 245935 MB
  node 3 free: 245568 MB
  node 4 cpus: 16 17 18 19 48 49 50 51
  node 4 size: 258046 MB
  node 4 free: 257908 MB
  node 5 cpus: 20 21 22 23 52 53 54 55
  node 5 size: 258046 MB
  node 5 free: 257921 MB
  node 6 cpus: 24 25 26 27 56 57 58 59
  node 6 size: 258046 MB
  node 6 free: 257913 MB
  node 7 cpus: 28 29 30 31 60 61 62 63
  node 7 size: 258043 MB
  node 7 free: 257914 MB

node distances:
  node 0 1 2 3 4 5 6 7
  0: 10 11 11 11 32 32 32 32
  1: 11 10 11 11 32 32 32 32
  2: 11 11 10 11 32 32 32 32
  3: 11 11 11 10 32 32 32 32
  4: 32 32 32 32 10 11 11 11
  5: 32 32 32 32 11 10 11 11
  6: 32 32 32 32 11 11 10 11
  7: 32 32 32 32 11 11 11 10

From /proc/meminfo
  MemTotal: 2101231580 kB
  HugePages_Total: 0

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Platform Notes (Continued)

Hugepagesize: 2048 kB
/sbin/tuned-adm active
Current active profile: throughput-performance
/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance
/usr/bin/lsb_release -d
Ubuntu 20.04.1 LTS

From /etc/*/release* /etc/*/version*
debian_version: bullseye/sid
os-release:
NAME="Ubuntu"
VERSION="20.04.1 LTS (Focal Fossa)"
ID=ubuntu
ID_LIKE=debian
PRETTY_NAME="Ubuntu 20.04.1 LTS"
VERSION_ID="20.04"
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/
uname -a:
Linux dl385g10v2 5.4.0-42-generic #46-Ubuntu SMP Fri Jul 10 00:24:02 UTC 2020 x86_64
x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2018-12207 (iTLB Multihit): Not affected
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: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2):
Mitigation: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBP: always-on, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 5 Apr 20 18:21

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**Platform Notes (Continued)**

SPEC is set to: /home/cpu2017_B1  
Filesystem  
Type   Size   Used   Avail   Use%   Mounted on  
/dev/mapper/ubuntu--vg-ubuntu--lv   ext4   182G   43G   131G   25%   /

From /sys/devices/virtual/dmi/id  
Vendor: HPE  
Product: ProLiant DL385 Gen10 Plus  
Product Family: ProLiant  
Serial: CN79340HC3

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 UNKNOWN M386AAG40AM3-CWE 128 GB 4 rank 3200  
16x UNKNOWN NOT AVAILABLE

BIOS:  
BIOS Vendor: HPE  
BIOS Version: A42  
BIOS Date: 02/15/2021  
BIOS Revision: 2.40  
Firmware Revision: 2.40

(End of data from sysinfo program)

**Compiler Version Notes**

C  
619.lbm_s(base, peak) 638.imagick_s(base, peak)  
644.nab_s(base, peak)

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

C++, C, Fortran  
607.cactuBSSN_s(base, peak)

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)  
Target: x86_64-unknown-linux-gnu

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Thread model: posix
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Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

Fortran         | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak)
| 654.roms_s(base, peak)
-----------------------------------------------------------------------------------------------
AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

Fortran, C      | 621.wrf_s(base, peak) 627.cam4_s(base, peak)
| 628.pop2_s(base, peak)
-----------------------------------------------------------------------------------------------
AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

Base Compiler Invocation

C benchmarks:
clang

(Continued on next page)
Base Compiler Invocation (Continued)

Fortran benchmarks:
flang

Benchmarks using both Fortran and C:
flang clang

Benchmarks using Fortran, C, and C++:
clang++ clang flang

Base Portability Flags

603.bwaves.s: -DSPEC_LP64
607.cactuBSSN.s: -DSPEC_LP64
619.lbm.s: -DSPEC_LP64
621.wrf.s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
627.cam4.s: -DSPEC_CASE_FLAG -DSPEC_LP64
628.pop2.s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
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:
-m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fvecclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -mllvm -function-specialize -flv-function-specialization
-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3 -z muldefs
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-lflang -lflangrti

Fortran benchmarks:
-m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-licm-vrp -Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6

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

Fortran benchmarks (continued):
-Wl,-mlirvm -Wl,-reduce-array-computations=3 -Hz,1,0x1 -O3
-mlirvm -fuse-tile-inner-loop -funroll-loops
-mlirvm -extra-vectorizer-passes -mlirvm -lsr-in-nested-loop
-mlirvm -enable-licm-vrp -mlirvm -reduce-array-computations=3
-mlirvm -global-vectorize-slp=true -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -ldl -ljemalloc -lflang -lflangrti

Benchmarks using both Fortran and C:
-m64 -mno-adx -mno-sse4a -Wl,-mlirvm -Wl,-enable-X86-prefetching
-Wl,-mlirvm -Wl,-enable-licm-vrp -Wl,-mlirvm -Wl,-region-vectorize
-Wl,-mlirvm -Wl,-function-specialize
-Wl,-mlirvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlirvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
-mlirvm -unroll-threshold=50 -mlirvm -inline-threshold=1000
-fremap-arrays -mlirvm -function-specialize -flv-function-specialization
-mlirvm -enable-gvn-host -mlirvm -global-vectorize-slp=true
-mlirvm -enable-licm-vrp -mlirvm -reduce-array-computations=3 -Hz,1,0x1
-mlirvm -function-specialize -mlirvm -fuse-tile-inner-loop -funroll-loops
-mlirvm -extra-vectorizer-passes -mlirvm -lsr-in-nested-loop -z muldefs
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -ldl -ljemalloc -lflang -lflangrti

Benchmarks using Fortran, C, and C++:
-m64 -mno-adx -mno-sse4a -std=c++98
-Wl,-mlirvm -Wl,-x86-use-vzeroupper=false
-Wl,-mlirvm -Wl,-region-vectorize -Wl,-mlirvm -Wl,-function-specialize
-Wl,-mlirvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlirvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
-mlirvm -unroll-threshold=50 -mlirvm -inline-threshold=1000
-fremap-arrays -mlirvm -function-specialize -flv-function-specialization
-mlirvm -enable-gvn-host -mlirvm -global-vectorize-slp=true
-mlirvm -enable-licm-vrp -mlirvm -reduce-array-computations=3
-mlirvm -enable-partial-unswitch -mlirvm -unroll-threshold=100
-finline-aggressive -mlirvm -loop-unswitch-threshold=200000
-mlirvm -reroll-loops -mlirvm -aggressive-loop-unswitch
-mlirvm -extra-vectorizer-passes -mlirvm -convert-pow-exp-to-int=false
-Hz,1,0x1 -Mrecursive -mlirvm -fuse-tile-inner-loop -funroll-loops
-mlirvm -lsr-in-nested-loop -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -ldl -ljemalloc -lflang -lflangrti
**Base Other Flags**

C benchmarks:
- `-Wno-unused-command-line-argument` `-Wno-return-type`

Fortran benchmarks:
- `-Wno-unused-command-line-argument` `-Wno-return-type`

Benchmarks using both Fortran and C:
- `-Wno-unused-command-line-argument` `-Wno-return-type`

Benchmarks using Fortran, C, and C++:
- `-Wno-unused-command-line-argument` `-Wno-return-type`

**Peak Compiler Invocation**

C benchmarks:
- `clang`

Fortran benchmarks:
- `flang`

Benchmarks using both Fortran and C:
- `flang clang`

Benchmarks using Fortran, C, and C++:
- `clang++ clang flang`

**Peak Portability Flags**

Same as Base Portability Flags

**Peak Optimization Flags**

C benchmarks:

```
619.lbm_s: -m64 -mno-adx -mno-sse4a
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=5 -mllvm -unroll-threshold=50
```

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Peak Optimization Flags (Continued)

619.lbm_s (continued):
- fremap-arrays -flv-function-specialization
- mllvm -inline-threshold=1000 -mllvm -enable-gvn-hoist
- mllvm -global-vectorize-slp=true
- mllvm -function-specialize -mllvm -enable-licm-vrp
- mllvm -reduce-array-computations=3 -DSPEC_OPENMP -fopenmp
  -fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

638.imagick_s: basepeak = yes

644.nab_s: -m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-region-vectorize
  -Wl,-mllvm -Wl,-function-specialize -Ofast -march=znver3
  -fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
  -mllvm -unroll-threshold=50 -fremap-arrays
  -flv-function-specialization -mllvm -inline-threshold=1000
  -mllvm -global-vectorize-slp=true
  -mllvm -function-specialize -mllvm -enable-licm-vrp
  -mllvm -reduce-array-computations=3 -DSPEC_OPENMP -fopenmp
  -fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

Fortran benchmarks:

603.bwaves_s: basepeak = yes

649.fotonik3d_s: basepeak = yes

654.roms_s: -m64 -mno-adx -mno-sse4a
  -Wl,-mllvm -Wl,-enable-X86-prefetching
  -Wl,-mllvm -Wl,-enable-licm-vrp
  -Wl,-mllvm -Wl,-function-specialize
  -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
  -Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
  -march=znver3 -fveclib=AMDLIBM -ffast-math -Mrecursive
  -mllvm -reduce-array-computations=3
  -mllvm -global-vectorize-slp=true -mllvm -enable-licm-vrp
  -DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm
  -ljemalloc -lflang

Benchmarks using both Fortran and C:

621.wrf_s: basepeak = yes

627.cam4_s: basepeak = yes

628.pop2_s: basepeak = yes

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Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL385 Gen10 Plus v2
(3.00 GHz, AMD EPYC 7313)

SPECspeed®2017_fp_base = 172
SPECspeed®2017_fp_peak = 181

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

Test Date: Apr-2021
Hardware Availability: Apr-2021
Software Availability: Mar-2021

Peak Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:
607.cactuBSSN_s: basepeak = yes

Peak Other Flags

C benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

Fortran benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

Benchmarks using both Fortran and C:
-Wno-unused-command-line-argument -Wno-return-type

Benchmarks using Fortran, C, and C++:
-Wno-unused-command-line-argument -Wno-return-type

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-AMD-V1.2-EPYC-revP.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-AMD-V1.2-EPYC-revP.xml

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