Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL385 Gen11
(3.00 GHz, AMD EPYC 9124)

SPECspeed®2017_fp_base = 222
SPECspeed®2017_fp_peak = 225

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

Test Date: Nov-2022
Hardware Availability: Dec-2022
Software Availability: Nov-2022

Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Value</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>32</td>
<td>311</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>32</td>
<td>311</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>32</td>
<td>163</td>
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<tr>
<td>621.wrf_s</td>
<td>32</td>
<td>162</td>
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<tr>
<td>627.cam4_s</td>
<td>32</td>
<td>118</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>32</td>
<td>68.6</td>
</tr>
<tr>
<td>638.imagick_s</td>
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<td>221</td>
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<tr>
<td>644.nab_s</td>
<td>32</td>
<td>339</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>32</td>
<td>177</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>32</td>
<td>322</td>
</tr>
</tbody>
</table>

SPECspeed®2017_fp_base = 222
SPECspeed®2017_fp_peak = 225

Hardware

CPU Name: AMD EPYC 9124
Max MHz: 3700
Nominal: 3000
Enabled: 32 cores, 2 chips
Orderable: 1, 2 chips
Cache L1: 32 KB I + 32 KB D on chip per core
L2: 1 MB I+D on chip per core
L3: 64 MB I+D on chip per chip, 16 MB shared / 4 cores
Other: None
Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 480 GB SATA SSD
Other: None

Software

OS: Red Hat Enterprise Linux 9.0 (Plow)
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
Parallel: Yes
Firmware: HPE BIOS Version v1.10 10/18/2022 released
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage
## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
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<tr>
<td>603.bwaves_s</td>
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<td>638.imagick_s</td>
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<td>65.4</td>
<td>221</td>
<td>65.4</td>
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<tr>
<td>644.nab_s</td>
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<td>51.6</td>
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<tr>
<td>649.fotonik3d_s</td>
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<td>51.7</td>
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<td>51.2</td>
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<td>654.roms_s</td>
<td>32</td>
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<td>48.7</td>
<td>323</td>
<td>48.9</td>
</tr>
</tbody>
</table>

**SPECspeed®2017_fp_base = 222**

**SPECspeed®2017_fp_peak = 225**

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 limit
'ulimit -l 2097152' was used to set environment locked pages in memory limit

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

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

To enable Transparent Hugepages (THP) for all allocations,
Operating System Notes (Continued)

'echo always > /sys/kernel/mm/transparent_hugepage/enabled' 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:
'echo madvise > /sys/kernel/mm/transparent_hugepage/enabled' run as root.
To disable THP for peak runs of 627.cam4_s, 649.fotonik3d_s, and 654.roms_s,
'echo never > /sys/kernel/mm/transparent_hugepage/enabled' run as root.

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-31"
LD_LIBRARY_PATH = "/home/CPU2017/amd_speed_aocc400_genoa_B_lib/lib:"
LIBOMP_NUM_HIDDEN_HELPER_THREADS = "0"
MALLOCC_CONF = "oversize_threshold:0,retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "32"

Environment variables set by runcpu during the 603.bwaves_s peak run:
GOMP_CPU_AFFINITY = "0-31"

Environment variables set by runcpu during the 607.cactuBSSN_s peak run:
GOMP_CPU_AFFINITY = "0-31"

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

Environment variables set by runcpu during the 621.wrf_s peak run:
GOMP_CPU_AFFINITY = "0-31"

Environment variables set by runcpu during the 627.cam4_s peak run:
GOMP_CPU_AFFINITY = "0-31"

Environment variables set by runcpu during the 628.pop2_s peak run:
GOMP_CPU_AFFINITY = "0-31"

Environment variables set by runcpu during the 638.imagick_s peak run:
GOMP_CPU_AFFINITY = "0-31"

Environment variables set by runcpu during the 644.nab_s peak run:
GOMP_CPU_AFFINITY = "0-31"

Environment variables set by runcpu during the 649.fotonik3d_s peak run:
GOMP_CPU_AFFINITY = "0-31"
**SPEC CPU®2017 Floating Point Speed Result**

Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL385 Gen11  
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| Tested by: HPE | Software Availability: Nov-2022 |

### Environment Variables Notes (Continued)

PGHPF_ZMEM = "yes"

Environment variables set by runcpu during the 654.roms_s peak run:

```
GOMP_CPU_AFFINITY = "0 16 1 17 2 18 3 19 4 20 5 21 6 22 7 23 8 24 9 25 10 26
11 27 12 28 13 29 14 30 15 31"
```

### General Notes

Binaries were compiled on a system with 2x AMD EPYC 9174F CPU + 1.5TiB Memory using RHEL 8.6

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**
- Workload Profile set to General Peak Frequency Compute
- Determinism Control set to Manual
- Performance Determinism set to Power Deterministic
- AMD SMT Option set to Disabled
- Last-Level Cache (LLC) as NUMA Node set to Enabled
- ACPI CST C2 Latency set to 18 microseconds
- Memory PStates set to Disabled
- Thermal Configuration set to Maximum Cooling
- Workload Profile set to Custom
- Power Regulator set to OS Control Mode

The system ROM used for this result contains microcode version 0xa10110d for the AMD EPYC 9n4X family of processors. The reference code/AGESA version used in this ROM is version GenoaPI 1.0.0.1-L2

Sysinfo program /home/CPU2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on localhost.localdomain Wed Apr 6 19:01:22 2022

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 9124 16-Core Processor
Platform Notes (Continued)

2 "physical id"s (chips)
32 "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 : 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 from util-linux 2.37.4:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Address sizes: 52 bits physical, 57 bits virtual
Byte Order: Little Endian
CPU(s): 32
On-line CPU(s) list: 0-31
Vendor ID: AuthenticAMD
BIOS Vendor ID: Advanced Micro Devices, Inc.
Model name: AMD EPYC 9124 16-Core Processor
CPU family: 25
Model: 17
Thread(s) per core: 1
Core(s) per socket: 16
Socket(s): 2
Stepping: 1
Frequency boost: enabled
CPU max MHz: 3711.9141
CPU min MHz: 1500.0000
BogoMIPS: 1500.0000
Flags: fpu vme de pse mce cmov pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpenlb rdtsscp lm constant_tsc rep_good nopl nonstop_tsc cpuid ext_apicid aperfmperf rafi pni pclmulqdq monitor ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osfw 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 ibp bmmcall fsgsbase bmsi avx2 smep bmi2 erms invvpid cmn rdt_a_avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb avx512bw

(Continued on next page)
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Test Date: Nov-2022
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Software Availability: Nov-2022

Platform Notes (Continued)

L1i cache: 1 MiB (32 instances)
L2 cache: 32 MiB (32 instances)
L3 cache: 128 MiB (8 instances)
NUMA node(s): 8
NUMA node0 CPU(s): 0-3
NUMA node1 CPU(s): 8-11
NUMA node2 CPU(s): 12-15
NUMA node3 CPU(s): 4-7
NUMA node4 CPU(s): 16-19
NUMA node5 CPU(s): 24-27
NUMA node6 CPU(s): 28-31
NUMA node7 CPU(s): 20-23
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Spectre v1: Mitigation; Speculative Store Bypass disabled via prctl
Vulnerability Spectre v2: Mitigation; Retpolines, IBPB conditional, IBRS_FW, STIBP disabled, RSB filling
Vulnerability Srbds: Not affected
Vulnerability Tsx async abort: Not affected

From lscpu --cache:
NAME ONE-SIZE ALL-SIZE WAYS TYPE LEVEL SETS PHY-LINE COHERENCY-SIZE
L1d 32K 1M 8 Data 1 64 1 64
L1i 32K 1M 8 Instruction 1 64 1 64
L2 1M 32M 8 Unified 2 2048 1 64
L3 16M 128M 16 Unified 3 16384 1 64

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
node 0 size: 192740 MB
node 0 free: 192485 MB
node 1 cpus: 8 9 10 11
node 1 size: 193534 MB
node 1 free: 193352 MB
node 2 cpus: 12 13 14 15
node 2 size: 193534 MB
node 2 free: 193141 MB

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

node 3 cpus: 4 5 6 7  
node 3 size: 193534 MB  
node 3 free: 193322 MB  
node 4 cpus: 16 17 18 19  
node 4 size: 193534 MB  
node 4 free: 193355 MB  
node 5 cpus: 24 25 26 27  
node 5 size: 193534 MB  
node 5 free: 193414 MB  
node 6 cpus: 28 29 30 31  
node 6 size: 193485 MB  
node 6 free: 193169 MB  
node 7 cpus: 20 21 22 23  
node 7 size: 193534 MB  
node 7 free: 193365 MB  
node distances:  

<table>
<thead>
<tr>
<th>node</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<td>32</td>
<td>32</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>10</td>
</tr>
</tbody>
</table>

From /proc/meminfo  
MemTotal: 1584573500 kB  
HugePages_Total: 0  
Hugepagesize: 2048 kB  
/sbin/tuned-adm active  
Current active profile: throughput-performance  
/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance  

From /etc/*release* /etc/*version*  
os-release:  
NAME="Red Hat Enterprise Linux"  
VERSION="9.0 (Plow)"  
ID=rhel  
ID_LIKE=fedora  
VERSION_ID="9.0"  
PLATFORM_ID="platform:el9"  
PRETTY_NAME="Red Hat Enterprise Linux 9.0 (Plow)"  
ANSI_COLOR="0;31"  

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

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<td></td>
</tr>
</tbody>
</table>

Platform Notes (Continued)

- redhat-release: Red Hat Enterprise Linux release 9.0 (Plow)
- system-release: Red Hat Enterprise Linux release 9.0 (Plow)
- system-release-cpe: cpe:/o:redhat:enterprise_linux:9::baseos

```
uname -a:
    Linux localhost.localdomain 5.14.0-70.13.1.el9_0.x86_64 #1 SMP PREEMPT Thu Apr 14 12:42:38 EDT 2022 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
- CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swapgs barriers and __user pointer sanitation
- CVE-2017-5715 (Spectre variant 2): Mitigation: Retpolines, IBPB: conditional, IBRS_FW, STIBP: disabled, RSB filling
- CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
- CVE-2019-11135 (TSX Asynchronous Abort): Not affected

```
run-level 3 Apr 6 19:00
```

SPEC is set to: /home/CPU2017

```
Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel-home  xfs  372G  149G  223G  40%  /home
```

From /sys/devices/virtual/dmi/id

Vendor: HPE
Product: ProLiant DL385 Gen11
Product Family: ProLiant
Serial: DL385GEN11-003

Additional information from dmidecode 3.3 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:
- 13x Hynix HMCG94MEBRA121N 64 GB 2 rank 4800
- 11x Hynix HMCG94MEBRA123N 64 GB 2 rank 4800

BIOS:
- BIOS Vendor: HPE

(Continued on next page)
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Platform Notes (Continued)

BIOS Version: 1.10
BIOS Date: 10/18/2022
BIOS Revision: 1.10
Firmware Revision: 1.10

(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 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

===============================================
C++, C, Fortran | 607.cactuBSSN_s(base, peak)
===============================================
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

===============================================
Fortran     | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak)
         | 654.roms_s(base, peak)
===============================================
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)

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Compiler Version Notes (Continued)

Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

Fortran, C  
| 621.wrf_s(base, peak) 627.cam4_s(base, peak)  
| 628.pop2_s(base, peak)

AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07)  
(based on LLVM Mirror.Version.14.0.6)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

Base 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

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

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SPEC CPU® 2017 Floating Point Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL385 Gen11
(3.00 GHz, AMD EPYC 9124)

SPECspeed® 2017 fp_base = 222
SPECspeed® 2017 fp_peak = 225

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

Test Date: Nov-2022
Hardware Availability: Dec-2022
Software Availability: Nov-2022

Base Portability Flags (Continued)

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 -Wl,-mllvm -W1,-align-all-nofallthru-blocks=6
-W1,-mllvm -W1,-reduce-array-computations=3 -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-DSPEC_OPENMP -zopt -fopenmp=libomp -lomp -lamdlibm -lmdalloct
-lflang

Fortran benchmarks:
-m64 -Wl,-mllvm -W1,-align-all-nofallthru-blocks=6
-W1,-mllvm -W1,-reduce-array-computations=3
-W1,-mllvm -W1,-enable-X86-prefetching -DSPEC_OPENMP -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -Mrecursive
-funroll-loops -mlvm -lsr-in-nested-loop
-mllvm -reduce-array-computations=3 -zopt -fopenmp=libomp -lomp
-lamdlibm -lmdalloct -lflang

Benchmarks using both Fortran and C:
-m64 -Wl,-mllvm -W1,-align-all-nofallthru-blocks=6
-W1,-mllvm -W1,-reduce-array-computations=3
-W1,-mllvm -W1,-enable-X86-prefetching -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mlvm -reduce-array-computations=3
-DSPEC_OPENMP -zopt -Mrecursive -funroll-loops
-mlvm -lsr-in-nested-loop -fopenmp=libomp -lomp -lamdlibm -lmdalloct
-lflang

Benchmarks using Fortran, C, and C++:
-m64 -Wl,-mllvm -W1,-align-all-nofallthru-blocks=6
-W1,-mllvm -W1,-reduce-array-computations=3
-W1,-mllvm -W1,-x86-use-vzeroupper=false -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mlvm -reduce-array-computations=3
-DSPEC_OPENMP -zopt -mllvm -unroll-threshold=100 -finline-aggressive

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

Benchmarks using Fortran, C, and C++ (continued):
- mllvm -loop-unswitch-threshold=200000 -Mrecursive -funroll-loops
- mllvm -lslr-in-nested-loop -fopenmp=libomp -lomp -lamdlibm -lamdalloc
- lflang

Base Other Flags

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

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

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

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

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
C benchmarks:

619.lbm_s: -m64 -Wl,-ml LLVM -Wl,-align-all-nofallthru-blocks=6
-Wl,-ml LLVM -Wl,-reduce-array-computations=3 -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-fto -fstruct-layout=9 -ml LLVM -unroll-threshold=50
-fremap-arrays -fstrip-mining
-ml LLVM -inline-threshold=1000
-ml LLVM -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-fopenmp=libomp -lomp -laml ibm -laml alloc -lflang

638.imagick_s: Same as 619.lbm_s

644.nab_s: -m64 -Wl,-ml LLVM -Wl,-region-vectorize -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-fto -fstruct-layout=9 -ml LLVM -unroll-threshold=50
-fremap-arrays -fstrip-mining
-ml LLVM -inline-threshold=1000
-ml LLVM -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-fopenmp=libomp -lomp -laml ibm -laml alloc -lflang

Fortran benchmarks:

603.bwaves_s: -m64 -Wl,-ml LLVM -Wl,-align-all-nofallthru-blocks=6
-Wl,-ml LLVM -Wl,-reduce-array-computations=3
-Wl,-ml LLVM -Wl,-enable-X86-prefetching -DSPEC_OPENMP
-Ofast -march=znver4 -fveclib=AMDLIBM -ffast-math
-fopenmp -Mrecursive -ml LLVM -reduce-array-computations=3
-fvector-transform -fscalar-transform -fopenmp=libomp
-lomp -laml ibm -laml alloc -lflang

649.fotonik3d_s: -m64 -Wl,-ml LLVM -Wl,-align-all-nofallthru-blocks=6
-Wl,-ml LLVM -Wl,-reduce-array-computations=3
-Wl,-ml LLVM -Wl,-enable-X86-prefetching -DSPEC_OPENMP
-Ofast -march=znver4 -fveclib=AMDLIBM -ffast-math
-fopenmp -fto -Mrecursive
-ml LLVM -reduce-array-computations=3 -zopt -fopenmp=libomp
-lomp -laml ibm -laml alloc -lflang

654.roms_s: Same as 603.bwaves_s

Benchmarks using both Fortran and C:

621.wrf_s: -m64 -Wl,-ml LLVM -Wl,-align-all-nofallthru-blocks=6
-Wl,-ml LLVM -Wl,-reduce-array-computations=3
-Wl,-ml LLVM -Wl,-enable-X86-prefetching -Ofast
Peek Optimization Flags (Continued)

621.wrf_s (continued):
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-fito -fstruct-layout=9 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-O3 -Mrecursive -funroll-loops -mllvm -lsr-in-nested-loop
-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang

627.cam4_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-fito -fstruct-layout=9 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-Mrecursive -fopenmp=libomp -lomp -lamdlibm -lamdalloc
-1flang

628.pop2_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-fito -fstruct-layout=9 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-Mrecursive -fvector-transform -fscalar-transform
-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang

Benchmarks using Fortran, C, and C++:
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast -march=znver4
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -fstruct-layout=9
-mllvm -unroll-threshold=50 -fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000 -mllvm -reduce-array-computations=3
-DSPEC_OPENMP -zopt -finline-aggressive -mllvm -unroll-threshold=100
-Mrecursive -fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL385 Gen11
(3.00 GHz, AMD EPYC 9124)

SPECspeed®2017_fp_base = 222
SPECspeed®2017_fp_peak = 225

CPU2017 License: 3
Test Sponsor: HPE
Test Date: Nov-2022
Tested by: HPE
Hardware Availability: Dec-2022
Software Availability: Nov-2022

Peak Other Flags

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

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

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

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

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-AMD-Genoa-rev2.0.html
http://www.spec.org/cpu2017/flags/aocc400-flags.2022-12-08.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-AMD-Genoa-rev2.0.xml
http://www.spec.org/cpu2017/flags/aocc400-flags.2022-12-08.xml

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