



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen11

(2.25 GHz, AMD EPYC 9754)

SPECSpeed®2017_fp_base =

SPECSpeed®2017_fp_peak =

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: May-2023

Hardware Availability: Jun-2023

Software Availability: Nov-2022

SPEC has determined that this result does not comply with the SPEC CPU 2017 rules and reporting rules. Specifically, the test sponsor notified SPEC that the results were measured on an unsupported configuration.

Threads
603.bwaves_s
607.cactuBSSN_s
619.lbm_s
621.wrf_s
627.cam4_s
628.pop2_s
638.imagick_s
644.nab_s
649.fotonik3d_s
654.roms_s

Hardware		Software	
CPU Name:	AMD EPYC 9754	OS:	Red Hat Enterprise Linux 9.0 (Plow)
Nominal:	2250	Compiler:	Kernel 5.14.0-70.13.1.el9_0.x86_64
Enabled:	128 cores, 1 chip	Parallel:	C/C++/Fortran: Version 4.0.0 of AOCC
Orderable:	1 chip	Firmware:	Yes
Cache L1:	32 KB I + 32 KB D on chip per core		HPE BIOS Version v1.30 03/06/2023 released Mar-2023
L2:	1 MB I+D on chip per core	File System:	xfs
L3:	256 MB I+D on chip per chip, 16 MB shared / 8 cores	System State:	Run level 3 (multi-user)
Other:	None	Base Pointers:	64-bit
Memory:	768 GB (12 x 64 GB 2Rx4 PC5-4800B-R)	Peak Pointers:	64-bit
Storage:	1 x 960 GB SATA SSD	Other:	None
Other:	None	Power Management:	BIOS and OS set to prefer performance at the cost of additional power usage



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Results Table

Benchmark	Base								Peak							
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
607.cactusBSSN_s	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
619.lbm_s	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
621.wrf_s	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
627.cam4_s	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
628.pop2_s	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
638.imagick_s	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
644.nab_s	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
649.fotonik3d_s	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
654.roms_s	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

~~SPECSpeed®2017_fp_base =~~

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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.
 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

runcpu 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.

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Operating System Notes (Continued)

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:
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.

To always enable THP for peak runs of:

603.bwaves_s, 607.cactusSSN_s, 619.lbm_s, 627.cam4_s, 628.pop2_s, 638.imagick_s, 644.nab_s, 649.fotonik3d_s:
'echo madvise > /sys/kernel/mm/transparent_hugepage/enabled; echo always > /sys/kernel/mm/transparent_hugepage/defrag'
run as root.

To disable THP for peak runs of 621.wrf_s:

'echo never > /sys/kernel/mm/transparent_hugepage/enabled; echo always > /sys/kernel/mm/transparent_hugepage/defrag'
run as root.

To enable THP only on request for peak runs of 644.roms_s:

'echo madvise > /sys/kernel/mm/transparent_hugepage/enabled; echo madvise > /sys/kernel/mm/transparent_hugepage/defrag'
run as root.

Environment Variables Notes

Environment variables set by runcpu before the start of the run:

GOMP_CPU_AFFINITY = "0-127"
LD_LIBRARY_PATH = "/home/cpu2017_10/amd_speed_aocc400_genoa_B/lib/lib:"
LIBOMP_NUM_HIDDEN_HELPERS_THREADS = "0"
MALLOC_CONF = "oversize_treshold:0,retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STEPPESIZE = "128M"
OMP_THREAD_AD_LIMIT = "128"

Environment variables set by runcpu during the 621.wrf_s peak run:

GOMP_CPU_AFFINITY = "0-127"

Environment variables set by runcpu during the 627.cam4_s peak run:

GOMP_CPU_AFFINITY = "0-127"

Environment variables set by runcpu during the 628.pop2_s peak run:

GOMP_CPU_AFFINITY = "0-127"

Environment variables set by runcpu during the 649.fotonik3d_s peak run:

GOMP_CPU_AFFINITY = "0-127"

PGHPF_ZMEM = "yes"

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)

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General Notes (Continued)

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
AMD SMT Option set to Disabled
Determinism Control set to Manual
Performance Determinism set to Partially Deterministic
Last-Level Cache (LLC) as NUMA Node set to Enabled
Memory PStates set to Disabled
ACPI CST C2 Latency set to 18 microseconds
Thermal Configuration set to Maximum Cooling

```
Sysinfo program /home/cpufp17_19/bin/sysinfo
Rev: r6732 of 2022-11-07 fed89b7ed5c36ae2c92cc097bec197
running on localhost.localdomain Thu May 18 20:40:17 2023
```

SUT (System Under Test) - So as seen by some common utilities.

Table of contents

1. uname -a
2. w
3. Username
4. cat /proc/cpuinfo
5. sysinfo process ancestry
6. /proc/cpuinfo
7. lscpu
8. numactl --hardware
9. /proc/meminfo
10. who -f
11. Systemd service manager version: systemd 250 (250-6.el9_0)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info
15. tuned-adm active
16. sysctl
17. /sys/kernel/mm/transparent_hugepage
18. /sys/kernel/mm/transparent_hugepage/khugepaged
19. OS release
20. Disk information
21. /sys/devices/virtual/dmi/id
22. dmidecode

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Platform Notes (Continued)

23. BIOS

```
1. uname -a
Linux localhost.localdomain 5.14.0-70.13.1.el8_6_4 #1 SMP PREEMPT Thu Apr 14 12:42:38 EDT 2022 x86_64
x86_64 x86_64 GNU/Linux
```

2. w
20:40:17 up 3 min, 0 users, load average: 0.00 0.35 0.17
USER TTY LOGIN@ JCPU PCPU WHAT

From environment variable \$USER, not

```
4. ulimit -a
real-time non-blocking time      microseconds, -R) unlimited
core file size                   (blocks, -c) 0
data seg size                    (kbytes, -d) unlimited
scheduling priority              (-e) 0
file size                        (locks, -f) unlimited
pending signals                  (-i) 3094696
max locked memory                (kbytes, -l) 2097152
max memory size                  (kbytes, -m) unlimited
open files                       (-n) 1024
pipe size                        (512 bytes, -p) 8
POSIX message queues             (bytes, -q) 819200
real-time prio                   (-r) 0
stack size                        (kbytes, -s) unlimited
cpu time                         (seconds, -t) unlimited
memlock                          (-u) 3094696
virtual memory                   (kbytes, -v) unlimited
file locks                        (-x) unlimited
```

```
5. sysinfo process ancestry
/usr/lib/systemd/systemd --switched-root --system --deserialize 28
sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
sshd: root [priv]
sshd: root@notty
bash -c cd $SPEC/ && $SPEC/fpspeed.sh
python3 ./run_fpspeed.py
/bin/bash ./amd_speed_aocc400_genoa_B1.sh
runcpu --config amd_speed_aocc400_genoa_B1.cfg --tune all --reportable --iterations 3 fpspeed
runcpu --configfile amd_speed_aocc400_genoa_B1.cfg --tune all --reportable --iterations 3 --nopower
--runmode speed --tune base:peak --size test:train:refspeed fpspeed --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.001/templogs/preenv.fpspeed.001.0.log --lognum 001.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
```

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Platform Notes (Continued)

\$SPEC = /home/cpu2017_19

6. /proc/cpuinfo

```
model name      : AMD EPYC 9754 128-Core Processor
vendor_id       : AuthenticAMD
cpu family     : 25
model          : 160
stepping        : 2
bugs           : sysret_ss恕trs spectre恕 spectre_v2 spec_store_bypass
TLB size        : 3584 4K pages
cpu cores      : 128
siblings        : 128
1 physical ids (chips)
128 processors (hardware threads)
physical id 0: core ids
0-7,16-23,32-39,48-55,64-71,80-87,96-103,112-119,128-135,144-151,160-167,176-183,192-199,208-215,224-231,
240-247
physical id 0: apicids
0-7,16-23,32-39,48-55,64-71,80-87,96-103,112-119,128-135,144-151,160-167,176-183,192-199,208-215,224-231,
240-247
Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
virtualized systems. Use the above data carefully.
```

7. lscpu

```
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):                128
Vendor ID:              AuthenticAMD
BIOS Vendor ID:        Advanced Micro Devices, Inc.
Model name:             AMD EPYC 9754 128-Core Processor
BIOS Model name:        AMD EPYC 9754 128-Core Processor
CPU family:             25
Model:                 160
Thread(s) per core:    1
Core(s) per socket:    128
Socket(s):              1
Stepping:               2
BogoMIPS:               4493.65
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 pdpe1gb rdtscp lm
constant_tsc rep_good nopl nonstop_tsc cpuid extd_apicid aperfmpfperf rapl
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 osvw ibs skinit wdt tce topoext
```

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Platform Notes (Continued)

perfctr_core perfctr_l1_ipext pc_fctr_l1c_mwaitx cpb cat_13 cdp_13
invpcid_single hw_rstate lbd mba ibrs ibpb stibp vmmcall fsgsbase bmi1
avx2 smep bmi2 emt invpcinm rdt_a avx512f avx512dq rdseed adx smap
avx512ifma clflush clwb avx512cd sha_ni avx512bw avx512vl xsaveopt
xsavec xgetbv1 xsaver cm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
avx512_bf16 crn_iprf xsaveerptr rdpru wbnoinvd amd_ppin arat npt lbrv
svm_lock rrip_sav tsc_scale vmcb_clean flushbyasid decodeassists
pausefilter pfthresold avic v_vmsave_vmlload vgif v_spec_ctrl avx512vbmi
l1_pkru_cooke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg
avx512_vpofld dq lmb7 rdpid overflow_recov succor smca fsrm flush_l1d

Virtualization:

L1d cache:
L1i cache:
L2 cache:
L3 cache:
NUMA node(s):
NUMA node0 CPU(s):
NUMA node1 CPU(s):
NUMA node2 CPU(s):
NUMA node3 CPU(s):
NUMA node4 CPU(s):
NUMA node5 CPU(s):
NUMA node6 CPU(s):
NUMA node7 CPU(s):
NUMA node8 CPU(s):
NUMA node9 CPU(s):
NUMA node10 CPU(s):
NUMA node11 CPU(s):
NUMA node12 CPU(s):
NUMA node13 CPU(s):
NUMA node14 CPU(s):
NUMA node15 CPU(s):
Vulnerability Itlb multihit:
Vulnerability L1tf:
Vulnerability Mds:
Vulnerability Meltdown:
Vulnerability Spec store bypass:
Vulnerability Spectre v1:
Vulnerability Spectre v2:
Vulnerability Srbds:
Vulnerability Tsx async abort:

AMD-V
4 MiB (128 instances)
4 MiB (128 instances)
128 MiB (128 instances)
256 MiB (16 instances)
8-15
64-71
72-79
32-39
40-47
96-103
104-111
48-55
56-63
112-119
120-127
16-23
24-31
80-87
88-95
Not affected
Not affected
Not affected
Not affected
Mitigation; Speculative Store Bypass disabled via prctl
Mitigation; usercopy/swaps barriers and __user pointer sanitization
Mitigation; Retpolines, IBPB conditional, IBRS_FW, STIBP disabled, RSB filling
Not affected
Not affected

From lscpu --cache:

NAME	ONE-SIZE	ALL-SIZE	WAYS	TYPE	LEVEL	SETS	PHY-LINE	COHERENCY-SIZE
L1d	32K	4M	8	Data	1	64	1	64
L1i	32K	4M	8	Instruction	1	64	1	64
L2	1M	128M	8	Unified	2	2048	1	64
L3	16M	256M	16	Unified	3	16384	1	64

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Platform Notes (Continued)

```
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
available: 16 nodes (0-15)
node 0 cpus: 0-7
node 0 size: 48135 MB
node 0 free: 47947 MB
node 1 cpus: 8-15
node 1 size: 48382 MB
node 1 free: 48215 MB
node 2 cpus: 64-71
node 2 size: 48382 MB
node 2 free: 48210 MB
node 3 cpus: 72-79
node 3 size: 48382 MB
node 3 free: 48122 MB
node 4 cpus: 32-39
node 4 size: 48382 MB
node 4 free: 48205 MB
node 5 cpus: 40-47
node 5 size: 48382 MB
node 5 free: 48214 MB
node 6 cpus: 96-103
node 6 size: 48382 MB
node 6 free: 48217 MB
node 7 cpus: 104-111
node 7 size: 48382 MB
node 7 free: 47891 MB
node 8 cpus: 48-55
node 8 size: 48382 MB
node 8 free: 48231 MB
node 9 cpus: 56-63
node 9 size: 48382 MB
node 9 free: 48216 MB
node 10 cpus: 112-119
node 10 size: 48345 MB
node 10 free: 48187 MB
node 11 cpus: 120-127
node 11 size: 48328 MB
node 11 free: 48027 MB
node 12 cpus: 16-23
node 12 size: 48382 MB
node 12 free: 48215 MB
node 13 cpus: 24-31
node 13 size: 48382 MB
node 13 free: 48155 MB
node 14 cpus: 80-87
node 14 size: 48382 MB
node 14 free: 48146 MB
node 15 cpus: 88-95
node 15 size: 48382 MB
node 15 free: 48127 MB
```

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PIERRE DESGRANGES (2.25 GHz, AMD EPYC 9754)

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~~Platform Notes (Continued)~~

9. /proc/meminfo
MemTotal: 7924896 kB

10. who -r
run-level 3 Mar 20:30

11. Systemd service manager version: systemd 250 (250-6.el9_0)
Default Target: multi-user

	STATE	systemctl list-unit-files
	enabled	UNIT FILES
		NetworkManager NetworkManager-dispatcher NetworkManager-wait-online audited crond dbus-broker firewalld getty@ irqbalance kdump lvm2-monitor mdmonitor microcode nis-domainname rhsmcertd rsyslog selinux-autorelabel-mark sshd sssd systemd-network-generator tuned udisks2 upower systemd-remount-fs
	enabled-runtime	blk-availability canberra-system-bootup canberra-system-shutdown canberra-system-shutdown-reboot chrony-wait chronyd console-getty cpupower debug-shell hwloc-dump-hwdata ipsec kvm_stat man-db-restart-cache-update nftables powertop rdisc rhsm rhsm-facts rpmbuild-rebuild serial-getty@ sshd-keygen@ systemd-boot-check-no-failures systemd-pstore systemd-sysext
	disabled	sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo
	indirect	

```
13. Linux kernel boot-time arguments, from /proc/cmdline  
    BOOT_IMAGE=(hd0,gpt2)/vmlinuz-5.14.0-70.13.1.el9_0.x86_64  
    root=/dev/mapper/rhel-root
```

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Platform Notes (Continued)

```
ro
resume=/dev/mapper/rhel-swap
rd.lvm.lv=rhel/root
rd.lvm.lv=rhel/swap
```

```
14. cpupower frequency-info
analyzing CPU 0:
  Unable to determine current policy
  boost state support:
    Supported: yes
    Active: yes
    Boost States: 0
    Total States: 3
    Pstate-P0: 2250MHz
```

```
15. tuned-adm active
Current active profile: throughput-performance
```

```
16. sysctl
kernel.numa_balancer 1
kernel.randomize_va_space 0
vm.compaction_proactive 20
vm.dirty_background_bytes 0
vm.dirty_background_ratio 10
vm.dirty_bytess 0
vm.dirty_expire_centisecs 3000
vm.dirty_rate 8
vm.dirty_writen_centisecs 500
vm.dirtytime_expire_seconds 43200
vm.dirtyfrac_threshold 500
vm.dirtyratio_ratio 1
vm.nr_hugepages 0
vm.nr_hugepages_mempolicy 0
vm.nr_overcommit_hugepages 0
vm.swappiness 1
vm.watmark_boost_factor 15000
vm.watermark_scale_factor 10
vm.zone_reclaim_mode 1
```

```
17. /sys/kernel/mm/transparent_hugepage
defrag      [always] defer defer+madvise madvise never
enabled     [always] madvise never
hpage_pmd_size 2097152
shmem_enabled always within_size advise [never] deny force
```

```
18. /sys/kernel/mm/transparent_hugepage/khugepaged
```

(Continued on next page)



SPEC CPU®2017 Floating Point Speed Result

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(Test Sponsor: HPE)

ProLiant DL325 Gen11

(2.25 GHz, AMD EPYC 9754)

SPECSpeed®2017_fp_base =

SPECSpeed®2017_fp_peak =

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: May-2023

Hardware Availability: Jun-2023

Software Availability: Nov-2022

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Platform Notes (Continued)

```
alloc_sleep_millisecs    60000
defrag                  1
max_ptes_none           511
max_ptes_shared          256
max_ptes_swap            64
pages_to_scan            4096
scan_sleep_millisecs     10000
```

```
19. OS release
From /etc/*-release /etc/*-version
os-release      Red Hat Enterprise Linux 9.0 (Plow)
redhat-release Red Hat Enterprise Linux release 9.0 (Plow)
system-release Red Hat Enterprise Linux release 9.0 (Plow)
```

```
20. Disk information
SPEC is set to: /home/cpu2017_19
Filesystem      Type  Si Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs   8G  44G  775G  6% /home
```

```
21. /sys/devices/virtual/dmi/
Vendor:          HPE
Product:        ProLiant DL325 Gen11
Product Family: ProLiant
Serial:         125G1-010
```

```
22. dmidecode
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
standard.
Memory:
  10x Hynix HMCG94AEBRA103N 64 GB 2 rank 4800
  2x Hynix HMCG94MEBRA121N 64 GB 2 rank 4800
```

```
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor:      HPE
BIOS Version:    1.30
BIOS Date:       03/06/2023
BIOS Revision:   1.30
Firmware Revision: 1.10
```



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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.cactusSSN_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)
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
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
```



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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.cactusBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_CFP64 -Mbyteswapio -DSPEC_LP64
627.cam4_s: -DSPEC_CFP64 -DSPEC_LP64
628.pcf2_s: -DSPEC_CAS64 -Mbyteswapio -DSPEC_LP64
638.magic_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
749.zeus3d_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:

-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fopenmp -floop -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 -lamdaloc
-lflang

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Base Optimization Flags (Continued)

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6  
-Wl,-mllvm -Wl,-reduce-array-computations=3  
-Wl,-mllvm -Wl,-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 -mllvm -reduce-array-computations=3  
-DSPEC_OPENMP -zopt -Mrecursive -funroll-loops  
-mllvm -lsr-in-nested-loop -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 -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 -mllvm -unroll-threshold=100 -finline-aggressive  
-mllvm -loop-unswitch-threshold=200000 -Mrecursive -funroll-loops  
-mllvm -lsr-in-nested-loop -fopenmp=libomp -lomp -lamdlibm -lamdalloc  
-lflang
```



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Test Sponsor: HPE

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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



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CPU2017 License: 3

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Tested by: HPE

Test Date: May-2023

Hardware Availability: Jun-2023

Software Availability: Nov-2022

SPEC has determined that this result does not comply with the SPEC CPU 2017 rules and reporting rules. Specifically, the test sponsor notified SPEC that the results were measured on an unsupported configuration.

Peak Optimization Flags

C benchmarks:

619.lbm_s: basepeak = yes

638.imagick_s: basepeak = yes

644.nab_s: basepeak = yes

Fortran benchmarks:

603.bwaves_s: basepeak = yes

649.fotonik3d_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -DSPEC_OPENMP
-Ofast -march=znver4 -fveclib=AMDLIBM -ffast-math
-fopenmp -flto -Mrecursive
-mllvm -reduce-array-computations=3 -zopt -fopenmp=libomp
-lomp -lamdlibm -lamdaloc -lflang

654.roms_s: basepeak = yes

Benchmarks using both Fortran and C:

621.wrf_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
-flto -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 -lamdaloc -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

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SPECspeed®2017_fp_base =

SPECspeed®2017_fp_peak =

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Peak Optimization Flags (Continued)

627.cam4_s (continued):

```
-fno-strict-aliasing -fno-align-to-8 -fno-align-to-16  
-fno-align-to-32 -fno-align-to-64 -fno-align-to-128  
-fno-align-to-256 -fno-align-to-512 -fno-align-to-1024  
-fno-align-to-2048 -fno-align-to-4096 -fno-align-to-8192  
-fno-align-to-16384 -fno-align-to-32768 -fno-align-to-65536  
-fno-align-to-131072 -fno-align-to-262144 -fno-align-to-524288  
-fno-align-to-1048576 -fno-align-to-2097152 -fno-align-to-4194304  
-fno-align-to-8388608 -fno-align-to-16777216 -fno-align-to-33554432  
-fno-align-to-67108864 -fno-align-to-134217728 -fno-align-to-268435456  
-fno-align-to-536870912 -fno-align-to-1073741824 -fno-align-to-2147483648  
-fno-align-to-4294967296 -fno-align-to-8589934592 -fno-align-to-17179869184  
-fno-align-to-34359738368 -fno-align-to-68719476736 -fno-align-to-137438953472  
-fno-align-to-274877906944 -fno-align-to-549755813888 -fno-align-to-1099511627776  
-fno-align-to-2199023255552 -fno-align-to-4398046511104 -fno-align-to-8796093022208  
-fno-align-to-17592186044416 -fno-align-to-35184372088832 -fno-align-to-70368744177664  
-fno-align-to-140737488355328 -fno-align-to-281474976710656 -fno-align-to-562949953421312  
-fno-align-to-1125899906842624 -fno-align-to-2251799813685248 -fno-align-to-4503599627370496  
-fno-align-to-9005399254740992 -fno-align-to-18010798509481984 -fno-align-to-36021597018963968  
-fno-align-to-72043194037927936 -fno-align-to-144086388075855872 -fno-align-to-288172776151711744  
-fno-align-to-576345552303423488 -fno-align-to-1152691104606846976 -fno-align-to-2305382209213693952  
-fno-align-to-4610764418427387904 -fno-align-to-9221528836854775808 -fno-align-to-18443057673709551616  
-fno-align-to-36886115347419103232 -fno-align-to-73772230694838206464 -fno-align-to-147544461389676412928  
-fno-align-to-295088922779352825856 -fno-align-to-590177845558705651712 -fno-align-to-118035569111741130344  
-fno-align-to-236071138223482260688 -fno-align-to-472142276446964521376 -fno-align-to-944284552893929042752  
-fno-align-to-1888569105787858085504 -fno-align-to-3777138211575716171008 -fno-align-to-7554276423151432342016  
-fno-align-to-15108552846302864684032 -fno-align-to-30217105692605729368064 -fno-align-to-60434211385211458736128  
-fno-align-to-120868422770422917472256 -fno-align-to-241736845540845834944512 -fno-align-to-483473691081691669889024  
-fno-align-to-966947382163383339778048 -fno-align-to-1933894764326766679556096 -fno-align-to-3867789528653533359112192  
-fno-align-to-7735579057307066718224384 -fno-align-to-15471158114614133436448768 -fno-align-to-30942316229228266872897536  
-fno-align-to-61884632458456533745795072 -fno-align-to-123769264916913067491590144 -fno-align-to-247538529833826134983180288  
-fno-align-to-495077059667652269966360576 -fno-align-to-990154119335304539932721152 -fno-align-to-1980308238670609079865442304  
-fno-align-to-3960616477341218159730884608 -fno-align-to-7921232954682436319461769216 -fno-align-to-15842465909364872638923538432  
-fno-align-to-31684931818729745277847076864 -fno-align-to-63369863637459490555694153728 -fno-align-to-126739727274918981111388307456  
-fno-align-to-253479454549837962222776614912 -fno-align-to-506958909099675924445553229824 -fno-align-to-101391781819935984889110645968  
-fno-align-to-202783563639871969778221291936 -fno-align-to-405567127279743939556442583872 -fno-align-to-811134254559487879112885167744  
-fno-align-to-1622268509118955758225773135488 -fno-align-to-3244537018237911516451546270976 -fno-align-to-6489074036475823032903092541952  
-fno-align-to-12978148072951646065806185083840 -fno-align-to-25956296145853292131612370167680 -fno-align-to-51912592291706584263224740335360  
-fno-align-to-103825184583413168526449480670720 -fno-align-to-207650369166826337052898961341440 -fno-align-to-415300738333652674105797922682880  
-fno-align-to-830601476667305348211595845365760 -fno-align-to-1661202953334610696423191690731520 -fno-align-to-3322405906669221392846383381463040  
-fno-align-to-6644811813338442785692766762926080 -fno-align-to-13289623626676885571385533525852160 -fno-align-to-26579247253353771142771067051704320  
-fno-align-to-53158494506707542285542134053408640 -fno-align-to-106316989013415084571084268106817280 -fno-align-to-212633978026825169142168536213634560  
-fno-align-to-425267956053650338284337072427269120 -fno-align-to-850535912107300676568674144854538240 -fno-align-to-1701071824214601353137358289709076480  
-fno-align-to-3402143648429202706274716579418152960 -fno-align-to-6804287296858405412549433158836305920 -fno-align-to-13608574593716810825988666317672611840  
-fno-align-to-27217149187433621651977332635345223680 -fno-align-to-54434298374867243303954665270685447360 -fno-align-to-10886859674973448660790933054137091520  
-fno-align-to-21773719349946897321581866068274089040 -fno-align-to-43547438699893794643163732136548178080 -fno-align-to-87094877399787589286327464273096356160  
-fno-align-to-174189754799575178572655328546188312320 -fno-align-to-348379509599150357145310657092376624640 -fno-align-to-696759019198300714290621314184753249280  
-fno-align-to-139351803839650142858125263436355349560 -fno-align-to-278703607679300285716250526872710699120 -fno-align-to-557407215358600571432501053745421388240  
-fno-align-to-111521403839500125714502513436355349560 -fno-align-to-223042807679000251429005026872710699120 -fno-align-to-446085615358000502858001053745421388240  
-fno-align-to-890428030716000125714502513436355349560 -fno-align-to-178085606143200251429005026872710699120 -fno-align-to-356171212286400502858001053745421388240  
-fno-align-to-178085606143200251429005026872710699120 -fno-align-to-356171212286400502858001053745421388240 -fno-align-to-71234241257280100514560021074280417680  
-fno-align-to-142468482544560200514560021074280417680 -fno-align-to-284936965089120400514560021074280417680 -fno-align-to-569873930178240800514560021074280417680  
-fno-align-to-111521403839500125714502513436355349560 -fno-align-to-223042807679000251429005026872710699120 -fno-align-to-446085615358000502858001053745421388240  
-fno-align-to-890428030716000125714502513436355349560 -fno-align-to-178085606143200251429005026872710699120 -fno-align-to-356171212286400502858001053745421388240  
-fno-align-to-178085606143200251429005026872710699120 -fno-align-to-356171212286400502858001053745421388240 -fno-align-to-71234241257280100514560021074280417680  
-fno-align-to-142468482544560200514560021074280417680 -fno-align-to-284936965089120400514560021074280417680 -fno-align-to-569873930178240800514560021074280417680  
-fno-align-to-111521403839500125714502513436355349560 -fno-align-to-223042807679000251429005026872710699120 -fno-align-to-446085615358000502858001053745421388240  
-fno-align-to-890428030716000125714502513436355349560 -fno-align-to-178085606143200251429005026872710699120 -fno-align-to-356171212286400502858001053745421388240  
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SPEC CPU®2017 Floating Point Speed Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen11

(2.25 GHz, AMD EPYC 9754)

SPECspeed®2017_fp_base =

SPECspeed®2017_fp_peak =

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: May-2023

Hardware Availability: Jun-2023

Software Availability: Nov-2022

SPEC has determined that this result does not comply with the SPEC CPU 2017 rules and reporting rules. Specifically, the test sponsor notified SPEC that the results were measured on an unsupported configuration.

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

<http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-AMD-Bogomo-rev1.0.html>

<http://www.spec.org/cpu2017/flags/aocc400-flags.html>

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

<http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-AMD-Bogomo-rev1.0.xml>

<http://www.spec.org/cpu2017/flags/aocc400-flags.xml>

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