



SPEC CPU®2017 Floating Point Speed Result

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Supermicro

Mainstream A+ Server AS -1015A-MT (H13SAE-MF , AMD EPYC 4344P)

SPECspeed®2017_fp_base = 69.6

SPECspeed®2017_fp_energy_base = 622

SPECspeed®2017_fp_peak = 72.4

SPECspeed®2017_fp_energy_peak = 642

CPU2017 License: 001176

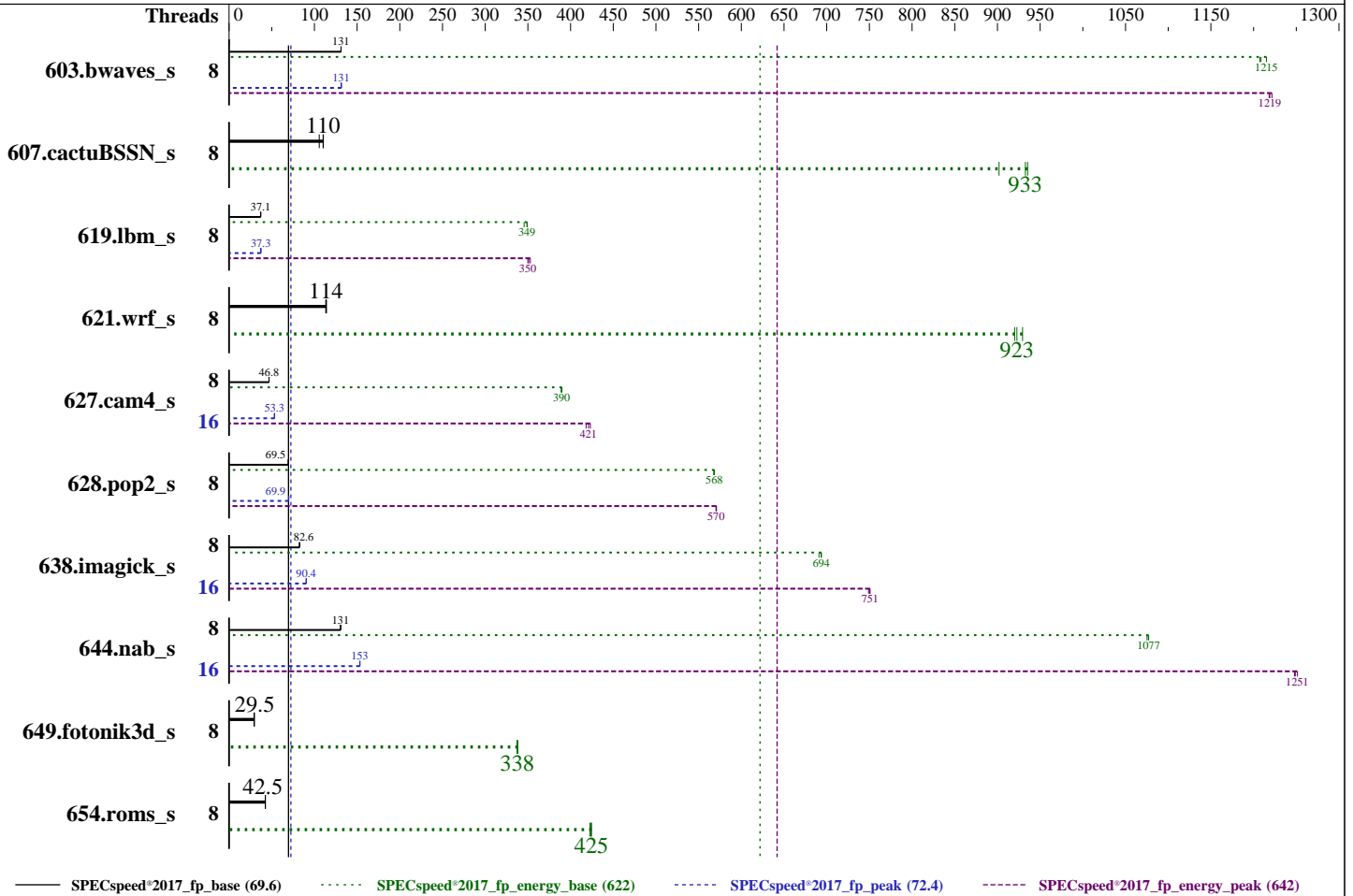
Test Sponsor: Supermicro

Tested by: Supermicro

Test Date: Jul-2024

Hardware Availability: May-2024

Software Availability: Jun-2024



Hardware

CPU Name: AMD EPYC 4344P
 Max MHz: 5300
 Nominal: 3800
 Enabled: 8 cores, 1 chip, 2 threads/core
 Orderable: 1 chip
 Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 32 MB I+D on chip per chip
 Other: None
 Memory: 64 GB (2 x 32 GB 2Rx8 PC5-5200B-U)
 Storage: 1 x 500 GB NVMe SSD
 Other: CPU Cooling: Air

Software

OS: Ubuntu 22.04.3 LTS
 Kernel 6.5.0-44-generic
 Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
 Parallel: Yes
 Firmware: Version 1.2a released Feb-2024
 File System: ext4
 System State: Run level 5 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 Other: None
 Power Management: OS set to prefer performance at the cost of additional power usage.



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Power

Max. Power (W): 141.37
Idle Power (W): 40.73
Min. Temperature (C): 30.00
Elevation (m): 132
Line Standard: 220 V / 50 Hz / 1 phase / 3 wires
Provisioning: Line-powered

Power Settings

Management FW: Version 01.01.04 of Supermicro BMC Firmware
Memory Mode: Normal

Power-Relevant Hardware

Power Supply: 1 x 500 W (non-redundant)
Details: Supermicro PWS-505P-1H
Backplane: 1 x 500 GB NVMe SSD back plane
Other Storage: None
Storage Model #: Samsung SSD 980 Pro 500 GB
NICs Installed: 2 x Intel I210 Gigabit Ethernet Controller @ 1 Gb
NICs Enabled (FW/OS): 2 / 1
NICs Connected/Speed: 1 @ 1 Gb
Other HW Model #: None

Power Analyzer

Power Analyzer: 10.216.139.174:8888
Hardware Vendor: YOKOGAWA, Inc.
Model: WT310E
Serial Number: C2ZG04129V
Input Connection: Ethernet
Metrology Institute: NIST
Calibration By: TESCOM
Calibration Label: T119755
Calibration Date: 16-May-2024
PTDaemon® Version: 1.11.0 (a4047d62; 2023-12-05)
Setup Description: Connected to PSU 1
Current Ranges Used: 2A
Voltage Range Used: 300V

Temperature Meter

Temperature Meter: 10.216.139.174:8889
Hardware Vendor: iButtonLink, Inc.
Model: LinkUSBi + T-Probe
Serial Number: USB-SERIAL CH340
Input Connection: USB
PTDaemon Version: 1.11.0 (a4047d62; 2023-12-05)
Setup Description: 50 mm in front of SUT main intake

Base Results Table

Benchmark	Threads	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
603.bwaves_s	8	450	131	53.0	1220	118	126	450	131	53.3	1210	118	127	449	131	53.3	1210	118	126
607.cactuBSSN_s	8	158	106	20.2	902	128	135	151	110	19.5	935	129	134	151	110	19.6	933	129	134
619.lbm_s	8	142	36.9	17.2	346	121	123	141	37.2	17.0	349	121	124	141	37.1	17.1	349	121	123
621.wrf_s	8	116	114	15.5	929	134	138	116	114	15.7	923	135	137	117	113	15.7	920	134	137
627.cam4_s	8	190	46.7	24.8	389	131	139	189	46.9	24.7	390	131	139	189	46.8	24.8	390	131	139
628.pop2_s	8	171	69.5	23.0	568	134	137	171	69.5	23.0	568	134	137	171	69.4	23.0	568	134	137
638.imagick_s	8	174	82.7	22.7	693	130	134	175	82.3	22.8	691	130	134	175	82.6	22.7	694	130	133
644.nab_s	8	134	131	17.7	1080	132	134	134	131	17.7	1080	132	134	134	131	17.6	1080	132	134
649.fotonik3d_s	8	309	29.5	30.3	338	98.0	101	310	29.4	30.3	337	98.0	101	309	29.5	30.3	338	97.9	100
654.roms_s	8	371	42.5	41.6	423	112	122	370	42.5	41.6	424	112	121	371	42.5	41.5	425	112	122

SPECspeed®2017_fp_base = **69.6**

SPECspeed®2017_fp_energy_base = **622**

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



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Peak Results Table

Benchmark	Threads	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
603.bwaves_s	8	449	131	52.8	1220	118	126	448	132	52.7	1220	118	126	449	131	52.8	1220	118	126
607.cactuBSSN_s	8	158	106	20.2	902	128	135	151	110	19.5	935	129	134	151	110	19.6	933	129	134
619.lbm_s	8	141	37.1	16.9	353	119	122	141	37.3	17.0	351	121	123	141	37.3	17.0	350	121	123
621.wrf_s	8	116	114	15.5	929	134	138	116	114	15.7	923	135	137	117	113	15.7	920	134	137
627.cam4_s	16	166	53.3	22.9	421	138	141	166	53.4	22.8	423	137	141	167	53.0	23.1	418	138	141
628.pop2_s	8	170	69.9	22.9	570	135	137	170	69.9	22.9	571	135	137	170	69.9	22.9	570	135	137
638.imagick_s	16	160	90.4	21.0	749	132	135	159	90.5	21.0	750	131	135	160	90.4	20.9	751	131	134
644.nab_s	16	114	153	15.2	1250	134	135	114	153	15.2	1250	134	135	114	153	15.2	1250	133	135
649.fotonik3d_s	8	309	29.5	30.3	338	98.0	101	310	29.4	30.3	337	98.0	101	309	29.5	30.3	338	97.9	100
654.roms_s	8	371	42.5	41.6	423	112	122	370	42.5	41.6	424	112	121	371	42.5	41.5	425	112	122

SPECspeed®2017_fp_peak = **72.4**

SPECspeed®2017_fp_energy_peak = **642**

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

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.
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.cactuBSSN_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'

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Operating System Notes (Continued)

```
run as root.
To enable THP only on request for peak runs of 654.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 = "0-15"
LD_LIBRARY_PATH = "/home/amd/eceo/speccpu2017/amd_speed_aocc400_znver4_A_lib/lib:"
LIBOMP_NUM_HIDDEN_HELPER_THREADS = "0"
MALLOC_CONF = "oversize_threshold:0,retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "16"

Environment variables set by runcpu during the 603.bwaves_s peak run:
GOMP_CPU_AFFINITY = "0-7"

Environment variables set by runcpu during the 619.lbm_s peak run:
GOMP_CPU_AFFINITY = "0-7"

Environment variables set by runcpu during the 627.cam4_s peak run:
GOMP_CPU_AFFINITY = "0-15"

Environment variables set by runcpu during the 628.pop2_s peak run:
GOMP_CPU_AFFINITY = "0-7"

Environment variables set by runcpu during the 638.imagick_s peak run:
GOMP_CPU_AFFINITY = "0-15"

Environment variables set by runcpu during the 644.nab_s peak run:
GOMP_CPU_AFFINITY = "0-15"
```

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

Sysinfo program /home/amd/eceo/speccpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197

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Platform Notes (Continued)

running on amd-Super-Server Mon Jul 29 19:41:16 2024

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

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- 7. lscpu
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- 9. /proc/meminfo
- 10. who -r
- 11. Systemd service manager version: systemd 249 (249.11-0ubuntu3.12)
- 12. Services, from systemctl list-unit-files
- 13. Linux kernel boot-time arguments, from /proc/cmdline
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- 17. /sys/kernel/mm/transparent_hugepage/khugepaged
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- 22. BIOS

```
1. uname -a
Linux amd-Super-Server 6.5.0-44-generic #44~22.04.1-Ubuntu SMP PREEMPT_DYNAMIC Tue Jun 18 14:36:16 UTC 2
x86_64 x86_64 x86_64 GNU/Linux
```

```
2. w
19:41:16 up 0 min, 2 users, load average: 0.30, 0.09, 0.03
USER      TTY      FROM            LOGIN@   IDLE   JCPU   PCPU   WHAT
amd       :1       :1              19:40   ?xdm?  13.61s 0.00s  /usr/libexec/gdm-x-session --run-script env
GNOME_SHELL_SESSION_MODE=ubuntu /usr/bin/gnome-session --session=ubuntu
amd      pts/1    -               19:40   4.00s  0.79s  0.02s sudo su
```

```
3. Username
From environment variable $USER:  root
From the command 'logname':      amd
```

```
4. ulimit -a
time(seconds)      unlimited
file(blocks)       unlimited
data(kbytes)       unlimited
stack(kbytes)      unlimited
coredump(blocks)   0
memory(kbytes)     unlimited
```

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Platform Notes (Continued)

```

locked memory(kbytes) 2097152
process                253413
nofiles               1024
vmemory(kbytes)      unlimited
locks                 unlimited
rtprio                0

```

```

-----
5. sysinfo process ancestry
/sbin/init splash
/lib/systemd/systemd --user
/usr/libexec/gnome-terminal-server
bash
sudo su
sudo su
su
bash
python3 ./run_amd_speed_aocc400_znver4_A1.py
/bin/bash ./amd_speed_aocc400_znver4_A1.sh
runcpu --config amd_speed_aocc400_znver4_A1.cfg --tune all --reportable --iterations 3 fpspeed
runcpu --configfile amd_speed_aocc400_znver4_A1.cfg --tune all --reportable --iterations 3 --runmode speed
--tune base:peak --size test:train:refspeed fpspeed --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.001/temlogs/preenv.fpspeed.001.0.log --lognum 001.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/amd/eceo/speccpu2017

```

```

-----
6. /proc/cpuinfo
model name      : AMD EPYC 4344P 8-Core Processor
vendor_id      : AuthenticAMD
cpu family     : 25
model          : 97
stepping       : 2
microcode      : 0xa601206
bugs           : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass srso
TLB size      : 3584 4K pages
cpu cores     : 8
siblings      : 16
1 physical ids (chips)
16 processors (hardware threads)
physical id 0: core ids 0-7
physical id 0: apicids 0-15
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 2.37.2:
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Address sizes:         48 bits physical, 48 bits virtual
Byte Order:            Little Endian
CPU(s):                16
On-line CPU(s) list:  0-15
Vendor ID:             AuthenticAMD
Model name:            AMD EPYC 4344P 8-Core Processor

```

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Platform Notes (Continued)

```

CPU family:                25
Model:                     97
Thread(s) per core:       2
Core(s) per socket:       8
Socket(s):                 1
Stepping:                 2
CPU max MHz:              5389.0000
CPU min MHz:              400.0000
BogoMIPS:                 7585.55
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 pdpelgb rdtscp
                          lm constant_tsc rep_good amd_lbr_v2 nopl nonstop_tsc cpuid extd_apicid
                          aperfmperf rapl 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 bpext perfctr_llc mwaitx cpb cat_l3
                          cdp_l3 hw_pstate ssbd mba perfmon_v2 ibrs ibpb stibp ibrs_enhanced
                          vmmcall fsgsbase bmi1 avx2 smep bmi2 erms invpcid cqm rdt_a avx512f
                          avx512dq rdseed adx smap avx512ifma clflushopt clwb avx512cd sha_ni
                          avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc
                          cqm_mbm_total cqm_mbm_local avx512_bf16 clzero irperf xsaveerptr rdpru
                          wbnoinvd cppc arat npt lbrv svm_lock nrip_save tsc_scale vmcb_clean
                          flushbyasid decodeassists pausefilter pfthreshold avic v_vmsave_vmload
                          vgif x2avic v_spec_ctrl vnmi avx512vbmi umip pku ospke avx512_vbmi2
                          gfni vaes vpclmulqdq avx512_vnni avx512_bitalg avx512_vpopcntdq rdpid
                          overflow_recov succor smca flush_llid

Virtualization:           AMD-V
L1d cache:               256 KiB (8 instances)
L1i cache:               256 KiB (8 instances)
L2 cache:                8 MiB (8 instances)
L3 cache:                32 MiB (1 instance)
NUMA node(s):            1
NUMA node0 CPU(s):      0-15
Vulnerability Gather data sampling: Not affected
Vulnerability Itlb multihit:   Not affected
Vulnerability L1tf:          Not affected
Vulnerability Mds:           Not affected
Vulnerability Meltdown:       Not affected
Vulnerability Mmio stale data: Not affected
Vulnerability Retbleed:       Not affected
Vulnerability Spec rstack overflow: Mitigation; Safe RET
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl
Vulnerability Spectre v1:     Mitigation; usercopy/swapgs barriers and __user pointer sanitization
Vulnerability Spectre v2:     Mitigation; Enhanced / Automatic IBRS; IBPB conditional; STIBP
                              always-on; RSB filling; PBRSE-eIBRS Not affected; BHI Not affected

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	256K	8	Data	1	64	1	64
L1i	32K	256K	8	Instruction	1	64	1	64
L2	1M	8M	8	Unified	2	2048	1	64
L3	32M	32M	16	Unified	3	32768	1	64

8. numactl --hardware

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Platform Notes (Continued)

NOTE: a numactl 'node' might or might not correspond to a physical chip.

```
available: 1 nodes (0)
node 0 cpus: 0-15
node 0 size: 63428 MB
node 0 free: 61766 MB
node distances:
node 0
0: 10
```

9. /proc/meminfo
MemTotal: 64950988 kB

10. who -r
run-level 5 Jul 29 19:40

11. Systemd service manager version: systemd 249 (249.11-0ubuntu3.12)
Default Target Status
graphical starting

12. Services, from systemctl list-unit-files

STATE	UNIT FILES
enabled	ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online accounts-daemon anacron apparmor avahi-daemon binfmt-support bluetooth console-setup cron cups cups-browsed dmesg e2scrub_reap getty@ gpu-manager grub-common grub-initrd-fallback hv-fcopy-daemon hv-kvp-daemon hv-vss-daemon irqbalance kerneloops keyboard-setup networkd-dispatcher nvme-fc-boot-connections nvme-autoconnect openvpn power-profiles-daemon rsyslog secureboot-db setvtrgb snapd ssh switcheroo-control systemd-oomd systemd-pstore systemd-resolved systemd-timesyncd thermald ua-reboot-cmds ubuntu-advantage udisks2 ufw unattended-upgrades wpa_supplicant
enabled-runtime	netplan-ovs-cleanup systemd-fsck-root systemd-remount-fs
disabled	acpid brltty console-getty debug-shell intel-sgx-load-module nftables openvpn-client@ openvpn-server@ openvpn@ rsync rtkit-daemon serial-getty@ speech-dispatcherd systemd-boot-check-no-failures systemd-network-generator systemd-networkd systemd-networkd-wait-online systemd-sysextd systemd-time-wait-sync upower wpa_supplicant-nl80211@ wpa_supplicant-wired@ wpa_supplicant@
generated	apport speech-dispatcher
indirect	saned@ spice-vdagentd uidd
masked	alsa-utils cryptdisks cryptdisks-early hwclock pulseaudio-enable-autospawn rc rcS saned screen-cleanup sudo x11-common

13. Linux kernel boot-time arguments, from /proc/cmdline
BOOT_IMAGE=/boot/vmlinuz-6.5.0-44-generic
root=UUID=a6df9058-1d2e-4132-a213-1d96030e2b42
ro
quiet
splash
vt.handoff=7

14. cpupower frequency-info
analyzing CPU 14:
current policy: frequency should be within 400 MHz and 5.39 GHz.

(Continued on next page)



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CPU2017 License: 001176
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Test Date: Jul-2024
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Software Availability: Jun-2024

Platform Notes (Continued)

The governor "performance" may decide which speed to use within this range.

boost state support:
Supported: yes
Active: yes
Boost States: 0
Total States: 2
Pstate-P0: 3800MHz

```
-----
15. sysctl
kernel.numa_balancing          0
kernel.randomize_va_space      0
vm.compaction_proactiveness    20
vm.dirty_background_bytes      0
vm.dirty_background_ratio      10
vm.dirty_bytes                 0
vm.dirty_expire_centisecs      3000
vm.dirty_ratio                 8
vm.dirty_writeback_centisecs   500
vm.dirtytime_expire_seconds    43200
vm.extfrag_threshold           500
vm.min_unmapped_ratio          1
vm.nr_hugepages                0
vm.nr_hugepages_mempolicy      0
vm.nr_overcommit_hugepages     0
vm.swappiness                   1
vm.watermark_boost_factor      15000
vm.watermark_scale_factor      10
vm.zone_reclaim_mode           1
-----
```

```
-----
16. /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
-----
```

```
-----
17. /sys/kernel/mm/transparent_hugepage/khugepaged
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
-----
```

```
-----
18. OS release
From /etc/*-release /etc/*-version
os-release Ubuntu 22.04.3 LTS
-----
```

```
-----
19. Disk information
SPEC is set to: /home/amd/eceo/speccpu2017
Filesystem      Type  Size  Used Avail Use% Mounted on
-----
```

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Platform Notes (Continued)

/dev/nvme0n1p2 ext4 457G 33G 402G 8% /

20. /sys/devices/virtual/dmi/id
Vendor: Supermicro
Product: Super Server
Product Family: Family
Serial: 0123456789

21. 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 "DMTF SMBIOS" standard.
Memory:
2x NO DIMM NO DIMM
2x Unknown CT32G52C42U5.M16G1 32 GB 2 rank 5200

22. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor: American Megatrends International, LLC.
BIOS Version: 1.2a
BIOS Date: 02/15/2024
BIOS Revision: 5.32

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#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin

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

AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin

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CPU2017 License: 001176
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Tested by: Supermicro

Test Date: Jul-2024
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Compiler Version Notes (Continued)

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#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/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#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/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
638.imagick_s: -DSPEC_LP64

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SPECspeed®2017_fp_energy_peak = 642

CPU2017 License: 001176

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Base Portability Flags (Continued)

644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_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 -flto -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-freemap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-DSPEC_OPENMP -zopt -fopenmp=libomp -lomp -lamdlibm -lamdalloc
-lflang
```

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
-freemap-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
-freemap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
```

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SPECspeed®2017_fp_energy_base = 622

SPECspeed®2017_fp_peak = 72.4

SPECspeed®2017_fp_energy_peak = 642

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Jul-2024
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Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):

```
-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
```

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
```



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CPU2017 License: 001176
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Test Date: Jul-2024
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Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

```
619.lbm_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -fstruct-layout=9 -mllvm -unroll-threshold=50
-freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang
```

638.imagick_s: Same as 619.lbm_s

```
644.nab_s: -m64 -Wl,-mllvm -Wl,-region-vectorize -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -fstruct-layout=9 -mllvm -unroll-threshold=50
-freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang
```

Fortran benchmarks:

```
603.bwaves_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 -Mrecursive -mllvm -reduce-array-computations=3
-fvector-transform -fscalar-transform -fopenmp=libomp
-lomp -lamdlibm -lamdalloc -lflang
```

649.fotonik3d_s: basepeak = yes

654.roms_s: basepeak = yes

Benchmarks using both Fortran and C:

(Continued on next page)



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SPECspeed®2017_fp_energy_peak = 642

CPU2017 License: 001176
Test Sponsor: Supermicro
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Peak Optimization Flags (Continued)

621.wrf_s: basepeak = yes

```
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
-flto -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
-lflang
```

```
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
-flto -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++:

607.cactuBSSN_s: basepeak = yes

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



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

<http://www.spec.org/cpu2017/flags/aocc400-flags-A1.2.html>

<http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-AM5-revA.html>

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

<http://www.spec.org/cpu2017/flags/aocc400-flags-A1.2.xml>

<http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-AM5-revA.xml>

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