# SPEC CPU®2017 Integer Speed Result

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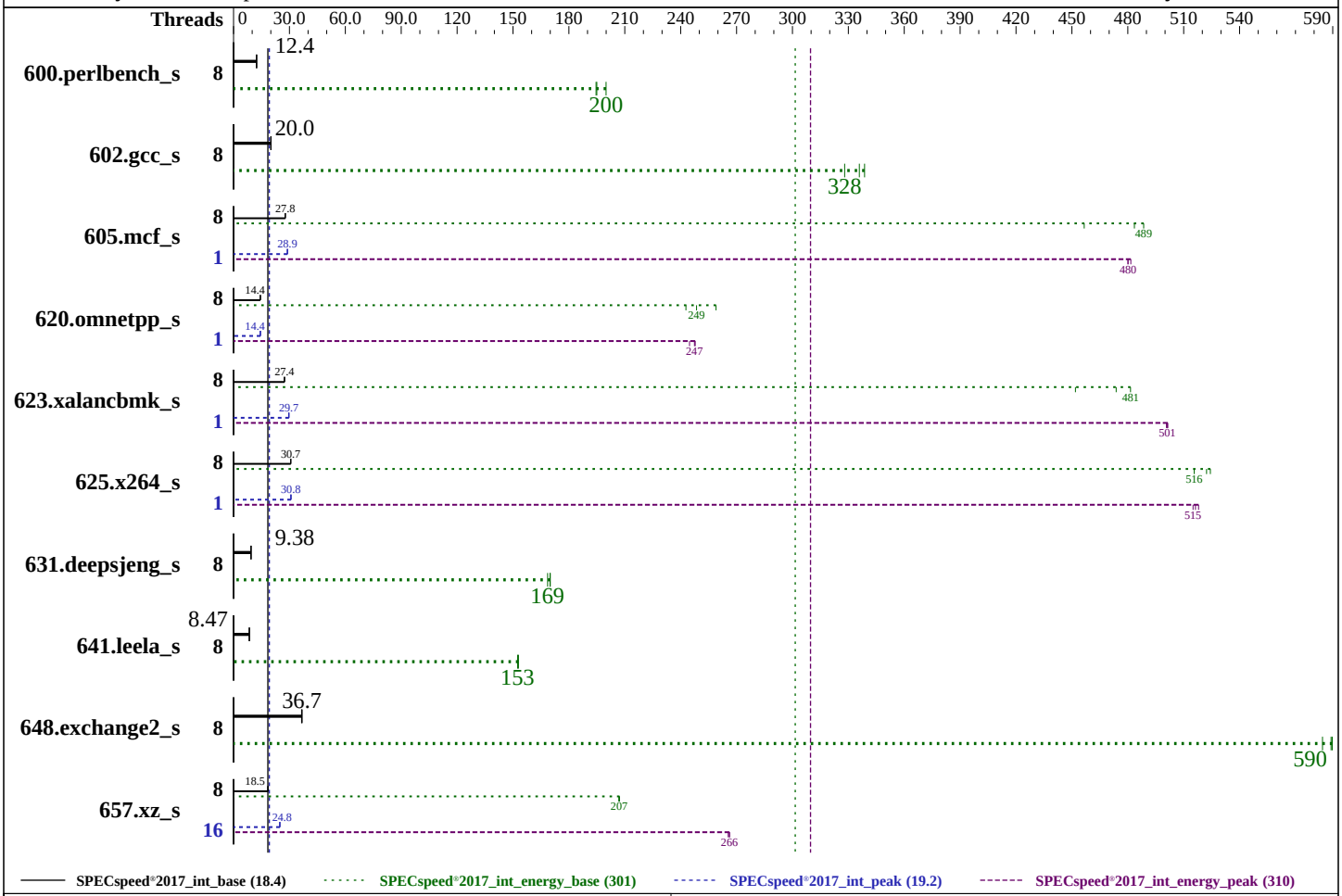
## Supermicro

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

| | |
|---|---|
| SPECspeed®2017_int_base = | 18.4 |
| SPECspeed®2017_int_energy_base = | 301 |
| SPECspeed®2017_int_peak = | 19.2 |
| SPECspeed®2017_int_energy_peak = | 310 |

**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<br>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): 135.81
Idle Power (W): 39.86
Min. Temperature (C): 29.88
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 #s: 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 #s: 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 600.perlbench_s | 8 | **143** | **12.4** | **9.63** | **200** | **67.3** | **69.4** | 144 | 12.3 | 9.90 | 195 | 68.6 | 69.6 | 143 | 12.4 | 9.88 | 195 | 69.0 | 69.7 |
| 602.gcc_s | 8 | 198 | 20.1 | 12.8 | 339 | 64.5 | 68.3 | **199** | **20.0** | **13.2** | **328** | **66.4** | **69.0** | 199 | 20.0 | 12.9 | 336 | 64.8 | 68.7 |
| 605.mcf_s | 8 | 170 | 27.8 | 10.7 | 484 | 62.7 | 71.2 | 170 | 27.7 | 11.3 | 457 | 66.3 | 69.1 | **170** | **27.8** | **10.5** | **489** | **62.0** | **64.8** |
| 620.omnetpp_s | 8 | **113** | **14.4** | **7.14** | **249** | **63.0** | **65.7** | 113 | 14.4 | 6.85 | 259 | 60.4 | 61.4 | 113 | 14.4 | 7.31 | 243 | 64.4 | 65.9 |
| 623.xalancbmk_s | 8 | 51.7 | 27.4 | 3.41 | 452 | 65.8 | 72.2 | **51.8** | **27.4** | **3.20** | **481** | **61.7** | **67.8** | 52.0 | 27.2 | 3.25 | 474 | 62.4 | 70.7 |
| 625.x264_s | 8 | 57.6 | 30.6 | 3.66 | 524 | 63.6 | 67.3 | **57.4** | **30.7** | **3.72** | **516** | **64.8** | **68.3** | 57.4 | 30.7 | 3.67 | 522 | 64.0 | 67.3 |
| 631.deepsjeng_s | 8 | **153** | **9.38** | **9.24** | **169** | **60.5** | **62.0** | 153 | 9.39 | 9.17 | 170 | 60.1 | 63.7 | 153 | 9.38 | 9.16 | 170 | 60.0 | 61.7 |
| 641.leela_s | 8 | 201 | 8.47 | 12.1 | 153 | 60.0 | 60.8 | 201 | 8.47 | 12.1 | 153 | 60.1 | 60.9 | **201** | **8.47** | **12.1** | **153** | **60.1** | **60.9** |
| 648.exchange2_s | 8 | 80.5 | 36.5 | 5.47 | 585 | 68.0 | 68.8 | 79.9 | 36.8 | 5.43 | 589 | 67.9 | 69.0 | **80.2** | **36.7** | **5.42** | **590** | **67.6** | **68.5** |
| 657.xz_s | 8 | 335 | 18.4 | 32.5 | 207 | 97.1 | 132 | **334** | **18.5** | **32.5** | **207** | **97.4** | **132** | 334 | 18.5 | 32.5 | 207 | 97.4 | 133 |

**SPECspeed®2017_int_base = 18.4**

**SPECspeed®2017_int_energy_base = 301**

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

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## Supermicro

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

SPECspeed®2017_int_base = 18.4

SPECspeed®2017_int_energy_base = 301

SPECspeed®2017_int_peak = 19.2

SPECspeed®2017_int_energy_peak = 310

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

**Test Date:** Jul-2024
**Hardware Availability:** May-2024
**Software Availability:** Jun-2024

## 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 600.perlbench_s | 8 | **143** | **12.4** | **9.63** | **200** | **67.3** | **69.4** | 144 | 12.3 | 9.90 | 195 | 68.6 | 69.6 | 143 | 12.4 | 9.88 | 195 | 69.0 | 69.7 |
| 602.gcc_s | 8 | 198 | 20.1 | 12.8 | 339 | 64.5 | 68.3 | **199** | **20.0** | **13.2** | **328** | **66.4** | **69.0** | 199 | 20.0 | 12.9 | 336 | 64.8 | 68.7 |
| 605.mcf_s | 1 | 163 | 28.9 | 10.7 | 480 | 65.7 | 69.2 | **163** | **28.9** | **10.7** | **480** | **65.7** | **69.1** | 163 | 28.9 | 10.7 | 482 | 65.5 | 69.9 |
| 620.omnetpp_s | 1 | 114 | 14.3 | 7.25 | 245 | 63.4 | 64.8 | **113** | **14.4** | **7.17** | **247** | **63.5** | **64.8** | 113 | 14.4 | 7.16 | 248 | 63.4 | 64.8 |
| 623.xalancbmk_s | 1 | 47.6 | 29.8 | 3.07 | 501 | 64.4 | 71.2 | **47.7** | **29.7** | **3.07** | **501** | **64.4** | **71.0** | 47.9 | 29.6 | 3.07 | 501 | 64.2 | 71.0 |
| 625.x264_s | 1 | **57.3** | **30.8** | **3.73** | **515** | **65.0** | **66.2** | 57.2 | 30.8 | 3.72 | 516 | 65.0 | 66.6 | 57.4 | 30.8 | 3.71 | 518 | 64.6 | 65.9 |
| 631.deepsjeng_s | 8 | **153** | **9.38** | **9.24** | **169** | **60.5** | **62.0** | 153 | 9.39 | 9.17 | 170 | 60.1 | 63.7 | 153 | 9.38 | 9.16 | 170 | 60.0 | 61.7 |
| 641.leela_s | 8 | 201 | 8.47 | 12.1 | 153 | 60.0 | 60.8 | 201 | 8.47 | 12.1 | 153 | 60.1 | 60.9 | **201** | **8.47** | **12.1** | **153** | **60.1** | **60.9** |
| 648.exchange2_s | 8 | 80.5 | 36.5 | 5.47 | 585 | 68.0 | 68.8 | 79.9 | 36.8 | 5.43 | 589 | 67.9 | 69.0 | **80.2** | **36.7** | **5.42** | **590** | **67.6** | **68.5** |
| 657.xz_s | 16 | 249 | 24.9 | 25.3 | 266 | 102 | 136 | 249 | 24.8 | 25.4 | 266 | 102 | 136 | **249** | **24.8** | **25.3** | **266** | **102** | **136** |

SPECspeed®2017_int_peak = **19.2**

SPECspeed®2017_int_energy_peak = **310**

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.
```

## 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 605.mcf_s peak run:
GOMP_CPU_AFFINITY = "15"

Environment variables set by runcpu during the 620.omnetpp_s peak run:
GOMP_CPU_AFFINITY = "15"

Environment variables set by runcpu during the 623.xalancbmk_s peak run:
GOMP_CPU_AFFINITY = "15"

Environment variables set by runcpu during the 625.x264_s peak run:
GOMP_CPU_AFFINITY = "15"

Environment variables set by runcpu during the 657.xz_s peak run:
GOMP_CPU_AFFINITY = "0-15"
LIBOMP_NUM_HIDDEN_HELPER_THREADS = "8"
```

## 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
 running on amd-Super-Server Sun Jul 28 20:37:21 2024

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

 ------------------------------------------------------------
 Table of contents
 ------------------------------------------------------------
  1. uname -a
  2. w
  3. Username
  4. ulimit -a
```

**(Continued on next page)**

## Platform Notes (Continued)

```
 5. sysinfo process ancestry
 6. /proc/cpuinfo
 7. lscpu
 8. numactl --hardware
 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
14. cpupower frequency-info
15. sysctl
16. /sys/kernel/mm/transparent_hugepage
17. /sys/kernel/mm/transparent_hugepage/khugepaged
18. OS release
19. Disk information
20. /sys/devices/virtual/dmi/id
21. dmidecode
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
   20:37:21 up 2 min,  2 users,  load average: 0.15, 0.10, 0.04
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
  amd      :1       :1               20:36   ?xdm?  15.93s  0.00s /usr/libexec/gdm-x-session --run-script env
  GNOME_SHELL_SESSION_MODE=ubuntu /usr/bin/gnome-session --session=ubuntu
  amd      pts/1    -                20:36    9.00s  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
  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
```

(Continued on next page)

## Platform Notes (Continued)

```
 /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 intspeed
 runcpu --configfile amd_speed_aocc400_znver4_A1.cfg --tune all --reportable --iterations 3 --runmode speed
   --tune base:peak --size test:train:refspeed intspeed --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.001/templogs/preenv.intspeed.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
  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:                        7585.94
  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
```

**(Continued on next page)**

## Platform Notes (Continued)

```
                                  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_l1d
  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; PBRSB-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
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: 61824 MB
  node distances:
  node   0
    0:  10

------------------------------------------------------------
9. /proc/meminfo
```

(Continued on next page)

## Platform Notes (Continued)

```
   MemTotal:       64950980 kB

------------------------------------------------------------
10. who -r
  run-level 5 Jul 28 20:35

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

------------------------------------------------------------
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 nvmefc-boot-connections nvmf-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-sysext systemd-time-wait-sync upower
                   wpa_supplicant-nl80211@ wpa_supplicant-wired@ wpa_supplicant@
  generated        apport speech-dispatcher
  indirect         saned@ spice-vdagentd uuidd
  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 4:
    current policy: frequency should be within 400 MHz and 5.39 GHz.
                    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
```

(Continued on next page)

## Platform Notes (Continued)

```
  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
  /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
```

(Continued on next page)

## Platform Notes (Continued)

```
  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       | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak)
        | 657.xz_s(base, peak)
--------------------------------------------------------------------------------------------------------------
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++     | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak)
        | 641.leela_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 | 648.exchange2_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
--------------------------------------------------------------------------------------------------------------
```

## Base Compiler Invocation

C benchmarks:
clang

**(Continued on next page)**

## Base Compiler Invocation (Continued)

C++ benchmarks:
clang++

Fortran benchmarks:
flang

## Base Portability Flags

600.perlbench_s: -DSPEC_LINUX_X64 -DSPEC_LP64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LINUX -DSPEC_LP64
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

## Base Optimization Flags

C benchmarks:
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-allow-multiple-definition -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 -lflang
-lamdalloc

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
-mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000

**(Continued on next page)**

## Base Optimization Flags (Continued)

C++ benchmarks (continued):
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-fvirtual-function-elimination -fvisibility=hidden -fopenmp=libomp
-lomp -lamdlibm -lflang -lamdalloc-ext

Fortran benchmarks:
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
-Wl,-mllvm -Wl,-enable-iv-split -O3 -march=znver4 -fveclib=AMDLIBM
-ffast-math -fopenmp -flto -mllvm -optimize-strided-mem-cost
-mllvm -unroll-aggressive -mllvm -unroll-threshold=150 -fopenmp=libomp
-lomp -lamdlibm -lflang -lamdalloc

## Base Other Flags

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

C++ benchmarks:
-Wno-unused-command-line-argument

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

## Peak Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

600.perlbench_s: basepeak = yes

602.gcc_s: basepeak = yes

605.mcf_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-allow-multiple-definition -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
-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang

625.x264_s: Same as 605.mcf_s

657.xz_s: Same as 605.mcf_s

C++ benchmarks:

620.omnetpp_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 -finline-aggressive -mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-fvirtual-function-elimination -fvisibility=hidden
-fopenmp=libomp -lomp -lamdlibm -lamdalloc-ext -lflang

623.xalancbmk_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-do-block-reorder=aggressive -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -finline-aggressive -mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-mllvm -do-block-reorder=aggressive
-fvirtual-function-elimination -fvisibility=hidden

**(Continued on next page)**

# Peak Optimization Flags (Continued)

623.xalancbmk_s (continued):
`-fopenmp=libomp -lomp -lamdlibm -lamdalloc-ext -lflang`

631.deepsjeng_s: `basepeak = yes`

641.leela_s: `basepeak = yes`

Fortran benchmarks:

648.exchange2_s: `basepeak = yes`

# Peak Other Flags

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

C++ benchmarks:
`-Wno-unused-command-line-argument`

Fortran benchmarks:
`-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/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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