# SPEC CPU®2017 Integer Speed Result

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## Quanta Cloud Technology
(Test Sponsor: Quanta Computer Inc.)

QuantaGrid D44N-1U
(2.40 GHz,AMD EPYC 9654)

$SPECspeed®2017\_int\_base =$ 13.9

$SPECspeed®2017\_int\_peak =$ Not Run
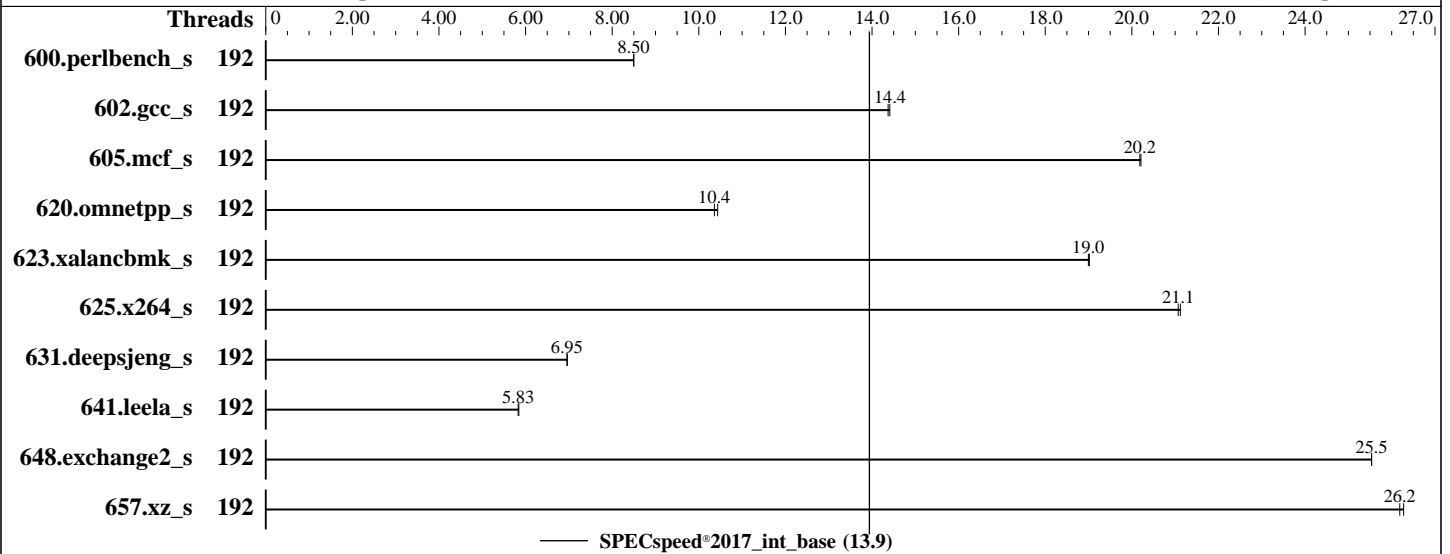
**CPU2017 License:** 9050　　　　　　　　　　　　　　　　**Test Date:** Oct-2023
**Test Sponsor:** Quanta Computer Inc.　　　　　　**Hardware Availability:** Nov-2023
**Tested by:** Quanta Computer Inc.　　　　　　　　**Software Availability:** Sep-2023

| Threads | | |
|---|---|---|
| 600.perlbench_s | 192 | 8.50 |
| 602.gcc_s | 192 | 14.4 |
| 605.mcf_s | 192 | 20.2 |
| 620.omnetpp_s | 192 | 10.4 |
| 623.xalancbmk_s | 192 | 19.0 |
| 625.x264_s | 192 | 21.1 |
| 631.deepsjeng_s | 192 | 6.95 |
| 641.leela_s | 192 | 5.83 |
| 648.exchange2_s | 192 | 25.5 |
| 657.xz_s | 192 | 26.2 |

SPECspeed®2017_int_base (13.9)

## Hardware

CPU Name: AMD EPYC 9654
　Max MHz: 3700
　Nominal: 2400
Enabled: 192 cores, 2 chips
Orderable: 1,2 chips
Cache L1: 32 KB I + 32 KB D on chip per core
　L2: 1 MB I+D on chip per core
　L3: 384 MB I+D on chip per chip,
　　　 32 MB shared / 8 cores
　Other: None
Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 3.84 TB NVMe SSD
Other: None

## Software

OS: Ubuntu 22.04.2 LTS
　　 kernel version 5.15.0-84-generic
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
Parallel: Yes
Firmware: Version 3A02 released Sep-2023
File System: ext4
System State: Run level 5 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: BIOS set to prefer performance at the cost of
　　　　　　　　 additional power usage

　　　　Standard Performance Evaluation Corporation (info@spec.org)　　　　https://www.spec.org/

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## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Threads | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Threads | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 600.perlbench_s | 192 | **209** | **8.50** | 209 | 8.50 | | | | | | | | | |
| 602.gcc_s | 192 | **277** | **14.4** | 276 | 14.4 | | | | | | | | | |
| 605.mcf_s | 192 | **234** | **20.2** | 234 | 20.2 | | | | | | | | | |
| 620.omnetpp_s | 192 | **157** | **10.4** | 156 | 10.4 | | | | | | | | | |
| 623.xalancbmk_s | 192 | 74.5 | 19.0 | **74.6** | **19.0** | | | | | | | | | |
| 625.x264_s | 192 | **83.7** | **21.1** | 83.5 | 21.1 | | | | | | | | | |
| 631.deepsjeng_s | 192 | 206 | 6.97 | **206** | **6.95** | | | | | | | | | |
| 641.leela_s | 192 | 292 | 5.84 | **293** | **5.83** | | | | | | | | | |
| 648.exchange2_s | 192 | 115 | 25.5 | **115** | **25.5** | | | | | | | | | |
| 657.xz_s | 192 | **236** | **26.2** | 235 | 26.3 | | | | | | | | | |
| SPECspeed®2017_int_base = | | | | 13.9 | | | | | | | | | | |
| SPECspeed®2017_int_peak = | | | | Not Run | | | | | | | | | | |

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.
```

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## Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-191"
LD_LIBRARY_PATH = "/root/cpu2017/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 = "192"
```

## General Notes

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

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.
```

## Platform Notes

```
BIOS Configuration
 ACPI CST C2 Latency set to 18
 NUMA nodes per socket set to NPS4
 Determinism Control is Manual
 Determinism Slider set to Power
 cTDP Control set to Manual
 cTDP set to 400
 PPT Control set to Manual
 PPT set to 400
 SMT set to disable

 Sysinfo program /root/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on quanta Thu Oct 12 10:21:56 2023

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

 -----------------------------------------------------------
 Table of contents
 -----------------------------------------------------------
  1. uname -a
  2. w
  3. Username
  4. ulimit -a
  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 (249.11-0ubuntu3.7)
 12. Failed units, from systemctl list-units --state=failed
 13. Services, from systemctl list-unit-files
 14. Linux kernel boot-time arguments, from /proc/cmdline
```

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## Platform Notes (Continued)

```
   15. cpupower frequency-info
   16. tuned-adm active
   17. sysctl
   18. /sys/kernel/mm/transparent_hugepage
   19. /sys/kernel/mm/transparent_hugepage/khugepaged
   20. OS release
   21. Disk information
   22. /sys/devices/virtual/dmi/id
   23. dmidecode
   24. BIOS
   ----------------------------------------------------------

   ----------------------------------------------------------
   1. uname -a
     Linux quanta 5.15.0-84-generic #93-Ubuntu SMP Tue Sep 5 17:16:10 UTC 2023 x86_64 x86_64 x86_64 GNU/Linux

   ----------------------------------------------------------
   2. w
      10:21:56 up  1:14,  1 user,  load average: 3.51, 4.67, 2.92
     USER      TTY      FROM              LOGIN@   IDLE   JCPU   PCPU WHAT
     root     tty1     -                 17:07    1:11m  1.28s  0.04s /bin/bash ./amd_speed_aocc400_znver4_A1.sh

   ----------------------------------------------------------
   3. Username
     From environment variable $USER:  root

   ----------------------------------------------------------
   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              6190491
     nofiles              1024000
     vmemory(kbytes)      unlimited
     locks                unlimited
     rtprio               0

   ----------------------------------------------------------
   5. sysinfo process ancestry
    /sbin/init
    /bin/login -f
    -bash
    /bin/bash ./test.sh
    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 base --reportable --iterations 2 intspeed
    runcpu --configfile amd_speed_aocc400_znver4_A1.cfg --tune base --reportable --iterations 2 --nopower
      --runmode speed --tune base --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 = /root/cpu2017

   ----------------------------------------------------------
   6. /proc/cpuinfo
       model name       : AMD EPYC 9654 96-Core Processor
       vendor_id        : AuthenticAMD
```

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## Platform Notes (Continued)

```
    cpu family      : 25
    model           : 17
    stepping        : 1
    microcode       : 0xa10113e
    bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
    TLB size        : 3584 4K pages
    cpu cores       : 96
    siblings        : 96
    2 physical ids (chips)
    192 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
    physical id 1: 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
    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
    physical id 1: apicids
    256-263,272-279,288-295,304-311,320-327,336-343,352-359,368-375,384-391,400-407,416-423,432-439
  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:                  46 bits physical, 57 bits virtual
   Byte Order:                     Little Endian
   CPU(s):                         192
   On-line CPU(s) list:            0-191
   Vendor ID:                      AuthenticAMD
   Model name:                     AMD EPYC 9654 96-Core Processor
   CPU family:                     25
   Model:                          17
   Thread(s) per core:             1
   Core(s) per socket:             96
   Socket(s):                      2
   Stepping:                       1
   Frequency boost:                enabled
   CPU max MHz:                    3707.8120
   CPU min MHz:                    1500.0000
   BogoMIPS:                       4792.35
   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 aperfmperf
                                   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 perfctr_core perfctr_nb bpext perfctr_llc mwaitx cpb cat_l3
                                   cdp_l3 invpcid_single hw_pstate ssbd mba ibrs ibpb stibp 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 amd_ppin cppc arat npt lbrv svm_lock nrip_save tsc_scale
                                   vmcb_clean flushbyasid decodeassists pausefilter pfthreshold avic
                                   v_vmsave_vmload vgif v_spec_ctrl avx512vbmi umip pku ospke avx512_vbmi2
                                   gfni vaes vpclmulqdq avx512_vnni avx512_bitalg avx512_vpopcntdq la57
                                   rdpid overflow_recov succor smca fsrm flush_l1d sme sev sev_es
   Virtualization:                 AMD-V
   L1d cache:                      6 MiB (192 instances)
   L1i cache:                      6 MiB (192 instances)
```

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## Platform Notes (Continued)

```
   L2 cache:                          192 MiB (192 instances)
   L3 cache:                          768 MiB (24 instances)
   NUMA node(s):                      24
   NUMA node0 CPU(s):                 0-7
   NUMA node1 CPU(s):                 8-15
   NUMA node2 CPU(s):                 16-23
   NUMA node3 CPU(s):                 24-31
   NUMA node4 CPU(s):                 32-39
   NUMA node5 CPU(s):                 40-47
   NUMA node6 CPU(s):                 48-55
   NUMA node7 CPU(s):                 56-63
   NUMA node8 CPU(s):                 64-71
   NUMA node9 CPU(s):                 72-79
   NUMA node10 CPU(s):                80-87
   NUMA node11 CPU(s):                88-95
   NUMA node12 CPU(s):                96-103
   NUMA node13 CPU(s):                104-111
   NUMA node14 CPU(s):                112-119
   NUMA node15 CPU(s):                120-127
   NUMA node16 CPU(s):                128-135
   NUMA node17 CPU(s):                136-143
   NUMA node18 CPU(s):                144-151
   NUMA node19 CPU(s):                152-159
   NUMA node20 CPU(s):                160-167
   NUMA node21 CPU(s):                168-175
   NUMA node22 CPU(s):                176-183
   NUMA node23 CPU(s):                184-191
   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 store bypass:   Mitigation; Speculative Store Bypass disabled via prctl and seccomp
   Vulnerability Spectre v1:          Mitigation; usercopy/swapgs barriers and __user pointer sanitization
   Vulnerability Spectre v2:          Mitigation; Retpolines, IBPB conditional, IBRS_FW, STIBP disabled, RSB
                                      filling, PBRSB-eIBRS 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       6M   8 Data              1    64        1             64
       L1i       32K       6M   8 Instruction       1    64        1             64
       L2         1M     192M   8 Unified           2  2048        1             64
       L3        32M     768M  16 Unified           3 32768        1             64


   ------------------------------------------------------------
   8. numactl --hardware
   NOTE: a numactl 'node' might or might not correspond to a physical chip.
     available: 24 nodes (0-23)
     node 0 cpus: 0-7
     node 0 size: 64110 MB
     node 0 free: 63767 MB
     node 1 cpus: 8-15
     node 1 size: 64509 MB
     node 1 free: 64118 MB
     node 2 cpus: 16-23
     node 2 size: 64509 MB
```

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## Platform Notes (Continued)

```
     node 2 free: 64096 MB
     node 3 cpus: 24-31
     node 3 size: 64509 MB
     node 3 free: 64357 MB
     node 4 cpus: 32-39
     node 4 size: 64509 MB
     node 4 free: 64316 MB
     node 5 cpus: 40-47
     node 5 size: 64509 MB
     node 5 free: 64348 MB
     node 6 cpus: 48-55
     node 6 size: 64509 MB
     node 6 free: 64350 MB
     node 7 cpus: 56-63
     node 7 size: 64509 MB
     node 7 free: 64317 MB
     node 8 cpus: 64-71
     node 8 size: 64509 MB
     node 8 free: 64321 MB
     node 9 cpus: 72-79
     node 9 size: 64509 MB
     node 9 free: 63049 MB
     node 10 cpus: 80-87
     node 10 size: 64509 MB
     node 10 free: 64191 MB
     node 11 cpus: 88-95
     node 11 size: 64509 MB
     node 11 free: 63352 MB
     node 12 cpus: 96-103
     node 12 size: 64509 MB
     node 12 free: 64281 MB
     node 13 cpus: 104-111
     node 13 size: 64509 MB
     node 13 free: 64275 MB
     node 14 cpus: 112-119
     node 14 size: 64509 MB
     node 14 free: 64262 MB
     node 15 cpus: 120-127
     node 15 size: 64509 MB
     node 15 free: 64361 MB
     node 16 cpus: 128-135
     node 16 size: 64509 MB
     node 16 free: 64345 MB
     node 17 cpus: 136-143
     node 17 size: 64509 MB
     node 17 free: 64351 MB
     node 18 cpus: 144-151
     node 18 size: 64509 MB
     node 18 free: 64359 MB
     node 19 cpus: 152-159
     node 19 size: 64509 MB
     node 19 free: 64365 MB
     node 20 cpus: 160-167
     node 20 size: 64462 MB
     node 20 free: 64295 MB
     node 21 cpus: 168-175
     node 21 size: 64509 MB
     node 21 free: 64322 MB
     node 22 cpus: 176-183
     node 22 size: 64509 MB
```

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## Platform Notes (Continued)

```
    node 22 free: 64332 MB
    node 23 cpus: 184-191
    node 23 size: 64454 MB
    node 23 free: 64165 MB
    node distances:
    node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23
      0:  10  11  11  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
      1:  11  10  11  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
      2:  11  11  10  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
      3:  12  12  12  10  11  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
      4:  12  12  12  11  10  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
      5:  12  12  12  11  11  10  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
      6:  12  12  12  12  12  12  10  11  11  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
      7:  12  12  12  12  12  12  11  10  11  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
      8:  12  12  12  12  12  12  11  11  10  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
      9:  12  12  12  12  12  12  12  12  12  10  11  11  32  32  32  32  32  32  32  32  32  32  32  32
     10:  12  12  12  12  12  12  12  12  12  11  10  11  32  32  32  32  32  32  32  32  32  32  32  32
     11:  12  12  12  12  12  12  12  12  12  11  11  10  32  32  32  32  32  32  32  32  32  32  32  32
     12:  32  32  32  32  32  32  32  32  32  32  32  32  10  11  11  12  12  12  12  12  12  12  12  12
     13:  32  32  32  32  32  32  32  32  32  32  32  32  11  10  11  12  12  12  12  12  12  12  12  12
     14:  32  32  32  32  32  32  32  32  32  32  32  32  11  11  10  12  12  12  12  12  12  12  12  12
     15:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  10  11  11  12  12  12  12  12  12
     16:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  11  10  11  12  12  12  12  12  12
     17:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  11  11  10  12  12  12  12  12  12
     18:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  10  11  11  12  12  12
     19:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  10  11  12  12  12
     20:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  11  10  12  12  12
     21:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  12  10  11  11
     22:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  12  11  10  11
     23:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  12  11  11  10


  -----------------------------------------------------------
  9. /proc/meminfo
     MemTotal:      1584881684 kB


  -----------------------------------------------------------
  10. who -r
    run-level 5 Oct 12 17:07


  -----------------------------------------------------------
  11. Systemd service manager version: systemd 249 (249.11-0ubuntu3.7)
    Default Target  Status
    graphical       degraded


  -----------------------------------------------------------
  12. Failed units, from systemctl list-units --state=failed
      UNIT            LOAD   ACTIVE SUB    DESCRIPTION
    * rc-local.service loaded failed failed /etc/rc.local Compatibility


  -----------------------------------------------------------
  13. Services, from systemctl list-unit-files
    STATE           UNIT FILES
    enabled         ModemManager apparmor blk-availability chrony cloud-config cloud-final cloud-init
                    cloud-init-local console-setup cron dmesg e2scrub_reap finalrd getty@ gpu-manager
                    grub-common irqbalance keyboard-setup lm-sensors lvm2-monitor lxd-agent multipathd
                    networkd-dispatcher open-iscsi open-vm-tools pollinate rpcbind rsyslog secureboot-db
                    setvtrgb ssh systemd-networkd systemd-networkd-wait-online systemd-pstore systemd-resolved
                    thermald tuned ua-reboot-cmds ubuntu-advantage udisks2 ufw vgauth
    enabled-runtime netplan-ovs-cleanup rc-local systemd-fsck-root systemd-remount-fs
    disabled        console-getty debug-shell grub-initrd-fallback ipmievd iscsid nftables rsync serial-getty@
```

**(Continued on next page)**

Quanta Cloud Technology

(Test Sponsor: Quanta Computer Inc.)

QuantaGrid D44N-1U

(2.40 GHz,AMD EPYC 9654)

SPECspeed®2017_int_base =    13.9

SPECspeed®2017_int_peak = Not Run

| | | | |
|---|---|---|---|
| **CPU2017 License:** | 9050 | **Test Date:** | Oct-2023 |
| **Test Sponsor:** | Quanta Computer Inc. | **Hardware Availability:** | Nov-2023 |
| **Tested by:** | Quanta Computer Inc. | **Software Availability:** | Sep-2023 |

## Platform Notes (Continued)

```
                     sysstat systemd-boot-check-no-failures systemd-network-generator systemd-sysext
                     systemd-time-wait-sync upower
  generated          apport cpufrequtils edac loadcpufreq openipmi
  indirect           uuidd
  masked             cryptdisks cryptdisks-early hwclock lvm2 multipath-tools-boot nfs-common rc rcS
                     screen-cleanup sudo systemd-timesyncd x11-common


  ----------------------------------------------------------------
  14. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=/boot/vmlinuz-5.15.0-84-generic
    root=UUID=2aa35e7a-56f6-460a-ae69-64654070d9c7
    ro
    pcie_aspm=off


  ----------------------------------------------------------------
  15. cpupower frequency-info
    analyzing CPU 0:
      current policy: frequency should be within 1.50 GHz and 2.40 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: 3
      Pstate-P0:  2400MHz


  ----------------------------------------------------------------
  16. tuned-adm active
    Current active profile: latency-performance


  ----------------------------------------------------------------
  17. sysctl
    kernel.numa_balancing          1
    kernel.randomize_va_space      0
    vm.compaction_proactiveness    20
    vm.dirty_background_bytes      0
    vm.dirty_background_ratio      3
    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


  ----------------------------------------------------------------
  18. /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
```

**(Continued on next page)**

# SPEC CPU®2017 Integer Speed Result
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## Quanta Cloud Technology
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## Platform Notes (Continued)

```
        ----------------------------------------------------------
    19. /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


        ----------------------------------------------------------
    20. OS release
      From /etc/*-release /etc/*-version
      os-release Ubuntu 22.04.2 LTS


        ----------------------------------------------------------
    21. Disk information
    SPEC is set to: /root/cpu2017
      Filesystem      Type  Size  Used Avail Use% Mounted on
      /dev/nvme1n1p2 ext4  3.5T   44G  3.3T   2% /


        ----------------------------------------------------------
    22. /sys/devices/virtual/dmi/id
        Vendor:         Quanta Cloud Technology Inc.
        Product:        QuantaGrid D44N-1U
        Product Family: S6N


        ----------------------------------------------------------
    23. 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:
        24x Micron Technology MTC36F2046S1PC48BA1 64 GB 2 rank 4800



        ----------------------------------------------------------
    24. BIOS
    (This section combines info from /sys/devices and dmidecode.)
        BIOS Vendor:       American Megatrends International, LLC.
        BIOS Version:      3A02
        BIOS Date:         09/21/2023
        BIOS Revision:     5.27
        Firmware Revision: 3.24
```

## Compiler Version Notes

```
==============================================================================
C      | 600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base) 657.xz_s(base)
------------------------------------------------------------------------------
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) 623.xalancbmk_s(base) 631.deepsjeng_s(base) 641.leela_s(base)
```

**(Continued on next page)**

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**Test Date:** Oct-2023
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**Software Availability:** Sep-2023

## Compiler Version Notes (Continued)

```
--------------------------------------------------------------------------------
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)
--------------------------------------------------------------------------------
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`

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`

**(Continued on next page)**

## Quanta Cloud Technology
(Test Sponsor: Quanta Computer Inc.)

## QuantaGrid D44N-1U
(2.40 GHz,AMD EPYC 9654)

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# Base Optimization Flags (Continued)

C benchmarks (continued):
```
-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
-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
```

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/Quanta-Computer-Inc-amd-speccpu-setting-v1.1_AMD_Genoa.html

# SPEC CPU®2017 Integer Speed Result

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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/Quanta-Computer-Inc-amd-speccpu-setting-v1.1_AMD_Genoa.xml

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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