SPEC CPU®2017 Integer Rate Result

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

QuantaGrid D44N-1U
(2.25 GHz,AMD EPYC 9754)

$SPECrate^{®}2017_int_base = $ **1860**

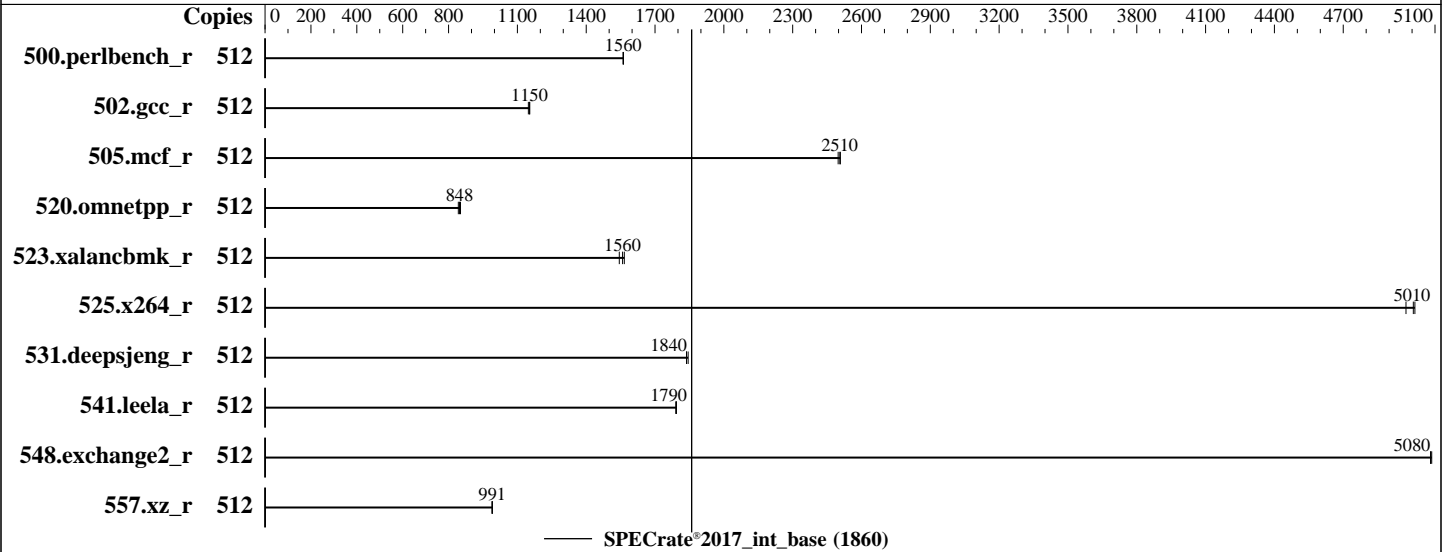$SPECrate^{®}2017_int_peak = $ Not Run

CPU2017 License: 9050

Test Sponsor: Quanta Computer Inc.

Tested by: Quanta Computer Inc.

Test Date: Dec-2023

Hardware Availability: Nov-2023

Software Availability: Nov-2022

Copies	Value
500.perlbench_r 512	1560
502.gcc_r 512	1150
505.mcf_r 512	2510
520.omnetpp_r 512	848
523.xalancbmk_r 512	1560
525.x264_r 512	5010
531.deepsjeng_r 512	1840
541.leela_r 512	1790
548.exchange2_r 512	5080
557.xz_r 512	991

SPECrate®2017_int_base (1860)

Hardware

CPU Name: AMD EPYC 9754
Max MHz: 3100
Nominal: 2250
Enabled: 256 cores, 2 chips, 2 threads/core
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: 256 MB I+D on chip per chip,
16 MB shared / 8 cores
Other: None
Memory: 768 GB (24 x 32 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 3.84 TB NVMe SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP4
Kernel 5.14.21-150400.22-default
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
Parallel: No
Firmware: Version 3A05 released Oct-2023
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: BIOS and OS 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						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	512	522	1560	**522**	**1560**	522	1560							
502.gcc_r	512	632	1150	628	1150	**629**	**1150**							
505.mcf_r	512	**330**	**2510**	330	2510	331	2500							
520.omnetpp_r	512	797	842	**792**	**848**	788	852							
523.xalancbmk_r	512	350	1540	345	1570	**347**	**1560**							
525.x264_r	512	179	5010	**179**	**5010**	180	4970							
531.deepsjeng_r	512	318	1840	**319**	**1840**	319	1840							
541.leela_r	512	473	1790	**473**	**1790**	473	1790							
548.exchange2_r	512	264	5090	264	5080	**264**	**5080**							
557.xz_r	512	559	990	**558**	**991**	558	991							
SPECrate®2017_int_base =	**1860**													
SPECrate®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) only on request for base runs,
'echo madvise > /sys/kernel/mm/transparent_hugepage/enabled' run as root.
To enable THP for all allocations for peak runs,
'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:
LD_LIBRARY_PATH =
     "/root/cpu2017/amd_rate_aocc400_znver4_A_lib/lib:/root/cpu2017/amd_rate_aocc400_znver4_A_lib/lib32:"
MALLOC_CONF = "retain:true"
```

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
 ACPI SRAT L3 Cache As NUMA Domain set to Enable

 Sysinfo program /root/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Fri Dec  8 03:48:16 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+suse.124.g2bc0b2c447)
 12. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. tuned-adm active
 16. sysctl
 17. /sys/kernel/mm/transparent_hugepage
 18. /sys/kernel/mm/transparent_hugepage/khugepaged
 19. OS release
```

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Platform Notes (Continued)

```
   20. Disk information
   21. /sys/devices/virtual/dmi/id
   22. dmidecode
   23. BIOS
   ------------------------------------------------------------


   ------------------------------------------------------------
   1. uname -a
     Linux localhost 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222/lp)
     x86_64 x86_64 x86_64 GNU/Linux


   ------------------------------------------------------------
   2. w
      03:48:16 up 17:21,  1 user,  load average: 276.90, 448.94, 483.66
      USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
      root     tty1     -                Thu10    7:38m 13.54s  0.08s /bin/bash ./amd_rate_aocc400_znver4_A1.sh

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


   ------------------------------------------------------------
   4. ulimit -a
     core file size          (blocks, -c) 0
     data seg size           (kbytes, -d) unlimited
     scheduling priority             (-e) 0
     file size               (blocks, -f) unlimited
     pending signals                 (-i) 3091942
     max locked memory       (kbytes, -l) 2097152
     max memory size         (kbytes, -m) unlimited
     open files                      (-n) 1024
     pipe size            (512 bytes, -p) 8
     POSIX message queues     (bytes, -q) 819200
     real-time priority              (-r) 0
     stack size              (kbytes, -s) unlimited
     cpu time               (seconds, -t) unlimited
     max user processes              (-u) 3091942
     virtual memory          (kbytes, -v) unlimited
     file locks                      (-x) unlimited

   ------------------------------------------------------------
   5. sysinfo process ancestry
    /usr/lib/systemd/systemd --switched-root --system --deserialize 30
    login -- root
    -bash
    /bin/bash ./test.sh
    python3 ./run_amd_rate_aocc400_znver4_A1.py
    /bin/bash ./amd_rate_aocc400_znver4_A1.sh
    runcpu --config amd_rate_aocc400_znver4_A1.cfg --tune base --reportable --iterations 3 intrate
    runcpu --configfile amd_rate_aocc400_znver4_A1.cfg --tune base --reportable --iterations 3 --nopower
      --runmode rate --tune base --size test:train:refrate intrate --nopreenv --note-preenv --logfile
      $SPEC/tmp/CPU2017.001/templogs/preenv.intrate.001.0.log --lognum 001.0 --from_runcpu 2
    specperl $SPEC/bin/sysinfo
    $SPEC = /root/cpu2017


   ------------------------------------------------------------
   6. /proc/cpuinfo
       model name      : AMD EPYC 9754 128-Core Processor
       vendor_id       : AuthenticAMD
       cpu family      : 25
```

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SPECrate®2017_int_base =   1860

SPECrate®2017_int_peak = Not Run

CPU2017 License: 9050   **Test Date:**   Dec-2023
Test Sponsor: Quanta Computer Inc.   **Hardware Availability:** Nov-2023
Tested by: Quanta Computer Inc.   **Software Availability:** Nov-2022

Platform Notes (Continued)

```
     model           : 160
     stepping        : 1
     microcode       : 0xaa00116
     bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
     TLB size        : 3584 4K pages
     cpu cores       : 128
     siblings        : 256
     2 physical ids (chips)
     512 processors (hardware threads)
     physical id 0: core ids 0-127
     physical id 1: core ids 0-127
     physical id 0: apicids 0-255
     physical id 1: apicids 256-511
  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):                   512
    On-line CPU(s) list:      0-511
    Vendor ID:                AuthenticAMD
    Model name:               AMD EPYC 9754 128-Core Processor
    CPU family:               25
    Model:                    160
    Thread(s) per core:       2
    Core(s) per socket:       128
    Socket(s):                2
    Stepping:                 1
    Frequency boost:          enabled
    CPU max MHz:              3100.3411
    CPU min MHz:              1500.0000
    BogoMIPS:                 4493.26
    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 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:                8 MiB (256 instances)
    L1i cache:                8 MiB (256 instances)
    L2 cache:                 256 MiB (256 instances)
    L3 cache:                 512 MiB (32 instances)
```

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Platform Notes (Continued)

```
    NUMA node(s):                  32
    NUMA node0 CPU(s):             0-7,256-263
    NUMA node1 CPU(s):             8-15,264-271
    NUMA node2 CPU(s):             16-23,272-279
    NUMA node3 CPU(s):             24-31,280-287
    NUMA node4 CPU(s):             32-39,288-295
    NUMA node5 CPU(s):             40-47,296-303
    NUMA node6 CPU(s):             48-55,304-311
    NUMA node7 CPU(s):             56-63,312-319
    NUMA node8 CPU(s):             64-71,320-327
    NUMA node9 CPU(s):             72-79,328-335
    NUMA node10 CPU(s):            80-87,336-343
    NUMA node11 CPU(s):            88-95,344-351
    NUMA node12 CPU(s):            96-103,352-359
    NUMA node13 CPU(s):            104-111,360-367
    NUMA node14 CPU(s):            112-119,368-375
    NUMA node15 CPU(s):            120-127,376-383
    NUMA node16 CPU(s):            128-135,384-391
    NUMA node17 CPU(s):            136-143,392-399
    NUMA node18 CPU(s):            144-151,400-407
    NUMA node19 CPU(s):            152-159,408-415
    NUMA node20 CPU(s):            160-167,416-423
    NUMA node21 CPU(s):            168-175,424-431
    NUMA node22 CPU(s):            176-183,432-439
    NUMA node23 CPU(s):            184-191,440-447
    NUMA node24 CPU(s):            192-199,448-455
    NUMA node25 CPU(s):            200-207,456-463
    NUMA node26 CPU(s):            208-215,464-471
    NUMA node27 CPU(s):            216-223,472-479
    NUMA node28 CPU(s):            224-231,480-487
    NUMA node29 CPU(s):            232-239,488-495
    NUMA node30 CPU(s):            240-247,496-503
    NUMA node31 CPU(s):            248-255,504-511
    Vulnerability Itlb multihit:   Not affected
    Vulnerability L1tf:            Not affected
    Vulnerability Mds:             Not affected
    Vulnerability Meltdown:        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 always-on, RSB
                                   filling
    Vulnerability Srbds:           Not affected
    Vulnerability Tsx async abort: Not affected

  From lscpu --cache:
      NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL  SETS PHY-LINE COHERENCY-SIZE
      L1d       32K       8M    8 Data            1    64        1             64
      L1i       32K       8M    8 Instruction     1    64        1             64
      L2         1M     256M    8 Unified         2  2048        1             64
      L3        16M     512M   16 Unified         3 16384        1             64

  -----------------------------------------------------------
  8. numactl --hardware
  NOTE: a numactl 'node' might or might not correspond to a physical chip.
    available: 32 nodes (0-31)
    node 0 cpus: 0-7,256-263
    node 0 size: 23718 MB
    node 0 free: 22624 MB
    node 1 cpus: 8-15,264-271
    node 1 size: 24187 MB
```

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SPECrate®2017_int_base = 1860

SPECrate®2017_int_peak = Not Run

CPU2017 License: 9050

Test Sponsor: Quanta Computer Inc.

Tested by: Quanta Computer Inc.

Test Date: Dec-2023

Hardware Availability: Nov-2023

Software Availability: Nov-2022

Platform Notes (Continued)

```
    node 1 free: 23554 MB
    node 2 cpus: 16-23,272-279
    node 2 size: 24187 MB
    node 2 free: 23541 MB
    node 3 cpus: 24-31,280-287
    node 3 size: 24187 MB
    node 3 free: 23543 MB
    node 4 cpus: 32-39,288-295
    node 4 size: 24187 MB
    node 4 free: 23545 MB
    node 5 cpus: 40-47,296-303
    node 5 size: 24187 MB
    node 5 free: 23530 MB
    node 6 cpus: 48-55,304-311
    node 6 size: 24187 MB
    node 6 free: 23538 MB
    node 7 cpus: 56-63,312-319
    node 7 size: 24187 MB
    node 7 free: 23520 MB
    node 8 cpus: 64-71,320-327
    node 8 size: 24187 MB
    node 8 free: 23532 MB
    node 9 cpus: 72-79,328-335
    node 9 size: 24187 MB
    node 9 free: 23523 MB
    node 10 cpus: 80-87,336-343
    node 10 size: 24187 MB
    node 10 free: 23512 MB
    node 11 cpus: 88-95,344-351
    node 11 size: 24187 MB
    node 11 free: 23524 MB
    node 12 cpus: 96-103,352-359
    node 12 size: 24187 MB
    node 12 free: 23433 MB
    node 13 cpus: 104-111,360-367
    node 13 size: 24187 MB
    node 13 free: 23544 MB
    node 14 cpus: 112-119,368-375
    node 14 size: 24187 MB
    node 14 free: 23548 MB
    node 15 cpus: 120-127,376-383
    node 15 size: 24187 MB
    node 15 free: 23550 MB
    node 16 cpus: 128-135,384-391
    node 16 size: 24187 MB
    node 16 free: 23537 MB
    node 17 cpus: 136-143,392-399
    node 17 size: 24187 MB
    node 17 free: 23541 MB
    node 18 cpus: 144-151,400-407
    node 18 size: 24187 MB
    node 18 free: 23528 MB
    node 19 cpus: 152-159,408-415
    node 19 size: 24187 MB
    node 19 free: 23532 MB
    node 20 cpus: 160-167,416-423
    node 20 size: 24187 MB
    node 20 free: 23534 MB
    node 21 cpus: 168-175,424-431
    node 21 size: 24187 MB
```

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Platform Notes (Continued)

```
   node 21 free: 23300 MB
   node 22 cpus: 176-183,432-439
   node 22 size: 24187 MB
   node 22 free: 23270 MB
   node 23 cpus: 184-191,440-447
   node 23 size: 24187 MB
   node 23 free: 23489 MB
   node 24 cpus: 192-199,448-455
   node 24 size: 24187 MB
   node 24 free: 23560 MB
   node 25 cpus: 200-207,456-463
   node 25 size: 24153 MB
   node 25 free: 23517 MB
   node 26 cpus: 208-215,464-471
   node 26 size: 24187 MB
   node 26 free: 23546 MB
   node 27 cpus: 216-223,472-479
   node 27 size: 24187 MB
   node 27 free: 23545 MB
   node 28 cpus: 224-231,480-487
   node 28 size: 24187 MB
   node 28 free: 23546 MB
   node 29 cpus: 232-239,488-495
   node 29 size: 24187 MB
   node 29 free: 23537 MB
   node 30 cpus: 240-247,496-503
   node 30 size: 24187 MB
   node 30 free: 23540 MB
   node 31 cpus: 248-255,504-511
   node 31 size: 23689 MB
   node 31 free: 23052 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  24
   25  26  27  28  29  30  31
     0:  10  11  11  11  12  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
     1:  11  10  11  11  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
     2:  11  11  10  11  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
     3:  11  11  11  10  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
     4:  12  12  12  12  10  11  11  11  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
     5:  12  12  12  12  11  10  11  11  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
     6:  12  12  12  12  11  11  10  11  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
     7:  12  12  12  12  11  11  11  10  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
     8:  12  12  12  12  12  12  12  12  10  11  11  11  12  12  12  12  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
     9:  12  12  12  12  12  12  12  12  11  10  11  11  12  12  12  32  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
    10:  12  12  12  12  12  12  12  12  11  11  10  11  12  12  12  12  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
    11:  12  12  12  12  12  12  12  12  11  11  11  10  12  12  12  32  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
    12:  12  12  12  12  12  12  12  12  12  12  12  12  10  11  11  11  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
```

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

QuantaGrid D44N-1U
(2.25 GHz,AMD EPYC 9754)

SPECrate®2017_int_base =   1860

SPECrate®2017_int_peak = Not Run

CPU2017 License: 9050
Test Sponsor: Quanta Computer Inc.
Tested by: Quanta Computer Inc.

Test Date: Dec-2023
Hardware Availability: Nov-2023
Software Availability: Nov-2022

Platform Notes (Continued)

```
    13:  12  12  12  12  12  12  12  12  12  12  12  12  11  10  11  11  32  32  32  32  32  32  32  32  32
    32  32  32  32  32  32  32
    14:  12  12  12  12  12  12  12  12  12  12  12  12  11  11  10  11  32  32  32  32  32  32  32  32  32
    32  32  32  32  32  32
    15:  12  12  12  12  12  12  12  12  12  12  12  12  11  11  11  10  32  32  32  32  32  32  32  32  32
    32  32  32  32  32  32
    16:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  10  11  11  11  12  12  12  12  12
    12  12  12  12  12  12  12
    17:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  10  11  11  12  12  12  12  12
    12  12  12  12  12  12
    18:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  10  11  12  12  12  12  12
    12  12  12  12  12  12
    19:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  10  12  12  12  12  12
    12  12  12  12  12  12
    20:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  10  11  11  11  12
    12  12  12  12  12  12
    21:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  11  10  11  11  12
    12  12  12  12  12  12
    22:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  11  11  10  11  12
    12  12  12  12  12  12
    23:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  11  11  11  10  12
    12  12  12  12  12  12
    24:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  10
    11  11  11  12  12  12  12
    25:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  11
    10  11  11  12  12  12  12
    26:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  11
    11  10  11  12  12  12
    27:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  11
    11  11  10  12  12  12  12
    28:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  12
    12  12  12  10  11  11  11
    29:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  12
    12  12  12  11  10  11  11
    30:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  12
    12  12  12  11  11  10  11
    31:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  12
    12  12  12  11  11  11  10


  ------------------------------------------------------------
  9. /proc/meminfo
     MemTotal:       791562084 kB


  ------------------------------------------------------------
  10. who -r
    run-level 3 Dec 7 10:27


  ------------------------------------------------------------
  11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
    Default Target  Status
    multi-user      running


  ------------------------------------------------------------
  12. Services, from systemctl list-unit-files
    STATE            UNIT FILES
    enabled          YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron getty@ haveged irqbalance
                     issue-generator kbdsettings klog lvm2-monitor nscd nvmefc-boot-connections postfix
                     purge-kernels rollback rsyslog smartd sshd wicked wickedd-auto4 wickedd-dhcp4
                     wickedd-dhcp6 wickedd-nanny
    enabled-runtime  systemd-remount-fs
```

(Continued on next page)

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

QuantaGrid D44N-1U
(2.25 GHz,AMD EPYC 9754)

SPECrate®2017_int_base =   1860

SPECrate®2017_int_peak = Not Run

CPU2017 License: 9050

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Tested by: Quanta Computer Inc.

Test Date: Dec-2023

Hardware Availability: Nov-2023

Software Availability: Nov-2022

Platform Notes (Continued)

```
   disabled          autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
                     chronyd console-getty cups cups-browsed debug-shell display-manager ebtables
                     exchange-bmc-os-info firewalld gpm grub2-once haveged-switch-root hwloc-dump-hwdata ipmi
                     ipmievd issue-add-ssh-keys kdump kdump-early kexec-load lunmask man-db-create multipathd
                     nfs nfs-blkmap nvmf-autoconnect rdisc rpcbind rpmconfigcheck rsyncd serial-getty@
                     smartd_generate_opts snmpd snmptrapd systemd-boot-check-no-failures
                     systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd tuned
                     udisks2
   indirect          wickedd


   ----------------------------------------------------------
   13. Linux kernel boot-time arguments, from /proc/cmdline
     BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
     root=UUID=bf0d00d4-f1bc-4aa3-92ff-ff6ee387ef92
     mitigations=auto
     quiet
     security=apparmor
     crashkernel=290M,high
     crashkernel=72M,low


   ----------------------------------------------------------
   14. cpupower frequency-info
     analyzing CPU 0:
       current policy: frequency should be within 1.50 GHz and 2.25 GHz.
                       The governor "performance" may decide which speed to use
                       within this range.
       boost state support:
         Supported: yes
         Active: yes


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


   ----------------------------------------------------------
   16. 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


   ----------------------------------------------------------
   17. /sys/kernel/mm/transparent_hugepage
     defrag            [always] defer defer+madvise madvise never
     enabled           [always] madvise never
```

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

QuantaGrid D44N-1U
(2.25 GHz,AMD EPYC 9754)

SPECrate®2017_int_base =   1860

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CPU2017 License: 9050
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Test Date: Dec-2023
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Platform Notes (Continued)

```
   hpage_pmd_size  2097152
   shmem_enabled    always within_size advise [never] deny force


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


 ----------------------------------------------------------------
19. OS release
   From /etc/*-release /etc/*-version
   os-release SUSE Linux Enterprise High Performance Computing 15 SP4

 ----------------------------------------------------------------
20. Disk information
SPEC is set to: /root/cpu2017
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/nvme0n1p3 xfs   2.1T   47G  2.0T   3% /

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

 ----------------------------------------------------------------
22. dmidecode
   Additional information from dmidecode 3.2 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 SK Hynix HMCG88MEBRA113N 32 GB 2 rank 4800



 ----------------------------------------------------------------
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:      American Megatrends International, LLC.
     BIOS Version:     3A05
     BIOS Date:        10/27/2023
     BIOS Revision:    5.27
     Firmware Revision: 3.29
```

Compiler Version Notes

```
==================================================================================
C      | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base) 557.xz_r(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
----------------------------------------------------------------------------------
```

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

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SPECrate®2017_int_base =   1860

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CPU2017 License: 9050
Test Sponsor: Quanta Computer Inc.
Tested by: Quanta Computer Inc.

Test Date: Dec-2023
Hardware Availability: Nov-2023
Software Availability: Nov-2022

Compiler Version Notes (Continued)

```
==============================================================================
C++     | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base) 541.leela_r(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
------------------------------------------------------------------------------


==============================================================================
Fortran | 548.exchange2_r(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

  500.perlbench_r: `-DSPEC_LINUX_X64 -DSPEC_LP64`
  502.gcc_r: `-DSPEC_LP64`
  505.mcf_r: `-DSPEC_LP64`
  520.omnetpp_r: `-DSPEC_LP64`
  523.xalancbmk_r: `-DSPEC_LINUX -DSPEC_LP64`
  525.x264_r: `-DSPEC_LP64`
  531.deepsjeng_r: `-DSPEC_LP64`
  541.leela_r: `-DSPEC_LP64`
  548.exchange2_r: `-DSPEC_LP64`
  557.xz_r: `-DSPEC_LP64`

SPEC CPU®2017 Integer Rate Result

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Quanta Cloud Technology
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QuantaGrid D44N-1U
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SPECrate®2017_int_base =   1860

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CPU2017 License: 9050

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Test Date: Dec-2023

Hardware Availability: Nov-2023

Software Availability: Nov-2022

Base Optimization Flags

C benchmarks:
```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-ldist-scalar-expand -fenable-aggressive-gather
-z muldefs -O3 -march=znver4 -fveclib=AMDLIBM -ffast-math
-fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lflang
-lamdalloc
```

C++ benchmarks:
```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -z muldefs -O3
-march=znver4 -fveclib=AMDLIBM -ffast-math
-mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt
-fvirtual-function-elimination -fvisibility=hidden -lamdlibm -lflang
-lamdalloc-ext
```

Fortran benchmarks:
```
-m64 -flto -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 -z muldefs -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fepilog-vectorization-of-inductions
-mllvm -optimize-strided-mem-cost -floop-transform
-mllvm -unroll-aggressive -mllvm -unroll-threshold=500 -lamdlibm
-lflang -lamdalloc
```

Base Other Flags

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

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

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

SPEC CPU®2017 Integer Rate Result

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CPU2017 License:	9050	**Test Date:**	Dec-2023
Test Sponsor:	Quanta Computer Inc.	**Hardware Availability:**	Nov-2023
Tested by:	Quanta Computer Inc.	**Software Availability:**	Nov-2022

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_AMD_Bergamo.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/Quanta-Computer-Inc-amd-speccpu-setting-v1_AMD_Bergamo.xml

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

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