SPEC CPU®2017 Integer Speed Result

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Dell Inc.

$SPECspeed^®2017\_int\_base = 14.2$

PowerEdge R6615 (AMD EPYC 9454P 48-Core Processor)

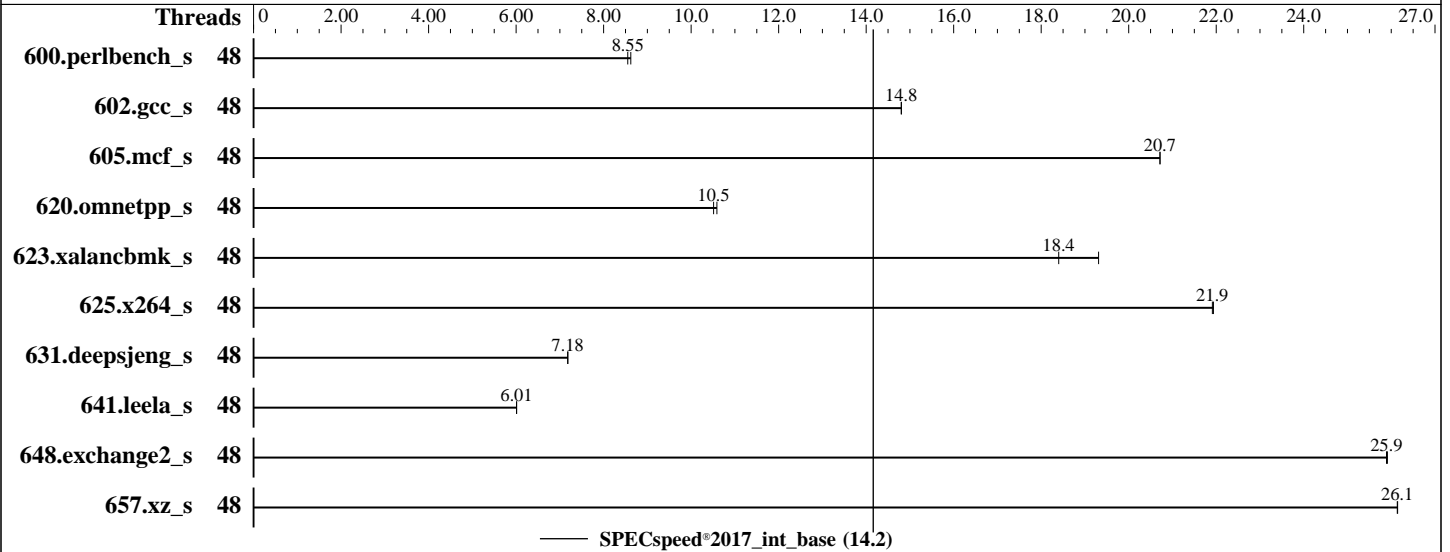$SPECspeed^®2017_int_peak = $ Not Run

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Mar-2023
Hardware Availability: Mar-2023
Software Availability: Jan-2023

Threads

Benchmark	Threads	Value
600.perlbench_s	48	8.55
602.gcc_s	48	14.8
605.mcf_s	48	20.7
620.omnetpp_s	48	10.5
623.xalancbmk_s	48	18.4
625.x264_s	48	21.9
631.deepsjeng_s	48	7.18
641.leela_s	48	6.01
648.exchange2_s	48	25.9
657.xz_s	48	26.1

SPECspeed®2017_int_base (14.2)

Hardware

CPU Name: AMD EPYC 9454P
 Max MHz: 3800
 Nominal: 2750
Enabled: 48 cores, 1 chip
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: 256 MB I+D on chip per chip, 32 MB shared / 6 cores
 Other: None
Memory: 768 GB (12 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 125 GB on tmpfs
Other: None

Software

OS: Ubuntu 22.04.1 LTS
 5.15.0-58-generic
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
Parallel: Yes
Firmware: Version 1.3.7 released Mar-2023
File System: tmpfs
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.

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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	48	206	8.62	**208**	**8.55**									
602.gcc_s	48	**269**	**14.8**	269	14.8									
605.mcf_s	48	**228**	**20.7**	228	20.7									
620.omnetpp_s	48	**155**	**10.5**	154	10.6									
623.xalancbmk_s	48	73.4	19.3	**77.0**	**18.4**									
625.x264_s	48	**80.5**	**21.9**	80.4	21.9									
631.deepsjeng_s	48	**200**	**7.18**	199	7.18									
641.leela_s	48	**284**	**6.01**	284	6.01									
648.exchange2_s	48	113	25.9	**114**	**25.9**									
657.xz_s	48	**237**	**26.1**	236	26.1									

SPECspeed®2017_int_base =	14.2
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 = "0-47"
LD_LIBRARY_PATH = "/mnt/ramdisk/cpu2017-1.1.9-aocc400-B1e/amd_speed_aocc400_genoa_B_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 = "48"
```

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.


 Benchmark run from a 125 GB ramdisk created with the cmd: "mount -t tmpfs -o size=125G tmpfs /mnt/ramdisk"
```

Platform Notes

```
 BIOS settings:
            DRAM Refresh Delay : Performance
        DIMM Self Healing on
    Uncorrectable Memory Error : Disabled
             Logical Processor : Disabled
    Virtualization Technology : Disabled
          NUMA Nodes per Socket : 4
      L3 Cache as NUMA Domain : Enabled

               System Profile : Custom
                     C-States : Disabled
          Memory Patrol Scrub : Disabled
          PCI ASPM L1 Link
              Power Management : Disabled
            Determinism Slider : Power Determinism
      Algorithm Performance
        Boost Disable (ApbDis) : Enabled

 Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-aocc400-B1e/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on amd-sut Thu Mar  9 17:57:02 2023

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

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

(Continued on next page)

Dell Inc.

PowerEdge R6615 (AMD EPYC 9454P 48-Core Processor)

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Test Sponsor: Dell Inc.		**Hardware Availability:**	Mar-2023
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Platform Notes (Continued)

```
   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 (249.11-0ubuntu3.6)
  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
  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 amd-sut 5.15.0-58-generic #64-Ubuntu SMP Thu Jan 5 11:43:13 UTC 2023 x86_64 x86_64 x86_64 GNU/Linux

    ------------------------------------------------------------
  2. w
     17:57:02 up 5 min,  1 user,  load average: 0.21, 0.05, 0.02
     USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
     root     tty1     -                17:56   22.00s  1.37s  0.30s /bin/bash ./amd_speed_aocc400_genoa_B1.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              3093953
     nofiles              1024
     vmemory(kbytes)      unlimited
     locks                unlimited
     rtprio               0

    ------------------------------------------------------------
  5. sysinfo process ancestry
  /sbin/init
  /bin/login -p --
  -bash
  /bin/bash ./DELL_speed.sh
  /bin/bash ./dell-run-main.sh speed
  /bin/bash ./dell-run-main.sh speed
```

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Platform Notes (Continued)

```
 /bin/bash ./dell-run-specspeed.sh --output_format csv,html,pdf,txt -define
   Dell-BIOS-inc=Dell-BIOS_EPYC-4.inc --define Dell-BIOS-LogProcD=1
 python3 ./run_amd_speed_aocc400_genoa_B1.py
 /bin/bash ./amd_speed_aocc400_genoa_B1.sh
 runcpu --config amd_speed_aocc400_genoa_B1.cfg --tune base --reportable --iterations 2 --output_format
   csv,html,pdf,txt -define Dell-BIOS-inc=Dell-BIOS_EPYC-4.inc --define Dell-BIOS-LogProcD=1 intspeed
 runcpu --configfile amd_speed_aocc400_genoa_B1.cfg --tune base --reportable --iterations 2 --output_format
   csv,html,pdf,txt --define Dell-BIOS-inc=Dell-BIOS_EPYC-4.inc --define Dell-BIOS-LogProcD=1 --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 = /mnt/ramdisk/cpu2017-1.1.9-aocc400-B1e


 ------------------------------------------------------------
 6. /proc/cpuinfo
     model name      : AMD EPYC 9454P 48-Core Processor
     vendor_id       : AuthenticAMD
     cpu family      : 25
     model           : 17
     stepping        : 1
     microcode       : 0xa101116
     bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
     TLB size        : 3584 4K pages
     cpu cores       : 48
     siblings        : 48
     1 physical ids (chips)
     48 processors (hardware threads)
     physical id 0: core ids 0-5,16-21,32-37,48-53,64-69,80-85,96-101,112-117
     physical id 0: apicids 0-5,16-21,32-37,48-53,64-69,80-85,96-101,112-117
   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:             52 bits physical, 57 bits virtual
   Byte Order:                Little Endian
   CPU(s):                    48
   On-line CPU(s) list:       0-47
   Vendor ID:                 AuthenticAMD
   Model name:                AMD EPYC 9454P 48-Core Processor
   CPU family:                25
   Model:                     17
   Thread(s) per core:        1
   Core(s) per socket:        48
   Socket(s):                 1
   Stepping:                  1
   Frequency boost:           enabled
   CPU max MHz:               3812.0000
   CPU min MHz:               400.0000
   BogoMIPS:                  5501.73
   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
```

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Platform Notes (Continued)

```
                        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
  Virtualization:       AMD-V
  L1d cache:            1.5 MiB (48 instances)
  L1i cache:            1.5 MiB (48 instances)
  L2 cache:             48 MiB (48 instances)
  L3 cache:             256 MiB (8 instances)
  NUMA node(s):         8
  NUMA node0 CPU(s):    0-5
  NUMA node1 CPU(s):    24-29
  NUMA node2 CPU(s):    12-17
  NUMA node3 CPU(s):    36-41
  NUMA node4 CPU(s):    18-23
  NUMA node5 CPU(s):    42-47
  NUMA node6 CPU(s):    6-11
  NUMA node7 CPU(s):    30-35
  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     1.5M    8 Data             1    64       1             64
      L1i      32K     1.5M    8 Instruction      1    64       1             64
      L2        1M      48M    8 Unified          2  2048       1             64
      L3       32M     256M   16 Unified          3 32768       1             64

  ------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 8 nodes (0-7)
  node 0 cpus: 0-5
  node 0 size: 96312 MB
  node 0 free: 96051 MB
  node 1 cpus: 24-29
  node 1 size: 96765 MB
  node 1 free: 96558 MB
  node 2 cpus: 12-17
  node 2 size: 96766 MB
  node 2 free: 96547 MB
  node 3 cpus: 36-41
  node 3 size: 96729 MB
  node 3 free: 96529 MB
```

(Continued on next page)

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Platform Notes (Continued)

```
   node 4 cpus: 18-23
   node 4 size: 96766 MB
   node 4 free: 96502 MB
   node 5 cpus: 42-47
   node 5 size: 96765 MB
   node 5 free: 96554 MB
   node 6 cpus: 6-11
   node 6 size: 96766 MB
   node 6 free: 95027 MB
   node 7 cpus: 30-35
   node 7 size: 96727 MB
   node 7 free: 94210 MB
   node distances:
   node   0   1   2   3   4   5   6   7
     0:  10  11  12  12  12  12  12  12
     1:  11  10  12  12  12  12  12  12
     2:  12  12  10  11  12  12  12  12
     3:  12  12  11  10  12  12  12  12
     4:  12  12  12  12  10  11  12  12
     5:  12  12  12  12  11  10  12  12
     6:  12  12  12  12  12  12  10  11
     7:  12  12  12  12  12  12  11  10


   --------------------------------------------------------------
 9. /proc/meminfo
    MemTotal:       792165696 kB


   --------------------------------------------------------------
10. who -r
   run-level 3 Mar 9 17:53


   --------------------------------------------------------------
11. Systemd service manager version: systemd 249 (249.11-0ubuntu3.6)
   Default Target  Status
   multi-user      degraded


   --------------------------------------------------------------
12. Failed units, from systemctl list-units --state=failed
     UNIT                               LOAD   ACTIVE SUB    DESCRIPTION
   * systemd-networkd-wait-online.service loaded failed failed Wait for Network to be Configured


   --------------------------------------------------------------
13. Services, from systemctl list-unit-files
    STATE           UNIT FILES
    enabled         blk-availability console-setup cron dmesg e2scrub_reap finalrd getty@ gpu-manager
                    grub-common grub-initrd-fallback irqbalance keyboard-setup lm-sensors networkd-dispatcher
                    open-iscsi open-vm-tools pollinate rsyslog secureboot-db setvtrgb ssh systemd-networkd
                    systemd-pstore systemd-resolved systemd-timesyncd thermald tuned ua-reboot-cmds
                    ubuntu-advantage udisks2 vgauth wpa_supplicant
    enabled-runtime netplan-ovs-cleanup systemd-fsck-root systemd-networkd-wait-online systemd-remount-fs
    disabled        ModemManager apparmor console-getty debug-shell iscsid lvm2-monitor lxd-agent multipathd
                    nftables rsync serial-getty@ systemd-boot-check-no-failures systemd-network-generator
                    systemd-sysext systemd-time-wait-sync ufw upower wpa_supplicant-nl80211@
                    wpa_supplicant-wired@ wpa_supplicant@
    generated       apport
    indirect        uuidd
    masked          NetworkManager NetworkManager-dispatcher NetworkManager-wait-online cryptdisks
                    cryptdisks-early hwclock lvm2 multipath-tools-boot rc rcS screen-cleanup sudo x11-common


   --------------------------------------------------------------
```

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Platform Notes (Continued)

```
14. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=/boot/vmlinuz-5.15.0-58-generic
    root=UUID=593ab29a-c8fe-4d75-821a-b60d5c945311
    ro

    ----------------------------------------------------------
15. cpupower frequency-info
    analyzing CPU 0:
      current policy: frequency should be within 400 MHz and 3.81 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:  2750MHz

    ----------------------------------------------------------
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

    ----------------------------------------------------------
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
```

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Platform Notes (Continued)

```
     ----------------------------------------------------------
     20. OS release
       From /etc/*-release /etc/*-version
       os-release Ubuntu 22.04.1 LTS

     ----------------------------------------------------------
     21. Disk information
     SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-aocc400-B1e
       Filesystem      Type   Size  Used Avail Use% Mounted on
       tmpfs           tmpfs  125G  3.5G  122G   3% /mnt/ramdisk

     ----------------------------------------------------------
     22. /sys/devices/virtual/dmi/id
        Vendor:         Dell Inc.
        Product:        PowerEdge R6615
        Product Family: PowerEdge
        Serial:         GLM4018

     ----------------------------------------------------------
     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:
         12x 802C0000802C MTC40F2046S1RC48BA1 64 GB 2 rank 4800


     ----------------------------------------------------------
     24. BIOS
     (This section combines info from /sys/devices and dmidecode.)
        BIOS Vendor:      Dell Inc.
        BIOS Version:     1.3.7
        BIOS Date:        03/06/2023
        BIOS Revision:    1.3
```

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#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
------------------------------------------------------------------------------


==============================================================================
C++     | 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base) 641.leela_s(base)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
------------------------------------------------------------------------------


==============================================================================
Fortran | 648.exchange2_s(base)
```

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SPEC CPU®2017 Integer Speed Result
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Dell Inc.

PowerEdge R6615 (AMD EPYC 9454P 48-Core Processor)

$SPECspeed®2017\_int\_base =$ 14.2

$SPECspeed®2017\_int\_peak =$ Not Run

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Mar-2023
Hardware Availability: Mar-2023
Software Availability: Jan-2023

Compiler Version Notes (Continued)

```
--------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
--------------------------------------------------------------------------------
```

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
-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
```

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

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PowerEdge R6615 (AMD EPYC 9454P 48-Core Processor)

SPECspeed®2017_int_base =   14.2

SPECspeed®2017_int_peak = Not Run

CPU2017 License: 6573
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Test Date: Mar-2023
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Software Availability: Jan-2023

Base Optimization Flags (Continued)

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.html
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-EPYC-v1.0.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/aocc400-flags.xml
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-EPYC-v1.0.xml

SPEC CPU®2017 Integer Speed Result

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PowerEdge R6615 (AMD EPYC 9454P 48-Core Processor)

SPECspeed®2017_int_base = 14.2

SPECspeed®2017_int_peak = Not Run

CPU2017 License:	6573	**Test Date:**	Mar-2023
Test Sponsor:	Dell Inc.	**Hardware Availability:**	Mar-2023
Tested by:	Dell Inc.	**Software Availability:**	Jan-2023

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

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