SPEC CPU®2017 Integer Rate Result

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Cisco Systems

Cisco UCS C225 M8 (AMD EPYC 9554P 64-Core Processor)

$SPECrate^{®}2017\_int\_base = 682$

$SPECrate^{®}2017\_int\_peak = 696$

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Mar-2025
Hardware Availability: Oct-2024
Software Availability: Sep-2024

Copies

Benchmark	Copies	Base	Peak
500.perlbench_r	128	477	
502.gcc_r	128	487	598
505.mcf_r	128	1020	1020
520.omnetpp_r	128	306	307
523.xalancbmk_r	128	1060	
525.x264_r	128	1640	
531.deepsjeng_r	128	604	
541.leela_r	128	541	
548.exchange2_r	128	1570	1570
557.xz_r	128	333	333

SPECrate®2017_int_base (682)   SPECrate®2017_int_peak (696)

Hardware

CPU Name: AMD EPYC 9554P
 Max MHz: 3750
 Nominal: 3100
Enabled: 64 cores, 1 chip, 2 threads/core
Orderable: 1 chip
Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 256 MB I+D on chip per chip, 32 MB shared / 8 cores
 Other: None
Memory: 768 GB (12 x 64 GB 2Rx4 PC5-5600B-R, running at 4800)
Storage: 1 x 240 GB M.2 SSD
Other: CPU Cooling: Air

Software

OS: SUSE Linux Enterprise Server 15 SP6 kernel version 6.4.0-150600.21-default
Compiler: C/C++/Fortran: Version 5.0.0 of AOCC
Parallel: No
Firmware: Version 4.3.5c released Dec-2024
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
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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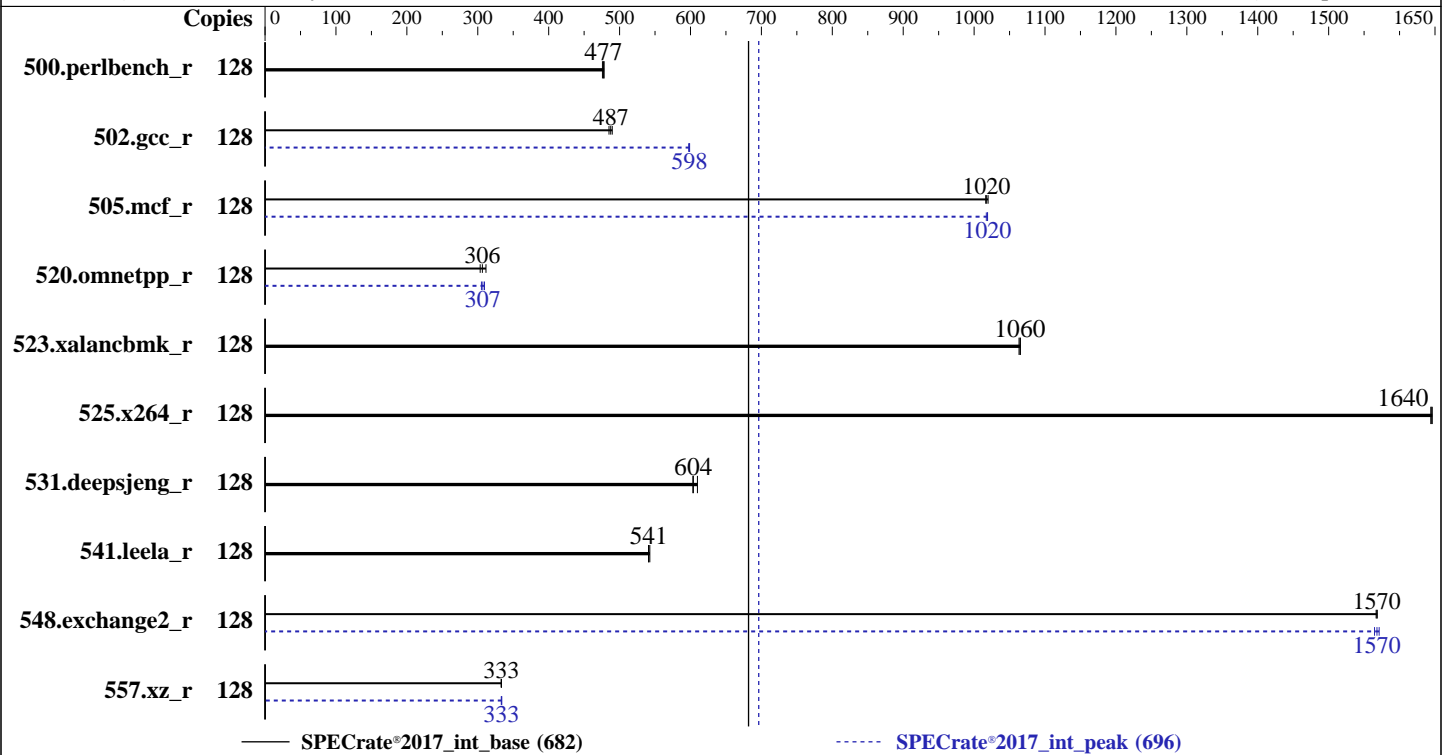
SPECrate®2017_int_peak = 696

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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	128	426	478	428	476	**427**	**477**	128	426	478	428	476	**427**	**477**
502.gcc_r	128	374	485	370	490	**372**	**487**	128	303	599	303	597	**303**	**598**
505.mcf_r	128	**203**	**1020**	204	1020	203	1020	128	203	1020	203	1020	**203**	**1020**
520.omnetpp_r	128	**548**	**306**	539	312	554	303	128	543	309	550	305	**547**	**307**
523.xalancbmk_r	128	**127**	**1060**	127	1070	127	1060	128	**127**	**1060**	127	1070	127	1060
525.x264_r	128	136	1650	**136**	**1640**	136	1640	128	136	1650	**136**	**1640**	136	1640
531.deepsjeng_r	128	243	**604**	241	610	243	603	128	**243**	**604**	241	610	243	603
541.leela_r	128	**392**	**541**	391	543	392	541	128	**392**	**541**	391	543	392	541
548.exchange2_r	128	214	1570	**214**	**1570**	214	1570	128	214	1560	213	1570	**214**	**1570**
557.xz_r	128	415	333	**415**	**333**	415	333	128	414	334	**415**	**333**	415	333
SPECrate®2017_int_base =		**682**												
SPECrate®2017_int_peak =		**696**												

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 =
     "/home/cpu2017/amd_rate_aocc500_znver5_A_lib/lib:/home/cpu2017/amd_rate_aocc500_znver5_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 settings:
NUMA nodes per socket set to NPS4
Determinism Slider set to Power
DF C-States set to Disabled

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Thu Mar  6 20:29:29 2025

 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 254 (254.10+suse.84.ge8d77af424)
 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. sysctl
 17. /sys/kernel/mm/transparent_hugepage
 18. /sys/kernel/mm/transparent_hugepage/khugepaged
 19. OS release
 20. Disk information
 21. /sys/devices/virtual/dmi/id
 22. dmidecode
 23. BIOS
```

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Platform Notes (Continued)

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

     ------------------------------------------------------------
     1. uname -a
       Linux localhost 6.4.0-150600.21-default #1 SMP PREEMPT_DYNAMIC Thu May 16 11:09:22 UTC 2024 (36c1e09)
       x86_64 x86_64 x86_64 GNU/Linux

     ------------------------------------------------------------
     2. w
        20:29:29 up 24 min,  1 user,  load average: 0.00, 0.00, 0.02
       USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
       root     tty1     -                20:06   16.00s  1.26s  0.16s /bin/bash ./amd_rate_aocc500_znver5_A1.sh

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

     ------------------------------------------------------------
     4. ulimit -a
       core file size          (blocks, -c) unlimited
       data seg size           (kbytes, -d) unlimited
       scheduling priority             (-e) 0
       file size               (blocks, -f) unlimited
       pending signals                 (-i) 3094659
       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) 3094659
       virtual memory          (kbytes, -v) unlimited
       file locks                      (-x) unlimited

     ------------------------------------------------------------
     5. sysinfo process ancestry
      /usr/lib/systemd/systemd --switched-root --system --deserialize=42
      login -- root
      -bash
      python3 ./run_amd_rate_aocc500_znver5_A1.py -b intrate
      /bin/bash ./amd_rate_aocc500_znver5_A1.sh
      runcpu --config amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 intrate
      runcpu --configfile amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 --nopower
        --runmode rate --tune base:peak --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 = /home/cpu2017

     ------------------------------------------------------------
     6. /proc/cpuinfo
         model name        : AMD EPYC 9554P 64-Core Processor
         vendor_id         : AuthenticAMD
         cpu family        : 25
         model             : 17
         stepping          : 1
         microcode         : 0xa101148
         bugs              : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass srso
         TLB size          : 3584 4K pages
```

(Continued on next page)

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Platform Notes (Continued)

```
     cpu cores       : 64
     siblings        : 128
     1 physical ids (chips)
     128 processors (hardware threads)
     physical id 0: core ids 0-63
     physical id 0: apicids 0-127
   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 2.39.3:
     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):                    128
     On-line CPU(s) list:       0-127
     Vendor ID:                 AuthenticAMD
     BIOS Vendor ID:            Advanced Micro Devices, Inc.
     Model name:                AMD EPYC 9554P 64-Core Processor
     BIOS Model name:           AMD EPYC 9554P 64-Core Processor          Unknown CPU @ 3.1GHz
     BIOS CPU family:           107
     CPU family:                25
     Model:                     17
     Thread(s) per core:        2
     Core(s) per socket:        64
     Socket(s):                 1
     Stepping:                  1
     Frequency boost:           enabled
     CPU(s) scaling MHz:        84%
     CPU max MHz:               3762.9880
     CPU min MHz:               1500.0000
     BogoMIPS:                  6190.73
     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 amd_lbr_v2 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 hw_pstate ssbd mba perfmon_v2
                                ibrs ibpb stibp ibrs_enhanced vmmcall fsgsbase bmi1 avx2 smep bmi2
                                erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma
                                clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec
                                xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
                                user_shstk 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 x2avic v_spec_ctrl vnmi avx512vbmi umip pku
                                ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg
                                avx512_vpopcntdq la57 rdpid overflow_recov succor smca fsrm flush_l1d
                                debug_swap
     Virtualization:            AMD-V
     L1d cache:                 2 MiB (64 instances)
     L1i cache:                 2 MiB (64 instances)
     L2 cache:                  64 MiB (64 instances)
     L3 cache:                  256 MiB (8 instances)
     NUMA node(s):              4
```

(Continued on next page)

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Platform Notes (Continued)

```
  NUMA node0 CPU(s):                0-15,64-79
  NUMA node1 CPU(s):                16-31,80-95
  NUMA node2 CPU(s):                32-47,96-111
  NUMA node3 CPU(s):                48-63,112-127
  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 Reg file data sampling: Not affected
  Vulnerability Retbleed:           Not affected
  Vulnerability Spec rstack overflow:  Mitigation; Safe RET
  Vulnerability Spec store bypass:  Mitigation; Speculative Store Bypass disabled via prctl
  Vulnerability Spectre v1:         Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:         Mitigation; Enhanced / Automatic IBRS; IBPB conditional; STIBP
                                    always-on; RSB filling; PBRSB-eIBRS Not affected; BHI Not affected
  Vulnerability Srbds:              Not affected
  Vulnerability Tsx async abort:    Not affected

  From lscpu --cache:
     NAME ONE-SIZE ALL-SIZE WAYS TYPE         LEVEL  SETS PHY-LINE COHERENCY-SIZE
     L1d       32K       2M   8 Data             1    64        1             64
     L1i       32K       2M   8 Instruction      1    64        1             64
     L2         1M      64M   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: 4 nodes (0-3)
    node 0 cpus: 0-15,64-79
    node 0 size: 193226 MB
    node 0 free: 192496 MB
    node 1 cpus: 16-31,80-95
    node 1 size: 193527 MB
    node 1 free: 192820 MB
    node 2 cpus: 32-47,96-111
    node 2 size: 193488 MB
    node 2 free: 192849 MB
    node 3 cpus: 48-63,112-127
    node 3 size: 193449 MB
    node 3 free: 192740 MB
    node distances:
    node   0   1   2   3
      0:  10  12  12  12
      1:  12  10  12  12
      2:  12  12  10  12
      3:  12  12  12  10


  ------------------------------------------------------------
  9. /proc/meminfo
    MemTotal:       792260976 kB


  ------------------------------------------------------------
  10. who -r
    run-level 3 Mar 6 20:05

  ------------------------------------------------------------
  11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
```

(Continued on next page)

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Platform Notes (Continued)

```
  Default Target  Status
  multi-user      degraded


  ----------------------------------------------------------
12. Failed units, from systemctl list-units --state=failed
    UNIT               LOAD   ACTIVE SUB    DESCRIPTION
  * logrotate.service loaded failed failed Rotate log files


  ----------------------------------------------------------
13. Services, from systemctl list-unit-files
    STATE           UNIT FILES
    enabled         YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron getty@ irqbalance iscsi
                    issue-generator kbdsettings klog lvm2-monitor nscd postfix purge-kernels rollback rsyslog
                    smartd sshd systemd-pstore virtqemud wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6
                    wickedd-nanny
    enabled-runtime systemd-remount-fs
    disabled        autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
                    chronyd console-getty cups cups-browsed debug-shell dnsmasq ebtables exchange-bmc-os-info
                    firewalld fsidd gpm grub2-once haveged hwloc-dump-hwdata ipmi ipmievd iscsi-init iscsid
                    issue-add-ssh-keys kexec-load ksm kvm_stat libvirt-guests lunmask man-db-create multipathd
                    munge nfs nfs-blkmap nfs-server nfsserver rpcbind rpmconfigcheck rsyncd rtkit-daemon
                    salt-minion serial-getty@ slurmd smartd_generate_opts snmpd snmptrapd strongswan
                    strongswan-starter svnserve systemd-boot-check-no-failures systemd-confext
                    systemd-network-generator systemd-nspawn@ systemd-sysext systemd-time-wait-sync
                    systemd-timesyncd tcsd udisks2 virtinterfaced virtlockd virtlogd virtnetworkd virtnodedevd
                    virtnwfilterd virtsecretd virtstoraged ypbind
    indirect        pcscd systemd-userdbd tftp wickedd


  ----------------------------------------------------------
14. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
    root=UUID=076ee295-de6f-47c7-95ad-f8ccc04c1b41
    splash=silent
    mitigations=auto
    quiet
    security=apparmor


  ----------------------------------------------------------
15. cpupower frequency-info
    analyzing CPU 70:
      current policy: frequency should be within 1.50 GHz and 3.10 GHz.
                      The governor "performance" may decide which speed to use
                      within this range.
      boost state support:
        Supported: yes
        Active: yes


  ----------------------------------------------------------
16. sysctl
    kernel.numa_balancing            1
    kernel.randomize_va_space        0
    vm.compaction_proactiveness      20
    vm.dirty_background_bytes        0
    vm.dirty_background_ratio        10
    vm.dirty_bytes                   0
    vm.dirty_expire_centisecs        3000
    vm.dirty_ratio                   8
    vm.dirty_writeback_centisecs     500
    vm.dirtytime_expire_seconds      43200
    vm.extfrag_threshold             500
```

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Platform Notes (Continued)

```
  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
  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 Server 15 SP6


----------------------------------------------------------
20. Disk information
SPEC is set to: /home/cpu2017
  Filesystem      Type   Size  Used Avail Use% Mounted on
  /dev/sdb2       btrfs  224G  8.3G  212G   4% /home


----------------------------------------------------------
21. /sys/devices/virtual/dmi/id
  Vendor:          Cisco Systems Inc
  Product:         UCSC-C225-M8S
  Product Family:  Cisco UCS Rack Server
  Serial:          WZP28199HWP


----------------------------------------------------------
22. dmidecode
  Additional information from dmidecode 3.4 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:
    9x 0xCE00 M321R8GA0PB0-CWMCH 64 GB 2 rank 5600, configured at 4800
    3x 0xCE00 M321R8GA0PB0-CWMKJ 64 GB 2 rank 5600, configured at 4800


----------------------------------------------------------
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
  BIOS Vendor:       Cisco Systems, Inc.
  BIOS Version:      C225M8.4.3.5c.0.1202241036
```

(Continued on next page)

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Platform Notes (Continued)

```
     BIOS Date:        12/02/2024
     BIOS Revision:    5.27
```

Compiler Version Notes

```
==============================================================================================
C       | 502.gcc_r(peak)
----------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
----------------------------------------------------------------------------------------------


==============================================================================================
C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
        | 557.xz_r(base, peak)
----------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
----------------------------------------------------------------------------------------------


==============================================================================================
C       | 502.gcc_r(peak)
----------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
----------------------------------------------------------------------------------------------


==============================================================================================
C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
        | 557.xz_r(base, peak)
----------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
----------------------------------------------------------------------------------------------


==============================================================================================
C++     | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak) 531.deepsjeng_r(base, peak)
        | 541.leela_r(base, peak)
----------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
----------------------------------------------------------------------------------------------


==============================================================================================
Fortran | 548.exchange2_r(base, peak)
----------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
```

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SPEC CPU®2017 Integer Rate Result

Cisco Systems

Cisco UCS C225 M8 (AMD EPYC 9554P 64-Core Processor)

SPECrate®2017_int_base = 682

SPECrate®2017_int_peak = 696

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Mar-2025
Hardware Availability: Oct-2024
Software Availability: Sep-2024

Compiler Version Notes (Continued)

```
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/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`

Base Optimization Flags

C benchmarks:
```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-ldist-scalar-expand -fenable-aggressive-gather
-Wl,-mllvm -Wl,-extra-inliner -z muldefs -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lflang
-lamdalloc-ext -ldl
```

C++ benchmarks:
```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
```

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Cisco Systems

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Base Optimization Flags (Continued)

C++ benchmarks (continued):
```
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-do-block-reorder=advanced -z muldefs -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -flto -mllvm -unroll-threshold=100
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt -fno-PIE -no-pie
-fvirtual-function-elimination -fvisibility=hidden
-mllvm -do-block-reorder=advanced -lamdlibm -lflang -lamdalloc-ext
-ldl
```

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 -z muldefs -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -flto
-fepilog-vectorization-of-inductions -mllvm -optimize-strided-mem-cost
-floop-transform -mllvm -unroll-aggressive -mllvm -unroll-threshold=500
-lamdlibm -lflang -lamdalloc -ldl
```

Base Other Flags

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

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

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

Peak Compiler Invocation

C benchmarks:
```
clang
```

C++ benchmarks:
```
clang++
```

Fortran benchmarks:
```
flang
```

Cisco Systems

Cisco UCS C225 M8 (AMD EPYC 9554P 64-Core Processor)

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CPU2017 License: 9019		**Test Date:**	Mar-2025
Test Sponsor: Cisco Systems		**Hardware Availability:**	Oct-2024
Tested by: Cisco Systems		**Software Availability:**	Sep-2024

Peak Portability Flags

500.perlbench_r: `-DSPEC_LINUX_X64 -DSPEC_LP64`
502.gcc_r: `-D_FILE_OFFSET_BITS=64`
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`

Peak Optimization Flags

C benchmarks:

500.perlbench_r: basepeak = yes

502.gcc_r: `-m32 -flto -Wl,-mllvm -Wl,-ldist-scalar-expand`
`-fenable-aggressive-gather -Wl,-mllvm -Wl,-extra-inliner`
`-z muldefs -Ofast -march=znver5 -fveclib=AMDLIBM`
`-ffast-math -fstruct-layout=7 -mllvm -unroll-threshold=50`
`-fremap-arrays -fstrip-mining`
`-mllvm -inline-threshold=1000`
`-mllvm -reduce-array-computations=3 -zopt -fgnu89-inline`
`-lamdalloc`

505.mcf_r: `-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
`-Wl,-mllvm -Wl,-reduce-array-computations=3`
`-Wl,-mllvm -Wl,-extra-inliner -Ofast -march=znver5`
`-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=7`
`-mllvm -unroll-threshold=50 -fremap-arrays -fstrip-mining`
`-mllvm -inline-threshold=1000`
`-mllvm -reduce-array-computations=3 -zopt -lamdlibm`
`-lflang -lamdalloc-ext -ldl`

525.x264_r: basepeak = yes

557.xz_r: `-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
`-Wl,-mllvm -Wl,-reduce-array-computations=3`
`-Wl,-mllvm -Wl,-ldist-scalar-expand`
`-fenable-aggressive-gather -Wl,-mllvm -Wl,-extra-inliner`
`-Ofast -march=znver5 -fveclib=AMDLIBM -ffast-math -flto`
`-fstruct-layout=7 -mllvm -unroll-threshold=50`
`-fremap-arrays -fstrip-mining`

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Cisco Systems

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Peak Optimization Flags (Continued)

557.xz_r (continued):
```
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lflang -lamdalloc-ext -ldl
```

C++ benchmarks:

520.omnetpp_r: `-m64 -std=c++14`
```
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-do-block-reorder=advanced -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt -fno-PIE
-no-pie -fvirtual-function-elimination -fvisibility=hidden
-mllvm -do-block-reorder=advanced -lamdlibm -lamdalloc-ext
-ldl
```

523.xalancbmk_r: `basepeak = yes`

531.deepsjeng_r: `basepeak = yes`

541.leela_r: `basepeak = yes`

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=znver5 -fveclib=AMDLIBM
-ffast-math -flto -fepilog-vectorization-of-inductions
-mllvm -optimize-strided-mem-cost -floop-transform
-mllvm -unroll-aggressive -mllvm -unroll-threshold=500 -lamdlibm
-lflang -lamdalloc -ldl
```

Peak Other Flags

C benchmarks (except as noted below):
```
-Wno-unused-command-line-argument
```

502.gcc_r: `-L/usr/lib32 -Wno-unused-command-line-argument`
```
-L/home/work/cpu2017/v119/aocc5/1316/amd_rate_aocc500_znver5_A_lib/lib32
```

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

Cisco Systems

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Peak Other Flags (Continued)

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/aocc500-flags.html`
`http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-AMD-Turin-v1.1-revG.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/aocc500-flags.xml`
`http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-AMD-Turin-v1.1-revG.xml`

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

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