SPEC CPU®2017 Integer Rate Result

Cisco Systems

Cisco UCS X215c M8 (AMD EPYC 9174F 4.10 GHz Processor)

$SPECrate^{®}2017\_int\_base = 472$

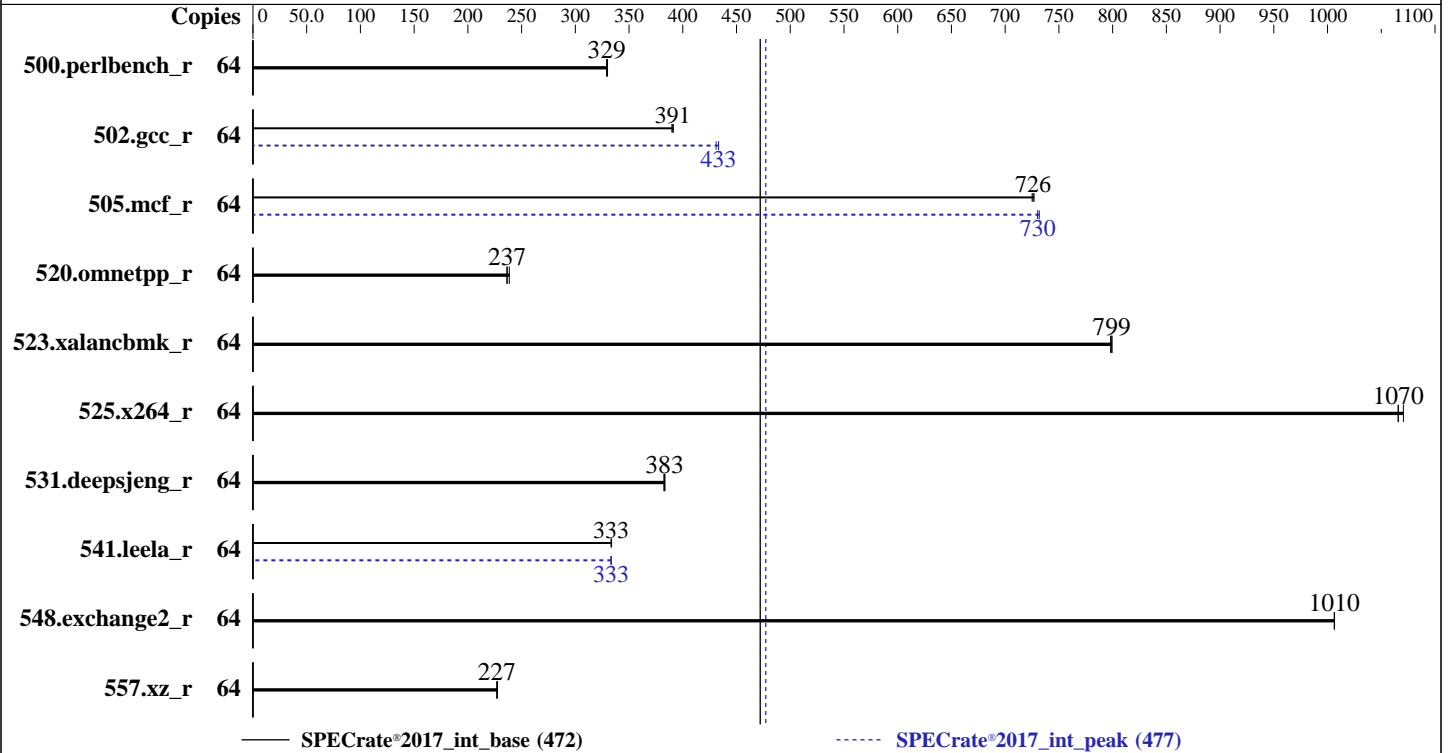$SPECrate^{®}2017\_int\_peak = 477$

Copies		
500.perlbench_r	64	329
502.gcc_r	64	391 / 433
505.mcf_r	64	726 / 730
520.omnetpp_r	64	237
523.xalancbmk_r	64	799
525.x264_r	64	1070
531.deepsjeng_r	64	383
541.leela_r	64	333 / 333
548.exchange2_r	64	1010
557.xz_r	64	227

SPECrate®2017_int_base (472)   SPECrate®2017_int_peak (477)

Hardware

CPU Name: AMD EPYC 9174F
 Max MHz: 4400
 Nominal: 4100
Enabled: 32 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, 32 MB shared / 2 cores
 Other: None
Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-5600B-R, running at 4800)
Storage: 1 x 960 GB NVMe 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 4.3.5 released Aug-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/

SPEC CPU®2017 Integer Rate Result

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Cisco Systems

Cisco UCS X215c M8 (AMD EPYC 9174F 4.10 GHz Processor)

$SPECrate^{®}2017\_int\_base = 472$

$SPECrate^{®}2017\_int\_peak = 477$

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

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

Results Table

Benchmark	Copies	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Copies	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
500.perlbench_r	64	**309**	**329**	309	330	310	329	64	**309**	**329**	309	330	310	329
502.gcc_r	64	232	391	232	390	**232**	**391**	64	210	431	**209**	**433**	209	433
505.mcf_r	64	142	727	**142**	**726**	143	725	64	141	732	142	730	**142**	**730**
520.omnetpp_r	64	355	236	352	239	**355**	**237**	64	355	236	352	239	**355**	**237**
523.xalancbmk_r	64	84.7	798	**84.6**	**799**	84.5	799	64	84.7	798	**84.6**	**799**	84.5	799
525.x264_r	64	105	1070	105	1070	**105**	**1070**	64	105	1070	105	1070	**105**	**1070**
531.deepsjeng_r	64	192	382	**191**	**383**	191	383	64	192	382	**191**	**383**	191	383
541.leela_r	64	318	333	**318**	**333**	318	334	64	318	333	318	334	**318**	**333**
548.exchange2_r	64	**167**	**1010**	167	1010	167	1010	64	**167**	**1010**	167	1010	167	1010
557.xz_r	64	304	227	304	227	**304**	**227**	64	304	227	304	227	**304**	**227**
SPECrate®2017_int_base =		472												
SPECrate®2017_int_peak =		477												

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 Wed Jan 22 01:41:06 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. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. sysctl
 16. /sys/kernel/mm/transparent_hugepage
 17. /sys/kernel/mm/transparent_hugepage/khugepaged
 18. OS release
 19. Disk information
 20. /sys/devices/virtual/dmi/id
 21. dmidecode
 22. BIOS
```

(Continued on next page)

SPEC CPU®2017 Integer Rate Result

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Cisco Systems

Cisco UCS X215c M8 (AMD EPYC 9174F
4.10 GHz Processor)

SPECrate®2017_int_base = 472

SPECrate®2017_int_peak = 477

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

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

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
  01:41:06 up 2 min,  2 users,  load average: 0.38, 0.45, 0.19
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
  root     tty1     -                01:40   18.00s  1.11s  0.15s /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) 6191345
  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) 6191345
  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
 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 9174F 16-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)

Cisco Systems

Cisco UCS X215c M8 (AMD EPYC 9174F
4.10 GHz Processor)

SPECrate®2017_int_base = 472

SPECrate®2017_int_peak = 477

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

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

Platform Notes (Continued)

```
       cpu cores       : 16
       siblings        : 32
       2 physical ids (chips)
       64 processors (hardware threads)
       physical id 0: core ids 0-1,8-9,16-17,24-25,32-33,40-41,48-49,56-57
       physical id 1: core ids 0-1,8-9,16-17,24-25,32-33,40-41,48-49,56-57
       physical id 0: apicids 0-3,16-19,32-35,48-51,64-67,80-83,96-99,112-115
       physical id 1: apicids 128-131,144-147,160-163,176-179,192-195,208-211,224-227,240-243
    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):                   64
      On-line CPU(s) list:      0-63
      Vendor ID:                AuthenticAMD
      BIOS Vendor ID:           Advanced Micro Devices, Inc.
      Model name:               AMD EPYC 9174F 16-Core Processor
      BIOS Model name:          AMD EPYC 9174F 16-Core Processor              Unknown CPU @ 4.1GHz
      BIOS CPU family:          107
      CPU family:               25
      Model:                    17
      Thread(s) per core:       2
      Core(s) per socket:       16
      Socket(s):                2
      Stepping:                 1
      Frequency boost:          enabled
      CPU(s) scaling MHz:       94%
      CPU max MHz:              4408.2998
      CPU min MHz:              1500.0000
      BogoMIPS:                 8187.73
      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:                1 MiB (32 instances)
      L1i cache:                1 MiB (32 instances)
      L2 cache:                 32 MiB (32 instances)
```

(Continued on next page)

Cisco Systems

Cisco UCS X215c M8 (AMD EPYC 9174F
4.10 GHz Processor)

SPECrate®2017_int_base = 472

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CPU2017 License: 9019

Test Sponsor: Cisco Systems

Tested by: Cisco Systems

Test Date: Jan-2025

Hardware Availability: Oct-2024

Software Availability: Sep-2024

Platform Notes (Continued)

```
   L3 cache:                             512 MiB (16 instances)
   NUMA node(s):                         8
   NUMA node0 CPU(s):                    0-3,32-35
   NUMA node1 CPU(s):                    4-7,36-39
   NUMA node2 CPU(s):                    8-11,40-43
   NUMA node3 CPU(s):                    12-15,44-47
   NUMA node4 CPU(s):                    16-19,48-51
   NUMA node5 CPU(s):                    20-23,52-55
   NUMA node6 CPU(s):                    24-27,56-59
   NUMA node7 CPU(s):                    28-31,60-63
   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       1M    8 Data            1    64        1             64
    L1i       32K       1M    8 Instruction     1    64        1             64
    L2         1M      32M    8 Unified         2  2048        1             64
    L3        32M     512M   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: 0-3,32-35
  node 0 size: 193230 MB
  node 0 free: 192731 MB
  node 1 cpus: 4-7,36-39
  node 1 size: 193495 MB
  node 1 free: 193072 MB
  node 2 cpus: 8-11,40-43
  node 2 size: 193533 MB
  node 2 free: 193129 MB
  node 3 cpus: 12-15,44-47
  node 3 size: 193533 MB
  node 3 free: 193099 MB
  node 4 cpus: 16-19,48-51
  node 4 size: 193533 MB
  node 4 free: 192778 MB
  node 5 cpus: 20-23,52-55
  node 5 size: 193533 MB
  node 5 free: 193164 MB
  node 6 cpus: 24-27,56-59
  node 6 size: 193533 MB
  node 6 free: 193079 MB
  node 7 cpus: 28-31,60-63
  node 7 size: 193469 MB
```

(Continued on next page)

Cisco Systems

Cisco UCS X215c M8 (AMD EPYC 9174F
4.10 GHz Processor)

SPECrate®2017_int_base = 472

SPECrate®2017_int_peak = 477

Platform Notes (Continued)

```
  node 7 free: 193002 MB
  node distances:
  node   0   1   2   3   4   5   6   7
    0:  10  12  12  12  32  32  32  32
    1:  12  10  12  12  32  32  32  32
    2:  12  12  10  12  32  32  32  32
    3:  12  12  12  10  32  32  32  32
    4:  32  32  32  32  10  12  12  12
    5:  32  32  32  32  12  10  12  12
    6:  32  32  32  32  12  12  10  12
    7:  32  32  32  32  12  12  12  10


  -----------------------------------------------------------
9. /proc/meminfo
   MemTotal:       1585012104 kB


  -----------------------------------------------------------
10. who -r
   run-level 3 Jan 22 01:38


  -----------------------------------------------------------
11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
   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@ irqbalance iscsi
                    issue-generator kbdsettings klog lvm2-monitor nscd nvmefc-boot-connections
                    nvmf-autoconnect 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


  -----------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
   root=UUID=a2d5841a-0efc-41c7-a352-ff6ddae8fa0b
   splash=silent
   mitigations=auto
   quiet
   security=apparmor


  -----------------------------------------------------------
14. cpupower frequency-info
   analyzing CPU 30:
     current policy: frequency should be within 1.50 GHz and 4.10 GHz.
                     The governor "performance" may decide which speed to use
                     within this range.
```

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Cisco Systems

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4.10 GHz Processor)

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Platform Notes (Continued)

```
    boost state support:
      Supported: yes
      Active: yes


    ----------------------------------------------------------
15. 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
  vm.min_unmapped_ratio              1
  vm.nr_hugepages                    0
  vm.nr_hugepages_mempolicy          0
  vm.nr_overcommit_hugepages         0
  vm.swappiness                      1
  vm.watermark_boost_factor          15000
  vm.watermark_scale_factor          10
  vm.zone_reclaim_mode               1


    ----------------------------------------------------------
16. /sys/kernel/mm/transparent_hugepage
  defrag          [always] defer defer+madvise madvise never
  enabled         [always] madvise never
  hpage_pmd_size  2097152
  shmem_enabled   always within_size advise [never] deny force


    ----------------------------------------------------------
17. /sys/kernel/mm/transparent_hugepage/khugepaged
  alloc_sleep_millisecs   60000
  defrag                  1
  max_ptes_none           511
  max_ptes_shared         256
  max_ptes_swap           64
  pages_to_scan           4096
  scan_sleep_millisecs    10000


    ----------------------------------------------------------
18. OS release
  From /etc/*-release /etc/*-version
  os-release SUSE Linux Enterprise Server 15 SP6

    ----------------------------------------------------------
19. Disk information
SPEC is set to: /home/cpu2017
  Filesystem      Type   Size  Used Avail Use% Mounted on
  /dev/nvme1n1p3 btrfs  477G   15G  460G   4% /home

    ----------------------------------------------------------
20. /sys/devices/virtual/dmi/id
    Vendor:         Cisco Systems Inc
    Product:        UCSX-215C-M8
    Serial:         FCH282172GT
```

Cisco Systems

Cisco UCS X215c M8 (AMD EPYC 9174F
4.10 GHz Processor)

SPECrate®2017_int_base = 472

SPECrate®2017_int_peak = 477

Platform Notes (Continued)

```
   ---------------------------------------------------------------
   21. 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:
       17x 0xCE00 M321R8GA0PB0-CWMCH 64 GB 2 rank 5600, configured at 4800
        2x 0xCE00 M321R8GA0PB0-CWMJH 64 GB 2 rank 5600, configured at 4800
        5x 0xCE00 M321R8GA0PB0-CWMKJ 64 GB 2 rank 5600, configured at 4800


   ---------------------------------------------------------------
   22. BIOS
   (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:       Cisco Systems, Inc.
     BIOS Version:      X215M8.4.3.5.136.0801240859
     BIOS Date:         08/01/2024
     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
------------------------------------------------------------------------------
```

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SPEC CPU®2017 Integer Rate Result

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Cisco Systems

Cisco UCS X215c M8 (AMD EPYC 9174F
4.10 GHz Processor)

SPECrate®2017_int_base = 472

SPECrate®2017_int_peak = 477

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

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

Compiler Version Notes (Continued)

```
==============================================================================
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
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`

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

SPEC CPU®2017 Integer Rate Result

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Cisco Systems

Cisco UCS X215c M8 (AMD EPYC 9174F
4.10 GHz Processor)

SPECrate®2017_int_base = 472

SPECrate®2017_int_peak = 477

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
-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
```

Cisco Systems

Cisco UCS X215c M8 (AMD EPYC 9174F
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CPU2017 License: 9019
Test Sponsor: Cisco Systems
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Test Date: Jan-2025
Hardware Availability: Oct-2024
Software Availability: Sep-2024

Peak Compiler Invocation

C benchmarks:
```
clang
```

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

Fortran benchmarks:
```
flang
```

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`

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Cisco Systems

Cisco UCS X215c M8 (AMD EPYC 9174F
4.10 GHz Processor)

SPECrate®2017_int_base = 472

$SPECrate^{®}2017\_int\_peak = 477$

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

Peak Optimization Flags (Continued)

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

525.x264_r: basepeak = yes

557.xz_r: basepeak = yes

C++ benchmarks:

520.omnetpp_r: basepeak = yes

523.xalancbmk_r: basepeak = yes

531.deepsjeng_r: basepeak = yes

541.leela_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 -lflang
-lamdalloc-ext -ldl
```

Fortran benchmarks:

548.exchange2_r: basepeak = yes

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
```

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Cisco Systems

Cisco UCS X215c M8 (AMD EPYC 9174F
4.10 GHz Processor)

SPECrate®2017_int_base = 472

SPECrate®2017_int_peak = 477

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

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-v3-revA.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-v3-revA.xml`

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

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