SPEC CPU®2017 Integer Rate Result

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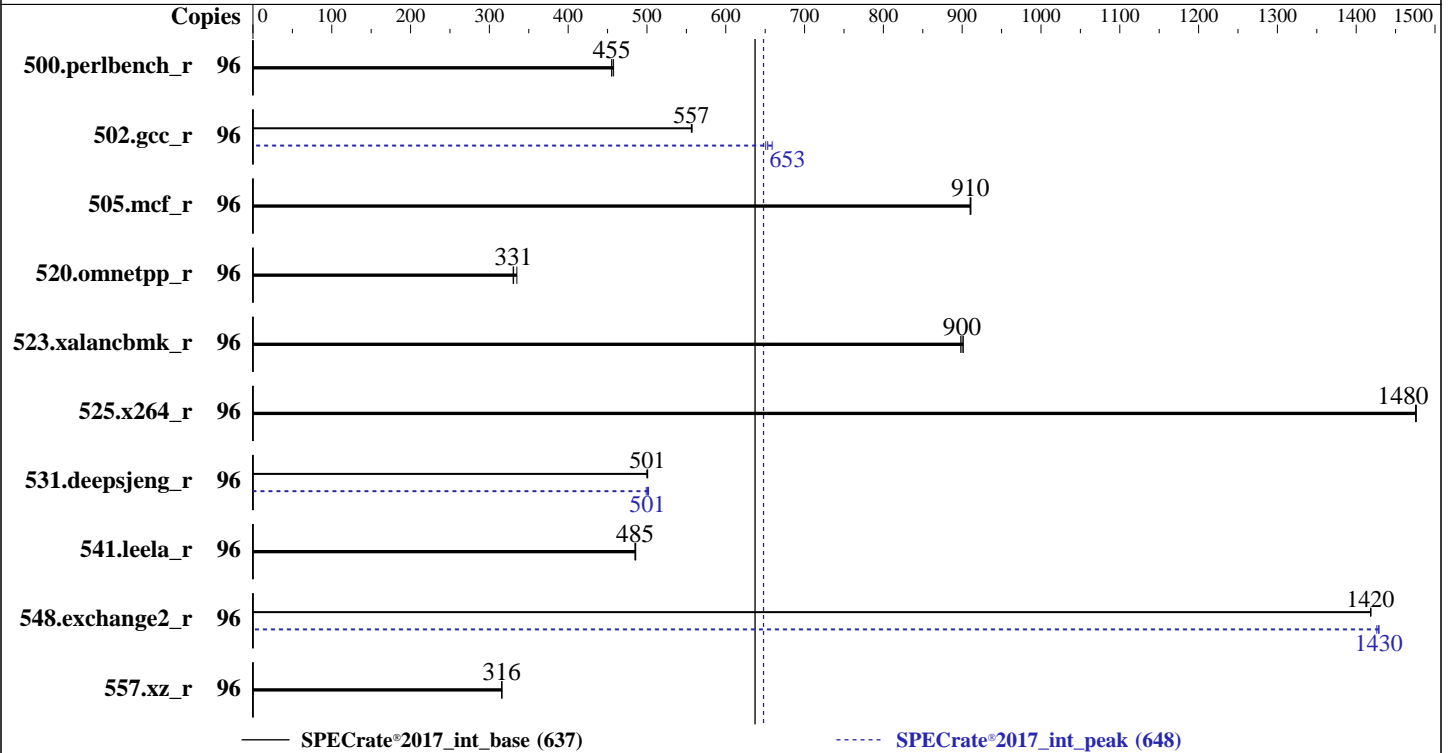## xFusion

2258 V7
(AMD EPYC 9274F)

$SPECrate^{®}2017\_int\_base = 637$

$SPECrate^{®}2017\_int\_peak = 648$

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

Test Date: Aug-2024
Hardware Availability: Dec-2023
Software Availability: Dec-2023

Copies		
500.perlbench_r	96	455
502.gcc_r	96	557 / 653
505.mcf_r	96	910
520.omnetpp_r	96	331
523.xalancbmk_r	96	900
525.x264_r	96	1480
531.deepsjeng_r	96	501 / 501
541.leela_r	96	485
548.exchange2_r	96	1420 / 1430
557.xz_r	96	316

SPECrate®2017_int_base (637)   SPECrate®2017_int_peak (648)

Hardware

CPU Name: AMD EPYC 9274F
 Max MHz: 4300
 Nominal: 4050
Enabled: 48 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 / 3 cores
 Other: None
Memory: 768 GB (24 x 32 GB 2Rx8 PC5-4800B-R)
Storage: 1 x 480 GB SATA SSD
Other: CPU Cooling: Air

Software

OS: Red Hat Enterprise Linux release 9.0 (Plow) kernel version 5.14.0-70.13.1.el9_0.x86_64
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
Parallel: No
Firmware: Version 2.09.17 released Jul-2024
File System: xfs
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

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Results Table

Benchmark	Base Copies	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Copies	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
500.perlbench_r	96	334	458	336	455	**336**	**455**	96	334	458	336	455	**336**	**455**
502.gcc_r	96	244	556	**244**	**557**	244	557	96	**208**	**653**	206	659	209	651
505.mcf_r	96	170	911	170	910	**170**	**910**	96	170	911	170	910	**170**	**910**
520.omnetpp_r	96	376	335	**381**	**331**	381	330	96	376	335	**381**	**331**	381	330
523.xalancbmk_r	96	112	901	113	898	**113**	**900**	96	112	901	113	898	**113**	**900**
525.x264_r	96	**114**	**1480**	114	1480	114	1480	96	**114**	**1480**	114	1480	114	1480
531.deepsjeng_r	96	**220**	**501**	220	500	220	501	96	220	499	**220**	**501**	219	502
541.leela_r	96	**328**	**485**	328	485	327	486	96	**328**	**485**	328	485	327	486
548.exchange2_r	96	**177**	**1420**	177	1420	177	1420	96	176	1430	**176**	**1430**	176	1430
557.xz_r	96	329	315	**328**	**316**	328	316	96	329	315	**328**	**316**	328	316

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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.
```

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

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Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/cpu2017/amd_rate_aocc400_znver4_A_lib/lib:/cpu2017/amd_rate_aocc400_znver4_A_lib/lib32:"
MALLOC_CONF = "retain:true"
```

General Notes

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

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

Platform Notes

```
BIOS settings:
 Determinism Control = Manual
 Determinism Enable = Power
 TDP Control = Manual
 TDP = 400
 PPT Control = Manual
 PPT = 400
 NUMA Nodes Per Socket = NPS4

 Sysinfo program /cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Fri Aug  9 05:41:27 2024

 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 250 (250-6.el9_0)
 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
```

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Platform Notes (Continued)

```
 22. /sys/devices/virtual/dmi/id
 23. dmidecode
 24. BIOS
   ------------------------------------------------------------


   ------------------------------------------------------------
 1. uname -a
   Linux localhost.localdomain 5.14.0-70.13.1.el9_0.x86_64 #1 SMP PREEMPT Thu Apr 14 12:42:38 EDT 2022 x86_64
   x86_64 x86_64 GNU/Linux


   ------------------------------------------------------------
 2. w
    05:41:27 up 50 min,  1 user,  load average: 0.00, 0.00, 0.00
   USER      TTY         LOGIN@   IDLE   JCPU   PCPU WHAT
   root      pts/0       05:39   15.00s  0.88s  0.01s -bash

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


   ------------------------------------------------------------
 4. ulimit -a
   real-time non-blocking time  (microseconds, -R) unlimited
   core file size              (blocks, -c) 0
   data seg size               (kbytes, -d) unlimited
   scheduling priority              (-e) 0
   file size                   (blocks, -f) unlimited
   pending signals                  (-i) 6191057
   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) 6191057
   virtual memory              (kbytes, -v) unlimited
   file locks                       (-x) unlimited

   ------------------------------------------------------------
 5. sysinfo process ancestry
  /usr/lib/systemd/systemd --switched-root --system --deserialize 30
  sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
  sshd: root [priv]
  sshd: root@pts/0
  -bash
  python3 ./run_amd_rate_aocc400_znver4_A1.py
  /bin/bash ./amd_rate_aocc400_znver4_A1.sh
  runcpu --config amd_rate_aocc400_znver4_A1.cfg --tune all --reportable --iterations 3 intrate
  runcpu --configfile amd_rate_aocc400_znver4_A1.cfg --tune all --reportable --iterations 3 --nopower
    --runmode rate --tune base:peak --size test:train:refrate intrate --nopreenv --note-preenv --logfile
    $SPEC/tmp/CPU2017.008/templogs/preenv.intrate.008.0.log --lognum 008.0 --from_runcpu 2
  specperl $SPEC/bin/sysinfo
 $SPEC = /cpu2017


   ------------------------------------------------------------
 6. /proc/cpuinfo
     model name      : AMD EPYC 9274F 24-Core Processor
     vendor_id       : AuthenticAMD
```

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Platform Notes (Continued)

```
      cpu family     : 25
      model          : 17
      stepping       : 1
      microcode      : 0xa101148
      bugs           : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
      TLB size       : 3584 4K pages
      cpu cores      : 24
      siblings       : 48
      2 physical ids (chips)
      96 processors (hardware threads)
      physical id 0: core ids 0-2,8-10,16-18,24-26,32-34,40-42,48-50,56-58
      physical id 1: core ids 0-2,8-10,16-18,24-26,32-34,40-42,48-50,56-58
      physical id 0: apicids 0-5,16-21,32-37,48-53,64-69,80-85,96-101,112-117
      physical id 1: apicids 128-133,144-149,160-165,176-181,192-197,208-213,224-229,240-245
   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 2.37.4:
   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):                    96
   On-line CPU(s) list:       0-95
   Vendor ID:                 AuthenticAMD
   BIOS Vendor ID:            Advanced Micro Devices, Inc.
   Model name:                AMD EPYC 9274F 24-Core Processor
   BIOS Model name:           AMD EPYC 9274F 24-Core Processor
   CPU family:                25
   Model:                     17
   Thread(s) per core:        2
   Core(s) per socket:        24
   Socket(s):                 2
   Stepping:                  1
   Frequency boost:           enabled
   CPU max MHz:               4303.1250
   CPU min MHz:               1500.0000
   BogoMIPS:                  8087.59
   Flags:                     fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36
                              clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb rdtscp lm
                              constant_tsc rep_good nopl nonstop_tsc cpuid extd_apicid aperfmperf rapl
                              pni pclmulqdq monitor ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe
                              popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy
                              abm sse4a misalignsse 3dnowprefetch osvw ibs skinit wdt tce topoext
                              perfctr_core perfctr_nb bpext perfctr_llc mwaitx cpb cat_l3 cdp_l3
                              invpcid_single hw_pstate ssbd mba ibrs ibpb stibp vmmcall fsgsbase bmi1
                              avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
                              avx512ifma clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt
                              xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
                              avx512_bf16 clzero irperf xsaveerptr rdpru wbnoinvd amd_ppin arat npt lbrv
                              svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists
                              pausefilter pfthreshold avic v_vmsave_vmload vgif v_spec_ctrl avx512vbmi
                              umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg
                              avx512_vpopcntdq la57 rdpid overflow_recov succor smca fsrm flush_l1d
   Virtualization:            AMD-V
   L1d cache:                 1.5 MiB (48 instances)
   L1i cache:                 1.5 MiB (48 instances)
```

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Platform Notes (Continued)

```
  L2 cache:                    48 MiB (48 instances)
  L3 cache:                    512 MiB (16 instances)
  NUMA node(s):                8
  NUMA node0 CPU(s):           0-5,48-53
  NUMA node1 CPU(s):           6-11,54-59
  NUMA node2 CPU(s):           12-17,60-65
  NUMA node3 CPU(s):           18-23,66-71
  NUMA node4 CPU(s):           24-29,72-77
  NUMA node5 CPU(s):           30-35,78-83
  NUMA node6 CPU(s):           36-41,84-89
  NUMA node7 CPU(s):           42-47,90-95
  Vulnerability Itlb multihit: Not affected
  Vulnerability L1tf:          Not affected
  Vulnerability Mds:           Not affected
  Vulnerability Meltdown:      Not affected
  Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl
  Vulnerability Spectre v1:        Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:        Mitigation; Retpolines, IBPB conditional, IBRS_FW, STIBP always-on, RSB
                                   filling
  Vulnerability Srbds:         Not affected
  Vulnerability Tsx async abort:  Not affected

From lscpu --cache:
    NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL  SETS PHY-LINE COHERENCY-SIZE
    L1d     32K      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      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: 0-5,48-53
  node 0 size: 95934 MB
  node 0 free: 95224 MB
  node 1 cpus: 6-11,54-59
  node 1 size: 96765 MB
  node 1 free: 96430 MB
  node 2 cpus: 12-17,60-65
  node 2 size: 96765 MB
  node 2 free: 96389 MB
  node 3 cpus: 18-23,66-71
  node 3 size: 96728 MB
  node 3 free: 96402 MB
  node 4 cpus: 24-29,72-77
  node 4 size: 96765 MB
  node 4 free: 96424 MB
  node 5 cpus: 30-35,78-83
  node 5 size: 96765 MB
  node 5 free: 96449 MB
  node 6 cpus: 36-41,84-89
  node 6 size: 96765 MB
  node 6 free: 96435 MB
  node 7 cpus: 42-47,90-95
  node 7 size: 96711 MB
  node 7 free: 96375 MB
  node distances:
  node   0   1   2   3   4   5   6   7
    0:  10  12  12  12  32  32  32  32
```

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Platform Notes (Continued)

```
    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:       791758116 kB


  ----------------------------------------------------------
  10. who -r
     run-level 3 Aug 9 04:50


  ----------------------------------------------------------
  11. Systemd service manager version: systemd 250 (250-6.el9_0)
     Default Target  Status
     multi-user      degraded


  ----------------------------------------------------------
  12. Failed units, from systemctl list-units --state=failed
       UNIT                    LOAD   ACTIVE SUB    DESCRIPTION
     * dnf-makecache.service loaded failed failed dnf makecache


  ----------------------------------------------------------
  13. Services, from systemctl list-unit-files
     STATE           UNIT FILES
     enabled         NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd crond
                     dbus-broker firewalld getty@ irqbalance kdump mdmonitor microcode nis-domainname rhsmcertd
                     rsyslog selinux-autorelabel-mark sshd sssd systemd-network-generator tuned udisks2 upower
     enabled-runtime systemd-remount-fs
     disabled        canberra-system-bootup canberra-system-shutdown canberra-system-shutdown-reboot
                     console-getty cpupower debug-shell hwloc-dump-hwdata kvm_stat man-db-restart-cache-update
                     nftables numad rdisc rhsm rhsm-facts rpmdb-rebuild serial-getty@ sshd-keygen@
                     systemd-boot-check-no-failures systemd-pstore systemd-sysext
     indirect        sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo


  ----------------------------------------------------------
  14. Linux kernel boot-time arguments, from /proc/cmdline
     BOOT_IMAGE=(hd0,gpt2)/vmlinuz-5.14.0-70.13.1.el9_0.x86_64
     root=UUID=0da7a98b-00dc-45cb-ad32-79152ae92c21
     ro
     crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M
     resume=UUID=ee42429e-4fa0-46ac-9096-0dd231fa0a86
     nohz_full=1-191


  ----------------------------------------------------------
  15. cpupower frequency-info
     analyzing CPU 0:
       current policy: frequency should be within 1.50 GHz and 4.05 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:  4050MHz
```

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Platform Notes (Continued)

```
   ----------------------------------------------------------
   16. tuned-adm active
     Current active profile: throughput-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       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


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

   ----------------------------------------------------------
   20. OS release
     From /etc/*-release /etc/*-version
     os-release    Red Hat Enterprise Linux 9.0 (Plow)
     redhat-release Red Hat Enterprise Linux release 9.0 (Plow)
     system-release Red Hat Enterprise Linux release 9.0 (Plow)

   ----------------------------------------------------------
   21. Disk information
   SPEC is set to: /cpu2017
     Filesystem    Type  Size  Used Avail Use% Mounted on
     /dev/sda5     xfs   140G  9.7G  131G   7% /

   ----------------------------------------------------------
   22. /sys/devices/virtual/dmi/id
       Product:        2258 V7
```

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Platform Notes (Continued)

```
    Product Family: Genoa


  --------------------------------------------------------------
  23. dmidecode
   Additional information from dmidecode 3.3 follows.  WARNING: Use caution when you interpret this section.
   The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately
   determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the
   "DMTF SMBIOS" standard.
   Memory:
     24x Samsung M321R4GA3BB6-CQKDG 32 GB 2 rank 4800



  --------------------------------------------------------------
  24. BIOS
  (This section combines info from /sys/devices and dmidecode.)
    BIOS Vendor:        INSYDE Corp.
    BIOS Version:       2.09.17
    BIOS Date:          07/11/2024
    BIOS Revision:      2.9
```

Compiler Version Notes

```
==============================================================================
C         | 502.gcc_r(peak)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/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 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------


==============================================================================
C         | 502.gcc_r(peak)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/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 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------
```

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2258 V7
(AMD EPYC 9274F)

SPECrate®2017_int_base = 637

SPECrate®2017_int_peak = 648

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

Test Date: Aug-2024
Hardware Availability: Dec-2023
Software Availability: Dec-2023

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 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------


==============================================================================
Fortran | 548.exchange2_r(base, peak)
------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
```
clang
```

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

Fortran benchmarks:
```
flang
```

Base Portability Flags

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

SPEC CPU®2017 Integer Rate Result

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SPECrate®2017_int_peak = 648

CPU2017 License: 6488　　　　　　　　　　　　　　　　　　**Test Date:** Aug-2024
Test Sponsor: xFusion　　　　　　　　　　　　　　　**Hardware Availability:** Dec-2023
Tested by: xFusion　　　　　　　　　　　　　　　**Software Availability:** Dec-2023

Base Optimization Flags

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

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

Fortran benchmarks:
```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
-Wl,-mllvm -Wl,-enable-iv-split -z muldefs -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fepilog-vectorization-of-inductions
-mllvm -optimize-strided-mem-cost -floop-transform
-mllvm -unroll-aggressive -mllvm -unroll-threshold=500 -lamdlibm
-lflang -lamdalloc
```

Base Other Flags

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

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

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

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Test Sponsor: xFusion
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Test Date: Aug-2024
Hardware Availability: Dec-2023
Software Availability: Dec-2023

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 -z muldefs -Ofast -march=znver4`
`-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: `basepeak = yes`

525.x264_r: `basepeak = yes`

557.xz_r: `basepeak = yes`

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Peak Optimization Flags (Continued)

C++ benchmarks:

520.omnetpp_r: `basepeak = yes`

523.xalancbmk_r: `basepeak = yes`

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

541.leela_r: `basepeak = yes`

Fortran benchmarks:
`-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
`-Wl,-mllvm -Wl,-reduce-array-computations=3`
`-Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop`
`-Wl,-mllvm -Wl,-enable-iv-split -O3 -march=znver4 -fveclib=AMDLIBM`
`-ffast-math -fepilog-vectorization-of-inductions`
`-mllvm -optimize-strided-mem-cost -floop-transform`
`-mllvm -unroll-aggressive -mllvm -unroll-threshold=500 -lamdlibm`
`-lflang -lamdalloc`

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/aocc4/znver4/rate/amd_rate_aocc400_znver4_A_lib/lib32`

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

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

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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/xFusion-Platform-Settings-AMD-V1.1.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/xFusion-Platform-Settings-AMD-V1.1.xml

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

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