SPEC CPU®2017 Integer Rate Result

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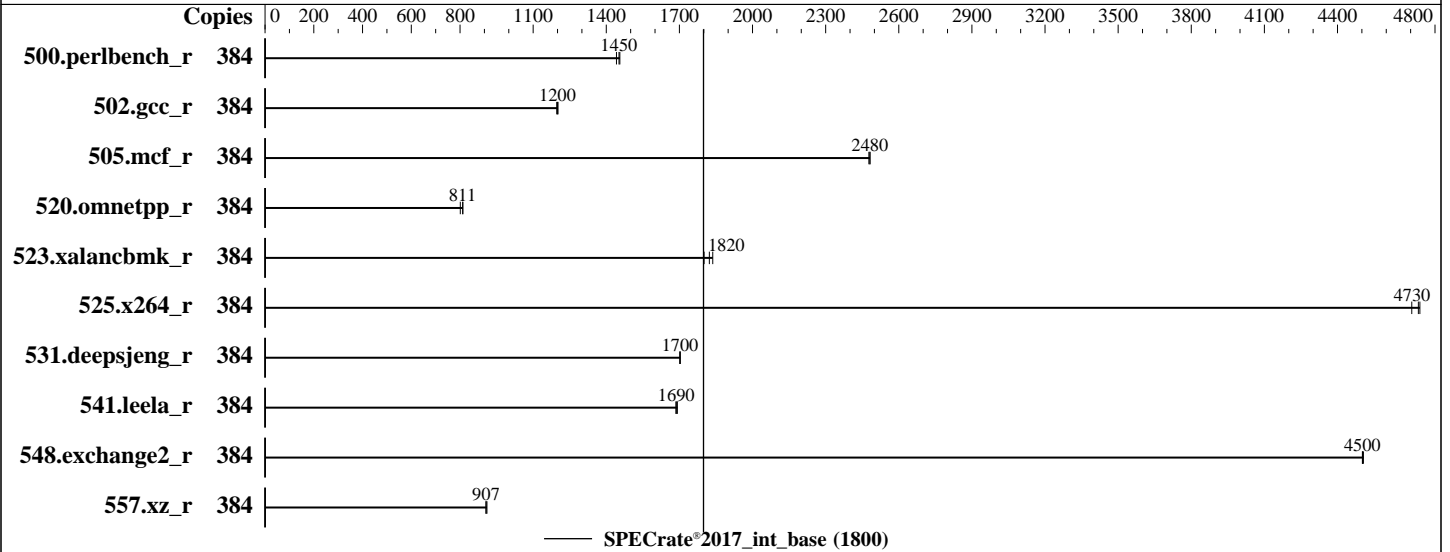## xFusion

FusionServer 2258 V7
AMD EPYC 9654

$SPECrate^{®}2017\_int\_base =$ **1800**

$SPECrate^{®}2017\_int\_peak =$ Not Run

CPU2017 License: 6488	**Test Date:** Jan-2024
Test Sponsor: xFusion	**Hardware Availability:** Nov-2023
Tested by: xFusion	**Software Availability:** Dec-2022

Copies — 0 200 400 600 800 1100 1400 1700 2000 2300 2600 2900 3200 3500 3800 4100 4400 4800

- 500.perlbench_r **384** — 1450
- 502.gcc_r **384** — 1200
- 505.mcf_r **384** — 2480
- 520.omnetpp_r **384** — 811
- 523.xalancbmk_r **384** — 1820
- 525.x264_r **384** — 4730
- 531.deepsjeng_r **384** — 1700
- 541.leela_r **384** — 1690
- 548.exchange2_r **384** — 4500
- 557.xz_r **384** — 907

SPECrate®2017_int_base (1800)

Hardware

CPU Name: AMD EPYC 9654
  Max MHz: 3700
  Nominal: 2400
Enabled: 192 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: 384 MB I+D on chip per chip, 32 MB shared / 8 cores
  Other: None
Memory: 768 GB (24 x 32 GB 2Rx8 PC5-4800B-R)
Storage: 1 x 960 GB SATA SSD
Other: None

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 1.06.29 released Nov-2023
File System: xfs
System State: Run level 5 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	384	420	1460	**421**	**1450**	424	1440							
502.gcc_r	384	454	1200	452	1200	**453**	**1200**							
505.mcf_r	384	250	2480	**250**	**2480**	250	2480							
520.omnetpp_r	384	629	801	**621**	**811**	621	812							
523.xalancbmk_r	384	**222**	**1820**	221	1840	225	1800							
525.x264_r	384	**142**	**4730**	142	4740	143	4700							
531.deepsjeng_r	384	259	1700	258	1700	**258**	**1700**							
541.leela_r	384	376	1690	377	1690	**377**	**1690**							
548.exchange2_r	384	**223**	**4500**	223	4510	223	4500							
557.xz_r	384	458	906	**457**	**907**	456	910							
SPECrate®2017_int_base =	**1800**													
SPECrate®2017_int_peak =	**Not Run**													

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Compiler Notes

```
The AMD64 AOCC Compiler Suite is available at
http://developer.amd.com/amd-aocc/
```

Submit Notes

```
The config file option 'submit' was used.
'numactl' was used to bind copies to the cores.
See the configuration file for details.
```

Operating System Notes

```
'ulimit -s unlimited' was used to set environment stack size limit
'ulimit -l 2097152' was used to set environment locked pages in memory limit

runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>

To limit dirty cache to 8% of memory, 'sysctl -w vm.dirty_ratio=8' run as root.
To limit swap usage to minimum necessary, 'sysctl -w vm.swappiness=1' run as root.
To free node-local memory and avoid remote memory usage,
'sysctl -w vm.zone_reclaim_mode=1' run as root.
To clear filesystem caches, 'sync; sysctl -w vm.drop_caches=3' run as root.
To disable address space layout randomization (ASLR) to reduce run-to-run
variability, 'sysctl -w kernel.randomize_va_space=0' run as root.

To enable Transparent Hugepages (THP) only on request for base runs,
'echo madvise > /sys/kernel/mm/transparent_hugepage/enabled' run as root.
To enable THP for all allocations for peak runs,
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
```

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Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/home/cpu2017/amd_rate_aocc400_znver4_A_lib/lib:/home/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:
 TDP: 400
 Determinism Enable set to Power
 PPT: 400
 NPS: 4

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Fri Jan  5 20:53:20 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. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. tuned-adm active
 16. sysctl
 17. /sys/kernel/mm/transparent_hugepage
 18. /sys/kernel/mm/transparent_hugepage/khugepaged
 19. OS release
 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.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
    20:53:20 up 8 min,  2 users,  load average: 0.32, 0.87, 0.74
    USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
    root     pts/0    20:46   12.00s  1.20s  0.02s -bash
    root     pts/1    20:49    3:51   0.00s  0.00s -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 rhgb --switched-root --system --deserialize 31
   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 base --reportable --iterations 3 intrate
   runcpu --configfile amd_rate_aocc400_znver4_A1.cfg --tune base --reportable --iterations 3 --nopower
     --runmode rate --tune base --size test:train:refrate intrate --nopreenv --note-preenv --logfile
     $SPEC/tmp/CPU2017.042/templogs/preenv.intrate.042.0.log --lognum 042.0 --from_runcpu 2
   specperl $SPEC/bin/sysinfo
   $SPEC = /home/cpu2017

  ------------------------------------------------------------
  6. /proc/cpuinfo
      model name      : AMD EPYC 9654 96-Core Processor
      vendor_id       : AuthenticAMD
      cpu family      : 25
      model           : 17
```

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Platform Notes (Continued)

```
      stepping        : 1
      microcode       : 0xa101121
      bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
      TLB size        : 3584 4K pages
      cpu cores       : 96
      siblings        : 192
      2 physical ids (chips)
      384 processors (hardware threads)
      physical id 0: core ids 0-95
      physical id 1: core ids 0-95
      physical id 0: apicids 0-191
      physical id 1: apicids 256-447
   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):                  384
  On-line CPU(s) list:     0-383
  Vendor ID:               AuthenticAMD
  BIOS Vendor ID:          Advanced Micro Devices, Inc.
  Model name:              AMD EPYC 9654 96-Core Processor
  BIOS Model name:         AMD EPYC 9654 96-Core Processor
  CPU family:              25
  Model:                   17
  Thread(s) per core:      2
  Core(s) per socket:      96
  Socket(s):               2
  Stepping:                1
  Frequency boost:         enabled
  CPU max MHz:             3707.8120
  CPU min MHz:             1500.0000
  BogoMIPS:                4799.82
  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:               6 MiB (192 instances)
  L1i cache:               6 MiB (192 instances)
  L2 cache:                192 MiB (192 instances)
  L3 cache:                768 MiB (24 instances)
```

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Platform Notes (Continued)

```
  NUMA node(s):                24
  NUMA node0 CPU(s):           0-7,192-199
  NUMA node1 CPU(s):           8-15,200-207
  NUMA node2 CPU(s):           16-23,208-215
  NUMA node3 CPU(s):           24-31,216-223
  NUMA node4 CPU(s):           32-39,224-231
  NUMA node5 CPU(s):           40-47,232-239
  NUMA node6 CPU(s):           48-55,240-247
  NUMA node7 CPU(s):           56-63,248-255
  NUMA node8 CPU(s):           64-71,256-263
  NUMA node9 CPU(s):           72-79,264-271
  NUMA node10 CPU(s):          80-87,272-279
  NUMA node11 CPU(s):          88-95,280-287
  NUMA node12 CPU(s):          96-103,288-295
  NUMA node13 CPU(s):          104-111,296-303
  NUMA node14 CPU(s):          112-119,304-311
  NUMA node15 CPU(s):          120-127,312-319
  NUMA node16 CPU(s):          128-135,320-327
  NUMA node17 CPU(s):          136-143,328-335
  NUMA node18 CPU(s):          144-151,336-343
  NUMA node19 CPU(s):          152-159,344-351
  NUMA node20 CPU(s):          160-167,352-359
  NUMA node21 CPU(s):          168-175,360-367
  NUMA node22 CPU(s):          176-183,368-375
  NUMA node23 CPU(s):          184-191,376-383
  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       6M    8 Data              1    64        1             64
      L1i       32K       6M    8 Instruction       1    64        1             64
      L2         1M     192M    8 Unified           2  2048        1             64
      L3        32M     768M   16 Unified           3 32768        1             64


  ------------------------------------------------------------
  8. numactl --hardware
  NOTE: a numactl 'node' might or might not correspond to a physical chip.
    available: 24 nodes (0-23)
    node 0 cpus: 0-7,192-199
    node 0 size: 31414 MB
    node 0 free: 30520 MB
    node 1 cpus: 8-15,200-207
    node 1 size: 32252 MB
    node 1 free: 31513 MB
    node 2 cpus: 16-23,208-215
    node 2 size: 32252 MB
    node 2 free: 31750 MB
    node 3 cpus: 24-31,216-223
    node 3 size: 32252 MB
    node 3 free: 32022 MB
    node 4 cpus: 32-39,224-231
```

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Platform Notes (Continued)

```
     node 4 size: 32252 MB
     node 4 free: 32004 MB
     node 5 cpus: 40-47,232-239
     node 5 size: 32252 MB
     node 5 free: 31955 MB
     node 6 cpus: 48-55,240-247
     node 6 size: 32252 MB
     node 6 free: 32020 MB
     node 7 cpus: 56-63,248-255
     node 7 size: 32252 MB
     node 7 free: 32004 MB
     node 8 cpus: 64-71,256-263
     node 8 size: 32252 MB
     node 8 free: 31967 MB
     node 9 cpus: 72-79,264-271
     node 9 size: 32252 MB
     node 9 free: 32030 MB
     node 10 cpus: 80-87,272-279
     node 10 size: 32216 MB
     node 10 free: 31995 MB
     node 11 cpus: 88-95,280-287
     node 11 size: 32252 MB
     node 11 free: 31964 MB
     node 12 cpus: 96-103,288-295
     node 12 size: 32252 MB
     node 12 free: 32033 MB
     node 13 cpus: 104-111,296-303
     node 13 size: 32252 MB
     node 13 free: 31992 MB
     node 14 cpus: 112-119,304-311
     node 14 size: 32252 MB
     node 14 free: 31984 MB
     node 15 cpus: 120-127,312-319
     node 15 size: 32252 MB
     node 15 free: 31996 MB
     node 16 cpus: 128-135,320-327
     node 16 size: 32252 MB
     node 16 free: 32025 MB
     node 17 cpus: 136-143,328-335
     node 17 size: 32252 MB
     node 17 free: 31964 MB
     node 18 cpus: 144-151,336-343
     node 18 size: 32252 MB
     node 18 free: 32026 MB
     node 19 cpus: 152-159,344-351
     node 19 size: 32252 MB
     node 19 free: 31982 MB
     node 20 cpus: 160-167,352-359
     node 20 size: 32252 MB
     node 20 free: 32004 MB
     node 21 cpus: 168-175,360-367
     node 21 size: 32252 MB
     node 21 free: 31966 MB
     node 22 cpus: 176-183,368-375
     node 22 size: 32252 MB
     node 22 free: 31871 MB
     node 23 cpus: 184-191,376-383
     node 23 size: 32177 MB
     node 23 free: 31840 MB
     node distances:
```

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Platform Notes (Continued)

```
     node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23
       0:  10  11  11  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
       1:  11  10  11  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
       2:  11  11  10  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
       3:  12  12  12  10  11  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
       4:  12  12  12  11  10  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
       5:  12  12  12  11  11  10  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
       6:  12  12  12  12  12  12  10  11  11  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
       7:  12  12  12  12  12  12  11  10  11  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
       8:  12  12  12  12  12  12  11  11  10  12  12  12  32  32  32  32  32  32  32  32  32  32  32  32
       9:  12  12  12  12  12  12  12  12  12  10  11  11  32  32  32  32  32  32  32  32  32  32  32  32
      10:  12  12  12  12  12  12  12  12  12  11  10  11  32  32  32  32  32  32  32  32  32  32  32  32
      11:  12  12  12  12  12  12  12  12  12  11  11  10  32  32  32  32  32  32  32  32  32  32  32  32
      12:  32  32  32  32  32  32  32  32  32  32  32  32  10  11  11  12  12  12  12  12  12  12  12  12
      13:  32  32  32  32  32  32  32  32  32  32  32  32  11  10  11  12  12  12  12  12  12  12  12  12
      14:  32  32  32  32  32  32  32  32  32  32  32  32  11  11  10  12  12  12  12  12  12  12  12  12
      15:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  10  11  11  12  12  12  12  12  12
      16:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  11  10  11  12  12  12  12  12  12
      17:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  11  11  10  12  12  12  12  12  12
      18:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  10  11  11  12  12  12
      19:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  10  11  12  12  12
      20:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  11  10  12  12  12
      21:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  12  10  11  11
      22:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  12  11  10  11
      23:  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  12  11  11  10

    ------------------------------------------------------------
    9. /proc/meminfo
       MemTotal:       791664556 kB


    ------------------------------------------------------------
    10. who -r
      run-level 5 Jan 5 20:45


    ------------------------------------------------------------
    11. Systemd service manager version: systemd 250 (250-6.el9_0)
       Default Target  Status
       graphical       running


    ------------------------------------------------------------
    12. Services, from systemctl list-unit-files
       STATE           UNIT FILES
       enabled         ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online
                       accounts-daemon atd auditd avahi-daemon bluetooth chronyd crond cups dbus-broker firewalld
                       gdm getty@ insights-client-boot irqbalance iscsi iscsi-onboot kdump libstoragemgmt
                       low-memory-monitor lvm2-monitor mcelog mdmonitor microcode multipathd nis-domainname
                       nvmefc-boot-connections ostree-remount power-profiles-daemon qemu-guest-agent rhsmcertd
                       rsyslog rtkit-daemon selinux-autorelabel-mark smartd sshd sssd switcheroo-control
                       systemd-network-generator tuned udisks2 upower vgauthd vmtoolsd
       enabled-runtime systemd-remount-fs
       disabled        arp-ethers blk-availability brltty canberra-system-bootup canberra-system-shutdown
                       canberra-system-shutdown-reboot chrony-wait cni-dhcp console-getty cpupower cups-browsed
                       dbus-daemon debug-shell dnsmasq hwloc-dump-hwdata iprdump iprinit iprupdate iscsid
                       iscsiuio kpatch kvm_stat ledmon man-db-restart-cache-update nftables nvmf-autoconnect
                       podman podman-auto-update podman-restart psacct ras-mc-ctl rasdaemon rdisc rhcd rhsm
                       rhsm-facts rpmdb-rebuild serial-getty@ speech-dispatcherd sshd-keygen@
                       systemd-boot-check-no-failures systemd-pstore systemd-sysext wpa_supplicant
       indirect        spice-vdagentd sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo

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

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xFusion

FusionServer 2258 V7
AMD EPYC 9654

SPECrate®2017_int_base =   1800

SPECrate®2017_int_peak = Not Run

CPU2017 License: 6488
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Tested by: xFusion

Test Date: Jan-2024
Hardware Availability: Nov-2023
Software Availability: Dec-2022

Platform Notes (Continued)

```
13. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=(hd0,gpt2)/vmlinuz-5.14.0-70.13.1.el9_0.x86_64
    root=/dev/mapper/rhel_huawei-root
    ro
    crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M
    resume=/dev/mapper/rhel_huawei-swap
    rd.lvm.lv=rhel_huawei/root
    rd.lvm.lv=rhel_huawei/swap
    rhgb
    quiet
    nohz_full=1-383


----------------------------------------------------------
14. cpupower frequency-info
    analyzing CPU 0:
      current policy: frequency should be within 1.50 GHz and 2.40 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:  2400MHz


----------------------------------------------------------
15. tuned-adm active
    It seems that tuned daemon is not running, preset profile is not activated.
    Preset profile: throughput-performance


----------------------------------------------------------
16. sysctl
    kernel.numa_balancing             1
    kernel.randomize_va_space         0
    vm.compaction_proactiveness       20
    vm.dirty_background_bytes         0
    vm.dirty_background_ratio         10
    vm.dirty_bytes                    0
    vm.dirty_expire_centisecs         3000
    vm.dirty_ratio                    20
    vm.dirty_writeback_centisecs      500
    vm.dirtytime_expire_seconds       43200
    vm.extfrag_threshold              500
    vm.min_unmapped_ratio             1
    vm.nr_hugepages                   0
    vm.nr_hugepages_mempolicy         0
    vm.nr_overcommit_hugepages        0
    vm.swappiness                     1
    vm.watermark_boost_factor         15000
    vm.watermark_scale_factor         10
    vm.zone_reclaim_mode              1


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

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

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Platform Notes (Continued)

```
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     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)


    ----------------------------------------------------------
20. Disk information
SPEC is set to: /home/cpu2017
  Filesystem                     Type  Size  Used Avail Use% Mounted on
  /dev/mapper/rhel_huawei-home xfs   819G   11G  809G   2% /home


    ----------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Product:        2258 V7
    Product Family: Genoa


    ----------------------------------------------------------
22. 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 Micron Technology MTC20F2085S1RC48BA1 32 GB 2 rank 4800



    ----------------------------------------------------------
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
  BIOS Vendor:       INSYDE Corp.
  BIOS Version:      1.06.29
  BIOS Date:         11/23/2023
  BIOS Revision:     1.6
```

Compiler Version Notes

```
==============================================================================================
C        | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base) 557.xz_r(base)
----------------------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
----------------------------------------------------------------------------------------------


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

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Compiler Version Notes (Continued)

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


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

Base Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang

Base Portability Flags

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

Base Optimization Flags

C benchmarks:
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3

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SPEC CPU®2017 Integer Rate Result

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Base Optimization Flags (Continued)

C benchmarks (continued):
```
-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
```

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-V1.0.html

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

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CPU2017 License:	6488	**Test Date:**	Jan-2024
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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-V1.0.xml

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

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