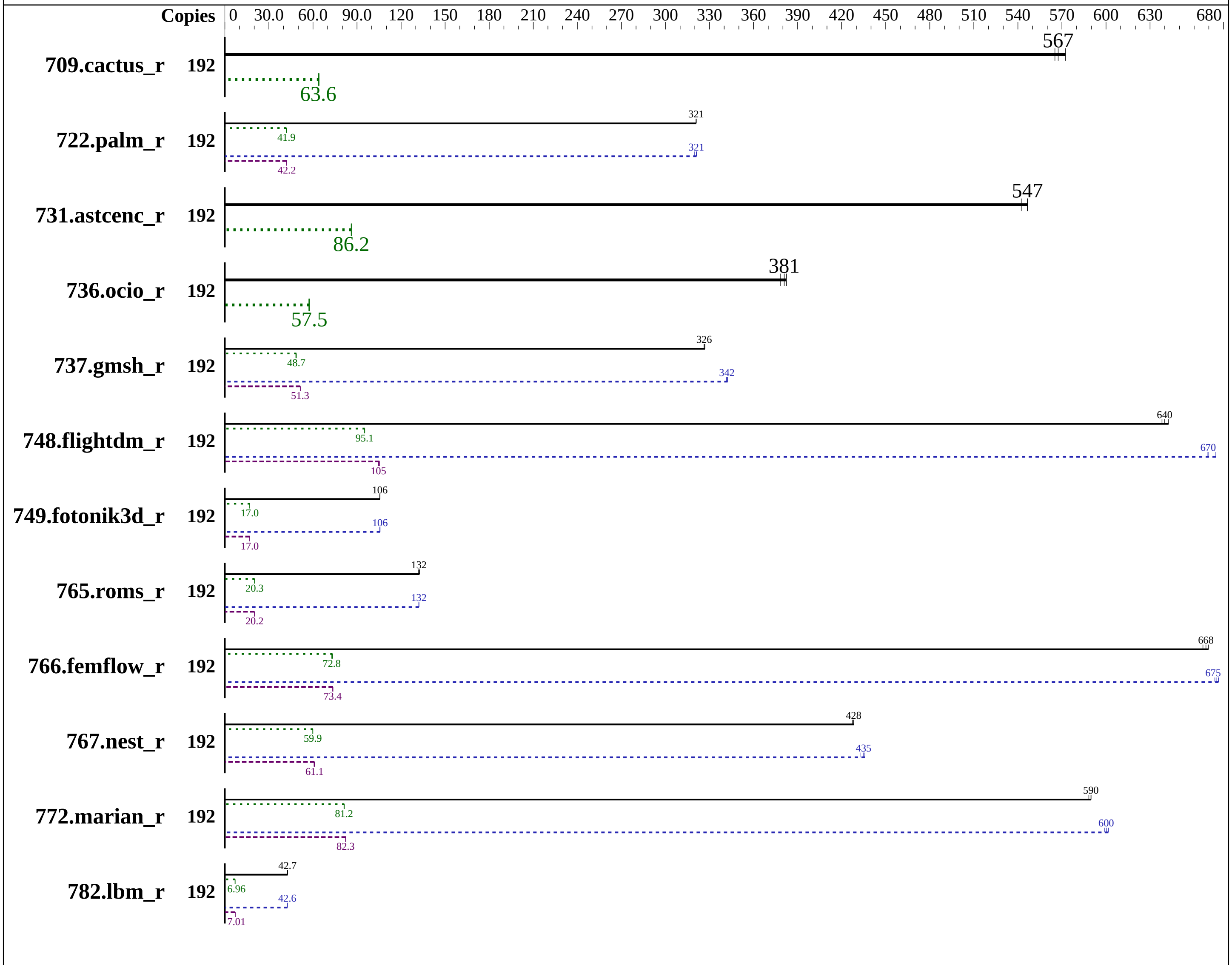
SPEC CPU®2026 Floating Point Rate Result

GIGA-BYTE TECHNOLOGY CO., LTD.
(Test Sponsor: Ampere Computing, Inc.)
R2A3-T40-AAV1
(3.20 GHz AmpereOneM A192-32M)

SPECrate®2026_fp_base =	310
SPECrate®2026_fp_energy_base =	43.9
SPECrate®2026_fp_peak =	314
SPECrate®2026_fp_energy_peak =	44.7

CPU2026 License:	6412	**Test Date:**	Feb-2026
Test Sponsor:	Ampere Computing, Inc.	**Hardware Availability:**	Nov-2025
Tested by:	Ampere Computing, Inc.	**Software Availability:**	Oct-2025



Hardware

CPU Name:	AmpereOneM A192-32M
Max MHz:	3200
Nominal:	3200
Enabled:	192 cores, 1 chip
Orderable:	1 chip
Cache L1:	16 KB I + 64 KB D on chip per core
L2:	2 MB I+D on chip per core
L3:	64 MB I+D on chip per chip

(Continued on next page)

Software

OS:	Fedora Linux 43 (Server Edition) 6.17.5-200.64K_PS.fc42.aarch64
Compiler:	C/C++/Fortran: Version 15.2.0 of GCC
Compiler Category:	Community
Firmware:	Version 5.4.5.1 released Oct-2025
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit

(Continued on next page)

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Hardware (Continued)

Other: None
Memory: 768 GB (12 x 64 GB 2Rx4 PC5-5600B-R)
Storage: 1 x 960 GB Samsung M.2 (MZ1L2960HCJR-00A07)
Cooling: Air
Other: None

Software (Continued)

Peak Pointers: 64-bit
Other: Jemalloc memory allocator library v5.3.0
Power Management: OS CPU governor set to "performance"

Power

Max. Power (W): 838.2
Idle Power (W): 234.7
Min. Temperature (C): 20.44
Elevation (m): 60
Line Standard: 120 V / 60 Hz / 1 phase / 2 wire
Provisioning: Line powered

Power Settings

Management FW: Version 4.06 of MegaRAC BMC
Memory Mode: Normal

Power-Relevant Hardware

Power Supply: 1 x 1600 W (non-redundant)
Details: 1+1 1600W 80 PLUS Titanium redundant power supplies
AC Power Supply
Backplane: PCIe Gen5 x4
Other Storage: Embedded SATA Controller
Storage Model #s: R2A3-T40-AAV1
NICs Installed: 1 x Mellanox Technologies MT27710 Family @ 25 GbE (2 ports ethernet)
NICs Enabled (FW/OS): 2 / 1
NICs Connected/Speed: 1 @ 25 Gbps
Other HW Model #s: Fan configuration is 4 x 80x80x38mm

Power Analyzer

Power Analyzer: cpu-reference-ptd:8000
Hardware Vendor: Yokogawa
Model: WT-310
Serial Number: T11733285
Input Connection: Serial over USB
Metrology Institute: NIST
Calibration By: Yokogawa USA
Calibration Label: T126622
Calibration Date: 13-Aug-2025
PTDaemon® Version: 1.11.3 (0c074d7d; 2025-10-15)
Setup Description: Directly Connected to PSU 1
Current Ranges Used: 10A
Voltage Range Used: 150V

Temperature Meter

Temperature Meter: cpu-reference-ptd:9000
Hardware Vendor: PCSensor
Model: USB9097+DS18B20
Serial Number: N/A
Input Connection: USB
PTDaemon Version: 1.11.3 (0c074d7d; 2025-10-15)
Setup Description: In front of SUT front panel primary air inlet

Base Results Table

Benchmark	Copies	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
709.cactus_r	192	288	572	218	64.2	758	834	291	565	220	63.7	754	831	**290**	**567**	**220**	**63.6**	**758**	**835**

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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Test Sponsor:	Ampere Computing, Inc.	**Hardware Availability:**	Nov-2025
Tested by:	Ampere Computing, Inc.	**Software Availability:**	Oct-2025

Base Results Table (Continued)

Benchmark	Copies	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
722.palm_r	192	790	321	513	41.9	650	725	790	321	514	41.9	650	724	**790**	**321**	**513**	**41.9**	**650**	**724**
731.astcenc_r	192	**295**	**547**	**156**	**86.2**	**529**	**553**	295	547	156	86.2	529	552	297	542	156	86.0	526	553
736.ocio_r	192	444	378	246	57.2	554	668	**441**	**381**	**244**	**57.5**	**554**	**660**	439	382	245	57.5	557	667
737.gmsh_r	192	**270**	**326**	**152**	**48.7**	**562**	**664**	270	327	152	48.5	565	662	270	326	153	48.3	566	660
748.flightdm_r	192	214	643	121	95.3	567	598	**215**	**640**	**121**	**95.1**	**565**	**598**	215	638	122	94.8	566	598
749.fotonik3d_r	192	2101	106	1110	17.0	531	554	2104	105	1120	17.0	530	552	**2102**	**106**	**1120**	**17.0**	**532**	**554**
765.roms_r	192	2281	133	1300	20.3	571	594	**2288**	**132**	**1300**	**20.3**	**570**	**597**	2292	132	1310	20.2	570	597
766.femflow_r	192	423	666	327	73.0	772	821	**422**	**668**	**328**	**72.8**	**777**	**821**	421	670	325	73.3	774	819
767.nest_r	192	355	428	212	59.9	595	729	**356**	**428**	**212**	**59.9**	**595**	**718**	356	427	212	59.9	594	719
772.marian_r	192	**514**	**590**	**314**	**81.2**	**610**	**691**	515	588	313	81.3	608	682	514	590	314	81.1	611	693
782.lbm_r	192	2574	42.7	1410	6.96	547	559	2579	42.7	1410	6.95	546	559	**2578**	**42.7**	**1410**	**6.96**	**546**	**560**

SPECrate®2026_fp_base = 310

SPECrate®2026_fp_energy_base = 43.9

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

Peak Results Table

Benchmark	Copies	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
709.cactus_r	192	288	572	218	64.2	758	834	291	565	220	63.7	754	831	**290**	**567**	**220**	**63.6**	**758**	**835**
722.palm_r	192	789	321	511	42.1	647	733	793	320	511	42.1	644	731	**789**	**321**	**510**	**42.2**	**646**	**718**
731.astcenc_r	192	**295**	**547**	**156**	**86.2**	**529**	**553**	295	547	156	86.2	529	552	297	542	156	86.0	526	553
736.ocio_r	192	444	378	246	57.2	554	668	**441**	**381**	**244**	**57.5**	**554**	**660**	439	382	245	57.5	557	667
737.gmsh_r	192	**258**	**342**	**144**	**51.3**	**559**	**663**	257	342	144	51.4	558	663	258	342	144	51.4	557	663
748.flightdm_r	192	204	675	110	105	538	560	205	669	110	105	536	560	**205**	**670**	**110**	**105**	**538**	**560**
749.fotonik3d_r	192	2100	106	1120	17.0	532	553	2104	105	1120	17.0	531	553	**2101**	**106**	**1120**	**17.0**	**531**	**553**
765.roms_r	192	**2289**	**132**	**1310**	**20.2**	**570**	**595**	2290	132	1310	20.2	570	596	2288	132	1310	20.2	571	593
766.femflow_r	192	**417**	**675**	**325**	**73.4**	**779**	**820**	416	677	324	73.6	778	822	418	674	325	73.4	778	819
767.nest_r	192	349	436	208	61.1	594	729	**350**	**435**	**208**	**61.1**	**593**	**736**	352	433	209	60.7	593	730
772.marian_r	192	504	602	309	82.5	613	696	506	599	310	82.2	612	695	**505**	**600**	**310**	**82.3**	**613**	**694**
782.lbm_r	192	2583	42.6	1390	7.03	540	555	2586	42.5	1390	7.03	539	555	**2585**	**42.6**	**1400**	**7.01**	**540**	**555**

SPECrate®2026_fp_peak = 314

SPECrate®2026_fp_energy_peak = 44.7

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

Compiler Notes

```
Binaries were compiled on a system with 1x AmpereOneM CPU
chip + 768 GB Memory using Fedora Linux 42
```

Submit Notes

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

Operating System Notes

```
'ulimit -s unlimited' was used to set environment stack size
Set dirty_ratio=8 to limit dirty cache to 8% of memory
     echo 8 | sudo tee /proc/sys/vm/dirty_ratio
Set swappiness=1 to swap only if necessary
     echo 1 | sudo tee /proc/sys/vm/swappiness
Set zone_reclaim_mode=1 to free local node memory and avoid remote memory
     echo 1 | sudo tee /proc/sys/vm/zone_reclaim_mode
Set drop_caches=3 to reset caches before invoking runcpu
     echo 3 | sudo tee /proc/sys/vm/drop_caches
Set numa_balancing=0 to disable automatic numa balancing
     echo 0 | sudo tee /proc/sys/kernel/numa_balancing
Switch off all ktune and tuned settings
     sudo tuned-adm off
Transparent huge pages set to 'never'
     sudo bash -c "echo never > /sys/kernel/mm/transparent_hugepage/enabled"

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

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/home/amptest/workspace/sir2026_pkg_verify/ampere_spec2026/spec2026/jem
     alloc/install/lib:/home/amptest/workspace/sir2026_pkg_verify/ampere_spec
     2026/spec2026/gcc/install/lib64:/home/amptest/ampere_spec2026/spec2026/j
     emalloc/install/lib:/home/amptest/ampere_spec2026/spec2026/gcc/install/l
     ib64"
MALLOC_CONF = "thp:never,dirty_decay_ms:-1,muzzy_decay_ms:-1,retain:true"
```

General Notes

```
Jemalloc v5.3.0 is available via
https://github.com/jemalloc/jemalloc/releases/download/5.3.0/jemalloc-5.3.0.tar.bz2
It was built on Fedora Linux 42 using Version 15.2.0 of GCC
The configure options are
"--with-lg-page=16" for building libjemalloc.so, and
"--with-lg-quantum=3 --with-lg-page=16" for building libjemalloc_ext.so
Tuned MALLOC_CONF in terms of https://jemalloc.net/jemalloc.3.html

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

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General Notes (Continued)

```
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

```
Note: lscpu is not able to detect the SLC.
SLC is defined at https://developer.arm.com/documentation/100180/0103/bry1436285730281

Sysinfo program /home/amptest/workspace/sir2026_pkg_verify/ampere_spec2026/spec2026/bin/sysinfo
Rev: 069f95da7e7f5d81b2ce48a82150e54f
running on ampereone Wed Feb  4 18:20:32 2026

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

------------------------------------------------------------
Table of contents
------------------------------------------------------------
 1. uname -srvm
 2. w
 3. Username
 4. ulimit -a
 5. sysinfo process ancestry
 6. /proc/cpuinfo
 7. lscpu
 8. numactl --hardware
 9. /proc/meminfo
10. Systemd service manager version: systemd 258 (258-1.fc43)
11. Services, from systemctl list-unit-files
12. Linux kernel boot-time arguments, from /proc/cmdline
13. cpupower frequency-info
14. tuned-adm active
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)

Platform Notes (Continued)

```
 1. uname -srvm
   Linux 6.17.5-200.64K_PS.fc42.aarch64 #1 SMP PREEMPT_DYNAMIC Wed Jan 21 08:54:52 EST 2026 aarch64

 ------------------------------------------------------------
 2. w
    18:20:32 up 10:33,  2 users,  load average: 103.85, 38.22, 63.21
   USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
   amptest           07:47   10:33m  0.00s  0.02s sshd-session: amptest [priv]
   amptest           07:47   10:33m  0.00s  0.17s /usr/lib/systemd/systemd --user

 ------------------------------------------------------------
 3. Username
   From environment variable $USER:  root
   From the command 'logname':       amptest

 ------------------------------------------------------------
 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) 784991
   max locked memory           (kbytes, -l) 8192
   max memory size             (kbytes, -m) unlimited
   open files                          (-n) 524288
   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) 784991
   virtual memory              (kbytes, -v) unlimited
   file locks                          (-x) unlimited

 ------------------------------------------------------------
 5. sysinfo process ancestry
  /usr/lib/systemd/systemd --switched-root --system --deserialize=57
  sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
  sshd-session: amptest [priv]
  sshd-session: amptest@notty
  java -jar remoting.jar -workDir /home/amptest -jar-cache /home/amptest/remoting/jarCache
  /bin/bash /tmp/jenkins10316276322400487163.sh
  sudo -S -E UPDATE_UTIL=false /home/amptest/util/jenkins/speccpu_pkg_verify.sh
    GreenSIR2026/without_report/spec2026_fprate_gcc15_Ofast_static_ampereonem_power_110.tgz
```

(Continued on next page)

Platform Notes (Continued)

```
  /bin/bash /home/amptest/util/jenkins/speccpu_pkg_verify.sh
    GreenSIR2026/without_report/spec2026_fprate_gcc15_Ofast_static_ampereonem_power_110.tgz
  /bin/bash /home/amptest/workspace/sir2026_pkg_verify/ampere_spec2026/run_spec2026.sh --iterations 3
    --nobuild --action run --copies 192 --reportable --tune=base,peak fprate
  runcpu --config=ampere_aarch64 --define numasize=48 --define
    gcc_dir=/home/amptest/ampere_spec2026/spec2026/gcc/install --define
    llvm_dir=/home/amptest/ampere_spec2026/spec2026/llvm/install --define
    jemalloc_dir=/home/amptest/ampere_spec2026/spec2026/jemalloc/install --define glibc_dir=/ --iterations 3
    --nobuild --action run --copies 192 --reportable --tune=base,peak fprate
  runcpu --configfile ampere_aarch64 --define numasize=48 --define
    gcc_dir=/home/amptest/ampere_spec2026/spec2026/gcc/install --define
    llvm_dir=/home/amptest/ampere_spec2026/spec2026/llvm/install --define
    jemalloc_dir=/home/amptest/ampere_spec2026/spec2026/jemalloc/install --define glibc_dir=/ --iterations 3
    --nobuild --action run --copies 192 --reportable --tune base,peak --runmode rate --tune base:peak --size
    refrate fprate --nopreenv --note-preenv --logfile $SPEC/tmp/CPU2026.003/templogs/preenv.fprate.003.0.log
    --lognum 003.0 --from_runcpu 2
  specperl $SPEC/bin/sysinfo -f
 $SPEC = /home/amptest/workspace/sir2026_pkg_verify/ampere_spec2026/spec2026

 ------------------------------------------------------------
 6. /proc/cpuinfo
     CPU implementer : 0xc0
     CPU architecture: 8
     CPU variant     : 0x0
     CPU part        : 0xac4
     CPU revision    : 0
    Features        : fp asimd evtstrm aes pmull sha1 sha2 crc32 atomics fphp asimdhp cpuid asimdrdm jscvt
                      fcma lrcpc dcpop sha3 sm3 sm4 asimddp sha512 asimdfhm dit uscat ilrcpc flagm ssbs sb
                      paca pacg dcpodp flagm2 frint i8mm bf16 rng bti ecv

 ------------------------------------------------------------
 7. lscpu

 From lscpu from util-linux 2.41.3:
   Architecture:                            aarch64
   CPU op-mode(s):                          64-bit
   Byte Order:                              Little Endian
   CPU(s):                                  192
   On-line CPU(s) list:                     0-191
   Vendor ID:                               Ampere
   BIOS Vendor ID:                          Ampere (R)
   Model name:                              Ampere-1a
   BIOS Model name:                         AmpereOne (R) A192-32M CPU @ 3.2GHz
   BIOS CPU family:                         257
   Model:                                   0
```

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Platform Notes (Continued)

```
  Thread(s) per core:                      1
  Core(s) per socket:                      192
  Socket(s):                               1
  Stepping:                                0x0
  Frequency boost:                         disabled
  CPU(s) scaling MHz:                      100%
  CPU max MHz:                             3200.0000
  CPU min MHz:                             1000.0000
  BogoMIPS:                                2000.00
  Flags:                                   fp asimd evtstrm aes pmull sha1 sha2 crc32 atomics fphp asimdhp
                                           cpuid asimdrdm jscvt fcma lrcpc dcpop sha3 sm3 sm4 asimddp sha512
                                           asimdfhm dit uscat ilrcpc flagm ssbs sb paca pacg dcpodp flagm2
                                           frint i8mm bf16 rng bti ecv
  L1d cache:                               12 MiB (192 instances)
  L1i cache:                               3 MiB (192 instances)
  L2 cache:                                384 MiB (192 instances)
  NUMA node(s):                            4
  NUMA node0 CPU(s):                       0-47
  NUMA node1 CPU(s):                       48-95
  NUMA node2 CPU(s):                       96-143
  NUMA node3 CPU(s):                       144-191
  Vulnerability Gather data sampling:      Not affected
  Vulnerability Ghostwrite:                Not affected
  Vulnerability Indirect target selection: 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 Old microcode:             Not affected
  Vulnerability Reg file data sampling:    Not affected
  Vulnerability Retbleed:                  Not affected
  Vulnerability Spec rstack overflow:      Not affected
  Vulnerability Spec store bypass:         Mitigation; Speculative Store Bypass disabled via prctl
  Vulnerability Spectre v1:                Mitigation; __user pointer sanitization
  Vulnerability Spectre v2:                Not affected
  Vulnerability Srbds:                     Not affected
  Vulnerability Tsa:                       Not affected
  Vulnerability Tsx async abort:           Not affected
  Vulnerability Vmscape:                   Not affected

 From lscpu --cache:
     NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL SETS PHY-LINE COHERENCY-SIZE
     L1d       64K      12M    4 Data            1  256                      64
     L1i       16K       3M    4 Instruction     1   64                      64
```

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Platform Notes (Continued)

```
      L2          2M     384M     8 Unified         2 4096                        64

 ------------------------------------------------------------
 8. numactl --hardware
 NOTE: a numactl 'node' might or might not correspond to a physical chip.
   available: 4 nodes (0-3)
   node 0 cpus: 0-47
   node 0 size: 195947 MB
   node 0 free: 147239 MB
   node 1 cpus: 48-95
   node 1 size: 196403 MB
   node 1 free: 145340 MB
   node 2 cpus: 96-143
   node 2 size: 196403 MB
   node 2 free: 147555 MB
   node 3 cpus: 144-191
   node 3 size: 196211 MB
   node 3 free: 148464 MB
   node distances:
   node     0    1    2    3
      0:   10   11   11   12
      1:   11   10   12   11
      2:   11   12   10   11
      3:   12   11   11   10

 ------------------------------------------------------------
 9. /proc/meminfo
    MemTotal:       803806272 kB

 'who -r' did not return a run level

 ------------------------------------------------------------
 10. Systemd service manager version: systemd 258 (258-1.fc43)
   Default Target  Status
   multi-user      running

 ------------------------------------------------------------
 11. Services, from systemctl list-unit-files
   STATE            UNIT FILES
   enabled          ModemManager NetworkManager NetworkManager-dispatcher abrt-journal-core abrt-oops
                    abrt-vmcore abrt-xorg abrtd atd audit-rules auditd authselect-apply-changes bluetooth
                    crond dbus-broker fips-crypto-policy-overlay firewalld getty@ irqbalance iscsi-onboot
                    iscsi-starter lm_sensors lvm2-monitor mdmonitor multipathd rpmdb-rebuild rsyslog
                    rtkit-daemon selinux-autorelabel-mark smartd sshd sssd systemd-boot-clear-sysfail
                    systemd-confext systemd-resolved systemd-sysext systemd-tpm2-clear tuned udisks2 upower
```

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Platform Notes (Continued)

```
  enabled-runtime  systemd-remount-fs
  disabled          NetworkManager-wait-online abrt-pstoreoops arp-ethers blk-availability
                    canberra-system-bootup canberra-system-shutdown canberra-system-shutdown-reboot
                    chrony-wait chronyd chronyd-restricted console-getty containerd cpupower debug-shell
                    dnf-system-upgrade dnf5-offline-transaction dnsmasq docker fancontrol fsidd gssproxy
                    iscsi-init iscsid iscsiuio kvm_stat lastlog2-import low-memory-monitor lvm-devices-import
                    man-db-restart-cache-update netavark-dhcp-proxy netavark-firewalld-reload
                    netavark-nftables-reload nfs-blkmap nfs-server nftables nis-domainname
                    nvmefc-boot-connections nvmf-autoconnect openhpid podman podman-auto-update
                    podman-clean-transient podman-kube@ podman-restart psacct rmtfs rpcbind
                    selinux-check-proper-disable ssh-host-keys-migration sshd-keygen@ svnserve
                    systemd-boot-check-no-failures systemd-boot-update systemd-homed systemd-homed-activate
                    systemd-homed-firstboot systemd-network-generator systemd-oomd systemd-pcrlock-file-system
                    systemd-pcrlock-firmware-code systemd-pcrlock-firmware-config systemd-pcrlock-machine-id
                    systemd-pcrlock-make-policy systemd-pcrlock-secureboot-authority
                    systemd-pcrlock-secureboot-policy systemd-pstore systemd-time-wait-sync systemd-timesyncd
                    systemd-udev-load-credentials systemd-userdb-load-credentials wpa_supplicant zvbid
  indirect          iscsi pcscd serial-getty@ sshd@ sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh
                    sssd-sudo systemd-sysupdate systemd-sysupdate-reboot systemd-userdbd

------------------------------------------------------------
12. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=(hd5,gpt2)/vmlinuz-6.17.5-200.64K_PS.fc42.aarch64
  root=/dev/mapper/fedora-root
  ro
  rd.lvm.lv=fedora/root
  nokaslr
  kaslr.disabled=1
  nohz=on
  nohz_full=0-191

------------------------------------------------------------
13. cpupower frequency-info
  analyzing CPU 60:
    current policy: frequency should be within 1000 MHz and 3.20 GHz.
                    The governor "performance" may decide which speed to use
                    within this range.

------------------------------------------------------------
14. tuned-adm active
  No current active profile.

------------------------------------------------------------
15. sysctl
  kernel.numa_balancing               0
```

(Continued on next page)

Platform Notes (Continued)

```
  kernel.randomize_va_space          2
  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  536870912
  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            8191
  max_ptes_shared          4096
  max_ptes_swap            1024
  pages_to_scan           65536
  scan_sleep_millisecs    10000

------------------------------------------------------------
18. OS release
  From /etc/*-release /etc/*-version
  os-release     Fedora Linux 43 (Server Edition)
  fedora-release Fedora release 43 (Forty Three)
  redhat-release Fedora release 43 (Forty Three)
  system-release Fedora release 43 (Forty Three)

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

(Continued on next page)

Platform Notes (Continued)

```
19. Disk information
SPEC is set to: /home/amptest/workspace/sir2026_pkg_verify/ampere_spec2026/spec2026
  Filesystem              Type  Size  Used Avail Use% Mounted on
  /dev/mapper/fedora-root xfs   891G  245G  646G  28% /

------------------------------------------------------------
20. /sys/devices/virtual/dmi/id
    Vendor:         GIGACOMPUTING
    Product:        R2A3-T40-AAV1
    Product Family: R2A3-T40-AAV1
    Serial:         0000000000000000000000000001

------------------------------------------------------------
21. dmidecode
  Additional information from dmidecode 3.6 follows.  WARNING: Use caution when you interpret this section.
  The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately
  determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the
  "DMTF SMBIOS" standard.
  Memory:
    12x Micron Technology MTC40F2046S1RC56BD2 MLCC 64 GB 2 rank 5600


------------------------------------------------------------
22. BIOS
(This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:       Ampere Computing LLC
   BIOS Version:      5.4.5.1
   BIOS Date:         10/22/2025
   BIOS Revision:     5.37
```

Compiler Version Notes

```
==============================================================================
C       | 782.lbm_r(base, peak)
------------------------------------------------------------------------------
gcc (GCC) 15.2.0
Copyright (C) 2025 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
------------------------------------------------------------------------------

==============================================================================
C++     | 731.astcenc_r(base, peak) 736.ocio_r(base, peak)
        | 748.flightdm_r(base, peak) 766.femflow_r(base, peak)
```

(Continued on next page)

Compiler Version Notes (Continued)

```
        | 767.nest_r(base, peak) 772.marian_r(base, peak)
------------------------------------------------------------------------------
g++ (GCC) 15.2.0
Copyright (C) 2025 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
------------------------------------------------------------------------------

==============================================================================
C++, C  | 709.cactus_r(base pass 0, peak pass 0) 737.gmsh_r(base pass 0, peak
        | pass 1, peak pass 2)
------------------------------------------------------------------------------
g++ (GCC) 15.2.0
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warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
------------------------------------------------------------------------------

==============================================================================
C++, C  | 709.cactus_r(base pass 0, peak pass 0) 737.gmsh_r(base pass 0, peak
        | pass 1, peak pass 2)
------------------------------------------------------------------------------
gcc (GCC) 15.2.0
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warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
------------------------------------------------------------------------------

==============================================================================
C++, C  | 709.cactus_r(base pass 0, peak pass 0) 737.gmsh_r(base pass 0, peak
        | pass 1, peak pass 2)
------------------------------------------------------------------------------
g++ (GCC) 15.2.0
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warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
------------------------------------------------------------------------------

==============================================================================
C++, C  | 709.cactus_r(base pass 0, peak pass 0) 737.gmsh_r(base pass 0, peak
        | pass 1, peak pass 2)
------------------------------------------------------------------------------
gcc (GCC) 15.2.0
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```

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Compiler Version Notes (Continued)

```
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
------------------------------------------------------------------------------

==============================================================================
Fortran | 722.palm_r(base, peak) 749.fotonik3d_r(base, peak) 765.roms_r(base,
        | peak)
------------------------------------------------------------------------------
GNU Fortran (GCC) 15.2.0
Copyright (C) 2025 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`gcc`

C++ benchmarks:
`g++`

Fortran benchmarks:
`gfortran`

Benchmarks using both C and C++:
`g++ gcc`

Base Portability Flags

736.ocio_r: `-fno-finite-math-only`
737.gmsh_r: `-fno-fast-math`
767.nest_r: `-fno-finite-math-only`

Base Optimization Flags

C benchmarks:
```
-mabi=lp64 -std=c18 -Wl,-allow-multiple-definition -static
-fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
```

(Continued on next page)

Base Optimization Flags (Continued)

C benchmarks (continued):
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib -g -Ofast
-mcpu=ampere1a -flto=32 -funroll-loops --param early-inlining-insns=96
--param max-inline-insns-auto=64 --param inline-unit-growth=96
-u malloc -ljemalloc

C++ benchmarks:

731.astcenc_r: -mabi=lp64 -std=c++17 -Wl,-allow-multiple-definition
-static -fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib
-g -Ofast -mcpu=ampere1a -flto=32 -funroll-loops
--param early-inlining-insns=256
--param max-inline-insns-auto=128
--param inline-unit-growth=256 -ffinite-loops -u malloc
-ljemalloc_ext

736.ocio_r: Same as 731.astcenc_r

748.flightdm_r: Same as 731.astcenc_r

766.femflow_r: -mabi=lp64 -std=c++17 -Wl,-allow-multiple-definition
-static -fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib
-g -Ofast -mcpu=ampere1a -flto=32 -funroll-loops
--param early-inlining-insns=256
--param max-inline-insns-auto=128
--param inline-unit-growth=256 -ffinite-loops -pthread
-u malloc -ljemalloc_ext

767.nest_r: Same as 731.astcenc_r

772.marian_r: Same as 766.femflow_r

Fortran benchmarks:
-mabi=lp64 -std=f2008 -Wl,-allow-multiple-definition -static
-fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib

(Continued on next page)

Base Optimization Flags (Continued)

Fortran benchmarks (continued):
```
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib -g -Ofast
-mcpu=ampere1a -flto=32 -funroll-loops -fallow-argument-mismatch
-u malloc -ljemalloc
```

Benchmarks using both C and C++:
```
-mabi=lp64 -std=c++17 -std=c18 -Wl,-allow-multiple-definition -static
-fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib -g -Ofast
-mcpu=ampere1a -flto=32 -funroll-loops --param early-inlining-insns=96
--param max-inline-insns-auto=64 --param inline-unit-growth=96
--param early-inlining-insns=256 --param max-inline-insns-auto=128
--param inline-unit-growth=256 -ffinite-loops -u malloc -ljemalloc_ext
```

Base Other Flags

C benchmarks:
`-w -Wl,-Map,mapfile`

C++ benchmarks:
`-Wl,-Map,mapfile`

Fortran benchmarks:
`-Wl,-Map,mapfile`

Benchmarks using both C and C++:
`-w -Wl,-Map,mapfile`

Peak Compiler Invocation

C benchmarks:
`gcc`

C++ benchmarks:
`g++`

(Continued on next page)

Peak Compiler Invocation (Continued)

Fortran benchmarks:
`gfortran`

Benchmarks using both C and C++:
`g++ gcc`

Peak Portability Flags

736.ocio_r: `-fno-finite-math-only`
737.gmsh_r: `-fno-fast-math`
767.nest_r: `-fno-finite-math-only`

Peak Optimization Flags

C benchmarks:
```
-mabi=lp64 -std=c18 -Wl,-allow-multiple-definition -static
-fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib
-fprofile-generate -fprofile-use -fprofile-partial-training -g -Ofast
-mcpu=ampere1a -flto=32 -funroll-loops --param early-inlining-insns=96
--param max-inline-insns-auto=64 --param inline-unit-growth=96
-u malloc -ljemalloc
```

C++ benchmarks:

731.astcenc_r: `basepeak = yes`

736.ocio_r: `basepeak = yes`

748.flightdm_r: `-mabi=lp64 -std=c++17 -Wl,-allow-multiple-definition`
```
-static -fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib
-fprofile-generate -fprofile-use
-fprofile-partial-training -g -Ofast -mcpu=ampere1a
-flto=32 -funroll-loops --param early-inlining-insns=256
```

(Continued on next page)

Peak Optimization Flags (Continued)

748.flightdm_r (continued):
```
--param max-inline-insns-auto=128
--param inline-unit-growth=256 -ffinite-loops -u malloc
-ljemalloc_ext
```

766.femflow_r:
```
-mabi=lp64 -std=c++17 -Wl,-allow-multiple-definition
-static -fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib
-fprofile-generate -fprofile-use
-fprofile-partial-training -g -Ofast -mcpu=ampere1a
-flto=32 -funroll-loops --param early-inlining-insns=256
--param max-inline-insns-auto=128
--param inline-unit-growth=256 -ffinite-loops -pthread
-u malloc -ljemalloc_ext
```

767.nest_r: `Same as 748.flightdm_r`

772.marian_r: `Same as 766.femflow_r`

Fortran benchmarks:
```
-mabi=lp64 -std=f2008 -Wl,-allow-multiple-definition -static
-fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib
-fprofile-generate -fprofile-use -fprofile-partial-training -g -Ofast
-mcpu=ampere1a -flto=32 -funroll-loops -fallow-argument-mismatch
-u malloc -ljemalloc
```

Benchmarks using both C and C++:

709.cactus_r: `basepeak = yes`

737.gmsh_r:
```
-mabi=lp64 -std=c++17 -std=c18
-Wl,-allow-multiple-definition -static -fwhole-program
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib64
-L/home/amptest/ampere_spec2026/spec2026/gcc/install/lib
-L/home/amptest/ampere_spec2026/spec2026/jemalloc/install/lib
-fprofile-generate -fprofile-use
-fprofile-partial-training -g -Ofast -mcpu=ampere1a
-flto=32 -funroll-loops --param early-inlining-insns=96
--param max-inline-insns-auto=64
```

(Continued on next page)

Peak Optimization Flags (Continued)

737.gmsh_r (continued):
```
--param inline-unit-growth=96
--param early-inlining-insns=256
--param max-inline-insns-auto=128
--param inline-unit-growth=256 -ffinite-loops -u malloc
-ljemalloc_ext
```

Peak Other Flags

C benchmarks:
`-w -Wl,-Map,mapfile`

C++ benchmarks:
`-Wl,-Map,mapfile`

Fortran benchmarks:
`-Wl,-Map,mapfile`

Benchmarks using both C and C++:
`-w -Wl,-Map,mapfile`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2026/results/flags/gcc-rev-A2.html
http://www.spec.org/cpu2026/results/flags/GIGA-BYTE-platform-settings-AmpereOneM-rev.1.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2026/results/flags/gcc-rev-A2.xml
http://www.spec.org/cpu2026/results/flags/GIGA-BYTE-platform-settings-AmpereOneM-rev.1.xml

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

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