SPEC CPU®2017 Floating Point Rate Result

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Lenovo Global Technology

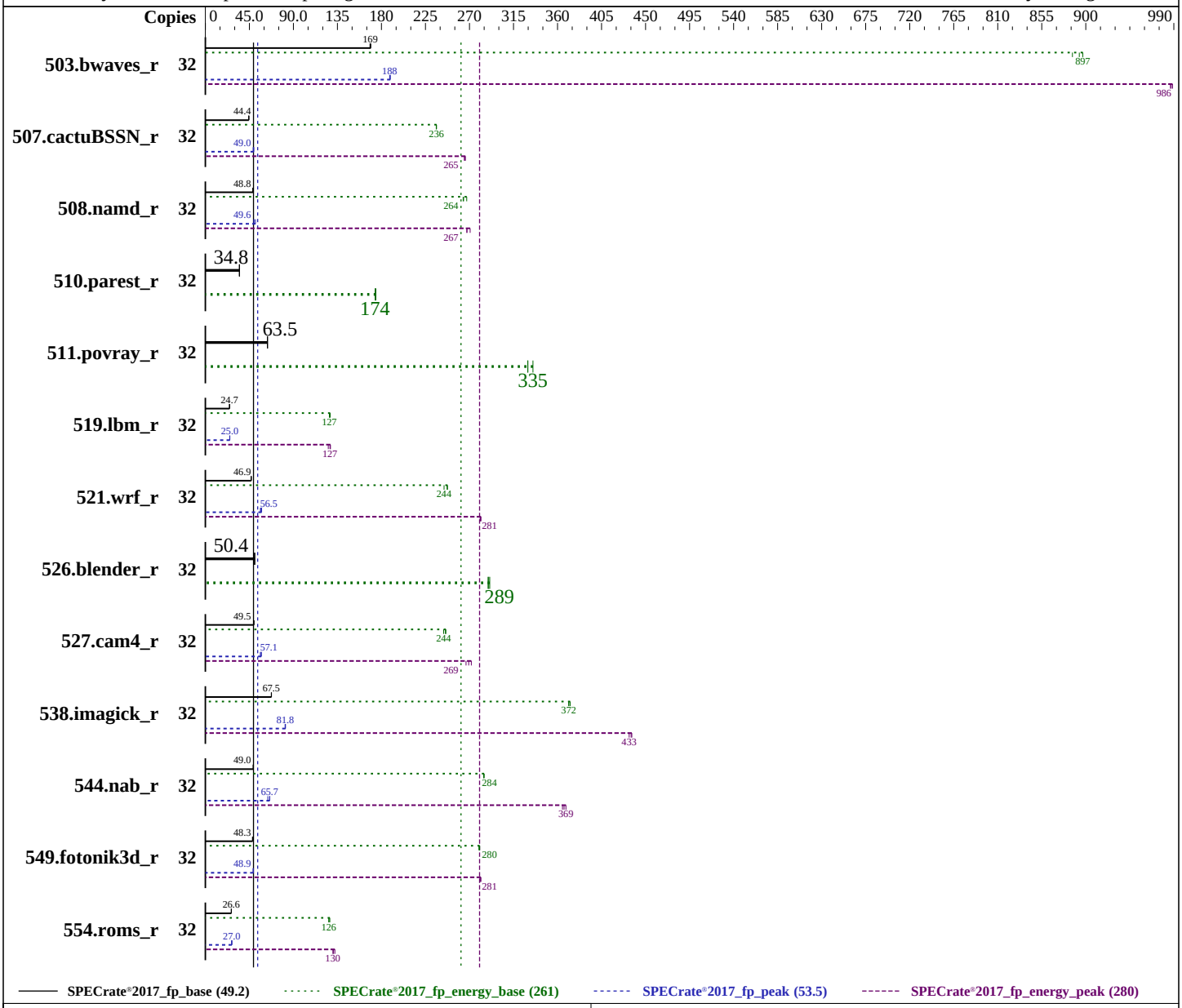
(Test Sponsor: Ampere Computing, Inc.)

ThinkSystem HR330A
(3.00 GHz Ampere eMAG 8180)

SPECrate®2017_fp_base =	49.2
SPECrate®2017_fp_energy_base =	261
SPECrate®2017_fp_peak =	53.5
SPECrate®2017_fp_energy_peak =	280

CPU2017 License: 6412
Test Sponsor: Ampere Computing, Inc.
Tested by: Ampere Computing, Inc.

Test Date: Mar-2026
Hardware Availability: Apr-2019
Software Availability: Aug-2025



Hardware

CPU Name: Ampere eMAG 8180
Max MHz: 3300
Nominal: 3000
Enabled: 32 cores, 1 chip
Orderable: 1 chips

(Continued on next page)

Software

OS: Ubuntu 24.04.1 LTS kernel 6.8.0 (64KB pages)
Compiler: C/C++/Fortran: Version 15.2.0 of GCC
Parallel: No
Firmware: Version 1.12 released Nov-2019
File System: ext4

(Continued on next page)

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Hardware (Continued)

Cache L1:	32 KB I + 32 KB D on chip per core
L2:	4 MB I+D on chip per chip (256 KiB shared / 2 cores)
L3:	32 MB I+D on chip per chip
Other:	None
Memory:	128 GB (8 x 16 GB 2Rx4 PC4-2666V-R)
Storage:	1 x 480 GB SATA SSD
Other:	CPU Cooling: Air

Software (Continued)

System State:	Run level 5 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	64-bit
Other:	jemalloc v5.3+, commit hash 1972241
Power Management:	OS CPU governor set to "performance"

Power

Max. Power (W):	296.63
Idle Power (W):	76.41
Min. Temperature (C):	20.75
Elevation (m):	60
Line Standard:	120 V / 60 Hz / 1 phase / 2 wire
Provisioning:	Line powered

Power Settings

Management FW:	Version 11.05.111 of Falcon BMC
Memory Mode:	Normal

Power-Relevant Hardware

Power Supply:	1 x 550 W (non-redundant)
Details:	Lenovo 03LD785 550 Watt High Efficiency Platinum AC Power Supply
Backplane:	N/A
Other Storage:	N/A
Storage Model #s:	1 x Lenovo 01PE965 (480GB SATA SSD) connected to on-board HBA
NICs Installed:	1 x Lenovo 01PE857 @ 10 GbE (2 ports ethernet)
NICs Enabled (FW/OS):	2 / 1
NICs Connected/Speed:	1 @ 1 Gbps
Other HW Model #s:	--

Power Analyzer

Power Analyzer:	cpu-reference-ptd:8000
Hardware Vendor:	Yokogawa
Model:	YokogawaWT310E
Serial Number:	T11733385
Input Connection:	Serial over USB
Metrology Institute:	NIST
Calibration By:	Yokogawa USA
Calibration Label:	T126622
Calibration Date:	18-Aug-2025
PTDaemon® Version:	1.11.3 (0c074d7d; 2025-10-15)
Setup Description:	Directly connected
Current Ranges Used:	5A
Voltage Range Used:	150V

Temperature Meter

Temperature Meter:	cpu-reference-ptd:9000
Hardware Vendor:	PCSensor
Model:	USB9097+DS18B20
Serial Number:	--
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

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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CPU2017 License: 6412
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Test Date: Mar-2026
Hardware Availability: Apr-2019
Software Availability: Aug-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
503.bwaves_r	32	**1903**	**169**	**390**	**897**	**205**	**224**	1907	168	395	886	207	227	1897	169	392	893	206	234
507.cactuBSSN_r	32	913	44.4	189	236	207	238	**912**	**44.4**	**188**	**236**	**207**	**251**	912	44.4	189	236	207	246
508.namd_r	32	623	48.8	124	267	199	237	627	48.5	126	264	201	237	**623**	**48.8**	**126**	**264**	**201**	**254**
510.parest_r	32	2402	34.9	522	174	218	259	**2402**	**34.8**	**525**	**174**	**219**	**282**	2403	34.8	524	174	218	259
511.povray_r	32	**1177**	**63.5**	**242**	**335**	**206**	**263**	1176	63.5	246	330	209	264	1178	63.4	246	330	209	264
519.lbm_r	32	1364	24.7	300	128	220	250	**1364**	**24.7**	**302**	**127**	**222**	**246**	1365	24.7	301	127	221	244
521.wrf_r	32	1527	46.9	316	248	207	242	1534	46.7	317	247	207	234	**1528**	**46.9**	**321**	**244**	**210**	**254**
526.blender_r	32	**968**	**50.4**	**183**	**289**	**189**	**236**	967	50.4	182	291	188	236	968	50.4	182	290	188	230
527.cam4_r	32	1131	49.5	248	245	220	289	**1131**	**49.5**	**250**	**244**	**221**	**289**	1127	49.6	248	246	220	290
538.imagick_r	32	1180	67.5	232	371	197	284	**1180**	**67.5**	**232**	**372**	**197**	**285**	1177	67.6	231	373	196	286
544.nab_r	32	1101	48.9	205	285	186	211	**1099**	**49.0**	**205**	**284**	**187**	**207**	1098	49.0	205	285	187	205
549.fotonik3d_r	32	2581	48.3	496	280	192	223	2587	48.2	497	280	192	223	**2584**	**48.3**	**495**	**280**	**192**	**224**
554.roms_r	32	1920	26.5	444	126	231	278	**1914**	**26.6**	**444**	**126**	**232**	**262**	1912	26.6	441	127	231	277

SPECrate®2017_fp_base = 49.2

SPECrate®2017_fp_energy_base = 261

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
503.bwaves_r	32	1703	188	354	987	208	232	**1703**	**188**	**355**	**986**	**208**	**232**	1697	189	354	989	209	232
507.cactuBSSN_r	32	828	48.9	168	265	203	229	**826**	**49.0**	**168**	**265**	**204**	**240**	818	49.5	167	266	205	252
508.namd_r	32	**613**	**49.6**	**124**	**267**	**202**	**245**	613	49.6	122	271	200	239	593	51.3	124	267	209	245
510.parest_r	32	2402	34.9	522	174	218	259	**2402**	**34.8**	**525**	**174**	**219**	**282**	2403	34.8	524	174	218	259
511.povray_r	32	**1177**	**63.5**	**242**	**335**	**206**	**263**	1176	63.5	246	330	209	264	1178	63.4	246	330	209	264
519.lbm_r	32	1357	24.9	300	128	221	245	**1349**	**25.0**	**301**	**127**	**223**	**246**	1348	25.0	305	126	226	266
521.wrf_r	32	1271	56.4	278	281	219	275	**1269**	**56.5**	**279**	**281**	**220**	**268**	1246	57.5	278	282	223	278
526.blender_r	32	**968**	**50.4**	**183**	**289**	**189**	**236**	967	50.4	182	291	188	236	968	50.4	182	290	188	230
527.cam4_r	32	996	56.2	224	272	225	297	**980**	**57.1**	**226**	**269**	**231**	**292**	979	57.2	229	266	234	293
538.imagick_r	32	**973**	**81.8**	**199**	**433**	**204**	**284**	972	81.9	198	436	203	284	976	81.5	198	435	203	284
544.nab_r	32	844	63.8	160	365	190	207	**819**	**65.7**	**158**	**369**	**193**	**205**	819	65.8	159	367	194	208
549.fotonik3d_r	32	2548	48.9	493	282	194	225	**2548**	**48.9**	**495**	**281**	**194**	**216**	2541	49.1	494	281	194	221
554.roms_r	32	1888	26.9	428	131	227	269	1882	27.0	424	132	225	267	**1883**	**27.0**	**430**	**130**	**229**	**284**

SPECrate®2017_fp_peak = 53.5

SPECrate®2017_fp_energy_peak = 280

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

Submit Notes

```
The config file option 'submit' was used.
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/usr/lib64/:/usr/lib/:/lib64:/home/mjm/jemalloc/lib"
```

General Notes

```
507.cactuBSSN_r (peak): "snprintf" src.alt was used.

507.cactuBSSN_r (base): "snprintf" src.alt was used.

jemalloc is a general purpose malloc(3) implementation that emphasizes
fragmentation avoidance and scalable concurrency support.
sources available from https://github.com/facebook/jemalloc/tree/1972241
and built via "./configure --with-lg-quantum=3" which used system gcc-14 -O3

This benchmark result is intended to provide perspective on
past power and/or performance using the historical hardware
and/or software described on this result page.

The system as described on this result page was formerly
generally available. At the time of this publication, it may
not be shipping, and/or may not be supported, and/or may fail
to meet other tests of General Availability described in the
SPEC OSG Policy document, http://www.spec.org/osg/policy.html

This measured result may not be representative of the result
that would be measured were this benchmark run with hardware
and software available as of the publication date.
```

Platform Notes

```
 Sysinfo program /home/mjm/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on emag Mon Mar  2 10:48:43 2026

 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 255 (255.4-1ubuntu8.8)
 12. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. sysctl
 15. /sys/kernel/mm/transparent_hugepage
 16. /sys/kernel/mm/transparent_hugepage/khugepaged
 17. OS release
 18. Disk information
 19. /sys/devices/virtual/dmi/id
 20. dmidecode
```

(Continued on next page)

Platform Notes (Continued)

```
21. BIOS
------------------------------------------------------------

------------------------------------------------------------
1. uname -a
  Linux emag 6.8.0 #1 SMP PREEMPT_DYNAMIC Fri Feb 28 00:25:30 UTC 2025 aarch64 aarch64 aarch64 GNU/Linux

------------------------------------------------------------
2. w
   10:48:43 up 73 days, 11:13,  2 users,  load average: 1.14, 6.55, 11.89
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
  mjm              10.13.114.186    28Jan26  2days  0.00s  0.02s sshd: mjm [priv]

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

------------------------------------------------------------
4. ulimit -a
  time(seconds)        unlimited
  file(blocks)         unlimited
  data(kbytes)         unlimited
  stack(kbytes)        unlimited
  coredump(blocks)     0
  memory(kbytes)       unlimited
  locked memory(kbytes) 16691648
  process              128681
  nofiles              1024
  vmemory(kbytes)      unlimited
  locks                unlimited
  rtprio               0

------------------------------------------------------------
5. sysinfo process ancestry
 /usr/lib/systemd/systemd --system --deserialize=66
 SCREEN
 -bin/tcsh
 runcpu --flagsurl=$SPEC/gcc.2024-08-14.xml --reportable -c emag-O3-gcc15 --tune=base,peak -n 3 -C 32 fprate
 runcpu --flagsurl $SPEC/gcc.2024-08-14.xml --reportable --configfile emag-O3-gcc15 --tune base,peak
   --iterations 3 --copies 32 --runmode rate --tune base:peak --size refrate fprate --nopreenv --note-preenv
   --logfile $SPEC/tmp/CPU2017.096/templogs/preenv.fprate.096.0.log --lognum 096.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo -f
$SPEC = /home/mjm/cpu2017

------------------------------------------------------------
6. /proc/cpuinfo
    CPU implementer : 0x50
    CPU architecture: 8
    CPU variant     : 0x3
    CPU part        : 0x000
    CPU revision    : 2
    Features        : fp asimd evtstrm aes pmull sha1 sha2 crc32 cpuid

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

From lscpu from util-linux 2.39.3:
```

(Continued on next page)

Platform Notes (Continued)

```
  Architecture:                    aarch64
  CPU op-mode(s):                  32-bit, 64-bit
  Byte Order:                      Little Endian
  CPU(s):                          32
  On-line CPU(s) list:             0-31
  Vendor ID:                       APM
  Model name:                      -
  Model:                           2
  Thread(s) per core:              1
  Core(s) per socket:              32
  Socket(s):                       1
  Stepping:                        0x3
  Frequency boost:                 disabled
  CPU(s) scaling MHz:              100%
  CPU max MHz:                     2911.7639
  CPU min MHz:                     363.9700
  BogoMIPS:                        80.00
  Flags:                           fp asimd evtstrm aes pmull sha1 sha2 crc32 cpuid
  L1d cache:                       1 MiB (32 instances)
  L1i cache:                       1 MiB (32 instances)
  L2 cache:                        4 MiB (16 instances)
  NUMA node(s):                    1
  NUMA node0 CPU(s):               0-31
  Vulnerability Gather data sampling: Not affected
  Vulnerability Itlb multihit:     Not affected
  Vulnerability L1tf:              Not affected
  Vulnerability Mds:               Not affected
  Vulnerability Meltdown:          Mitigation; PTI
  Vulnerability Mmio stale data:   Not affected
  Vulnerability Retbleed:          Not affected
  Vulnerability Spec rstack overflow: Not affected
  Vulnerability Spec store bypass: Vulnerable
  Vulnerability Spectre v1:        Mitigation; __user pointer sanitization
  Vulnerability Spectre v2:        Vulnerable
  Vulnerability Srbds:             Not affected
  Vulnerability Tsx async abort:   Not affected

From lscpu --cache:
     NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL SETS PHY-LINE COHERENCY-SIZE
     L1d       32K       1M    8 Data            1
     L1i       32K       1M    8 Instruction     1
     L2       256K       4M   32 Unified         2

------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 1 nodes (0)
  node 0 cpus: 0-31
  node 0 size: 130403 MB
  node 0 free: 80737 MB
  node distances:
  node   0
    0:  10

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       133533376 kB
```

(Continued on next page)

Platform Notes (Continued)

```
------------------------------------------------------------
10. who -r
  run-level 5 Dec 18 23:35

------------------------------------------------------------
11. Systemd service manager version: systemd 255 (255.4-1ubuntu8.8)
  Default Target  Status
  graphical       running

------------------------------------------------------------
12. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          ModemManager apparmor apport blk-availability cloud-config cloud-final cloud-init
                   cloud-init-local console-setup cron dmesg e2scrub_reap finalrd getty@ grub-common
                   grub-initrd-fallback keyboard-setup lvm2-monitor multipathd networkd-dispatcher open-iscsi
                   open-vm-tools pollinate power-profiles-daemon rsyslog secureboot-db setvtrgb snapd sysstat
                   systemd-networkd systemd-networkd-wait-online systemd-pstore systemd-resolved
                   systemd-timesyncd ua-reboot-cmds ubuntu-advantage udisks2 ufw unattended-upgrades vgauth
  enabled-runtime  netplan-ovs-cleanup systemd-fsck-root systemd-remount-fs
  disabled         console-getty debug-shell ipmievd iscsid nftables rsync ssh systemd-boot-check-no-failures
                   systemd-confext systemd-network-generator systemd-networkd-wait-online@
                   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-sysext
                   systemd-time-wait-sync
  generated        openipmi perlbal
  indirect         serial-getty@ systemd-sysupdate systemd-sysupdate-reboot uuidd
  masked           cryptdisks cryptdisks-early hwclock multipath-tools-boot screen-cleanup sudo x11-common

------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=/boot/vmlinuz-6.8.0
  root=UUID=16268541-06d0-4374-97ca-2d512d4db26f
  ro
  cma=1024M
  iommu.passthrough=1

------------------------------------------------------------
14. sysctl
  kernel.numa_balancing               0
  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                     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                      60
  vm.watermark_boost_factor       15000
```

(Continued on next page)

Platform Notes (Continued)

```
  vm.watermark_scale_factor          10
  vm.zone_reclaim_mode                0

------------------------------------------------------------
15. /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

------------------------------------------------------------
16. /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

------------------------------------------------------------
17. OS release
  From /etc/*-release /etc/*-version
  os-release Ubuntu 24.04.1 LTS

------------------------------------------------------------
18. Disk information
SPEC is set to: /home/mjm/cpu2017
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/sda2      ext4  439G  307G  110G  74% /

------------------------------------------------------------
19. /sys/devices/virtual/dmi/id
    Vendor:         Lenovo
    Product:        HR330A            7X33CTO1WW
    Product Family: Lenovo ThinkSystem HR330A/HR350A

------------------------------------------------------------
20. dmidecode
  Additional information from dmidecode 3.5 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:
    8x Samsung M393A2K43CB2-CTD 16 GB 2 rank 2667


------------------------------------------------------------
21. BIOS
(This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:       LENOVO
   BIOS Version:      HVE104N-1.12
   BIOS Date:         11/29/2019
   BIOS Revision:     1.12
   Firmware Revision: 1.7
```

Power Settings Notes

```
OS CPU governor was set using the command:
echo performance | tee /sys/devices/system/cpu/cpu*/cpufreq/scaling_governor
```

Compiler Version Notes

```
==============================================================================================================
C               | 519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_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++             | 508.namd_r(base, peak) 510.parest_r(base, peak)
--------------------------------------------------------------------------------------------------------------
g++ (GCC) 15.2.0
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--------------------------------------------------------------------------------------------------------------

==============================================================================================================
C++, C          | 511.povray_r(base, peak) 526.blender_r(base, peak)
--------------------------------------------------------------------------------------------------------------
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--------------------------------------------------------------------------------------------------------------

==============================================================================================================
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
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warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
--------------------------------------------------------------------------------------------------------------

==============================================================================================================
Fortran         | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base, peak)
--------------------------------------------------------------------------------------------------------------
```

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Compiler Version Notes (Continued)

```
GNU Fortran (GCC) 15.2.0
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------------------------------------------------------------------------------------------------------------------------

==============================================================================================================
Fortran, C      | 521.wrf_r(base, peak) 527.cam4_r(base, peak)
------------------------------------------------------------------------------------------------------------------------
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warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
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.
------------------------------------------------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
gcc

C++ benchmarks:
g++

Fortran benchmarks:
gfortran

Benchmarks using both Fortran and C:
gfortran gcc

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

Benchmarks using Fortran, C, and C++:
g++ gcc gfortran

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64

(Continued on next page)

Base Portability Flags (Continued)

510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_CASE_FLAG -fconvert=big-endian -DSPEC_LP64
526.blender_r: -funsigned-char -DSPEC_LINUX -DSPEC_LP64
527.cam4_r: -DSPEC_CASE_FLAG -DSPEC_LP64
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-mabi=lp64 -std=c99 -g -O3 -mcpu=native -flto=16
-fno-strict-aliasing -L/home/mjm/jemalloc/lib -ljemalloc

C++ benchmarks:
-mabi=lp64 -std=c++03 -g -O3 -mcpu=native -flto=16
-L/home/mjm/jemalloc/lib -ljemalloc

Fortran benchmarks:
-mabi=lp64 -g -O3 -mcpu=native -flto=16 -L/home/mjm/jemalloc/lib
-ljemalloc

Benchmarks using both Fortran and C:
-mabi=lp64 -std=c99 -g -O3 -mcpu=native -flto=16
-fno-strict-aliasing -L/home/mjm/jemalloc/lib -ljemalloc

Benchmarks using both C and C++:
-mabi=lp64 -std=c++03 -std=c99 -g -O3 -mcpu=native -flto=16
-fno-strict-aliasing -L/home/mjm/jemalloc/lib -ljemalloc

Benchmarks using Fortran, C, and C++:
-mabi=lp64 -std=c++03 -std=c99 -g -O3 -mcpu=native -flto=16
-fno-strict-aliasing -L/home/mjm/jemalloc/lib -ljemalloc

Base Other Flags

C benchmarks:
`-Wno-error=implicit-int`

Fortran benchmarks:
`-fallow-argument-mismatch`

Benchmarks using both Fortran and C:
`-Wno-error=implicit-int -fallow-argument-mismatch`

Benchmarks using both C and C++:
`-Wno-error=implicit-int`

Benchmarks using Fortran, C, and C++:
`-Wno-error=implicit-int -fallow-argument-mismatch`

Peak Compiler Invocation

C benchmarks:
`gcc`

C++ benchmarks:
`g++`

Fortran benchmarks:
`gfortran`

Benchmarks using both Fortran and C:
`gfortran gcc`

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

Benchmarks using Fortran, C, and C++:
`g++ gcc gfortran`

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
-mabi=lp64 -std=c99 -fprofile-generate -fprofile-use -g -Ofast
-mcpu=native -flto=16 -L/home/mjm/jemalloc/lib -ljemalloc

C++ benchmarks:

508.namd_r: -mabi=lp64 -std=c++03 -fprofile-generate -fprofile-use
-g -Ofast -mcpu=native -flto=16 -L/home/mjm/jemalloc/lib
-ljemalloc

510.parest_r: basepeak = yes

Fortran benchmarks:
-mabi=lp64 -fprofile-generate -fprofile-use -g -Ofast -mcpu=native
-flto=16 -L/home/mjm/jemalloc/lib -ljemalloc

Benchmarks using both Fortran and C:

521.wrf_r: -mabi=lp64 -std=c99 -fprofile-generate -fprofile-use -g
-Ofast -mcpu=native -flto=16 -L/home/mjm/jemalloc/lib
-ljemalloc

527.cam4_r: -mabi=lp64 -std=c99 -fprofile-generate -fprofile-use -g
-Ofast -mcpu=native -flto=16 -fno-strict-aliasing
-L/home/mjm/jemalloc/lib -ljemalloc

Benchmarks using both C and C++:

511.povray_r: basepeak = yes

526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:
-mabi=lp64 -std=c++03 -std=c99 -fprofile-generate -fprofile-use -g
-Ofast -mcpu=native -flto=16 -L/home/mjm/jemalloc/lib -ljemalloc

Peak Other Flags

Benchmarks using both Fortran and C:

521.wrf_r: -fallow-argument-mismatch

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Peak Other Flags (Continued)

527.cam4_r: `-Wno-error=implicit-int -fallow-argument-mismatch`

Benchmarks using both C and C++:
`-Wno-error=implicit-int`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2017/flags/gcc.2026-04-28.00.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2017/flags/gcc.2026-04-28.00.xml`

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

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