SPEC CPU®2017 Floating Point Rate Result

Lenovo Global Technology

ThinkSystem SR665 V3
(2.60 GHz, AMD EPYC 9655)

SPECrate®2017_fp_base =	1520
SPECrate®2017_fp_energy_base =	2490
SPECrate®2017_fp_peak =	1530
SPECrate®2017_fp_energy_peak =	2500

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test Date: Sep-2024
Hardware Availability: Nov-2024
Software Availability: Oct-2024

Copies

Benchmark	Copies	base	energy_base	peak	energy_peak
503.bwaves_r	192	6580	9606		
507.cactuBSSN_r	192	1840	3079		
508.namd_r	192	1060	1660	1060	1674
510.parest_r	192	1480	2229	1490	2225
511.povray_r	192	1410	2351	1410	2359
519.lbm_r	192	652	1186	655	1189
521.wrf_r	192	1200	1935	1220	1959
526.blender_r	192	1380	2171	1400	2201
527.cam4_r	192	1630	2511		
538.imagick_r	192	5330	8502		
544.nab_r	192	2120	3555	2210	3620
549.fotonik3d_r	192	612	1209	613	1219
554.roms_r	192	713	1200	714	1217

─── SPECrate®2017_fp_base (1520) ⋯⋯ **SPECrate®2017_fp_energy_base (2490)** - - - SPECrate®2017_fp_peak (1530) - - - SPECrate®2017_fp_energy_peak (2500)

Hardware

CPU Name: AMD EPYC 9655
Max MHz: 4500
Nominal: 2600
Enabled: 192 cores, 2 chips
Orderable: 1,2 chips

Software

OS: SUSE Linux Enterprise Server 15 SP6
Kernel 6.4.0-150600.21-default
Compiler: C/C++/Fortran: Version 5.0.0 of AOCC
Parallel: No
Firmware: Lenovo BIOS Version KAE125W 5.10 released Aug-2024

(Continued on next page)

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

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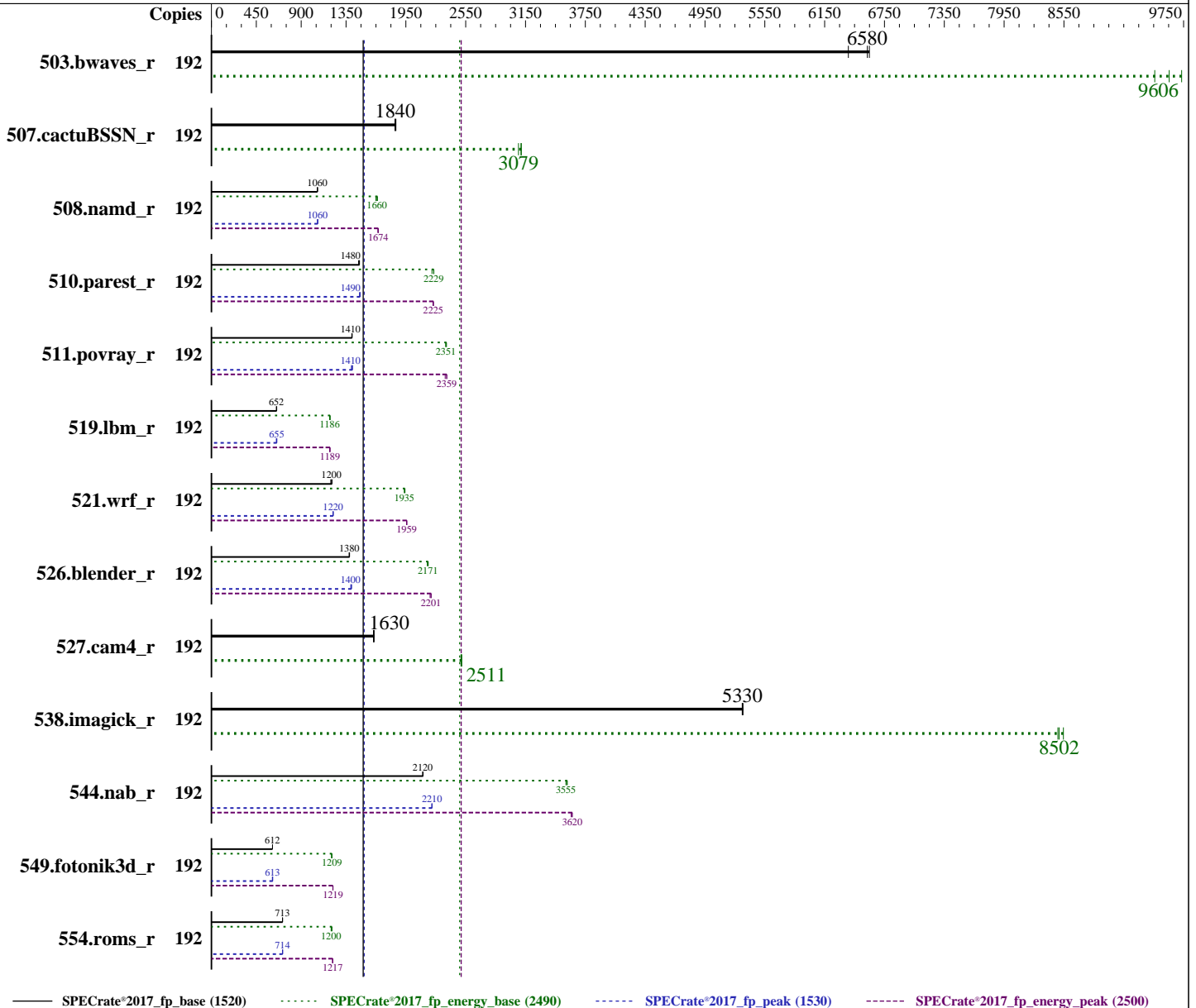|	
CPU2017 License: 9017	**Test Date:** Sep-2024
Test Sponsor: Lenovo Global Technology	**Hardware Availability:** Nov-2024
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Hardware (Continued)

Cache L1: 32 KB I + 48 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 PC5-6400B-R, running at 4800)
Storage: 1 x 480 GB SATA SSD
Other: CPU Cooling: Air

Software (Continued)

File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: None
Power Management: BIOS and OS set to balance power and performance

Power

Max. Power (W): 801.0
Idle Power (W): 147.33
Min. Temperature (C): 25.13
Elevation (m): 43
Line Standard: 220 V / 50 Hz / 1 phase / 3 wires
Provisioning: Line-powered

Power Settings

Management FW: Version 53.9 of KAX341H
Memory Mode: Normal

Power-Relevant Hardware

Power Supply: 2 x 1100 W (redundant)
 Details: ThinkSystem 1100W 230V Titanium Power Supply 4P57A72666
Backplane: 8 x 2.5-inch HDD back plane
Other Storage: None
Storage Model #s: 4XB7A82259
NICs Installed: 1 x ThinkSystem Ethernet 4-port Adaptor @ 1 Gb
NICs Enabled (FW/OS): 4 / 1
NICs Connected/Speed: 1 @ 1 Gb
Other HW Model #s: 6 x Performance fans

Power Analyzer

Power Analyzer: WIN:9888
Hardware Vendor: YOKOGAWA, Inc.
Model: YokogawaWT310E
Serial Number: C3UG05013E
Input Connection: Default
Metrology Institute: CNAS
Calibration By: GRG METROLOGY & TEST (BEIJING) CO., LTD.
Calibration Label: J202308266858A-0004
Calibration Date: 16-Oct-2023
PTDaemon® Version: 1.10.0 (82175bac; 2022-08-17)
Setup Description: Connected to PSU1
Current Ranges Used: 5A
Voltage Range Used: 300V

Temperature Meter

Temperature Meter: WIN:9889
Hardware Vendor: Digi International, Inc.
Model: DigiWATCHPORT_H
Serial Number: W63181846
Input Connection: USB
PTDaemon Version: 1.10.0 (82175bac; 2022-08-17)
Setup Description: 50 mm in front of SUT main intake

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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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	192	292	6600	216	9730	739	756	**293**	**6580**	**218**	**9610**	**746**	**761**	301	6390	222	9460	736	750
507.cactuBSSN_r	192	132	1840	86.0	3100	652	660	131	1850	86.0	3110	654	663	**132**	**1840**	**86.7**	**3080**	**658**	**668**
508.namd_r	192	172	1060	119	1670	696	721	**172**	**1060**	**120**	**1660**	**698**	**720**	172	1060	121	1650	703	727
510.parest_r	192	**339**	**1480**	**245**	**2230**	**724**	**794**	338	1480	245	2230	724	797	340	1480	247	2210	726	798
511.povray_r	192	318	1410	206	2360	649	672	318	1410	207	2350	650	673	**318**	**1410**	**207**	**2350**	**651**	**675**
519.lbm_r	192	310	652	193	1190	622	634	309	655	193	1190	626	635	**310**	**652**	**194**	**1190**	**625**	**633**
521.wrf_r	192	359	1200	242	1940	675	713	356	1210	242	1940	681	718	**357**	**1200**	**243**	**1930**	**680**	**715**
526.blender_r	192	211	1390	146	2170	690	727	212	1380	146	2160	691	734	**211**	**1380**	**146**	**2170**	**690**	**733**
527.cam4_r	192	**206**	**1630**	**146**	**2510**	**706**	**742**	207	1630	146	2500	707	733	206	1630	146	2500	709	731
538.imagick_r	192	89.6	5330	60.5	8540	676	707	**89.7**	**5330**	**60.8**	**8500**	**678**	**712**	89.7	5320	60.9	8490	679	700
544.nab_r	192	152	2120	98.1	3570	645	733	**152**	**2120**	**98.5**	**3560**	**646**	**735**	152	2120	98.3	3560	645	734
549.fotonik3d_r	192	**1222**	**612**	**690**	**1210**	**564**	**619**	1221	613	691	1210	566	599	1222	612	691	1210	566	696
554.roms_r	192	427	714	278	1210	651	673	**428**	**713**	**280**	**1200**	**655**	**674**	428	712	279	1210	652	675

SPECrate®2017_fp_base = 1520
SPECrate®2017_fp_energy_base = 2490

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	192	292	6600	216	9730	739	756	**293**	**6580**	**218**	**9610**	**746**	**761**	301	6390	222	9460	736	750
507.cactuBSSN_r	192	132	1840	86.0	3100	652	660	131	1850	86.0	3110	654	663	**132**	**1840**	**86.7**	**3080**	**658**	**668**
508.namd_r	192	171	1060	119	1670	695	720	**171**	**1060**	**119**	**1670**	**694**	**718**	171	1070	119	1670	695	718
510.parest_r	192	338	1490	246	2220	727	798	337	1490	245	2230	728	801	**337**	**1490**	**246**	**2220**	**729**	**798**
511.povray_r	192	319	1400	207	2340	650	674	**318**	**1410**	**206**	**2360**	**649**	**674**	317	1420	206	2360	651	674
519.lbm_r	192	**309**	**655**	**193**	**1190**	**626**	**634**	309	655	193	1190	626	632	311	651	194	1190	623	634
521.wrf_r	192	**352**	**1220**	**240**	**1960**	**681**	**713**	352	1220	240	1960	681	717	353	1220	240	1960	680	717
526.blender_r	192	**208**	**1400**	**144**	**2200**	**691**	**733**	208	1400	144	2200	690	735	209	1400	144	2190	690	733
527.cam4_r	192	**206**	**1630**	**146**	**2510**	**706**	**742**	207	1630	146	2500	707	733	206	1630	146	2500	709	731
538.imagick_r	192	89.6	5330	60.5	8540	676	707	**89.7**	**5330**	**60.8**	**8500**	**678**	**712**	89.7	5320	60.9	8490	679	700
544.nab_r	192	146	2210	97.1	3610	664	744	**146**	**2210**	**96.8**	**3620**	**662**	**743**	146	2210	97.0	3610	664	744
549.fotonik3d_r	192	1218	614	684	1220	562	607	1225	611	685	1220	559	699	**1220**	**613**	**684**	**1220**	**561**	**616**
554.roms_r	192	428	712	277	1220	646	669	427	714	277	1210	649	671	**427**	**714**	**277**	**1220**	**647**	**671**

SPECrate®2017_fp_peak = 1530
SPECrate®2017_fp_energy_peak = 2500

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.
```

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SPECrate®2017_fp_energy_peak = 2500

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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) for all allocations,
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
    "/home/cpu2017-1.1.9-amd-aocc500_znver5_A1/amd_rate_aocc500_znver5_A_lib/lib:/home/cpu2017-1.1.9-amd-a
    occ500_znver5_A1/amd_rate_aocc500_znver5_A_lib/lib32:"
MALLOC_CONF = "retain:true"
```

General Notes

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

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

Platform Notes

```
BIOS configuration:
Choose Operating Mode set to Custom Mode
Core Performance Boost set to Disabled
Memory Speed set to 4800MHz
NUMA Nodes per Socket set to NPS4
SMT Mode set to Disabled
BoostFmax set to Manual
BoostFmax Manual set to 2400

 Sysinfo program /home/cpu2017-1.1.9-amd-aocc500_znver5_A1/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
```

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Platform Notes (Continued)

```
running on localhost Mon Sep 23 00:20:44 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 254 (254.10+suse.84.ge8d77af424)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info
15. sysctl
16. /sys/kernel/mm/transparent_hugepage
17. /sys/kernel/mm/transparent_hugepage/khugepaged
18. OS release
19. Disk information
20. /sys/devices/virtual/dmi/id
21. dmidecode
22. BIOS
-------------------------------------------------------------


-------------------------------------------------------------
1. uname -a
  Linux localhost 6.4.0-150600.21-default #1 SMP PREEMPT_DYNAMIC Thu May 16 11:09:22 UTC 2024 (36c1e09)
  x86_64 x86_64 x86_64 GNU/Linux


-------------------------------------------------------------
2. w
   00:20:44 up 5 min,  1 user,  load average: 0.47, 0.57, 0.32
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT


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


-------------------------------------------------------------
4. ulimit -a
  core file size          (blocks, -c) unlimited
  data seg size           (kbytes, -d) unlimited
  scheduling priority             (-e) 0
  file size               (blocks, -f) unlimited
  pending signals                 (-i) 3093993
  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
```

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Platform Notes (Continued)

```
   real-time priority              (-r) 0
   stack size              (kbytes, -s) unlimited
   cpu time               (seconds, -t) unlimited
   max user processes              (-u) 3093993
   virtual memory          (kbytes, -v) unlimited
   file locks                      (-x) unlimited


   -----------------------------------------------------------
5. sysinfo process ancestry
 /usr/lib/systemd/systemd --switched-root --system --deserialize=42
 sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
 sshd: root [priv]
 sshd: root@notty
 /bin/bash ./02.remote_local_SPECcpu_1.01.sh
 /bin/bash ./Run026-compliant-amd-ratefp.sh
 python3 ./run_amd_rate_aocc500_znver5_A1.py
 /bin/bash ./amd_rate_aocc500_znver5_A1.sh
 runcpu --power --config amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 fprate
 runcpu --power --configfile amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 --runmode
   rate --tune base:peak --size test:train:refrate fprate --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.018/templogs/preenv.fprate.018.0.log --lognum 018.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017-1.1.9-amd-aocc500_znver5_A1


   -----------------------------------------------------------
6. /proc/cpuinfo
   model name         : AMD EPYC 9655 96-Core Processor
   vendor_id          : AuthenticAMD
   cpu family         : 26
   model              : 2
   stepping           : 1
   microcode          : 0xb00210e
   bugs               : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
   TLB size           : 192 4K pages
   cpu cores          : 96
   siblings           : 96
   2 physical ids (chips)
   192 processors (hardware threads)
   physical id 0: core ids 0-7,16-23,32-39,48-55,64-71,80-87,96-103,112-119,128-135,144-151,160-167,176-183
   physical id 1: core ids 0-7,16-23,32-39,48-55,64-71,80-87,96-103,112-119,128-135,144-151,160-167,176-183
   physical id 0: apicids 0-7,16-23,32-39,48-55,64-71,80-87,96-103,112-119,128-135,144-151,160-167,176-183
   physical id 1: apicids
   256-263,272-279,288-295,304-311,320-327,336-343,352-359,368-375,384-391,400-407,416-423,432-439
 Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
 virtualized systems.  Use the above data carefully.


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

From lscpu from util-linux 2.39.3:
   Architecture:                   x86_64
   CPU op-mode(s):                 32-bit, 64-bit
   Address sizes:                  52 bits physical, 57 bits virtual
   Byte Order:                     Little Endian
   CPU(s):                         192
   On-line CPU(s) list:            0-191
   Vendor ID:                      AuthenticAMD
```

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Platform Notes (Continued)

```
BIOS Vendor ID:                     Advanced Micro Devices, Inc.
Model name:                         AMD EPYC 9655 96-Core Processor
BIOS Model name:                    AMD EPYC 9655 96-Core Processor          Unknown CPU @ 2.6GHz
BIOS CPU family:                    107
CPU family:                         26
Model:                              2
Thread(s) per core:                 1
Core(s) per socket:                 96
Socket(s):                          2
Stepping:                           1
CPU(s) scaling MHz:                 33%
CPU max MHz:                        4509.3750
CPU min MHz:                        1500.0000
BogoMIPS:                           5192.08
Flags:                              fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat
                                    pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb
                                    rdtscp lm constant_tsc rep_good amd_lbr_v2 nopl nonstop_tsc cpuid
                                    extd_apicid aperfmperf rapl pni pclmulqdq monitor ssse3 fma cx16 pcid
                                    sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm
                                    cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch
                                    osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpext
                                    perfctr_llc mwaitx cat_l3 cdp_l3 hw_pstate ssbd mba perfmon_v2 ibrs
                                    ibpb stibp ibrs_enhanced vmmcall fsgsbase tsc_adjust bmi1 avx2 smep
                                    bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
                                    avx512ifma clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt
                                    xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
                                    cqm_mbm_local user_shstk avx_vnni avx512_bf16 clzero irperf
                                    xsaveerptr rdpru wbnoinvd amd_ppin cppc arat npt lbrv svm_lock
                                    nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter
                                    pfthreshold avic v_vmsave_vmload vgif x2avic v_spec_ctrl vnmi
                                    avx512vbmi umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq
                                    avx512_vnni avx512_bitalg avx512_vpopcntdq la57 rdpid bus_lock_detect
                                    movdiri movdir64b overflow_recov succor smca fsrm avx512_vp2intersect
                                    flush_l1d debug_swap
Virtualization:                     AMD-V
L1d cache:                          9 MiB (192 instances)
L1i cache:                          6 MiB (192 instances)
L2 cache:                           192 MiB (192 instances)
L3 cache:                           768 MiB (24 instances)
NUMA node(s):                       8
NUMA node0 CPU(s):                  0-23
NUMA node1 CPU(s):                  24-47
NUMA node2 CPU(s):                  48-71
NUMA node3 CPU(s):                  72-95
NUMA node4 CPU(s):                  96-119
NUMA node5 CPU(s):                  120-143
NUMA node6 CPU(s):                  144-167
NUMA node7 CPU(s):                  168-191
Vulnerability Gather data sampling: Not affected
Vulnerability Itlb multihit:        Not affected
Vulnerability L1tf:                 Not affected
Vulnerability Mds:                  Not affected
Vulnerability Meltdown:             Not affected
Vulnerability Mmio stale data:      Not affected
Vulnerability Reg file data sampling: Not affected
Vulnerability Retbleed:             Not affected
Vulnerability Spec rstack overflow: Not affected
```

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(2.60 GHz, AMD EPYC 9655)

SPECrate®2017_fp_base =	1520
SPECrate®2017_fp_energy_base =	2490
SPECrate®2017_fp_peak =	1530
SPECrate®2017_fp_energy_peak =	2500

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Sep-2024

Hardware Availability: Nov-2024

Software Availability: Oct-2024

Platform Notes (Continued)

```
  Vulnerability Spec store bypass:      Mitigation; Speculative Store Bypass disabled via prctl
  Vulnerability Spectre v1:             Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:             Mitigation; Enhanced / Automatic IBRS; IBPB conditional; STIBP
                                        disabled; RSB filling; PBRSB-eIBRS Not affected; BHI Not affected
  Vulnerability Srbds:                  Not affected
  Vulnerability Tsx async abort:        Not affected

  From lscpu --cache:
      NAME ONE-SIZE ALL-SIZE WAYS TYPE         LEVEL   SETS PHY-LINE COHERENCY-SIZE
      L1d       48K       9M  12 Data              1     64       1             64
      L1i       32K       6M   8 Instruction       1     64       1             64
      L2         1M     192M  16 Unified           2   1024       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: 8 nodes (0-7)
    node 0 cpus: 0-23
    node 0 size: 96339 MB
    node 0 free: 95805 MB
    node 1 cpus: 24-47
    node 1 size: 96761 MB
    node 1 free: 96334 MB
    node 2 cpus: 48-71
    node 2 size: 96761 MB
    node 2 free: 96399 MB
    node 3 cpus: 72-95
    node 3 size: 96761 MB
    node 3 free: 96394 MB
    node 4 cpus: 96-119
    node 4 size: 96723 MB
    node 4 free: 96367 MB
    node 5 cpus: 120-143
    node 5 size: 96761 MB
    node 5 free: 96379 MB
    node 6 cpus: 144-167
    node 6 size: 96761 MB
    node 6 free: 96321 MB
    node 7 cpus: 168-191
    node 7 size: 96654 MB
    node 7 free: 96245 MB
    node distances:
    node   0   1   2   3   4   5   6   7
      0:  10  12  12  12  32  32  32  32
      1:  12  10  12  12  32  32  32  32
      2:  12  12  10  12  32  32  32  32
      3:  12  12  12  10  32  32  32  32
      4:  32  32  32  32  10  12  12  12
      5:  32  32  32  32  12  10  12  12
      6:  32  32  32  32  12  12  10  12
      7:  32  32  32  32  12  12  12  10

  ------------------------------------------------------------
  9. /proc/meminfo
    MemTotal:       792088916 kB
```

(Continued on next page)

Lenovo Global Technology	SPECrate®2017_fp_base = 1520
	SPECrate®2017_fp_energy_base = 2490
ThinkSystem SR665 V3	SPECrate®2017_fp_peak = 1530
(2.60 GHz, AMD EPYC 9655)	SPECrate®2017_fp_energy_peak = 2500

CPU2017 License: 9017 **Test Date:** Sep-2024
Test Sponsor: Lenovo Global Technology **Hardware Availability:** Nov-2024
Tested by: Lenovo Global Technology **Software Availability:** Oct-2024

Platform Notes (Continued)

```
----------------------------------------------------------
10. who -r
  run-level 3 Sep 23 00:16


----------------------------------------------------------
11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
  Default Target  Status
  multi-user      running


----------------------------------------------------------
12. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron getty@ irqbalance issue-generator
                   kbdsettings klog lvm2-monitor nscd postfix purge-kernels rollback rsyslog smartd sshd
                   systemd-pstore wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
  enabled-runtime  systemd-remount-fs
  disabled         autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
                   chronyd console-getty cups cups-browsed debug-shell ebtables exchange-bmc-os-info
                   firewalld fsidd gpm grub2-once haveged hwloc-dump-hwdata ipmi ipmievd issue-add-ssh-keys
                   kexec-load lunmask man-db-create multipathd nfs nfs-blkmap rpcbind rpmconfigcheck rsyncd
                   serial-getty@ smartd_generate_opts snmpd snmptrapd systemd-boot-check-no-failures
                   systemd-confext systemd-network-generator systemd-sysext systemd-time-wait-sync
                   systemd-timesyncd
  indirect         systemd-userdbd wickedd


----------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
  root=UUID=7b8fe170-8cd6-4f33-a048-ee31798eab65
  splash=silent
  mitigations=auto
  quiet
  security=apparmor


----------------------------------------------------------
14. cpupower frequency-info
  analyzing CPU 41:
    current policy: frequency should be within 1.50 GHz and 2.60 GHz.
                    The governor "ondemand" may decide which speed to use
                    within this range.
    boost state support:
      Supported: no
      Active: no


----------------------------------------------------------
15. sysctl
  kernel.numa_balancing            1
  kernel.randomize_va_space        0
  vm.compaction_proactiveness      20
  vm.dirty_background_bytes        0
  vm.dirty_background_ratio        10
  vm.dirty_bytes                   0
  vm.dirty_expire_centisecs        3000
  vm.dirty_ratio                   8
  vm.dirty_writeback_centisecs     500
  vm.dirtytime_expire_seconds      43200
  vm.extfrag_threshold             500
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR665 V3
(2.60 GHz, AMD EPYC 9655)

SPECrate®2017_fp_base = 1520

SPECrate®2017_fp_energy_base = 2490

SPECrate®2017_fp_peak = 1530

SPECrate®2017_fp_energy_peak = 2500

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test Date: Sep-2024
Hardware Availability: Nov-2024
Software Availability: Oct-2024

Platform Notes (Continued)

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


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


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


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


   -------------------------------------------------------------
19. Disk information
SPEC is set to: /home/cpu2017-1.1.9-amd-aocc500_znver5_A1
   Filesystem      Type   Size  Used Avail Use% Mounted on
   /dev/sda3       btrfs  444G   70G  371G  16% /home


   -------------------------------------------------------------
20. /sys/devices/virtual/dmi/id
     Vendor:         Lenovo
     Product:        ThinkSystem SR665 V3
     Product Family: ThinkSystem
     Serial:         1234567890


   -------------------------------------------------------------
21. dmidecode
   Additional information from dmidecode 3.4 follows.  WARNING: Use caution when you interpret this section.
   The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately
   determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the
   "DMTF SMBIOS" standard.
   Memory:
     13x SK Hynix HMCG88AHBRA471N 32 GB 2 rank 6400, configured at 4800
     4x SK Hynix HMCG88AHBRA472N 32 GB 2 rank 6400, configured at 4800
     7x SK Hynix HMCG88AHBRA478N 32 GB 2 rank 6400, configured at 4800


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

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR665 V3
(2.60 GHz, AMD EPYC 9655)

SPECrate®2017_fp_base =	1520
SPECrate®2017_fp_energy_base =	2490
SPECrate®2017_fp_peak =	1530
SPECrate®2017_fp_energy_peak =	2500

CPU2017 License: 9017		**Test Date:**	Sep-2024
Test Sponsor: Lenovo Global Technology		**Hardware Availability:**	Nov-2024
Tested by: Lenovo Global Technology		**Software Availability:**	Oct-2024

Platform Notes (Continued)

```
    22. BIOS
   (This section combines info from /sys/devices and dmidecode.)
      BIOS Vendor:       Lenovo
      BIOS Version:      KAE125W-5.10
      BIOS Date:         08/02/2024
      BIOS Revision:     5.10
      Firmware Revision: 53.9
```

Compiler Version Notes

```
==============================================================================
C               | 519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
------------------------------------------------------------------------------


==============================================================================
C++             | 508.namd_r(base, peak) 510.parest_r(base, peak)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
------------------------------------------------------------------------------


==============================================================================
C++, C          | 511.povray_r(base, peak) 526.blender_r(base, peak)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
------------------------------------------------------------------------------


==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
```

(Continued on next page)

SPEC CPU®2017 Floating Point Rate Result

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Lenovo Global Technology

ThinkSystem SR665 V3
(2.60 GHz, AMD EPYC 9655)

SPECrate®2017_fp_base = 1520

SPECrate®2017_fp_energy_base = 2490

SPECrate®2017_fp_peak = 1530

SPECrate®2017_fp_energy_peak = 2500

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test Date: Sep-2024
Hardware Availability: Nov-2024
Software Availability: Oct-2024

Compiler Version Notes (Continued)

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

==================================================================================
Fortran      | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base, peak)
-------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
-------------------------------------------------------------------------------------

==================================================================================
Fortran, C   | 521.wrf_r(base, peak) 527.cam4_r(base, peak)
-------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
-------------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
```
clang
```

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

Fortran benchmarks:
```
flang
```

Benchmarks using both Fortran and C:
```
flang clang
```

Benchmarks using both C and C++:
```
clang++ clang
```

Benchmarks using Fortran, C, and C++:
```
clang++ clang flang
```

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

Lenovo Global Technology
ThinkSystem SR665 V3
(2.60 GHz, AMD EPYC 9655)

SPECrate®2017_fp_base =	1520
SPECrate®2017_fp_energy_base =	2490
SPECrate®2017_fp_peak =	1530
SPECrate®2017_fp_energy_peak =	2500

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test Date: Sep-2024
Hardware Availability: Nov-2024
Software Availability: Oct-2024

Base Portability Flags

503.bwaves_r: `-DSPEC_LP64`
507.cactuBSSN_r: `-DSPEC_LP64`
508.namd_r: `-DSPEC_LP64`
510.parest_r: `-DSPEC_LP64`
511.povray_r: `-DSPEC_LP64`
519.lbm_r: `-DSPEC_LP64`
521.wrf_r: `-DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64`
526.blender_r: `-funsigned-char -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:
```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-ldist-scalar-expand -fenable-aggressive-gather -O3
-march=znver5 -fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloc
-lflang -ldl
```

C++ benchmarks:
```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-extra-inliner
-O3 -march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-mllvm -unroll-threshold=100 -mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloc
-lflang -ldl
```

Fortran benchmarks:
```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-aggressive-gather=true
-Wl,-mllvm -Wl,-enable-masked-gather-sequence=false -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -flto -Mrecursive -funroll-loops
```

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Lenovo Global Technology
ThinkSystem SR665 V3
(2.60 GHz, AMD EPYC 9655)

SPECrate®2017_fp_base =　　　　1520
SPECrate®2017_fp_energy_base = 2490
SPECrate®2017_fp_peak =　　　　1530
SPECrate®2017_fp_energy_peak = 2500

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test Date: Sep-2024
Hardware Availability: Nov-2024
Software Availability: Oct-2024

Base Optimization Flags (Continued)

Fortran benchmarks (continued):
```
-mllvm -lsr-in-nested-loop -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlibm -lamdalloc
-lflang -ldl
```

Benchmarks using both Fortran and C:
```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-aggressive-gather=true
-Wl,-mllvm -Wl,-enable-masked-gather-sequence=false -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -fepilog-vectorization-of-inductions
-lamdlibm -lamdalloc -lflang -ldl
```

Benchmarks using both C and C++:
```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-extra-inliner
-O3 -march=znver5 -fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie
-flto -fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -mllvm -unroll-threshold=100
-mllvm -loop-unswitch-threshold=200000 -lamdlibm -lamdalloc -lflang
-ldl
```

Benchmarks using Fortran, C, and C++:
```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-extra-inliner
-O3 -march=znver5 -fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie
-flto -fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -mllvm -unroll-threshold=100
-mllvm -loop-unswitch-threshold=200000 -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -fepilog-vectorization-of-inductions
-lamdlibm -lamdalloc -lflang -ldl
```

SPEC CPU®2017 Floating Point Rate Result
Copyright 2017-2024 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR665 V3
(2.60 GHz, AMD EPYC 9655)

SPECrate®2017_fp_base =   1520
SPECrate®2017_fp_energy_base = 2490
SPECrate®2017_fp_peak =   1530
SPECrate®2017_fp_energy_peak = 2500

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test Date: Sep-2024
Hardware Availability: Nov-2024
Software Availability: Oct-2024

Base Other Flags

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

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

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

Benchmarks using both Fortran and C:
```
-Wno-unused-command-line-argument
```

Benchmarks using both C and C++:
```
-Wno-unused-command-line-argument
```

Benchmarks using Fortran, C, and C++:
```
-Wno-unused-command-line-argument
```

Peak Compiler Invocation

C benchmarks:
```
clang
```

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

Fortran benchmarks:
```
flang
```

Benchmarks using both Fortran and C:
```
flang clang
```

Benchmarks using both C and C++:
```
clang++ clang
```

Benchmarks using Fortran, C, and C++:
```
clang++ clang flang
```

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

Lenovo Global Technology	SPECrate®2017_fp_base = 1520
	SPECrate®2017_fp_energy_base = 2490
ThinkSystem SR665 V3	SPECrate®2017_fp_peak = 1530
(2.60 GHz, AMD EPYC 9655)	SPECrate®2017_fp_energy_peak = 2500

CPU2017 License: 9017		**Test Date:**	Sep-2024
Test Sponsor:	Lenovo Global Technology	**Hardware Availability:**	Nov-2024
Tested by:	Lenovo Global Technology	**Software Availability:**	Oct-2024

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

519.lbm_r: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl

538.imagick_r: basepeak = yes

544.nab_r: -m64 -flto -Wl,-mllvm -Wl,-ldist-scalar-expand
-fenable-aggressive-gather -Ofast -march=znver5
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl

C++ benchmarks:

508.namd_r: -m64 -std=c++14
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl

510.parest_r: -m64 -std=c++14 -flto -Wl,-mllvm -Wl,-suppress-fmas
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math
-mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl

(Continued on next page)

Lenovo Global Technology	SPECrate®2017_fp_base = 1520
	SPECrate®2017_fp_energy_base = 2490
ThinkSystem SR665 V3	SPECrate®2017_fp_peak = 1530
(2.60 GHz, AMD EPYC 9655)	SPECrate®2017_fp_energy_peak = 2500

CPU2017 License: 9017		**Test Date:**	Sep-2024
Test Sponsor:	Lenovo Global Technology	**Hardware Availability:**	Nov-2024
Tested by:	Lenovo Global Technology	**Software Availability:**	Oct-2024

Peak Optimization Flags (Continued)

Fortran benchmarks:

 503.bwaves_r: basepeak = yes

 549.fotonik3d_r: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-Mrecursive -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -fvector-transform
-fscalar-transform -lamdlibm -lamdalloc -ldl -lflang

 554.roms_r: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-Mrecursive -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlibm
-lamdalloc -ldl -lflang

Benchmarks using both Fortran and C:

 521.wrf_r: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -Mrecursive
-funroll-loops -mllvm -lsr-in-nested-loop
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc
-ldl -lflang

 527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

 511.povray_r: -m64 -std=c++14
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false
-Wl,-mllvm -Wl,-extra-inliner -Ofast -march=znver5
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000

(Continued on next page)

SPEC CPU®2017 Floating Point Rate Result

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Lenovo Global Technology

ThinkSystem SR665 V3
(2.60 GHz, AMD EPYC 9655)

SPECrate®2017_fp_base =   1520

SPECrate®2017_fp_energy_base = 2490

SPECrate®2017_fp_peak =   1530

SPECrate®2017_fp_energy_peak = 2500

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Sep-2024

Hardware Availability: Nov-2024

Software Availability: Oct-2024

Peak Optimization Flags (Continued)

511.povray_r (continued):
```
-fremap-arrays -mllvm -reduce-array-computations=3 -zopt
-mllvm -unroll-threshold=100
-mllvm -loop-unswitch-threshold=200000 -lamdlibm
-lamdalloc -ldl
```

526.blender_r: `-m64 -std=c++14`
```
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt
-mllvm -unroll-threshold=100 -lamdlibm -lamdalloc -ldl
```

Benchmarks using Fortran, C, and C++:

507.cactuBSSN_r: `basepeak = yes`

Peak Other Flags

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

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

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

Benchmarks using both Fortran and C:
```
-Wno-unused-command-line-argument
```

Benchmarks using both C and C++:
```
-Wno-unused-command-line-argument
```

Benchmarks using Fortran, C, and C++:
```
-Wno-unused-command-line-argument
```

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The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/aocc500-flags.html
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Turin-A.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/aocc500-flags.xml
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Turin-A.xml

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

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