



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Dell Inc.

SPECrate®2017\_fp\_base = 1420

PowerEdge R6625 (AMD EPYC 9754 128-Core Processor)

SPECrate®2017\_fp\_peak = Not Run

CPU2017 License: 6573

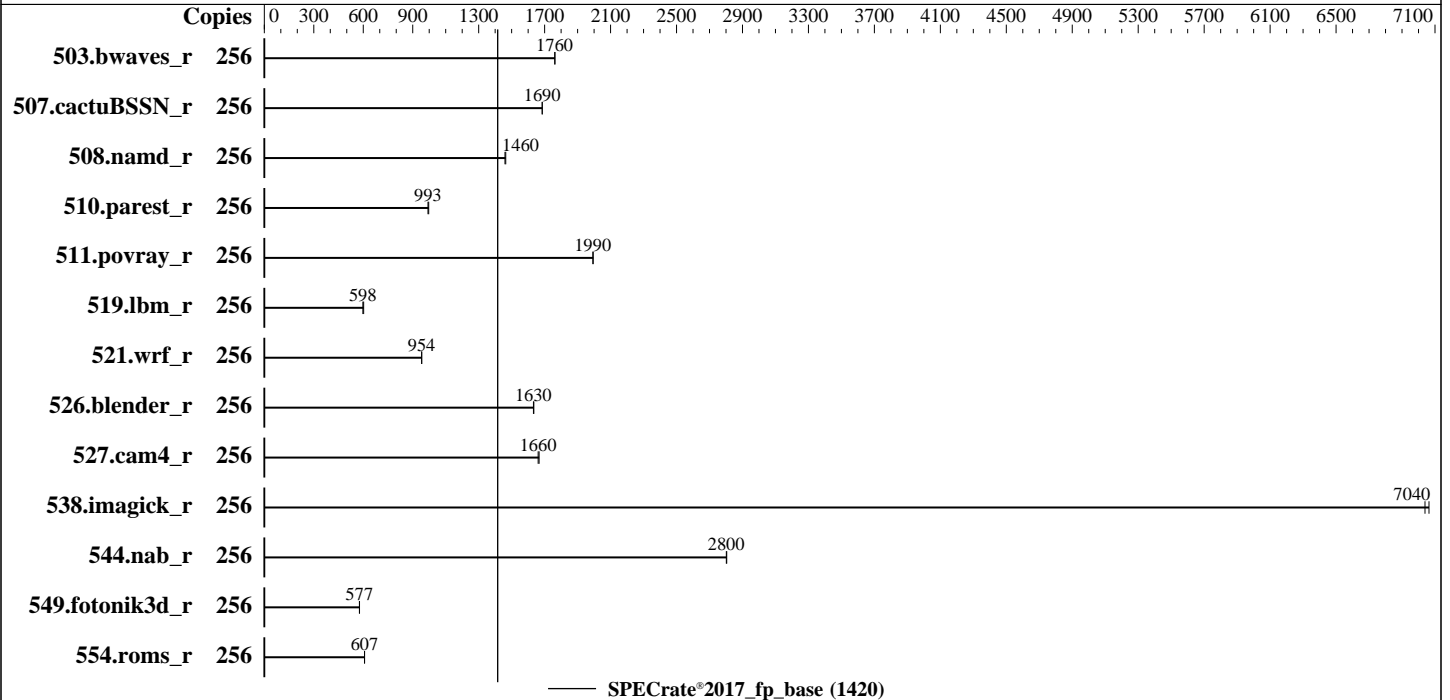
Test Date: Apr-2023

Test Sponsor: Dell Inc.

Hardware Availability: Jun-2023

Tested by: Dell Inc.

Software Availability: Nov-2022



### Hardware

CPU Name: AMD EPYC 9754  
 Max MHz: 3100  
 Nominal: 2250  
 Enabled: 256 cores, 2 chips  
 Orderable: 1,2 chips  
 Cache L1: 32 KB I + 32 KB D on chip per core  
 L2: 1 MB I+D on chip per core  
 L3: 256 MB I+D on chip per chip, 16 MB shared / 8 cores  
 Other: None  
 Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)  
 Storage: 130 GB on tmpfs  
 Other: None

### Software

OS: Ubuntu 22.04.1 LTS  
 5.15.0-46-generic  
 Compiler: C/C++/Fortran: Version 4.0.0 of AOCC  
 Parallel: No  
 Firmware: Version 1.3.11 released Mar-2023  
 File System: tmpfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: Not Applicable  
 Other: None  
 Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.



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## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	256	<u>1458</u>	<u>1760</u>	1456	1760									
507.cactuBSSN_r	256	<u>192</u>	<u>1690</u>	192	1690									
508.namd_r	256	166	1460	<u>167</u>	<u>1460</u>									
510.parest_r	256	<u>675</u>	<u>993</u>	672	997									
511.povray_r	256	<u>300</u>	<u>1990</u>	300	1990									
519.lbm_r	256	448	602	<u>452</u>	<u>598</u>									
521.wrf_r	256	<u>601</u>	<u>954</u>	601	954									
526.blender_r	256	239	1630	<u>239</u>	<u>1630</u>									
527.cam4_r	256	<u>270</u>	<u>1660</u>	269	1670									
538.imagick_r	256	<u>90.4</u>	<u>7040</u>	90.1	7060									
544.nab_r	256	154	2800	<u>154</u>	<u>2800</u>									
549.fotonik3d_r	256	<u>1730</u>	<u>577</u>	1728	577									
554.roms_r	256	669	608	<u>670</u>	<u>607</u>									

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

## Compiler Notes

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

## Submit Notes

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

## Operating System Notes

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

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

To limit dirty cache to 8% of memory, 'sysctl -w vm.dirty\_ratio=8' run as root.  
To limit swap usage to minimum necessary, 'sysctl -w vm.swappiness=1' run as root.  
To free node-local memory and avoid remote memory usage,  
'sysctl -w vm.zone\_reclaim\_mode=1' run as root.  
To clear filesystem caches, 'sync; sysctl -w vm.drop\_caches=3' run as root.  
To disable address space layout randomization (ASLR) to reduce run-to-run  
variability, 'sysctl -w kernel.randomize\_va\_space=0' run as root.

To enable Transparent Hugepages (THP) for all allocations,

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## Operating System Notes (Continued)

'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 =  
    "/mnt/ramdisk/cpu2017-1.1.9-aocc400-B1e/amd_rate_aocc400_genoa_B_lib/lib:/mnt/ramdisk/cpu2017-1.1.9-ao  
cc400-B1e/amd_rate_aocc400_genoa_B_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.

Benchmark run from a 130 GB ramdisk created with the cmd: "mount -t tmpfs -o size=130G tmpfs /mnt/ramdisk"

## Platform Notes

BIOS settings:

```
    DRAM Refresh Delay : Performance  
    DIMM Self Healing on  
Uncorrectable Memory Error : Disabled  
    Logical Processor : Disabled  
Virtualization Technology : Disabled  
    L1 Stride Prefetcher: : Disabled  
    NUMA Nodes per Socket : 4  
    L3 Cache as NUMA Domain : Enabled  
  
    System Profile : Custom  
    Memory Patrol Scrub : Disabled  
    PCI ASPM L1 Link  
    Power Management : Disabled  
    Determinism Slider : Power Determinism
```

Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-aocc400-B1e/bin/sysinfo  
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197  
running on genoa-sut Sat Apr 29 20:53:36 2023

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

-----  
Table of contents  
-----

1. uname -a

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## Platform Notes (Continued)

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 249 (249.11-0ubuntu3.4)
12. Failed units, from systemctl list-units --state=failed
13. Services, from systemctl list-unit-files
14. Linux kernel boot-time arguments, from /proc/cmdline
15. cpupower frequency-info
16. tuned-adm active
17. sysctl
18. /sys/kernel/mm/transparent\_hugepage
19. /sys/kernel/mm/transparent\_hugepage/khugepaged
20. OS release
21. Disk information
22. /sys/devices/virtual/dmi/id
23. dmidecode
24. BIOS

```
-----
1. uname -a
   Linux genoa-sut 5.15.0-46-generic #49-Ubuntu SMP Thu Aug 4 18:03:25 UTC 2022 x86_64 x86_64 x86_64 GNU/Linux
-----
```

```
-----
2. w
   20:53:36 up 1 day,  2:17,  1 user,  load average: 143.85, 226.60, 242.64
USER      TTY      FROM          LOGIN@      IDLE        JCPU   PCPU   WHAT
root      ttyl    -             19:16       1:36m      2.70s   0.57s /bin/bash ./amd_rate_aocc400_genoa_B1.sh
-----
```

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

```
-----
4. ulimit -a
   time(seconds)      unlimited
   file(blocks)       unlimited
   data(kbytes)       unlimited
   stack(kbytes)      unlimited
   coredump(blocks)   0
   memory(kbytes)     unlimited
   locked memory(kbytes) 2097152
   process            6190229
   nofiles            1024
   vmemory(kbytes)    unlimited
   locks              unlimited
   rtprio             0
-----
```

```
-----
5. sysinfo process ancestry
   /sbin/init
   /bin/login -p --
   -bash
   /bin/bash ./DELL_rate.sh
-----
```

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## Platform Notes (Continued)

```

/bin/bash ./dell-run-main.sh rate
/bin/bash ./dell-run-main.sh rate
/bin/bash ./dell-run-specrate.sh --output_format csv,html,pdf,txt -define Dell-BIOS-inc=Dell-BIOS_EPYC-4.inc
--define Dell-BIOS-LogProcD=1
python3 ./run_amd_rate_aocc400_genoa_B1.py
/bin/bash ./amd_rate_aocc400_genoa_B1.sh
runcpu --config amd_rate_aocc400_genoa_B1.cfg --tune base --reportable --iterations 2 --output_format
csv,html,pdf,txt -define Dell-BIOS-inc=Dell-BIOS_EPYC-4.inc --define Dell-BIOS-LogProcD=1 fprate
runcpu --configfile amd_rate_aocc400_genoa_B1.cfg --tune base --reportable --iterations 2 --output_format
csv,html,pdf,txt --define Dell-BIOS-inc=Dell-BIOS_EPYC-4.inc --define Dell-BIOS-LogProcD=1 --nopower
--runmode rate --tune base --size test:train:refrate fprate --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.002/templogs/preenv.fprate.002.0.log --lognum 002.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /mnt/ramdisk/cpu2017-1.1.9-aocc400-B1e

```

```

-----
6. /proc/cpuinfo
model name      : AMD EPYC 9754 128-Core Processor
vendor_id      : AuthenticAMD
cpu family     : 25
model          : 160
stepping       : 2
microcode      : 0xaa00205
bugs           : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
TLB size      : 3584 4K pages
cpu cores     : 128
siblings      : 128
2 physical ids (chips)
256 processors (hardware threads)
physical id 0: core ids
0-7,16-23,32-39,48-55,64-71,80-87,96-103,112-119,128-135,144-151,160-167,176-183,192-199,208-215,224-231,
240-247
physical id 1: core ids
0-7,16-23,32-39,48-55,64-71,80-87,96-103,112-119,128-135,144-151,160-167,176-183,192-199,208-215,224-231,
240-247
physical id 0: apicids
0-7,16-23,32-39,48-55,64-71,80-87,96-103,112-119,128-135,144-151,160-167,176-183,192-199,208-215,224-231,
240-247
physical id 1: apicids
256-263,272-279,288-295,304-311,320-327,336-343,352-359,368-375,384-391,400-407,416-423,432-439,448-455,4
64-471,480-487,496-503
Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
virtualized systems. Use the above data carefully.

```

```

-----
7. lscpu

From lscpu from util-linux 2.37.2:
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):           256
On-line CPU(s) list: 0-255
Vendor ID:        AuthenticAMD
Model name:       AMD EPYC 9754 128-Core Processor
CPU family:       25
Model:            160
Thread(s) per core: 1
Core(s) per socket: 128

```

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### Platform Notes (Continued)

```

Socket(s):                2
Stepping:                 2
Frequency boost:         enabled
CPU max MHz:              3101.0000
CPU min MHz:              400.0000
BogoMIPS:                 4501.50
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 pdpelgb rdtscp lm
                           constant_tsc rep_good nopl nonstop_tsc cpuid extd_apicid aperfmperf rapl
                           pni pclmulqdq monitor ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe
                           popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy
                           abm sse4a misalignsse 3dnowprefetch osvw ibs skinit wdt tce topoext
                           perfctr_core perfctr_nb bpext perfctr_llc mwaitx cpb cat_l3 cdp_l3
                           invpcid_single hw_pstate ssbd mba ibrs ibpb stibp vmmcall fsgsbase bmi1
                           avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
                           avx512ifma clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt
                           xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
                           avx512_bf16 clzero irperf xsaveerptr rdpru wbnoinvd amd_ppin cpc arat npt
                           lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists
                           pausefilter pfthreshold avic v_vmsave_vmload vgif v_spec_ctrl avx512vbmi
                           umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg
                           avx512_vpopcntdq la57 rdpid overflow_recov succor smca fsrm flush_l1d
Virtualization:          AMD-V
L1d cache:               8 MiB (256 instances)
L1i cache:               8 MiB (256 instances)
L2 cache:                256 MiB (256 instances)
L3 cache:                512 MiB (32 instances)
NUMA node(s):           32
NUMA node0 CPU(s):      0-7
NUMA node1 CPU(s):      8-15
NUMA node2 CPU(s):      64-71
NUMA node3 CPU(s):      72-79
NUMA node4 CPU(s):      32-39
NUMA node5 CPU(s):      40-47
NUMA node6 CPU(s):      96-103
NUMA node7 CPU(s):      104-111
NUMA node8 CPU(s):      48-55
NUMA node9 CPU(s):      56-63
NUMA node10 CPU(s):     112-119
NUMA node11 CPU(s):     120-127
NUMA node12 CPU(s):     16-23
NUMA node13 CPU(s):     24-31
NUMA node14 CPU(s):     80-87
NUMA node15 CPU(s):     88-95
NUMA node16 CPU(s):     128-135
NUMA node17 CPU(s):     136-143
NUMA node18 CPU(s):     192-199
NUMA node19 CPU(s):     200-207
NUMA node20 CPU(s):     160-167
NUMA node21 CPU(s):     168-175
NUMA node22 CPU(s):     224-231
NUMA node23 CPU(s):     232-239
NUMA node24 CPU(s):     176-183
NUMA node25 CPU(s):     184-191
NUMA node26 CPU(s):     240-247
NUMA node27 CPU(s):     248-255
NUMA node28 CPU(s):     144-151
NUMA node29 CPU(s):     152-159
NUMA node30 CPU(s):     208-215
NUMA node31 CPU(s):     216-223

```

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## Platform Notes (Continued)

Vulnerability Itlb multihit: Not affected  
 Vulnerability Lltf: Not affected  
 Vulnerability Mds: Not affected  
 Vulnerability Meltdown: Not affected  
 Vulnerability Mmio stale data: Not affected  
 Vulnerability Retbleed: Not affected  
 Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp  
 Vulnerability Spectre v1: Mitigation; usercopy/swaps barriers and \_\_user pointer sanitization  
 Vulnerability Spectre v2: Mitigation; Retpolines, IBPB conditional, IBRS\_FW, STIBP disabled, RSB filling  
 Vulnerability Srbds: Not affected  
 Vulnerability Tsx async abort: Not affected

From lscpu --cache:

NAME	ONE-SIZE	ALL-SIZE	WAYS	TYPE	LEVEL	SETS	PHY-LINE	COHERENCY-SIZE
L1d	32K	8M	8	Data	1	64	1	64
L1i	32K	8M	8	Instruction	1	64	1	64
L2	1M	256M	8	Unified	2	2048	1	64
L3	16M	512M	16	Unified	3	16384	1	64

8. numactl --hardware

NOTE: a numactl 'node' might or might not correspond to a physical chip.

available: 32 nodes (0-31)

```
node 0 cpus: 0-7
node 0 size: 47928 MB
node 0 free: 47381 MB
node 1 cpus: 8-15
node 1 size: 48346 MB
node 1 free: 47861 MB
node 2 cpus: 16-23
node 2 size: 48381 MB
node 2 free: 47913 MB
node 3 cpus: 24-31
node 3 size: 48379 MB
node 3 free: 44369 MB
node 4 cpus: 32-39
node 4 size: 48381 MB
node 4 free: 47948 MB
node 5 cpus: 40-47
node 5 size: 48381 MB
node 5 free: 47956 MB
node 6 cpus: 48-55
node 6 size: 48381 MB
node 6 free: 47949 MB
node 7 cpus: 56-63
node 7 size: 48379 MB
node 7 free: 47944 MB
node 8 cpus: 64-71
node 8 size: 48381 MB
node 8 free: 47954 MB
node 9 cpus: 72-79
node 9 size: 48381 MB
node 9 free: 47953 MB
node 10 cpus: 80-87
node 10 size: 48381 MB
node 10 free: 47949 MB
node 11 cpus: 88-95
node 11 size: 48379 MB
node 11 free: 47942 MB
```

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## Platform Notes (Continued)

```

node 12 cpus: 16-23
node 12 size: 48381 MB
node 12 free: 47951 MB
node 13 cpus: 24-31
node 13 size: 48381 MB
node 13 free: 47951 MB
node 14 cpus: 80-87
node 14 size: 48381 MB
node 14 free: 47954 MB
node 15 cpus: 88-95
node 15 size: 48363 MB
node 15 free: 47936 MB
node 16 cpus: 128-135
node 16 size: 48381 MB
node 16 free: 47840 MB
node 17 cpus: 136-143
node 17 size: 48381 MB
node 17 free: 47960 MB
node 18 cpus: 192-199
node 18 size: 48381 MB
node 18 free: 47798 MB
node 19 cpus: 200-207
node 19 size: 48379 MB
node 19 free: 47749 MB
node 20 cpus: 160-167
node 20 size: 48381 MB
node 20 free: 47959 MB
node 21 cpus: 168-175
node 21 size: 48381 MB
node 21 free: 47947 MB
node 22 cpus: 224-231
node 22 size: 48381 MB
node 22 free: 47953 MB
node 23 cpus: 232-239
node 23 size: 48379 MB
node 23 free: 47939 MB
node 24 cpus: 176-183
node 24 size: 48381 MB
node 24 free: 47939 MB
node 25 cpus: 184-191
node 25 size: 48381 MB
node 25 free: 47943 MB
node 26 cpus: 240-247
node 26 size: 48381 MB
node 26 free: 47950 MB
node 27 cpus: 248-255
node 27 size: 48379 MB
node 27 free: 47952 MB
node 28 cpus: 144-151
node 28 size: 48381 MB
node 28 free: 47947 MB
node 29 cpus: 152-159
node 29 size: 48381 MB
node 29 free: 47953 MB
node 30 cpus: 208-215
node 30 size: 48381 MB
node 30 free: 47943 MB
node 31 cpus: 216-223
node 31 size: 48347 MB
node 31 free: 47921 MB

```

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## Platform Notes (Continued)

node distances:

node	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
0:	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	32	32	32	32	32	32	32	32	32
1:	11	10	11	11	12	12	12	12	12	12	12	12	12	12	12	12	32	32	32	32	32	32	32	32	32
2:	11	11	10	11	12	12	12	12	12	12	12	12	12	12	12	12	32	32	32	32	32	32	32	32	32
3:	11	11	11	10	12	12	12	12	12	12	12	12	12	12	12	12	32	32	32	32	32	32	32	32	32
4:	12	12	12	12	10	11	11	11	12	12	12	12	12	12	12	12	32	32	32	32	32	32	32	32	32
5:	12	12	12	12	11	10	11	11	12	12	12	12	12	12	12	12	32	32	32	32	32	32	32	32	32
6:	12	12	12	12	11	11	10	11	12	12	12	12	12	12	12	12	32	32	32	32	32	32	32	32	32
7:	12	12	12	12	11	11	11	10	12	12	12	12	12	12	12	12	32	32	32	32	32	32	32	32	32
8:	12	12	12	12	12	12	12	12	10	11	11	11	12	12	12	12	32	32	32	32	32	32	32	32	32
9:	12	12	12	12	12	12	12	12	11	10	11	11	12	12	12	12	32	32	32	32	32	32	32	32	32
10:	12	12	12	12	12	12	12	12	11	11	10	11	12	12	12	12	32	32	32	32	32	32	32	32	32
11:	12	12	12	12	12	12	12	12	11	11	11	10	12	12	12	12	32	32	32	32	32	32	32	32	32
12:	12	12	12	12	12	12	12	12	12	12	12	10	11	11	11	11	32	32	32	32	32	32	32	32	32
13:	12	12	12	12	12	12	12	12	12	12	12	11	10	11	11	11	32	32	32	32	32	32	32	32	32
14:	12	12	12	12	12	12	12	12	12	12	12	11	11	10	11	11	32	32	32	32	32	32	32	32	32
15:	12	12	12	12	12	12	12	12	12	12	12	11	11	11	10	11	32	32	32	32	32	32	32	32	32
16:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	10	11	11	11	12	12	12	12	12
17:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	11	10	11	11	12	12	12	12	12
18:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	11	11	10	11	12	12	12	12	12
19:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	11	11	11	10	12	12	12	12	12
20:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	12	12	12	12	10	11	11	11	12
21:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	12	12	12	12	11	10	11	11	12
22:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	12	12	12	12	11	11	10	11	12
23:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	12	12	12	12	11	11	11	10	12
24:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	12	12	12	12	12	12	12	12	10
25:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	12	12	12	12	12	12	12	12	11
26:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	12	12	12	12	12	12	12	12	11
27:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	12	12	12	12	12	12	12	12	11
28:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	12	12	12	12	12	12	12	12	12

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

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## Dell Inc.

SPECrate®2017\_fp\_base = 1420

PowerEdge R6625 (AMD EPYC 9754 128-Core Processor)

SPECrate®2017\_fp\_peak = Not Run

CPU2017 License: 6573

Test Date: Apr-2023

Test Sponsor: Dell Inc.

Hardware Availability: Jun-2023

Tested by: Dell Inc.

Software Availability: Nov-2022

### Platform Notes (Continued)

```

12 12 12 10 11 11 11
29: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 12 12 12 12 12 12 12 12
12 12 12 11 10 11 11
30: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 12 12 12 12 12 12 12 12
12 12 12 11 11 10 11
31: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 12 12 12 12 12 12 12 12
12 12 12 11 11 11 10

```

```

-----
9. /proc/meminfo
MemTotal: 1584812528 kB
-----

```

```

-----
10. who -r
run-level 3 Apr 28 18:36
-----

```

```

-----
11. Systemd service manager version: systemd 249 (249.11-0ubuntu3.4)
Default Target Status
multi-user degraded
-----

```

```

-----
12. Failed units, from systemctl list-units --state=failed
UNIT LOAD ACTIVE SUB DESCRIPTION
* fwupd-refresh.service loaded failed failed Refresh fwupd metadata and update motd
-----

```

```

-----
13. Services, from systemctl list-unit-files
STATE UNIT FILES
enabled ModemManager blk-availability cloud-config cloud-final cloud-init cloud-init-local
console-setup cron dmesg e2scrub_reap finalrd getty@ grub-common grub-initrd-fallback
irqbalance keyboard-setup lm-sensors lvm2-monitor lxd-agent networkd-dispatcher open-iscsi
open-vm-tools pollinate rsync rsyslog secureboot-db setvtrgb ssh systemd-networkd
systemd-networkd-wait-online systemd-pstore systemd-resolved systemd-timesyncd thermald
tuned ua-reboot-cmds ubuntu-advantage udisks2 vgauth
enabled-runtime netplan-ovs-cleanup rc-local systemd-remount-fs
disabled apparmor console-getty debug-shell iscsid multipathd nftables powertop serial-getty@
smartmontools sysstat systemd-boot-check-no-failures systemd-network-generator
systemd-sysextd systemd-time-wait-sync ufw upower
generated apport
indirect uuid
masked accounts-daemon alsa-utils atd cryptdisks cryptdisks-early gpu-manager hwclock lvm2
multipath-tools-boot rc rcS screen-cleanup sudo x11-common
-----

```

```

-----
14. Linux kernel boot-time arguments, from /proc/cmdline
BOOT_IMAGE=/vmlinuz-5.15.0-46-generic
root=/dev/mapper/ubuntu--vg-ubuntu--lv
ro
-----

```

```

-----
15. cpupower frequency-info
analyzing CPU 0:
current policy: frequency should be within 400 MHz and 3.10 GHz.
The governor "performance" may decide which speed to use
within this range.

boost state support:
Supported: yes
Active: yes
Boost States: 0
-----

```

(Continued on next page)



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Hardware Availability: Jun-2023

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Software Availability: Nov-2022

## Platform Notes (Continued)

Total States: 3  
Pstate-P0: 2250MHz

-----  
16. tuned-adm active  
Current active profile: latency-performance  
-----

17. sysctl  
kernel.numa\_balancing 1  
kernel.randomize\_va\_space 0  
vm.compaction\_proactiveness 20  
vm.dirty\_background\_bytes 0  
vm.dirty\_background\_ratio 3  
vm.dirty\_bytes 0  
vm.dirty\_expire\_centisecs 3000  
vm.dirty\_ratio 8  
vm.dirty\_writeback\_centisecs 500  
vm.dirtytime\_expire\_seconds 43200  
vm.extfrag\_threshold 500  
vm.min\_unmapped\_ratio 1  
vm.nr\_hugepages 0  
vm.nr\_hugepages\_mempolicy 0  
vm.nr\_overcommit\_hugepages 0  
vm.swappiness 1  
vm.watermark\_boost\_factor 15000  
vm.watermark\_scale\_factor 10  
vm.zone\_reclaim\_mode 1  
-----

18. /sys/kernel/mm/transparent\_hugepage  
defrag [always] defer+madvise madvise never  
enabled [always] madvise never  
hpage\_pmd\_size 2097152  
shmem\_enabled always within\_size advise [never] deny force  
-----

19. /sys/kernel/mm/transparent\_hugepage/khugepaged  
alloc\_sleep\_millisecs 60000  
defrag 1  
max\_ptes\_none 511  
max\_ptes\_shared 256  
max\_ptes\_swap 64  
pages\_to\_scan 4096  
scan\_sleep\_millisecs 10000  
-----

20. OS release  
From /etc/\*-release /etc/\*-version  
os-release Ubuntu 22.04.1 LTS  
-----

21. Disk information  
SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-aocc400-B1e  
Filesystem Type Size Used Avail Use% Mounted on  
tmpfs tmpfs 130G 3.5G 127G 3% /mnt/ramdisk  
-----

22. /sys/devices/virtual/dmi/id  
Vendor: Dell Inc.  
-----

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**Test Date:** Apr-2023  
**Hardware Availability:** Jun-2023  
**Software Availability:** Nov-2022

## Platform Notes (Continued)

Product: PowerEdge R6625  
Product Family: PowerEdge  
Serial: BGP4016

### 23. dmidecode

Additional information from dmidecode 3.3 follows. **WARNING:** Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

Memory:  
24x 802C0000802C MTC40F2046S1RC48BA1 64 GB 2 rank 4800

### 24. BIOS

(This section combines info from /sys/devices and dmidecode.)

BIOS Vendor: Dell Inc.  
BIOS Version: 1.3.11  
BIOS Date: 03/31/2023  
BIOS Revision: 1.3

## Compiler Version Notes

=====  
C | 519.lbm\_r(base) 538.imagick\_r(base) 544.nab\_r(base)  
=====

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin  
=====

=====  
C++ | 508.namd\_r(base) 510.parest\_r(base)  
=====

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin  
=====

=====  
C++, C | 511.povray\_r(base) 526.blender\_r(base)  
=====

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin  
AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin  
=====

=====  
C++, C, Fortran | 507.cactuBSSN\_r(base)  
=====

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
=====

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# SPEC CPU®2017 Floating Point Rate Result

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Dell Inc.

SPECrate®2017\_fp\_base = 1420

PowerEdge R6625 (AMD EPYC 9754 128-Core Processor)

SPECrate®2017\_fp\_peak = Not Run

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**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.

**Test Date:** Apr-2023  
**Hardware Availability:** Jun-2023  
**Software Availability:** Nov-2022

## Compiler Version Notes (Continued)

```

Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

```

```

-----
Fortran          | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
-----

```

```

AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

```

```

-----
Fortran, C       | 521.wrf_r(base) 527.cam4_r(base)
-----

```

```

AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/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

(Continued on next page)



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CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Apr-2023

Hardware Availability: Jun-2023

Software Availability: Nov-2022

## Base Compiler Invocation (Continued)

Benchmarks using Fortran, C, and C++:

clang++ clang flang

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

C++ benchmarks:

-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6  
 -Wl,-mllvm -Wl,-reduce-array-computations=3  
 -Wl,-mllvm -Wl,-x86-use-vzeroupper=false -O3 -march=znver4  
 -fveclib=AMDLIBM -ffast-math -mllvm -unroll-threshold=100  
 -finline-aggressive -mllvm -loop-unswitch-threshold=200000  
 -mllvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloc  
 -lflang

Fortran benchmarks:

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

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Test Date: Apr-2023

Hardware Availability: Jun-2023

Software Availability: Nov-2022

## Base Optimization Flags (Continued)

Fortran benchmarks (continued):

```
-Wl,-mllvm -Wl,-enable-X86-prefetching -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -Kieee -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlibm -lamdalloc
-lflang
```

Benchmarks using both Fortran and C:

```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-freemap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt -Kieee -Mrecursive -funroll-loops -mllvm -lsr-in-nested-loop
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc -lflang
```

Benchmarks using both C and C++:

```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-freemap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt -mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000 -lamdlibm -lamdalloc -lflang
```

Benchmarks using Fortran, C, and C++:

```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-freemap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt -mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000 -Kieee -Mrecursive
-funroll-loops -mllvm -lsr-in-nested-loop
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc -lflang
```

## Base Other Flags

C benchmarks:

```
-Wno-unused-command-line-argument
```

(Continued on next page)



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## Base Other Flags (Continued)

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

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2017/flags/aocc400-flags.html>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-EPYC-v1.1.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2017/flags/aocc400-flags.xml>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-EPYC-v1.1.xml>

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Tested with SPEC CPU®2017 v1.1.9 on 2023-04-29 16:53:35-0400.

Report generated on 2023-06-13 15:15:36 by CPU2017 PDF formatter v6716.

Originally published on 2023-06-13.