



SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECspeed®2017_fp_base = 370

SPECspeed®2017_fp_peak = 381

PowerEdge R6625 (AMD EPYC 9734 112-Core Processor)

CPU2017 License: 6573

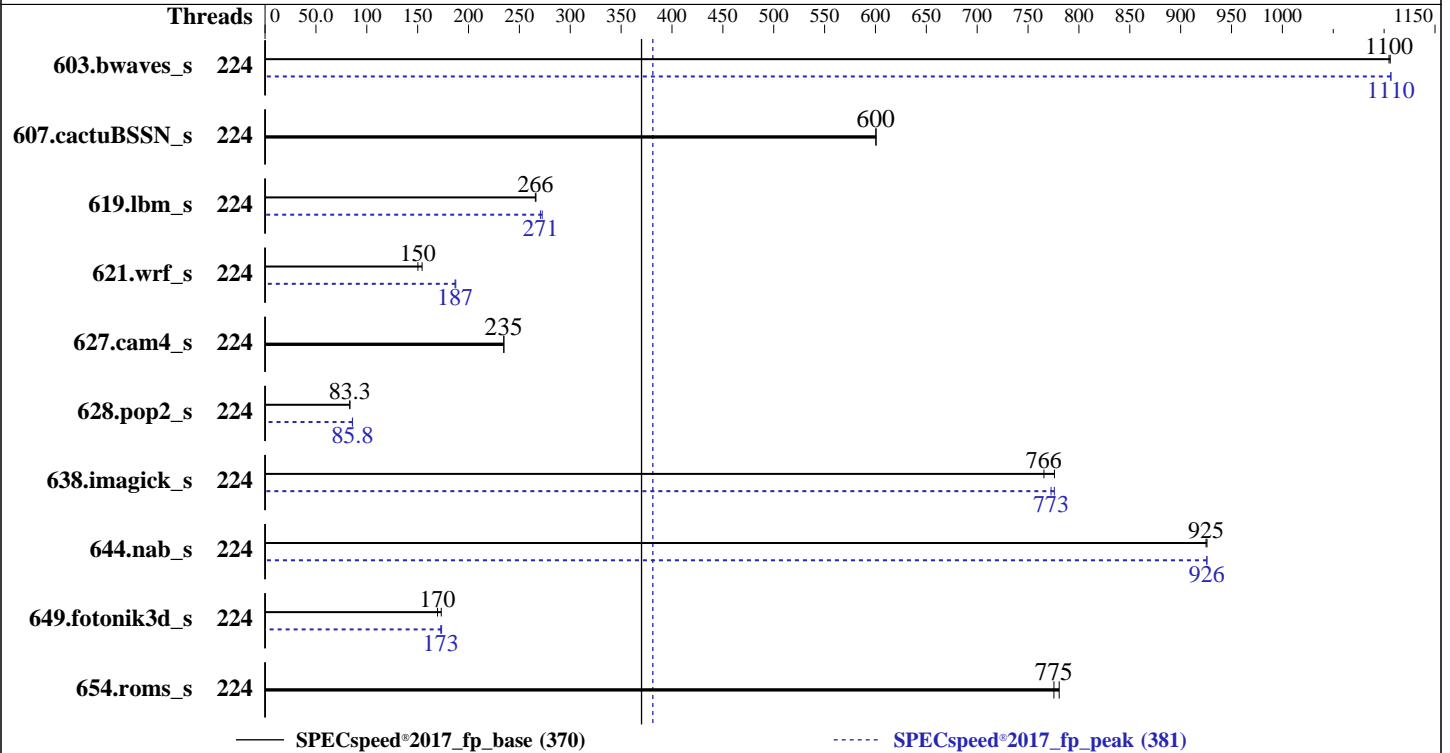
Test Date: May-2023

Test Sponsor: Dell Inc.

Hardware Availability: Jun-2023

Tested by: Dell Inc.

Software Availability: Nov-2022



Hardware

CPU Name: AMD EPYC 9734
 Max MHz: 3000
 Nominal: 2200
 Enabled: 224 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 / 7 cores
 Other: None
 Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)
 Storage: 120 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: Yes
 Firmware: Version 1.3.11 released Mar-2023
 File System: tmpfs
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 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							
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	224	53.4	1100	53.3	1110			224	53.3	1110	53.3	1110		
607.cactuBSSN_s	224	27.8	600	27.8	601			224	27.8	600	27.8	601		
619.lbm_s	224	19.7	266	19.7	266			224	19.4	271	19.2	272		
621.wrf_s	224	85.7	154	88.0	150			224	70.8	187	70.5	187		
627.cam4_s	224	37.8	235	37.8	235			224	37.8	235	37.8	235		
628.pop2_s	224	143	83.3	142	83.4			224	138	85.8	138	86.0		
638.imagick_s	224	18.8	766	18.6	776			224	18.6	776	18.7	773		
644.nab_s	224	18.9	925	18.9	926			224	18.9	926	18.9	926		
649.fotonik3d_s	224	53.8	170	52.6	173			224	52.5	174	52.8	173		
654.roms_s	224	20.3	775	20.2	781			224	20.3	775	20.2	781		

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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,
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.

To always enable THP for peak runs of:

603.bwaves_s, 607.cactuBSSN_s, 619.lbm_s, 627.cam4_s, 628.pop2_s, 638.imagick_s, 644.nab_s, 649.fotonik3d_s:
'echo madvise > /sys/kernel/mm/transparent_hugepage/enabled; echo always > /sys/kernel/mm/transparent_hugepage/defrag'
run as root.

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Operating System Notes (Continued)

To disable THP for peak runs of 621.wrf_s:

```
'echo never > /sys/kernel/mm/transparent_hugepage/enabled; echo always > /sys/kernel/mm/transparent_hugepage/defrag'  
run as root.
```

To enable THP only on request for peak runs of 654.roms_s:

```
'echo madvise > /sys/kernel/mm/transparent_hugepage/enabled; echo madvise > /sys/kernel/mm/transparent_hugepage/defrag'  
run as root.
```

Environment Variables Notes

Environment variables set by runcpu before the start of the run:

```
GOMP_CPU_AFFINITY = "0-223"  
LD_LIBRARY_PATH = "/mnt/ramdisk/cpu2017-1.1.9-aocc400-znver4-A1/amd_speed_aocc400_znver4_A_lib/lib:"  
LIBOMP_NUM_HIDDEN_HELPER_THREADS = "0"  
MALLOC_CONF = "oversize_threshold:0,retain:true"  
OMP_DYNAMIC = "false"  
OMP_SCHEDULE = "static"  
OMP_STACKSIZE = "128M"  
OMP_THREAD_LIMIT = "224"
```

Environment variables set by runcpu during the 603.bwaves_s peak run:

```
GOMP_CPU_AFFINITY = "0-223"
```

Environment variables set by runcpu during the 619.lbm_s peak run:

```
GOMP_CPU_AFFINITY = "0-223"
```

Environment variables set by runcpu during the 621.wrf_s peak run:

```
GOMP_CPU_AFFINITY = "0-223"
```

Environment variables set by runcpu during the 628.pop2_s peak run:

```
GOMP_CPU_AFFINITY = "0-223"
```

Environment variables set by runcpu during the 638.imagick_s peak run:

```
GOMP_CPU_AFFINITY = "0-223"
```

Environment variables set by runcpu during the 644.nab_s peak run:

```
GOMP_CPU_AFFINITY = "0-223"
```

Environment variables set by runcpu during the 649.fotonik3d_s peak run:

```
GOMP_CPU_AFFINITY = "0-223"
```

```
PGHFP_ZMEM = "yes"
```

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 120 GB ramdisk created with the cmd: "mount -t tmpfs -o size=120G tmpfs /mnt/ramdisk"



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Platform Notes

BIOS settings:

```

    DRAM Refresh Delay : Performance
    DIMM Self Healing on
    Uncorrectable Memory Error : Disabled
    Logical Processor : Disabled
    Virtualization Technology : Disabled
    L3 Cache as NUMA Domain : Enabled

    System Profile : Custom
    C-States : Disabled
    Memory Patrol Scrub : Disabled
    PCI ASPM L1 Link
    Power Management : Disabled
    Determinism Slider : Power Determinism
    Algorithm Performance
    Boost Disable (ApbDis) : Enabled

```

```

Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-aocc400-znver4-A1/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on genoa-sut Tue May 16 18:14:19 2023

```

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

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
 18:14:19 up 2:57, 1 user, load average: 5.57, 6.28, 3.67
 USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT

```

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## Platform Notes (Continued)

```
root tty1 - 15:18 2:55m 2.13s 0.52s /bin/bash ./amd_speed_aocc400_znver4_A1.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 6190259
nofiles 1024
vmemory(kbytes) unlimited
locks unlimited
rtprio 0
```

### 5. sysinfo process ancestry

```
/sbin/init
/bin/login -p --
-bash
/bin/bash ./DELL_speed.sh
/bin/bash ./dell-run-main.sh speed
/bin/bash ./dell-run-main.sh speed
/bin/bash ./dell-run-speccpu.sh speed --define DL-BIOSinc=Dell-BIOS_EPYC-4.inc --define DL-BIOS-LogProcD=1
--define DL-BIOS-adddcD=1 --define DL-BIOS-VirtD=1 --define DL-VERS=v4.5 --output_format html,pdf,txt
python3 ./run_amd_speed_aocc400_znver4_A1.py
/bin/bash ./amd_speed_aocc400_znver4_A1.sh
runcpu --config amd_speed_aocc400_znver4_A1.cfg --tune all --reportable --iterations 2 --define
DL-BIOSinc=Dell-BIOS_EPYC-4.inc --define DL-BIOS-LogProcD=1 --define DL-BIOS-adddcD=1 --define
DL-BIOS-VirtD=1 --define DL-VERS=v4.5 --output_format html,pdf,txt fpspeed
runcpu --configfile amd_speed_aocc400_znver4_A1.cfg --tune all --reportable --iterations 2 --define
DL-BIOSinc=Dell-BIOS_EPYC-4.inc --define DL-BIOS-LogProcD=1 --define DL-BIOS-adddcD=1 --define
DL-BIOS-VirtD=1 --define DL-VERS=v4.5 --output_format html,pdf,txt --nopower --runmode speed --tune
base:peak --size test:train:refspeed fpspeed --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.002/templogs/preenv.fpspeed.002.0.log --lognum 002.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /mnt/ramdisk/cpu2017-1.1.9-aocc400-znver4-A1
```

### 6. /proc/cpuinfo

```
model name : AMD EPYC 9734 112-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 : 112
siblings : 112
2 physical ids (chips)
224 processors (hardware threads)
physical id 0: core ids
0-6,16-22,32-38,48-54,64-70,80-86,96-102,112-118,128-134,144-150,160-166,176-182,192-198,208-214,224-230,
```

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## Platform Notes (Continued)

240-246

physical id 1: core ids

0-6,16-22,32-38,48-54,64-70,80-86,96-102,112-118,128-134,144-150,160-166,176-182,192-198,208-214,224-230,240-246

physical id 0: apicids

0-6,16-22,32-38,48-54,64-70,80-86,96-102,112-118,128-134,144-150,160-166,176-182,192-198,208-214,224-230,240-246

physical id 1: apicids

256-262,272-278,288-294,304-310,320-326,336-342,352-358,368-374,384-390,400-406,416-422,432-438,448-454,464-470,480-486,496-502

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): 224
On-line CPU(s) list: 0-223
Vendor ID: AuthenticAMD
Model name: AMD EPYC 9734 112-Core Processor
CPU family: 25
Model: 160
Thread(s) per core: 1
Core(s) per socket: 112
Socket(s): 2
Stepping: 2
Frequency boost: enabled
CPU max MHz: 3000.0000
CPU min MHz: 400.0000
BogoMIPS: 4401.07
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 bpeext 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: 7 MiB (224 instances)
L1i cache: 7 MiB (224 instances)
L2 cache: 224 MiB (224 instances)
L3 cache: 512 MiB (32 instances)
NUMA node(s): 32
NUMA node0 CPU(s): 0-6
NUMA node1 CPU(s): 7-13
NUMA node2 CPU(s): 56-62

```

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## Platform Notes (Continued)

```

NUMA node3 CPU(s): 63-69
NUMA node4 CPU(s): 28-34
NUMA node5 CPU(s): 35-41
NUMA node6 CPU(s): 84-90
NUMA node7 CPU(s): 91-97
NUMA node8 CPU(s): 42-48
NUMA node9 CPU(s): 49-55
NUMA node10 CPU(s): 98-104
NUMA node11 CPU(s): 105-111
NUMA node12 CPU(s): 14-20
NUMA node13 CPU(s): 21-27
NUMA node14 CPU(s): 70-76
NUMA node15 CPU(s): 77-83
NUMA node16 CPU(s): 112-118
NUMA node17 CPU(s): 119-125
NUMA node18 CPU(s): 168-174
NUMA node19 CPU(s): 175-181
NUMA node20 CPU(s): 140-146
NUMA node21 CPU(s): 147-153
NUMA node22 CPU(s): 196-202
NUMA node23 CPU(s): 203-209
NUMA node24 CPU(s): 154-160
NUMA node25 CPU(s): 161-167
NUMA node26 CPU(s): 210-216
NUMA node27 CPU(s): 217-223
NUMA node28 CPU(s): 126-132
NUMA node29 CPU(s): 133-139
NUMA node30 CPU(s): 182-188
NUMA node31 CPU(s): 189-195
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: 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      | 7M       | 8    | Data        | 1     | 64    | 1        | 64             |
| L1i  | 32K      | 7M       | 8    | Instruction | 1     | 64    | 1        | 64             |
| L2   | 1M       | 224M     | 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: 0-6

node 0 size: 47928 MB

node 0 free: 47674 MB

node 1 cpus: 7-13

node 1 size: 48382 MB

node 1 free: 48175 MB

node 2 cpus: 56-62

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## Platform Notes (Continued)

```

node 2 size: 48382 MB
node 2 free: 48232 MB
node 3 cpus: 63-69
node 3 size: 48346 MB
node 3 free: 44680 MB
node 4 cpus: 28-34
node 4 size: 48382 MB
node 4 free: 48079 MB
node 5 cpus: 35-41
node 5 size: 48382 MB
node 5 free: 48220 MB
node 6 cpus: 84-90
node 6 size: 48382 MB
node 6 free: 48180 MB
node 7 cpus: 91-97
node 7 size: 48382 MB
node 7 free: 48118 MB
node 8 cpus: 42-48
node 8 size: 48382 MB
node 8 free: 48193 MB
node 9 cpus: 49-55
node 9 size: 48382 MB
node 9 free: 48233 MB
node 10 cpus: 98-104
node 10 size: 48382 MB
node 10 free: 48130 MB
node 11 cpus: 105-111
node 11 size: 48358 MB
node 11 free: 48123 MB
node 12 cpus: 14-20
node 12 size: 48382 MB
node 12 free: 48166 MB
node 13 cpus: 21-27
node 13 size: 48382 MB
node 13 free: 48172 MB
node 14 cpus: 70-76
node 14 size: 48382 MB
node 14 free: 48172 MB
node 15 cpus: 77-83
node 15 size: 48382 MB
node 15 free: 47036 MB
node 16 cpus: 112-118
node 16 size: 48382 MB
node 16 free: 46928 MB
node 17 cpus: 119-125
node 17 size: 48382 MB
node 17 free: 48210 MB
node 18 cpus: 168-174
node 18 size: 48382 MB
node 18 free: 48231 MB
node 19 cpus: 175-181
node 19 size: 48382 MB
node 19 free: 48229 MB
node 20 cpus: 140-146
node 20 size: 48382 MB
node 20 free: 46731 MB
node 21 cpus: 147-153
node 21 size: 48382 MB
node 21 free: 48237 MB
node 22 cpus: 196-202

```

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## Platform Notes (Continued)

```

node 22 size: 48382 MB
node 22 free: 48230 MB
node 23 cpus: 203-209
node 23 size: 48382 MB
node 23 free: 48189 MB
node 24 cpus: 154-160
node 24 size: 48382 MB
node 24 free: 48254 MB
node 25 cpus: 161-167
node 25 size: 48382 MB
node 25 free: 48225 MB
node 26 cpus: 210-216
node 26 size: 48382 MB
node 26 free: 48212 MB
node 27 cpus: 217-223
node 27 size: 48342 MB
node 27 free: 48179 MB
node 28 cpus: 126-132
node 28 size: 48382 MB
node 28 free: 48195 MB
node 29 cpus: 133-139
node 29 size: 48382 MB
node 29 free: 48237 MB
node 30 cpus: 182-188
node 30 size: 48382 MB
node 30 free: 48247 MB
node 31 cpus: 189-195
node 31 size: 48382 MB
node 31 free: 47164 MB

```

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 |    |
|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 25   | 26 | 27 | 28 | 29 | 30 | 31 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0:   | 10 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 32   | 32 | 32 | 32 | 32 | 32 | 32 | 32 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 1:   | 11 | 10 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 32   | 32 | 32 | 32 | 32 | 32 | 32 | 32 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 2:   | 11 | 11 | 10 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 32   | 32 | 32 | 32 | 32 | 32 | 32 | 32 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3:   | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 32   | 32 | 32 | 32 | 32 | 32 | 32 | 32 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 4:   | 11 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 32   | 32 | 32 | 32 | 32 | 32 | 32 | 32 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5:   | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 32   | 32 | 32 | 32 | 32 | 32 | 32 | 32 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 6:   | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 32   | 32 | 32 | 32 | 32 | 32 | 32 | 32 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 7:   | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 32   | 32 | 32 | 32 | 32 | 32 | 32 | 32 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 8:   | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 32   | 32 | 32 | 32 | 32 | 32 | 32 | 32 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 9:   | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 11 | 11 | 11 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 32   | 32 | 32 | 32 | 32 | 32 | 32 | 32 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 10:  | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 11 | 11 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 32   | 32 | 32 | 32 | 32 | 32 | 32 | 32 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 11:  | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 11 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 32   | 32 | 32 | 32 | 32 | 32 | 32 | 32 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 12:  | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 32   | 32 | 32 | 32 | 32 | 32 | 32 | 32 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 13:  | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 32   | 32 | 32 | 32 | 32 | 32 | 32 | 32 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

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SPECSpeed®2017\_fp\_base = 370

PowerEdge R6625 (AMD EPYC 9734 112-Core Processor)

SPECSpeed®2017\_fp\_peak = 381

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: May-2023

Hardware Availability: Jun-2023

Software Availability: Nov-2022

### Platform Notes (Continued)

```

14: 11 11 11 11 11 11 11 11 11 11 11 11 11 11 10 11 32 32 32 32 32 32 32 32
32 32 32 32 32 32 32 32 11 11 11 11 11 11 11 11 11 10 32 32 32 32 32 32 32
15: 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 10 32 32 32 32 32 32
32 32 32 32 32 32 32 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
16: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 10 11 11 11 11 11 11 11
11 11 11 11 11 11 11 32 32 32 32 32 32 32 32 32 32 11 10 11 11 11 11 11 11
17: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 10 11 11 11 11 11
11 11 11 11 11 11 11 32 32 32 32 32 32 32 32 32 32 11 11 10 11 11 11 11 11
18: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 10 11 11 11 11
11 11 11 11 11 11 11 32 32 32 32 32 32 32 32 32 32 11 11 11 10 11 11 11 11
19: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 11 10 11 11 11
11 11 11 11 11 11 11 32 32 32 32 32 32 32 32 32 32 11 11 11 11 10 11 11 11
20: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 11 11 10 11 11
11 11 11 11 11 11 11 32 32 32 32 32 32 32 32 32 32 11 11 11 11 10 11 11 11
21: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 10 11
11 11 11 11 11 11 11 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 10 11 11
22: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 10 11
11 11 11 11 11 11 11 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 10 11 11
23: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 10
11 11 11 11 11 11 11 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 10 11
24: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 10
11 11 11 11 11 11 11 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 10 11
25: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 11
10 11 11 11 11 11 11 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 11 11
26: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 11
11 10 11 11 11 11 11 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 11 11
27: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 11
11 11 10 11 11 11 11 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 11 11
28: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 11
11 11 11 10 11 11 11 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 11 11
29: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 11
11 11 11 11 10 11 11 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 11 11
30: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 11
11 11 11 11 11 10 11 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 11 11
31: 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 11
11 11 11 11 11 11 10 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 11 11

```

```

9. /proc/meminfo
MemTotal: 1584820240 kB

```

```

10. who -r
run-level 3 May 16 15:18

```

```

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

```

```

12. 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 thermald tuned ua-reboot-cmds
ubuntu-advantage udisks2 vgauth
enabled-runtime netplan-ovs-cleanup rc-local systemd-remount-fs

```

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### Platform Notes (Continued)

```

disabled apparmor console-getty debug-shell iscsid mpd multipathd nftables powertop rtkit-daemon
 serial-getty@ smartmontools sysstat systemd-boot-check-no-failures
 systemd-network-generator systemd-sysextd systemd-time-wait-sync systemd-timesyncd ufw
 upower
generated apport libnss-ldap perlbal
indirect uidd
masked accounts-daemon alsa-utils atd cryptdisks cryptdisks-early gpu-manager hwclock lvm2
 multipath-tools-boot rc rcS screen-cleanup sudo x11-common

```

```

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

```

```

14. cpupower frequency-info
analyzing CPU 0:
 current policy: frequency should be within 400 MHz and 3.00 GHz.
 The governor "performance" may decide which speed to use
 within this range.

 boost state support:
 Supported: yes
 Active: yes
 Boost States: 0
 Total States: 3
 Pstate-P0: 2200MHz

```

```

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

```

```

16. sysctl
kernel.numa_balancing 1
kernel.randomize_va_space 0
vm.compaction_proactiveness 20
vm.dirty_background_bytes 0
vm.dirty_background_ratio 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

```

```

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

```

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## Platform Notes (Continued)

```

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

```

```

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

```

```

20. Disk information
SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-aocc400-znver4-A1
Filesystem Type Size Used Avail Use% Mounted on
tmpfs tmpfs 120G 3.5G 117G 3% /mnt/ramdisk

```

```

21. /sys/devices/virtual/dmi/id
Vendor: Dell Inc.
Product: PowerEdge R6625
Product Family: PowerEdge
Serial: BGP4016

```

```

22. dmidecode
Additional information from dmidecode 3.3 follows. WARNING: Use caution when you interpret this section.
The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately
determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the
"DMTF SMBIOS" standard.
Memory:
24x 802C0000802C MTC40F2046S1RC48BA1 64 GB 2 rank 4800

```

```

23. 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 | 619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base, peak)

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

=====
```

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## Compiler Version Notes (Continued)

C++, C, Fortran | 607.cactuBSSN\_s(base, peak)

```

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

```

Fortran | 603.bwaves\_s(base, peak) 649.fotonik3d\_s(base, peak) 654.roms\_s(base, peak)

```

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

```

Fortran, C | 621.wrf\_s(base, peak) 627.cam4\_s(base, peak) 628.pop2\_s(base, peak)

```

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

```

## Base Compiler Invocation

C benchmarks:

clang

Fortran benchmarks:

flang

Benchmarks using both Fortran and C:

flang clang

Benchmarks using Fortran, C, and C++:

clang++ clang flang



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## Base Portability Flags

```
603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
627.cam4_s: -DSPEC_CASE_FLAG -DSPEC_LP64
628.pop2_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64
```

## Base Optimization Flags

### C benchmarks:

```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-freemap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-DSPEC_OPENMP -zopt -fopenmp=libomp -lomp -lamdlibm -lamdalloc
-lflang
```

### Fortran benchmarks:

```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -DSPEC_OPENMP -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -Mrecursive
-funroll-loops -mllvm -lsr-in-nested-loop
-mllvm -reduce-array-computations=3 -zopt -fopenmp=libomp -lomp
-lamdlibm -lamdalloc -lflang
```

### 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 -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-freemap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-DSPEC_OPENMP -zopt -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -fopenmp=libomp -lomp -lamdlibm -lamdalloc
-lflang
```

### Benchmarks using Fortran, C, and C++:

```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
```

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## Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):

```
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-DSPEC_OPENMP -zopt -mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000 -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -fopenmp=libomp -lomp -lamdlibm -lamdalloc
-lflang
```

## Base Other Flags

C benchmarks:

```
-Wno-return-type -Wno-unused-command-line-argument
```

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

```
-Wno-return-type -Wno-unused-command-line-argument
```

Benchmarks using Fortran, C, and C++:

```
-Wno-return-type -Wno-unused-command-line-argument
```

## Peak Compiler Invocation

C benchmarks:

```
clang
```

Fortran benchmarks:

```
flang
```

Benchmarks using both Fortran and C:

```
flang clang
```

Benchmarks using Fortran, C, and C++:

```
clang++ clang flang
```



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## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

```
619.lbm_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -fstruct-layout=9 -mllvm -unroll-threshold=50
-freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang
```

638.imagick\_s: Same as 619.lbm\_s

```
644.nab_s: -m64 -Wl,-mllvm -Wl,-region-vectorize -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -fstruct-layout=9 -mllvm -unroll-threshold=50
-freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang
```

Fortran benchmarks:

```
603.bwaves_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -DSPEC_OPENMP
-Ofast -march=znver4 -fveclib=AMDLIBM -ffast-math
-fopenmp -Mrecursive -mllvm -reduce-array-computations=3
-fvector-transform -fscalar-transform -fopenmp=libomp
-lomp -lamdlibm -lamdalloc -lflang
```

```
649.fotonik3d_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -DSPEC_OPENMP
-Ofast -march=znver4 -fveclib=AMDLIBM -ffast-math
-fopenmp -flto -Mrecursive
-mllvm -reduce-array-computations=3 -zopt -fopenmp=libomp
-lomp -lamdlibm -lamdalloc -lflang
```

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# SPEC CPU®2017 Floating Point Speed Result

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Dell Inc.

SPECSpeed®2017\_fp\_base = 370

PowerEdge R6625 (AMD EPYC 9734 112-Core Processor)

SPECSpeed®2017\_fp\_peak = 381

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: May-2023

Hardware Availability: Jun-2023

Software Availability: Nov-2022

## Peak Optimization Flags (Continued)

654.roms\_s: basepeak = yes

Benchmarks using both Fortran and C:

```
621.wrf_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -fstruct-layout=9 -mllvm -unroll-threshold=50
-freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-O3 -Mrecursive -funroll-loops -mllvm -lsr-in-nested-loop
-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang
```

627.cam4\_s: basepeak = yes

```
628.pop2_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -fstruct-layout=9 -mllvm -unroll-threshold=50
-freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-Mrecursive -fvector-transform -fscalar-transform
-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang
```

Benchmarks using Fortran, C, and C++:

607.cactuBSSN\_s: basepeak = yes

## Peak Other Flags

C benchmarks:

-Wno-return-type -Wno-unused-command-line-argument

Fortran benchmarks:

-Wno-unused-command-line-argument

Benchmarks using both Fortran and C:

-Wno-return-type -Wno-unused-command-line-argument

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## Peak Other Flags (Continued)

Benchmarks using Fortran, C, and C++:

-Wno-return-type -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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