## SPEC CPU®2017 Floating Point Speed Result

**Dell Inc.**

PowerEdge R6615 (AMD EPYC 9354 32-Core Processor)

<table>
<thead>
<tr>
<th>CPU2017 License: 6573</th>
<th>Test Date: Jan-2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Dell Inc.</td>
<td>Hardware Availability: Feb-2023</td>
</tr>
<tr>
<td>Tested by: Dell Inc.</td>
<td>Software Availability: Nov-2022</td>
</tr>
</tbody>
</table>

### SPECspeed®2017_fp_base = 228

SPECspeed®2017_fp_peak = Not Run

| SPECspeed®2017_fp_base | 228 |

### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>32</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>32</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>32</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>32</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>32</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>32</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>32</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>32</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>32</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>32</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** AMD EPYC 9354
- **Max MHz:** 3800
- **Nominal:** 3250
- **Enabled:** 32 cores, 1 chip
- **Orderable:** 1 chip
- **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, 32 MB shared / 4 cores
- **Other:** None
- **Memory:** 768 GB (12 x 64 GB 2Rx4 PC5-4800B-R)
- **Storage:** 125 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 1.1.0 released Nov-2022
- **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.
SPEC CPU®2017 Floating Point Speed Result

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Dell Inc.

PowerEdge R6615 (AMD EPYC 9354 32-Core Processor)

SPECspeed®2017_fp_base = 228

SPECspeed®2017_fp_peak = Not Run

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>603.bwaves_s</td>
<td>32</td>
<td>68.2</td>
<td>865</td>
<td>68.3</td>
<td>864</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>32</td>
<td>50.4</td>
<td>330</td>
<td>49.9</td>
<td>334</td>
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<tr>
<td>619.lbm_s</td>
<td>32</td>
<td>35.9</td>
<td>146</td>
<td>35.8</td>
<td>146</td>
<td></td>
<td></td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>32</td>
<td>65.5</td>
<td>202</td>
<td>65.6</td>
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<td></td>
</tr>
<tr>
<td>627.cam4_s</td>
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<td>129</td>
<td>68.6</td>
<td>129</td>
<td></td>
<td></td>
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<tr>
<td>628.pop2_s</td>
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<td>123</td>
<td>96.2</td>
<td>124</td>
<td>96.1</td>
<td></td>
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</tr>
<tr>
<td>638.imagick_s</td>
<td>32</td>
<td>62.3</td>
<td>232</td>
<td>62.5</td>
<td>231</td>
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<td></td>
</tr>
<tr>
<td>644.nab_s</td>
<td>32</td>
<td>49.2</td>
<td>355</td>
<td>49.2</td>
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</tr>
<tr>
<td>649.fotonik3d_s</td>
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<tr>
<td>654.roms_s</td>
<td>32</td>
<td>50.3</td>
<td>313</td>
<td>50.3</td>
<td>313</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

(Continued on next page)
Dell Inc.

PowerEdge R6615 (AMD EPYC 9354 32-Core Processor)

**Operating System Notes (Continued)**

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.
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 = "0-31"
LD_LIBRARY_PATH = 
"/mnt/ramdisk/cpu2017-1.1.8-aocc400-B1b/amd_speed_aocc400_genoa_B_lib/lib;"
LIBOMP_NUM_HIDDEN.Helper_THREADS = "0"
MALLOCONF = "oversize_threshold:0,retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "32"

**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 125 GB ramdisk created with the cmd: "mount -t tmpfs -o size=125G tmpfs /mnt/ramdisk"
Dell Inc. PowerEdge R6615 (AMD EPYC 9354 32-Core Processor)  SPECspeed®2017_fp_base = 228 SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 6573  Test Date: Jan-2023
Test Sponsor: Dell Inc.  Hardware Availability: Feb-2023
Tested by: Dell Inc.  Software Availability: Nov-2022

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/cpu2017-1.1.8-aocc400-B1l/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aca6c64d
running on amd-sut Sat Jan 14 23:11:10 2023

SUT (System Under Test) info as seen by some common utilities.
For more information on this section, see
https://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /proc/cpuinfo
- model name: AMD EPYC 9354 32-Core Processor
- 1 "physical id"s (chips)
- 32 "processors"
- cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
  - cpu cores: 32
  - siblings: 32
  - physical 0: cores 0 1 2 3 16 17 18 19 32 33 34 35 48 49 50 51 64 65 66 67 80 81 82 83 96 97 98 99 112 113 114 115

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): 32
- On-line CPU(s) list: 0-31
- Vendor ID: AuthenticAMD
- Model name: AMD EPYC 9354 32-Core Processor
- CPU family: 25

(Continued on next page)
Dell Inc.

PowerEdge R6615 (AMD EPYC 9354 32-Core Processor)

SPECS\textsuperscript{c}\textsuperscript{u}p\textsuperscript{e}\textsuperscript{2017}_\textsuperscript{fp\_base} = 228

SPECS\textsuperscript{c}\textsuperscript{u}p\textsuperscript{e}\textsuperscript{2017}_\textsuperscript{fp\_peak} = Not Run

CPU\textsuperscript{2017} License: 6573
Test Sponsor: Dell Inc.
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Platform Notes (Continued)

Model: 17
Thread(s) per core: 1
Core(s) per socket: 32
Socket(s): 1
Stepping: 1
Frequency boost: enabled
CPU max MHz: 3800.0000
CPU min MHz: 400.0000
BogoMIPS: 6501.64

Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pgse mca cmov pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt preed1gb rdtsscp lm constant_tsc rep_good nopl nonstop_tsc cpuid extapic cr8_legacy abi sse4a misalignsse 3dnowprefetch osqw ibs skinit wdt tce topoext perfctr_core perfctr_nb bprex perfctr_llc mwaltx cpb cat_l3 cdp_l3 invpcid_single hw_pstate ssbd mba ibrs ibpb stibp vmmcall fsqbase bml1 avx2 smp bmi2 ems invpcid crq rdt_a_avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb avx512 cd sha na avx512bw avx512vl xsaveopt xsaves xgetbv1 xsaveav cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local avx512_bf16 clzero irperf xsaveeprtr rdpri uwbnoinvd amd_pipn cpc arat npt lbrv svmlock rip_nop save tscale vmcb_clean flushbyasid decodeassist pausefilter pfthreshold avic v_vmsave_vmload vgif v_spec_ctlx avx512ibi umip pku ospke avx512_vbmi2 gfnv vaes vpcmuldq avx512_vnni avx512_bitalg avx512_vpopcntdq la57 rdpid overflow_recov succor smca fsrn flush_lld

Virtualization: AMD-V

L1d cache: 1 MiB (32 instances)
L1i cache: 1 MiB (32 instances)
L2 cache: 32 MiB (32 instances)
L3 cache: 256 MiB (8 instances)

NUMA node(s): 8
NUMA node0 CPU(s): 0–3
NUMA node1 CPU(s): 16–19
NUMA node2 CPU(s): 8–11
NUMA node3 CPU(s): 24–27
NUMA node4 CPU(s): 12–15
NUMA node5 CPU(s): 28–31
NUMA node6 CPU(s): 4–7
NUMA node7 CPU(s): 20–23

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 prct1 and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and __user

(Continued on next page)
Dell Inc.

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SPECspeed®2017_fp_base = 228
SPECspeed®2017_fp_peak = Not Run

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Platform Notes (Continued)

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 1M 8 Data 1 64 1 64
L1i 32K 1M 8 Instruction 1 64 1 64
L2 1M 32M 8 Unified 2 2048 1 64
L3 32M 256M 16 Unified 3 32768 1 64

/proc/cpuinfo cache data
cache size : 1024 KB

From numactl --hardware
WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 8 nodes (0-7)
node 0 cpus: 0 1 2 3
node 0 size: 96312 MB
node 0 free: 95043 MB
node 1 cpus: 16 17 18 19
node 1 size: 96766 MB
node 1 free: 96124 MB
node 2 cpus: 8 9 10 11
node 2 size: 96766 MB
node 2 free: 93911 MB
node 3 cpus: 24 25 26 27
node 3 size: 96731 MB
node 3 free: 96406 MB
node 4 cpus: 12 13 14 15
node 4 size: 96766 MB
node 4 free: 96453 MB
node 5 cpus: 28 29 30 31
node 5 size: 96726 MB
node 5 free: 96387 MB
node 6 cpus: 4 5 6 7
node 6 size: 96766 MB
node 6 free: 96141 MB
node 7 cpus: 20 21 22 23
node 7 size: 96766 MB
node 7 free: 96501 MB
node distances:
node distances:
node 0 1 2 3 4 5 6 7
0: 10 11 11 11 11 11 11
1: 11 10 11 11 11 11 11

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SPEC CPU®2017 Floating Point Speed Result

Dell Inc.

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SPECspec®2017_fp_base = 228

SPECspec®2017_fp_peak = Not Run

CPU2017 License: 6573
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Platform Notes (Continued)

2:  11 11 10 11 11 11 11
3:  11 11 11 10 11 11 11
4:  11 11 11 11 11 11 11
5:  11 11 11 11 11 11 11
6:  11 11 11 11 11 11 10
7:  11 11 11 11 11 11 10

From /proc/meminfo
MemTotal:       792171868 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

/sbin/tuned-adm active
Current active profile: latency-performance
/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance
/usr/bin/lsb_release -d
Ubuntu 22.04.1 LTS

From /etc/*release* /etc/*version*
debian_version: bookworm/sid
os-release:
  PRETTY_NAME="Ubuntu 22.04.1 LTS"
  NAME="Ubuntu"
  VERSION_ID="22.04"
  VERSION="22.04.1 LTS (Jammy Jellyfish)"
  VERSION_CODENAME=jammy
  ID=ubuntu
  ID_LIKE=debian
  HOME_URL="https://www.ubuntu.com/"

uname -a:
  Linux amd-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

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit): Not affected
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Not affected
mmio_stale_data: Not affected
retbleed: Mitigation: Speculative Store Bypass disabled via prctl and
CVE-2018-3639 (Speculative Store Bypass):
Dell Inc.

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**SPECs**

SPECs**2017_fp_base = 228
SPECs**2017_fp_peak = Not Run

**Platform Notes (Continued)**

CVE-2017-5753 (Spectre variant 1): seccomp
Mitigation: usercopy/swapgs
barriers and __user pointer
sanitization

CVE-2017-5715 (Spectre variant 2):
Mitigation: Retpolines, IBPB:
conditional, IBRS_FW, STIBP:
disabled, RSB filling

CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Jan 14 22:00

SPEC is set to: /mnt/ramdisk/cpu2017-1.1.8-aocc400-B1b

Filesystem     Type   Size  Used Avail Use% Mounted on
tmpfs          tmpfs  125G  3.4G  122G   3% /mnt/ramdisk

From /sys/devices/virtual/dmi/id
Vendor:         Dell Inc.
Product:        PowerEdge R6615
Product Family: PowerEdge
Serial:         GLM4018

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:
12x 802C0000802C MTC40F2046S1RC48BA1 64 GB 2 rank 4800

BIOS:
BIOS Vendor:     Dell Inc.
BIOS Version:    1.1.0
BIOS Date:       11/25/2022
BIOS Revision:   1.1

(End of data from sysinfo program)

**Compiler Version Notes**

==============================================================================
C               | 619.libm_s(base) 638.imagick_s(base) 644.nab_s(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

(Continued on next page)
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**Compiler Version Notes (Continued)**

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**C++, C, Fortran** | **607.cactuBSSN_s(base)**

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**Fortran** | **603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)**

---

**Fortran, C** | **621.wrf_s(base) 627.cam4_s(base) 628.pop2_s(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

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

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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

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 -03 -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 -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 -03 -march=znver4
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -Mrecursive
-funroll-loops -mllvm -lsr-in-nested-loop

(Continued on next page)
## Dell Inc.

### PowerEdge R6615 (AMD EPYC 9354 32-Core Processor)

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<th>SPECspeed 2017 fp base</th>
<th>228</th>
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<tr>
<td>SPECspeed 2017 fp peak</td>
<td>Not Run</td>
</tr>
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**CPU2017 License:** 6573

**Test Sponsor:** Dell Inc.

**Test Date:** Jan-2023

**Tested by:** Dell Inc.

**Hardware Availability:** Feb-2023

**Software Availability:** Nov-2022

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### Base Optimization Flags (Continued)

For Fortran benchmarks:

```bash
-mllvm -reduce-array-computations=3 -zopt -fopenmp=libomp -lomp -lflang
-lamdlibm -lamdalloc -lflang
```

For benchmarks using both Fortran and C:

```bash
-m64 -Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-m64 -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -03 -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 -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -fopenmp=libomp -lomp -lamdlibm -lamdalloc
-lflang
```

For benchmarks using Fortran, C, and C++:

```bash
-m64 -Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-m64 -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -03 -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

For C benchmarks:

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

For Fortran benchmarks:

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

For benchmarks using both Fortran and C:

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

For benchmarks using Fortran, C, and C++:

```bash
-Wno-return-type -Wno-unused-command-line-argument
```
## Dell Inc. PowerEdge R6615 (AMD EPYC 9354 32-Core Processor)

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


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

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

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