## SPEC CPU®2017 Floating Point Rate Result

**Dell Inc.**

PowerEdge R7615 (AMD EPYC 9174F 16-Core Processor)  

### SPECrate®2017_fp_base = 297

**SPECrate®2017_fp_peak = Not Run**

<table>
<thead>
<tr>
<th>Copies</th>
<th>503.bwaves_r</th>
<th>32</th>
<th>340</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>507.cactuBSSN_r</td>
<td>32</td>
<td>159</td>
</tr>
<tr>
<td></td>
<td>508.namd_r</td>
<td>32</td>
<td>309</td>
</tr>
<tr>
<td></td>
<td>510.parest_r</td>
<td>32</td>
<td>234</td>
</tr>
<tr>
<td></td>
<td>511.povray_r</td>
<td>32</td>
<td>222</td>
</tr>
<tr>
<td></td>
<td>519.ibm_r</td>
<td>32</td>
<td>241</td>
</tr>
<tr>
<td></td>
<td>521.wrf_r</td>
<td>32</td>
<td>234</td>
</tr>
<tr>
<td></td>
<td>526.blender_r</td>
<td>32</td>
<td>229</td>
</tr>
<tr>
<td></td>
<td>527.cam4_r</td>
<td>32</td>
<td>233</td>
</tr>
<tr>
<td></td>
<td>538.imagick_r</td>
<td>32</td>
<td>347</td>
</tr>
<tr>
<td></td>
<td>544.nab_r</td>
<td>32</td>
<td>240</td>
</tr>
<tr>
<td></td>
<td>549.fotonik3d_r</td>
<td>32</td>
<td>184</td>
</tr>
<tr>
<td></td>
<td>554.roms_r</td>
<td>32</td>
<td>795</td>
</tr>
</tbody>
</table>

**Hardware**

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>AMD EPYC 9174F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz:</td>
<td>4400</td>
</tr>
<tr>
<td>Nominal:</td>
<td>4100</td>
</tr>
<tr>
<td>Enabled:</td>
<td>16 cores, 1 chip, 2 threads/core</td>
</tr>
<tr>
<td>Orderable:</td>
<td>1 chip</td>
</tr>
<tr>
<td>Cache L1:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>L2:</td>
<td>1 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>256 MB I+D on chip per chip, 32 MB shared / 2 cores</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>768 GB (12 x 64 GB 2Rx4 PC5-4800B-R)</td>
</tr>
<tr>
<td>Storage:</td>
<td>125 GB on tmpfs</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>

**Software**

<table>
<thead>
<tr>
<th>OS:</th>
<th>Ubuntu 22.04.1 LTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++/Fortran: Version 4.0.0 of AOCC</td>
</tr>
<tr>
<td>Parallel:</td>
<td>No</td>
</tr>
<tr>
<td>Firmware:</td>
<td>Version 0.5.3 released Nov-2022</td>
</tr>
<tr>
<td>File System:</td>
<td>tmpfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Power Management:</td>
<td>BIOS and OS set to prefer performance at the cost of additional power usage.</td>
</tr>
</tbody>
</table>

---

Test Date: Nov-2022  
Hardware Availability: Feb-2023  
Software Availability: Nov-2022
Dell Inc. 

PowerEdge R7615 (AMD EPYC 9174F 16-Core Processor)

CPU2017 License: 6573 
Test Sponsor: Dell Inc. 
Tested by: Dell Inc.

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
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<tbody>
<tr>
<td>503.bwaves_r</td>
<td>32</td>
<td>403</td>
<td>795</td>
<td>401</td>
<td>800</td>
</tr>
<tr>
<td>507.cactusBSSN_r</td>
<td>32</td>
<td>119</td>
<td>340</td>
<td>115</td>
<td>353</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>32</td>
<td>191</td>
<td>159</td>
<td>190</td>
<td>160</td>
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<td>32</td>
<td>271</td>
<td>309</td>
<td>271</td>
<td>309</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>32</td>
<td>319</td>
<td>234</td>
<td>319</td>
<td>234</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>32</td>
<td>151</td>
<td>223</td>
<td>152</td>
<td>222</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>32</td>
<td>255</td>
<td>281</td>
<td>249</td>
<td>288</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>32</td>
<td>213</td>
<td>229</td>
<td>211</td>
<td>231</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>32</td>
<td>240</td>
<td>233</td>
<td>235</td>
<td>238</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>32</td>
<td>92.0</td>
<td>865</td>
<td>92.0</td>
<td>865</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>32</td>
<td>155</td>
<td>347</td>
<td>155</td>
<td>347</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>32</td>
<td>516</td>
<td>242</td>
<td>520</td>
<td>240</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>32</td>
<td>276</td>
<td>184</td>
<td>276</td>
<td>185</td>
</tr>
</tbody>
</table>

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,
Dell Inc. PowerEdge R7615 (AMD EPYC 9174F 16-Core Processor)

**Operating System Notes (Continued)**

'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/defrag' run as root.

**Environment Variables Notes**

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
"/mnt/ramdisk/cpu2017-1.1.8-aocc400-B1b/amd_rate_aocc400_genoa_B_lib/lib
:/mnt/ramdisk/cpu2017-1.1.8-aocc400-B1b/amd_rate_aocc400_genoa_B_lib/lib
32:" 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 125 GB ramdisk created with the cmd: "mount -t tmpfs -o size=125G tmpfs /mnt/ramdisk"

**Platform Notes**

BIOS settings:

<table>
<thead>
<tr>
<th>Setting</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAM Refresh Delay</td>
<td>Performance</td>
</tr>
<tr>
<td>DIMM Self Healing</td>
<td>on</td>
</tr>
<tr>
<td>Uncorrectable Memory Error</td>
<td>Disabled</td>
</tr>
<tr>
<td>Virtualization Technology</td>
<td>Disabled</td>
</tr>
<tr>
<td>L1 Stride Prefetcher</td>
<td>Disabled</td>
</tr>
<tr>
<td>NUMA Nodes per Socket</td>
<td>4</td>
</tr>
<tr>
<td>L3 Cache as NUMA Domain</td>
<td>Enabled</td>
</tr>
</tbody>
</table>

(Continued on next page)
Dell Inc.

PowerEdge R7615 (AMD EPYC 9174F 16-Core Processor)

SPECrate®2017_fp_base = 297
SPECrate®2017_fp_peak = Not Run

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Nov-2022
Hardware Availability: Feb-2023
Software Availability: Nov-2022

Platform Notes (Continued)

System Profile : Custom
Memory Patrol Scrub : Disabled
PCI ASPM L1 Link
Power Management : Disabled
Determinism Slider : Power Determinism

Sysinfo program /mnt/ramdisk/cpu2017-1.1.8-aocc400-B1b/bin/sysinfo
Rev: r6622 of 2021-04-07 9b2a61ec0915b55891ef0e16acafc64d
running on amd-sut Sat Nov 12 20:59:20 2022

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

---
# System Profile

model name : AMD EPYC 9174F 16-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 : 16
siblings : 32
physical 0: cores 0 1 8 9 16 17 24 25 32 33 40 41 48 49 56 57
---

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 9174F 16-Core Processor
CPU family: 25
Model: 17
Thread(s) per core: 2
Core(s) per socket: 16
Socket(s): 1
Stepping: 1
Frequency boost: enabled
CPU max MHz: 4409.0000
CPU min MHz: 400.0000
BogoMIPS: 8201.43
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 nopl nonstop_tsc cpuid extd_apicid

(Continued on next page)
**Platform Notes (Continued)**

aperfmpref rapl pni pclmulqdq monitor ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe pocnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extatic 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 fsqsbcase bmi1 avx2 smp bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adv smap avx512ifma clflushopt clwb avx512cd sha ni avx512bw avx512vl xsaveopt xsave xsave xsave cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local avx512_bf16 clzero irperf xsave rpr rdrpr wbnoind vmd amd pinn ccpp arat npt lbrv svm_lock nrip_save tsc_scale vmb_clean flushbyasid decodeassists pausefilter pthreshold avic v_vmsave_vmload vgfi v_spec_ctrl avx512vbmi umip pku ospke avx512_vmbi gfn vaes vpcmulqdq avx512_vnni avx512_bitalg avx512_vpopcntdq la57 rdpid overflow_reco succor smca fsm flush_l1d

**Virtualization:**

AMD-V

**L1d cache:**

12 KiB (16 instances)

**L1i cache:**

12 KiB (16 instances)

**L2 cache:**

16 MiB (16 instances)

**L3 cache:**

256 MiB (8 instances)

**NUMA node(s):**

8

**NUMA node0 CPU(s):**

0,1,16,17

**NUMA node1 CPU(s):**

8,9,24,25

**NUMA node2 CPU(s):**

4,5,20,21

**NUMA node3 CPU(s):**

12,13,28,29

**NUMA node4 CPU(s):**

6,7,22,23

**NUMA node5 CPU(s):**

14,15,30,31

**NUMA node6 CPU(s):**

2,3,18,19

**NUMA node7 CPU(s):**

10,11,26,27

**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; userscopy/swapgs barriers and __user pointer sanitization

**Vulnerability Spectre v2:**

Mitigation; Retpolines, IBFB conditional, IBRS_FW, STIBP always-on, RSB filling

**Vulnerability Srbd:**

Not affected

**Vulnerability Tsz async abort:**

Not affected

From lscpu --cache:

<table>
<thead>
<tr>
<th>NAME</th>
<th>ONE-SIZE</th>
<th>ALL-SIZE</th>
<th>WAYS</th>
<th>TYPE</th>
<th>LEVEL</th>
<th>SETS</th>
<th>PHY-LINE</th>
<th>COHERENCY-SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1d</td>
<td>32K</td>
<td>512K</td>
<td>8</td>
<td>Data</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L1i</td>
<td>32K</td>
<td>512K</td>
<td>8</td>
<td>Instruction</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L2</td>
<td>1M</td>
<td>16M</td>
<td>8</td>
<td>Unified</td>
<td>2</td>
<td>2048</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L3</td>
<td>32M</td>
<td>256M</td>
<td>16</td>
<td>Unified</td>
<td>3</td>
<td>32768</td>
<td>1</td>
<td>64</td>
</tr>
</tbody>
</table>

(Continued on next page)
SPEC CPU®2017 Floating Point Rate Result

Dell Inc.
PowerEdge R7615 (AMD EPYC 9174F 16-Core Processor)

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

SPECrater®2017_fp_base = 297
SPECrater®2017_fp_peak = Not Run

Test Date: Nov-2022
Hardware Availability: Feb-2023
Software Availability: Nov-2022

Platform Notes (Continued)

/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 16 17
  node 0 size: 96313 MB
  node 0 free: 95973 MB
  node 1 cpus: 8 9 24 25
  node 1 size: 96765 MB
  node 1 free: 96390 MB
  node 2 cpus: 4 5 20 21
  node 2 size: 96766 MB
  node 2 free: 95391 MB
  node 3 cpus: 12 13 28 29
  node 3 size: 96765 MB
  node 3 free: 93906 MB
  node 4 cpus: 6 7 22 23
  node 4 size: 96731 MB
  node 4 free: 96413 MB
  node 5 cpus: 14 15 30 31
  node 5 size: 96765 MB
  node 5 free: 96418 MB
  node 6 cpus: 2 3 18 19
  node 6 size: 96766 MB
  node 6 free: 96418 MB
  node 7 cpus: 10 11 26 27
  node 7 size: 96729 MB
  node 7 free: 96344 MB

node distances:
  node 0 1 2 3 4 5 6 7
  0:  10  11  12  12 12 12 12 12
  1:  11  10  12  12 12 12 12 12
  2:  12  12  10 11 12 12 12 12
  3:  12  12  11 10 12 12 12 12
  4:  12  12  12 12 10 11 12 12
  5:  12  12  12 12 11 10 12 12
  6:  12  12  12 12 12 12 10 11
  7:  12  12  12 12 12 12 11 10

From /proc/meminfo
  MemTotal: 792172168 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

(Continued on next page)
Dell Inc.

PowerEdge R7615 (AMD EPYC 9174F 16-Core Processor)

<table>
<thead>
<tr>
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Platform Notes (Continued)

/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: Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Retpolines, IBPB: conditional, IBRS_FW, STIBP: always-on, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Nov 12 19:37

(Continued on next page)
**SPEC CPU®2017 Floating Point Rate Result**

**Dell Inc.**

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<tr>
<th>SPECrate®2017_fp_base =</th>
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**CPU2017 License:** 6573  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** Nov-2022  
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**Software Availability:** Nov-2022

### Platform Notes (Continued)

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 R7615  
Product Family: PowerEdge

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: 0.5.3  
BIOS Date: 11/10/2022  
BIOS Revision: 0.5

(End of data from sysinfo program)

### Compiler Version Notes

```
<table>
<thead>
<tr>
<th>Compiler</th>
<th>Version</th>
<th>Target</th>
<th>Thread model</th>
<th>InstalledDir</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td>/opt/AMD/aocc/aoacc-compiler-rel-4.0-3206-389/bin</td>
</tr>
<tr>
<td>C++</td>
<td></td>
<td></td>
<td></td>
<td>/opt/AMD/aocc/aoacc-compiler-rel-4.0-3206-389/bin</td>
</tr>
</tbody>
</table>
```

(Continued on next page)
Dell Inc.

PowerEdge R7615 (AMD EPYC 9174F 16-Core Processor)

SPECrates

---

SPECrates®2017_fp_base = 297
SPECrates®2017_fp_peak = Not Run

---

Compiler Version Notes (Continued)

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

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)
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)

(Continued on next page)
Dell Inc.  
PowerEdge R7615 (AMD EPYC 9174F 16-Core Processor)

**SPECrater®2017_fp_base = 297**

**SPECrater®2017_fp_peak = Not Run**

<table>
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<th>CPU2017 License: 6573</th>
<th>Test Date: Nov-2022</th>
</tr>
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<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>
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**Compiler Version Notes (Continued)**

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

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.lbmn_r: -DSPEC_LP64
- 521.wrf_r: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
- 526.blender_r: -funsigned-char -DSPEC_LP64

(Continued on next page)
SPEC CPU®2017 Floating Point Rate Result

Dell Inc.
PowerEdge R7615 (AMD EPYC 9174F 16-Core Processor)

SPECrate®2017_fp_base = 297
SPECrate®2017_fp_peak = Not Run

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Nov-2022
Hardware Availability: Feb-2023
Software Availability: Nov-2022

Base Portability Flags (Continued)

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,-mllv -Wl,-reduce-array-computations=6
- Wl,-mllv -Wl,-ldist-scalar-expand -fenable-aggressive-gather -O3
- march=znver4 -fveclib=AMDLIBM -ffast-math -fstruct-layout=7
- mlvm -unroll-threshold=50 -mllv -inline-threshold=1000
- fremap-arrays -fstrip-mining -mllv -reduce-array-computations=3
- zopt -lamdlibm -lmdalloca -lflang

C++ benchmarks:
- m64 -flto -Wl,-mllv -Wl,-reduce-array-computations=6
- Wl,-mllv -Wl,-ldist-scalar-expand -fenable-aggressive-gather -O3
- fveclib=AMDLIBM -ffast-math -mllv -unroll-threshold=100
- finline-aggressive -mllv -loop-unswitch-threshold=200000
- mlvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloca -lflang

Fortran benchmarks:
- m64 -flto -Wl,-mllv -Wl,-reduce-array-computations=6
- Wl,-mllv -Wl,-enable-X86-prefetching -O3 -march=znver4
- fveclib=AMDLIBM -ffast-math -kieee -Mrecursive -funroll-loops
- mlvm -lsl-in-nested-loop -mllv -reduce-array-computations=3
- fepilog-vectorization-of-inductions -zopt -lamdlibm -lamdalloca -lflang

Benchmarks using both Fortran and C:
- m64 -flto -Wl,-mllv -Wl,-reduce-array-computations=6
- Wl,-mllv -Wl,-enable-X86-prefetching -O3 -march=znver4
- fveclib=AMDLIBM -ffast-math -fstruct-layout=7
- mlvm -unroll-threshold=50 -mllv -inline-threshold=1000
- fremap-arrays -fstrip-mining -mllv -reduce-array-computations=3
- zopt -kieee -Mrecursive -funroll-loops -mllv -lsl-in-nested-loop
- fepilog-vectorization-of-inductions -lamdlibm -lamdalloca -lflang

(Continued on next page)
Dell Inc.

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Base Optimization Flags (Continued)

Benchmarks using both C and C++:
- -m64 -flto -W1, -mllvm -W1, -align-all-nofallthru-blocks=6
- -W1, -mllvm -W1, -reduce-array-computations=3
- -W1, -mllvm -W1, -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-unschedule-threshold=200000 -lamdlibm -lamdalloc -lflang

Benchmarks using Fortran, C, and C++:
- -m64 -flto -W1, -mllvm -W1, -align-all-nofallthru-blocks=6
- -W1, -mllvm -W1, -reduce-array-computations=3
- -W1, -mllvm -W1, -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-unschedule-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

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
Dell Inc.

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The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/aocc400-flags.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-v1.0.xml

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

Tested with SPEC CPU®2017 v1.1.8 on 2022-11-12 15:59:19-0500.
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