Dell Inc. PowerEdge R6615 (AMD EPYC 9174F 16-Core Processor) SPECsved®2017_fp_base = 167 SPECsved®2017_fp_peak = Not Run

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

Test Date: Dec-2022
Hardware Availability: Dec-2022
Software Availability: Nov-2022

Threads

<table>
<thead>
<tr>
<th>SPECsved®2017_fp_base (167)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

| 163.bwaves_s | 16 | 225 |
| 607.cactuBSSN_s | 16 | 225 |
| 619.lbm_s | 16 | 89.3 |
| 621.wrf_s | 16 | 151 |
| 627.cam4_s | 16 | 83.0 |
| 628.pop2_s | 16 | 95.0 |
| 638.imagick_s | 16 | 139 |
| 644.nab_s | 16 | 223 |
| 649.fotonik3d_s | 16 | 134 |
| 654.roms_s | 16 | 219 |

Hardware

CPU Name: AMD EPYC 9174F
Max MHz: 4400
Enabled: 16 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 / 2 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
Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.
PowerEdge R6615 (AMD EPYC 9174F 16-Core Processor)

SPECspeed®2017_fp_base = 167
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>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>16</td>
<td>77.8</td>
<td>758</td>
<td>77.9</td>
<td>758</td>
<td></td>
<td></td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>16</td>
<td>74.1</td>
<td>225</td>
<td>72.6</td>
<td>230</td>
<td></td>
<td></td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>16</td>
<td>58.6</td>
<td>89.3</td>
<td>58.5</td>
<td>89.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>16</td>
<td>87.1</td>
<td>152</td>
<td>87.4</td>
<td>151</td>
<td></td>
<td></td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>16</td>
<td>107</td>
<td>83.0</td>
<td>106</td>
<td>83.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>16</td>
<td>125</td>
<td>95.1</td>
<td>125</td>
<td>95.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>16</td>
<td>104</td>
<td>139</td>
<td>104</td>
<td>139</td>
<td></td>
<td></td>
</tr>
<tr>
<td>644.nab_s</td>
<td>16</td>
<td>78.2</td>
<td>224</td>
<td>78.2</td>
<td>223</td>
<td></td>
<td></td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>16</td>
<td>67.8</td>
<td>134</td>
<td>67.7</td>
<td>135</td>
<td></td>
<td></td>
</tr>
<tr>
<td>654.roms_s</td>
<td>16</td>
<td>71.7</td>
<td>220</td>
<td>71.9</td>
<td>219</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)
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 = "0-15"
LD_LIBRARY_PATH =
"/mnt/ramdisk/cpu2017-1.1.8-aocc400-B1b/amd_speed_aocc400_genoa_B_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 = "16"

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 9174F 16-Core Processor)  

SPECspeed®2017_fp_base = 167  
SPECspeed®2017_fp_peak = Not Run

**CPU2017 License:** 6573  
**Test Date:** Dec-2022  
**Test Sponsor:** Dell Inc.  
**Hardware Availability:** Dec-2022  
**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-B1b/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on amd-sut Wed Dec 7 11:49:02 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
- model name: AMD EPYC 9174F 16-Core Processor
- 1 "physical id"s (chips)
- 16 "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: 16
  - physical 0: cores 0 1 16 17 32 33 48 49 64 65 80 81 96 97 112 113

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): 16
- On-line CPU(s) list: 0-15
- Vendor ID: AuthenticAMD
- Model name: AMD EPYC 9174F 16-Core Processor
- CPU family: 25
- Model: 17

(Continued on next page)
Dell Inc.

PowerEdge R6615 (AMD EPYC 9174F 16-Core Processor)

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

SPECSpeed®2017_fp_base = 167
SPECSpeed®2017_fp_peak = Not Run

Platform Notes (Continued)

Thread(s) per core: 1
Core(s) per socket: 16
Socket(s): 1
Stepping: 1
Frequency boost: enabled
CPU max MHz: 4409.0000
CPU min MHz: 400.0000
BogoMIPS: 8202.43

Platforms:

- 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
- aperfmperf rpl 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 3nowprefetch osvw ibrk wdt tsc topoext perfctr_core perfctr_nb
- bpcext perfctr_l1d mwaitx cbp cat_l3 cdp_l3 invpcid_single hw_pstate ssbd mba ibrs
- lmb mibp stibp vmcall fsgsbase bmul avx2 smep bmi2 erms invpcid cqm rdt_a avx512f
- avx512dq rdseed adx smap avx512ifma clflushopt clwb avx512cd sha ni avx512bw
- avx512vl xsaveopt xsaves cqm llc cqm_occup llc cqm_mbb_total
cqm_mbb_local avx512_bf16 clzr perf xsaveopt rdrandr wbnoinv vmlinux pcmp arat
- lbrv svm_lock nip_save tsc-scale vmbc_clean flushbyasid decodeassists
- pausefilter pfthreshold avic v_vmsemv_load vgif v_spec_ctrl avx512vbm umip pku
- ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg avx512_vpopcntdq
- la57 rdpid overflow_recover succor smca fsrm flush_lld

Virtualization: AMD-V
L1d cache: 512 K1B (16 instances)
L1i cache: 512 K1B (16 instances)
L2 cache: 16 M1B (16 instances)
L3 cache: 256 M1B (8 instances)
NUMA node(s): 8
NUMA node0 CPU(s): 0,1
NUMA node1 CPU(s): 8,9
NUMA node2 CPU(s): 4,5
NUMA node3 CPU(s): 12,13
NUMA node4 CPU(s): 6,7
NUMA node5 CPU(s): 14,15
NUMA node6 CPU(s): 2,3
NUMA node7 CPU(s): 10,11

Vulnerability L1lb 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/swapgs barriers and __user
pointer sanitization

(Continued on next page)
Dell Inc.

PowerEdge R6615 (AMD EPYC 9174F 16-Core Processor)

SPECspeed®2017_fp_base = 167
SPECspeed®2017_fp_peak = Not Run

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

Test Date: Dec-2022
Hardware Availability: Dec-2022
Software Availability: Nov-2022

Platform Notes (Continued)

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:

<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 Data</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 Instruction</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>L2</td>
<td>1M</td>
<td>16M</td>
<td>8 Unified</td>
<td>2</td>
<td>2048</td>
<td>1</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>L3</td>
<td>32M</td>
<td>256M</td>
<td>16 Unified</td>
<td>3</td>
<td>32768</td>
<td>1</td>
<td>64</td>
<td></td>
</tr>
</tbody>
</table>

From /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
node 0 size: 96313 MB
node 0 free: 96127 MB
node 1 cpus: 8 9
node 1 size: 96767 MB
node 1 free: 96568 MB
node 2 cpus: 4 5
node 2 size: 96731 MB
node 2 free: 96568 MB
node 3 cpus: 12 13
node 3 size: 96767 MB
node 3 free: 94983 MB
node 4 cpus: 6 7
node 4 size: 96767 MB
node 4 free: 96437 MB
node 5 cpus: 14 15
node 5 size: 96277 MB
node 5 free: 96434 MB
node 6 cpus: 2 3
node 6 size: 96767 MB
node 6 free: 95482 MB
node 7 cpus: 10 11
node 7 size: 96767 MB
node 7 free: 96492 MB
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
2: 11 11 10 11 11 11 11

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

PowerEdge R6615 (AMD EPYC 9174F 16-Core Processor)

Dell Inc.

SPECSpeed®2017_fp_base = 167

SPECSpeed®2017_fp_peak = Not Run

CPU2017 License: 6573
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Software Availability: Nov-2022

Platform Notes (Continued)

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

From /proc/meminfo
MemTotal: 792175712 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: Not affected
- CVE-2018-3639 (Speculative Store Bypass):
  - Mitigation: Speculative Store Bypass disabled via prctl and seccomp

(Continued on next page)
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Test Date: Dec-2022
Hardware Availability: Dec-2022
Software Availability: Nov-2022

Platform Notes (Continued)

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: disabled, RSB filling

CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected

CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Nov 27 05:46

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: GLM4030

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 80AD000080AD HMCG94MEBRA109N 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               | 619.1bm_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
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

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

---

### C++, C, Fortran | 607.cactuBSSN_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
---

### Fortran | 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_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
---

### 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
SPEC CPU®2017 Floating Point Speed Result

Dell Inc.

PowerEdge R6615 (AMD EPYC 9174F 16-Core Processor)

SPECspeed®2017_fp_base = 167

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 6573
Test Sponsor: Dell Inc.
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Test Date: Dec-2022
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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 -Dbyteswapio -DSPEC_LP64
627.cam4_s: -DSPEC_CASE_FLAG -DSPEC_LP64
628.pop2_s: -DSPEC_CASE_FLAG -Dbyteswapio -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
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-DSPEC_OPENMP -zopt -fopenmp=libomp -lomp -lamdlibm -lamdaloc
-llflang

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 -lslr-in-nested-loop

(Continued on next page)
**Dell Inc.**

PowerEdge R6615 (AMD EPYC 9174F 16-Core Processor)  

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base =</th>
<th>167</th>
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<tr>
<td>SPECspeed®2017_fp_peak = Not Run</td>
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**CPU2017 License:** 6573  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** Dec-2022  
**Hardware Availability:** Dec-2022  
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### Base Optimization Flags (Continued)

Fortran benchmarks (continued):
- `--mllvm -reduce-array-computations=3`  
- `--zopt --fopenmp=libomp -lomp`  
- `--landlibm --lамдалоc --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`  
- `--mlllvm -unroll-threshold=50 -mllvm -inline-threshold=1000`  
- `--fremap-arrays -fstrip-mining -mlllvm -reduce-array-computations=3`  
- `--DSPEC_OPENMP -zopt -Mrecursive -funroll-loops`  
- `--mlllvm -lsr-in-nested-loop -fopenmp=libomp -lomp -lамдалоc --lflang`

Benchmarks using Fortran, C, and C++:
- `--m64 -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 -fopenmp -flto -fstruct-layout=7`  
- `--mlllvm -unroll-threshold=50 -mllvm -inline-threshold=1000`  
- `--fremap-arrays -fstrip-mining -mlllvm -reduce-array-computations=3`  
- `--DSPEC_OPENMP -zopt -mlllvm -unroll-threshold=100 -finline-aggressive`  
- `--mlllvm -loop-unswitch-threshold=200000 -Mrecursive -funroll-loops`  
- `--mlllvm -lsr-in-nested-loop -fopenmp=libomp -lomp -lамдалоc --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`
**SPEC CPU®2017 Floating Point Speed Result**

Dell Inc.

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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:


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

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