Dell Inc.

PowerEdge C6525 (AMD EPYC 7343 16-Core Processor)

SPECspeed®2017_fp_base = 178
SPECspeed®2017_fp_peak = 182

CPU2017 License: 55
Test Sponsor: Dell Inc.
Test Date: Mar-2021
Hardware Availability: Mar-2021
Tested by: Dell Inc.
Software Availability: Mar-2021

---

### Hardware

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<tr>
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<th>SPECspeed®2017_fp_peak (182)</th>
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<tr>
<td>603.bwaves_s</td>
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<td>607.cactuBSSN_s</td>
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<td>619.lbm_s</td>
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<td>621.wrf_s</td>
<td>32</td>
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<td>627.cam4_s</td>
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<td>628.pop2_s</td>
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<td>644.nab_s</td>
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<tr>
<td>649.fotonik3d_s</td>
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</tr>
<tr>
<td>654.roms_s</td>
<td>32</td>
<td>219</td>
</tr>
</tbody>
</table>

### Software

| OS: Red Hat Enterprise Linux 8.3 (Ootpa) |
| Compiler: C/C++/Fortran: Version 3.0.0 of AOCC |
| Parallel: Yes |
| Firmware: Version 2.2.2 released Mar-2021 |
| File System: tmpfs |
| System State: Run level 3 (multi-user) |
| Base Pointers: 64-bit |
| Peak Pointers: 64-bit |
| Other: jemalloc: jemalloc memory allocator library v5.1.0 |
| Power Management: BIOS and OS set to prefer performance at the cost of additional power usage. |

---

CPU Name: AMD EPYC 7343
Max MHz: 3900
Nominal: 3200
Enabled: 32 cores, 2 chips
Orderable: 1.2 chips
Cache L1: 32 KB I + 32 KB D on chip per core
L2: 512 KB I+D on chip per core
L3: 128 MB I+D on chip per chip, 32 MB shared / 4 cores
Other: None
Memory: 2 TB (16 x 128 GB 4Rx4 PC4-3200AA-L)
Storage: 1002 GB on tmpfs
Other: None
SPECCPU®2017 Floating Point Speed Result

Dell Inc. PowerEdge C6525 (AMD EPYC 7343 16-Core Processor)

SPECspeed®2017_fp_base = 178
 SPECspeed®2017_fp_peak = 182

Results Table

<table>
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<tr>
<th>Benchmark</th>
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SPECCPU®2017_fp_base = 178
 SPECspeed®2017_fp_peak = 182

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>

'echo 8 > /proc/sys/vm/dirty_ratio' run as root to limit dirty cache to 8% of memory.
'echo 1 > /proc/sys/vm/swappiness' run as root to limit swap usage to minimum necessary.
'echo 1 > /proc/sys/vm/zone_reclaim_mode' run as root to free node-local memory and avoid remote memory usage.
'sync; echo 3 > /proc/sys/vm/drop_caches' run as root to reset filesystem caches.
'sysctl -w kernel.randomize_va_space=0' run as root to disable address space layout randomization (ASLR) to reduce run-to-run variability.

(Continued on next page)
# Dell Inc.

**PowerEdge C6525 (AMD EPYC 7343 16-Core Processor)**

| SPECspeed®2017_fp_base | 178 |
| SPECspeed®2017_fp_peak | 182 |

| CPU2017 License: | 55 |
| Test Sponsor: | Dell Inc. |
| Tested by: | Dell Inc. |

### Operating System Notes (Continued)

To enable Transparent Hugepages (THP) for all allocations,
'echo always > /sys/kernel/mm/transparent_hugepage/failed' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.

To enable THP only on request for peak runs of 628.pop2_s, and 638.imagick_s,
'echo madvise > /sys/kernel/mm/transparent_hugepage/failed' run as root.

To disable THP for peak runs of 627.cam4_s, 644.nab_s, 649.fotonik3d_s, and 654.roms_s,
'echo never > /sys/kernel/mm/transparent_hugepage/failed' 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**: 
  
  "/dev/shm/cpu2017-1.1.5/amd_speed_aocc300_milan_B_lib/64;/dev/shm/cpu2017-1.1.5/amd_speed_aocc300_milan_B_lib/32;"
- **MALLOC_CONF**: "retain:true"
- **OMP_DYNAMIC**: "false"
- **OMP_SCHEDULE**: "static"
- **OMP_STACKSIZE**: "128M"
- **OMP_THREAD_LIMIT**: "32"

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

- **GOMP_CPU_AFFINITY**: 
  "0 16 1 17 2 18 3 19 4 20 5 21 6 22 7 23 8 24 9 25 10 26 11 27 12 28 13 29 14 30 15 31"

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

- **GOMP_CPU_AFFINITY**: "0-31"

Environment variables set by runcpu during the 654.roms_s peak run:

- **GOMP_CPU_AFFINITY**: "0-31"

### General Notes

Binaries were compiled on a system with 2x AMD EPYC 7742 CPU + 1TiB Memory using openSUSE 15.2

jemalloc: configured and built with GCC v4.8.2 in RHEL 7.4 (No options specified)
jemalloc 5.1.0 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.1.0/jemalloc-5.1.0.tar.bz2

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)

(Continued on next page)
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 1002 GB ramdisk created with the cmd: "mount -t tmpfs -o size=1002G tmpfs /mnt/ramdisk"

Platform Notes

BIOS settings:
- Logical processor: Disabled
- L3 Cache as NUMA Domain: Enabled
- Virtualization Technology: Disabled
- DRAM Refresh Delay: Performance
- System Profile: Custom
- CPU Power Management: Maximum Performance
- Memory Patrol Scrub: Disabled
- PCI ASPM L1 Link: Disabled
- Power Management: Disabled

Sysinfo program /dev/shm/cpu2017-1.1.5/bin/sysinfo
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c running on rhel-8-3-amd Thu Mar 18 15:25:30 2021

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 7343 16-Core Processor
- 2 "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: 16
  - physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
  - physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lscpu:
- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit
- Byte Order: Little Endian
- CPU(s): 32
- On-line CPU(s) list: 0-31

(Continued on next page)
Dell Inc.

PowerEdge C6525 (AMD EPYC 7343 16-Core Processor)

**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** Mar-2021  
**Hardware Availability:** Mar-2021  
**Software Availability:** Mar-2021

**SPEC**

**SPECspeed®2017_fp_base = 178**

**SPECspeed®2017_fp_peak = 182**

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**Platform Notes (Continued)**

Thread(s) per core: 1  
Core(s) per socket: 16  
Socket(s): 2  
NUMA node(s): 8  
Vendor ID: AuthenticAMD  
CPU family: 25  
Model: 1  
Model name: AMD EPYC 7343 16-Core Processor  
Stepping: 1  
CPU MHz: 2013.903  
BogoMIPS: 6388.21  
Virtualization: AMD-V  
L1d cache: 32K  
L1i cache: 32K  
L2 cache: 512K  
L3 cache: 32768K  
NUMA node0 CPU(s): 0-3  
NUMA node1 CPU(s): 4-7  
NUMA node2 CPU(s): 8-11  
NUMA node3 CPU(s): 12-15  
NUMA node4 CPU(s): 16-19  
NUMA node5 CPU(s): 20-23  
NUMA node6 CPU(s): 24-27  
NUMA node7 CPU(s): 28-31  
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 rdtsscp lm constant_tsc rep_good nopl nonstop_tsc cpuid aperfmperf pni pclmulqdq monitor ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx f16c rdrcr lahf_lm cmp_legacy svm extapic cr8_legacy abm ssrownss 3dnowprefetch osfw ibrisk wdt tce topexc perfctr_core perfctr_nb mwitx cpb cat_l3 cdpl_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2 invpcid cqm rdt_a rdseed adx smap clflushopt clwb sha_ni xsaveopt xsaves xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local clzero irperf xsaveerptr wbnoinvd amd_ppin arat nppt lbv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter pfthreshold v_vmsave_vmload vgif umip pku ospke vaes vpclmulqdq rdpid overflow_recov succor smca

/proc/cpuinfo cache data  
cache size: 512 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: 257595 MB  
node 0 free: 257489 MB  
node 1 cpus: 4 5 6 7

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

**Dell Inc.**

PowerEdge C6525 (AMD EPYC 7343 16-Core Processor)  

SPECspeed®2017_fp_base = 178  
SPECspeed®2017_fp_peak = 182

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</tbody>
</table>

**Platform Notes (Continued)**

```plaintext
node 1 size: 258016 MB
node 1 free: 257785 MB
node 2 cpus: 8 9 10 11
node 2 size: 258016 MB
node 2 free: 257940 MB
node 3 cpus: 12 13 14 15
node 3 size: 245915 MB
node 3 free: 245808 MB
node 4 cpus: 16 17 18 19
node 4 size: 257984 MB
node 4 free: 257853 MB
node 5 cpus: 20 21 22 23
node 5 size: 258022 MB
node 5 free: 257914 MB
node 6 cpus: 24 25 26 27
node 6 size: 258016 MB
node 6 free: 252012 MB
node 7 cpus: 28 29 30 31
node 7 size: 258032 MB
node 7 free: 257815 MB

node distances:
node   0   1   2   3   4   5   6   7
0:  10  11  11  11  32  32  32  32
1:  11  10  11  11  32  32  32  32
2:  11  11  10  11  32  32  32  32
3:  11  11  11  10  32  32  32  32
4:  32  32  32  32  10  11  11  11
5:  32  32  32  32  11  10  11  11
6:  32  32  32  32  11  10  11  11
7:  32  32  32  32  11  11  11  10

From /proc/meminfo
MemTotal:       2101028888 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

/sbin/tuned-adm active
Current active profile: throughput-performance

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux"
VERSION="8.3 (Ootpa)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="8.3"
PLATFORM_ID="platform:el8"
```

(Continued on next page)
Dell Inc. PowerEdge C6525 (AMD EPYC 7343 16-Core Processor) SPECspeed®2017_fp_base = 178
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CPU2017 License: 55 Test Date: Mar-2021
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Platform Notes (Continued)

PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga

uname -a:
Linux rhel-8-3-amd 4.18.0-240.el8.x86_64 #1 SMP Wed Sep 23 05:13:10 EDT 2020 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): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2018-3639 (Speculative Store Bypass): Mitigation: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5753 (Spectre variant 1): Mitigation: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBP: disabled, RSB filling
CVE-2017-5715 (Spectre variant 2):
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Nov 25 11:39
SPEC is set to: /dev/shm/cpu2017-1.1.5
Filesystem Type Size Used Avail Use% Mounted on
tmpfs tmpfs 1002G 5.7G 997G 1% /dev/shm

From /sys/devices/virtual/dmi/id
Vendor: Dell Inc.
Product: PowerEdge C6525
Product Family: PowerEdge

Additional information from dmidecode 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:
16x 802C8632802C 72ASS16G72LZ-3G2B3 128 GB 4 rank 3200

BIOS:

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

Dell Inc.
PowerEdge C6525 (AMD EPYC 7343 16-Core Processor)

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Platform Notes (Continued)

BIOS Vendor: Dell Inc.
BIOS Version: 2.2.2
BIOS Date: 03/02/2021
BIOS Revision: 2.2

(End of data from sysinfo program)

Compiler Version Notes

C

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

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

C++, C, Fortran

| 607.cactuBSSN_s(base, peak) |

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin
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Fortran

| 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak) |
| 654.roms_s(base, peak) |

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)

(Continued on next page)
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PowerEdge C6525 (AMD EPYC 7343 16-Core Processor)

**SPECspeed®2017_fp_base = 178**

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**Compiler Version Notes (Continued)**

Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

------------------------------------------------------------------

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

------------------------------------------------------------------

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/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

**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

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SPEC CPU®2017 Floating Point Speed Result

Dell Inc.

PowerEdge C6525 (AMD EPYC 7343 16-Core Processor)

SPECspeed®2017_fp_base = 178
SPECspeed®2017_fp_peak = 182

Test Date: Mar-2021
Hardware Availability: Mar-2021
Software Availability: Mar-2021

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Base Portability Flags (Continued)

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 -mno-adx -mno-sse4a -Wl,-mllvm -W1,-region-vectorize
-Wl,-mllvm -W1,-function-specialize
-Wl,-mllvm -W1,-align-all-nofallback-thru-blocks=6
-Wl,-mllvm -W1,-reduce-array-computations=3 -O3 -march=znver3
-fveget=AMDLIBM -ffast-math -flto -fstruct-layout=5
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -mllvm -function-specialize -flv-function-specialization
-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3 -z muldefs
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-flang -lflangrti

Fortran benchmarks:
-m64 -mno-adx -mno-sse4a -Wl,-mllvm -W1,-enable-X86-prefetching
-Wl,-mllvm -W1,-enable-licm-vrp -W1,-mllvm -W1,-region-vectorize
-Wl,-mllvm -W1,-function-specialize
-Wl,-mllvm -W1,-align-all-nofallback-thru-blocks=6
-Wl,-mllvm -W1,-reduce-array-computations=3 -Hz,1,0x1 -O3
-march=znver3=fveget=AMDLIBM -ffast-math -Mrecursive
-mllvm -fuse-tile-inner-loop -funroll-loops
-mllvm -extra-vectorizer-passes -mllvm -lslr-in-nested-loop
-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp=true -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -flang -lflangrti

Benchmarks using both Fortran and C:
-m64 -mno-adx -mno-sse4a -Wl,-mllvm -W1,-enable-X86-prefetching
-Wl,-mllvm -W1,-enable-licm-vrp -W1,-mllvm -W1,-region-vectorize
-Wl,-mllvm -W1,-function-specialize
-Wl,-mllvm -W1,-align-all-nofallback-thru-blocks=6
-Wl,-mllvm -W1,-reduce-array-computations=3 -O3 -march=znver3
-fveget=AMDLIBM -ffast-math -flto -fstruct-layout=5
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -mllvm -function-specialize -flv-function-specialization
-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3 -Hz,1,0x1

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## Dell Inc.

**PowerEdge C6525 (AMD EPYC 7343 16-Core Processor)**  

<table>
<thead>
<tr>
<th>SPECspeed(^\text{®}2017_fp_base</th>
<th>= 178</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed(^\text{®}2017_fp_peak</td>
<td>= 182</td>
</tr>
</tbody>
</table>

### Base Optimization Flags (Continued)

Benchmarks using both Fortran and C (continued):
- `-Mrecursive`  
- `-mllvm -fuse-tile-inner-loop -funroll-loops`  
- `-mllvm -extra-vectorizer-passes -mllvm -lsr-in-nested-loop -z muldefs`  
- `-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc`  
- `-lflang -lflangrti`  

Benchmarks using Fortran, C, and C++:
- `-m64`  
- `-mno-adx`  
- `-mno-sse4a`  
- `-std=c++98`  
- `-Wl,-mllvm -Wl,-x86-use-vzeroupper=false`  
- `-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-function-specialize`  
- `-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`  
- `-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3`  
- `-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5`  
- `-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000`  
- `-fremap-arrays -mllvm -function-specialize -flv-function-specialization`  
- `-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true`  
- `-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3`  
- `-mllvm -enable-partial-unswitch -mllvm -unroll-threshold=100`  
- `-mllvm -function-specialize -flv-function-specialization`  
- `-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000`  
- `-fremap-arrays -mllvm -function-specialize -flv-function-specialization`  
- `-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true`  
- `-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3`  
- `-mllvm -enable-partial-unswitch -mllvm -unroll-threshold=100`  
- `-mllvm -function-specialize -flv-function-specialization`  
- `-Hx,1,0x1 -Mrecursive -mllvm -fuse-tile-inner-loop -funroll-loops`  
- `-mllvm -lsr-in-nested-loop -z muldefs -DSPEC_OPENMP -fopenmp`  
- `-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang -lflangrti`  

### Base Other Flags

C benchmarks:
- `-Wno-unused-command-line-argument -Wno-return-type`  

Fortran benchmarks:
- `-Wno-unused-command-line-argument -Wno-return-type`  

Benchmarks using both Fortran and C:
- `-Wno-unused-command-line-argument -Wno-return-type`  

Benchmarks using Fortran, C, and C++:
- `-Wno-unused-command-line-argument -Wno-return-type`
Dell Inc.
PowerEdge C6525 (AMD EPYC 7343 16-Core Processor)

SPECspeed®2017_fp_base = 178
SPECspeed®2017_fp_peak = 182

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Mar-2021
Hardware Availability: Mar-2021
Software Availability: Mar-2021

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

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

619.lbm_s: -m64 -mno-adx -mno-sse4a
-Wl, -mllvml -Wl, -function-specialize
-Wl, -mllvml -Wl, -align-all-nofallthru-blocks=6
-Wl, -mllvml -Wl, -reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=5 -mllvml -unroll-threshold=50
-fremap-arrays -flv-function-specialization
-mllvml -inline-threshold=1000 -mllvml -enable-gvn-hoist
-mllvml -global-vectorize-slp=true
-mllvml -function-specialize -mllvml -enable-lcim-vrp
-mllvml -reduce-array-computations=3 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

638.imagick_s: basepeak = yes
644.nab_s: basepeak = yes

Fortran benchmarks:

603.bwaves_s: basepeak = yes

(Continued on next page)
**Peak Optimization Flags (Continued)**

649.fotonik3d_s: basepeak = yes

654.roms_s: -m64 -mno-adx -mno-sse4a
-W1, -mlllvm -W1, -enable-X86-prefetching
-W1, -mlllvm -W1, -enable-licm-vrp
-W1, -mlllvm -W1, -function-specialize
-W1, -mlllvm -W1, -align-all-nofallback-blocks=6
-W1, -mlllvm -W1, -reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -Mrecursive
-mlllvm -reduce-array-computations=3
-mlllvm -global-vectorize-slp=true -mlllvm -enable-licm-vrp
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm
-ljemalloc -lflang

Benchmarks using both Fortran and C:

621.wrf_s: -m64 -mno-adx -mno-sse4a
-W1, -mlllvm -W1, -enable-X86-prefetching
-W1, -mlllvm -W1, -enable-licm-vrp
-W1, -mlllvm -W1, -function-specialize
-W1, -mlllvm -W1, -align-all-nofallback-blocks=6
-W1, -mlllvm -W1, -reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=5 -mlllvm -unroll-threshold=50
-fremap-arrays -flv-function-specialization
-mlllvm -inline-threshold=1000 -mlllvm -enable-gvn-hoist
-mlllvm -global-vectorize-slp=true
-mlllvm -function-specialize -mlllvm -enable-licm-vrp
-mlllvm -reduce-array-computations=3 -Hz,1,0x1 -O3
-Mrecursive -mlllvm -fuse-tile-inner-loop -funroll-loops
-mlllvm -extra-vectorizer-passes -mlllvm -lsr-in-nested-loop
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm
-ljemalloc -lflang

627.cam4_s: basepeak = yes

628.pop2_s: basepeak = yes

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s: basepeak = yes
## Dell Inc.

PowerEdge C6525 (AMD EPYC 7343 16-Core Processor) | SPECspeed®2017_fp_base = 178  
| SPECspeed®2017_fp_peak = 182  

### Peak Other Flags

C benchmarks:
```
-Wno-unused-command-line-argument -Wno-return-type
```

Fortran benchmarks:
```
-Wno-unused-command-line-argument -Wno-return-type
```

Benchmarks using both Fortran and C:
```
-Wno-unused-command-line-argument -Wno-return-type
```

Benchmarks using Fortran, C, and C++:
```
-Wno-unused-command-line-argument -Wno-return-type
```

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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Tested with SPEC CPU®2017 v1.1.5 on 2021-03-18 16:25:30-0400.
Originally published on 2021-05-25.