# SPEC CPU®2017 Floating Point Speed Result

## Lenovo Global Technology

**ThinkSystem SR665 V3**

(2.45 GHz, AMD EPYC 9534)

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**SPECspeed®2017_fp_base = 411**

**SPECspeed®2017_fp_peak = 419**

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## Hardware

<table>
<thead>
<tr>
<th>Thread</th>
<th>603.bwaves_s</th>
<th>607.cactuBSSN_s</th>
<th>619.lbm_s</th>
<th>621.wrf_s</th>
<th>627.cam4_s</th>
<th>628.pop2_s</th>
<th>638.imagick_s</th>
<th>644.nab_s</th>
<th>649.fotonik3d_s</th>
<th>654.roms_s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threads</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>128</td>
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</tr>
</tbody>
</table>

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### SPECspeed®2017_fp_base (411)

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### SPECspeed®2017_fp_peak (419)

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## Software

- **CPU Name**: AMD EPYC 9534
- **Max MHz**: 3700
- **Nominal**: 2450
- **Enabled**: 128 cores, 2 chips
- **Orderable**: 1.2 chips
- **Cache L1**: 32 KB I + 32 KB D on chip per core
- **Cache L2**: 1 MB I+D on chip per core
- **Cache L3**: 256 MB I+D on chip per chip, 32 MB shared / 8 cores
- **Other**: None
- **Memory**: 768 GB (24 x 32 GB 2Rx8 PC5-4800B-R)
- **Storage**: 1 x 480 GB SATA SSD
- **Other**: None
- **OS**: SUSE Linux Enterprise Server 15 SP4 (x86_64) Kernel 5.14.21-150400.22-default
- **Compiler**: C/C++/Fortran: Version 4.0.0 of AOCC
- **Parallel**: Yes
- **Firmware**: Lenovo BIOS Version KAE105F 1.20 released Dec-2022
- **File System**: xfs
- **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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**Lenovo Global Technology**

**Test Date**: Dec-2022

**Hardware Availability**: Feb-2023

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**Test Sponsor**: Lenovo Global Technology

**Hardware Availability**: Nov-2022

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**Tested by**: Lenovo Global Technology

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**CPU2017 License**: 9017

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**Software Availability**: Nov-2022

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**Lenovo Global Technology**

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**Lenovo Global Technology**  
ThinkSystem SR665 V3  
(2.45 GHz, AMD EPYC 9534)

**SPECspeed®2017_fp_base = 411**  
**SPECspeed®2017_fp_peak = 419**

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**Results Table**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds Base</th>
<th>Ratio Base</th>
<th>Seconds Peak</th>
<th>Ratio Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>128</td>
<td>33.9</td>
<td>1740</td>
<td>33.9</td>
<td>1740</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>128</td>
<td><strong>26.1</strong></td>
<td><strong>638</strong></td>
<td>26.1</td>
<td><strong>638</strong></td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>128</td>
<td>19.5</td>
<td>268</td>
<td>19.4</td>
<td><strong>270</strong></td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>128</td>
<td>74.3</td>
<td>178</td>
<td>73.9</td>
<td>179</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>128</td>
<td><strong>31.3</strong></td>
<td><strong>284</strong></td>
<td>31.6</td>
<td>284</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>128</td>
<td>20.9</td>
<td>690</td>
<td>20.7</td>
<td>697</td>
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<tr>
<td>638.imagick_s</td>
<td>128</td>
<td>19.8</td>
<td>884</td>
<td>19.7</td>
<td>886</td>
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<tr>
<td>644.nab_s</td>
<td>128</td>
<td>42.5</td>
<td>215</td>
<td>42.4</td>
<td><strong>215</strong></td>
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<tr>
<td>654.roms_s</td>
<td>128</td>
<td>21.4</td>
<td>736</td>
<td>21.3</td>
<td>734</td>
</tr>
</tbody>
</table>

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**Compiler Notes**

The AMD64 AOCC Compiler Suite is available at http://developer.amd.com/amd-aocc/

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**Submit Notes**

The config file option 'submit' was used.  
'numactl' was used to bind copies to the cores.  
See the configuration file for details.

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**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,

(Continued on next page)
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ThinkSystem SR665 V3
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Operating System Notes (Continued)

'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 = "0-127"
LD_LIBRARY_PATH =  
"/home/cpu2017-1.1.8-amd-aocc400-genoa-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 = "128"

Environment variables set by runcpu during the 621.wrf_s peak run:
GOMP_CPU_AFFINITY = "0-127"

Environment variables set by runcpu during the 628.pop2_s peak run:
GOMP_CPU_AFFINITY = "0-127"

Environment variables set by runcpu during the 638.imagick_s peak run:
GOMP_CPU_AFFINITY = "0-127"

Environment variables set by runcpu during the 649.fotonik3d_s peak run:
GOMP_CPU_AFFINITY = "0-127"
PGHPF_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)
Lenovo Global Technology
ThinkSystem SR665 V3
(2.45 GHz, AMD EPYC 9534)

SPECspeed®2017_fp_base = 411
SPECspeed®2017_fp_peak = 419

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

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

General Notes (Continued)

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.

Platform Notes

BIOS configuration:
Operating Mode set to Maximum Performance
SMT Mode set to Disabled

Sysinfo program /home/cpu2017-1.1.8-amd-aocc400-genoa-B1b/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on localhost Sun Dec 25 21:00:43 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 9534 64-Core Processor
    2 "physical id"s (chips)
    128 "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 : 64
  siblings : 64
    physical 0: cores 0 1 2 3 4 5 6 7 20 21 22 23 32 33 34 35 36 37 38 39 48 49 50 51
    52 53 54 55 64 65 66 67 68 69 70 71 80 81 82 83 84 85 86 87 96 97 98 99 100 101 102
    103 112 113 114 115 116 117 118 119
    physical 1: cores 0 1 2 3 4 5 6 7 20 21 22 23 32 33 34 35 36 37 38 39 48 49 50 51
    52 53 54 55 64 65 66 67 68 69 70 71 80 81 82 83 84 85 86 87 96 97 98 99 100 101 102
    103 112 113 114 115 116 117 118 119

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): 128
  On-line CPU(s) list: 0–127
  Vendor ID: AuthenticAMD
  Model name: AMD EPYC 9534 64-Core Processor
  CPU family: 25

(Continued on next page)
Lenovo Global Technology

ThinkSystem SR665 V3
(2.45 GHz, AMD EPYC 9534)

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Platform Notes (Continued)

Model: 17
Thread(s) per core: 1
Core(s) per socket: 64
Socket(s): 2
Stepping: 1
Frequency boost: enabled
CPU max MHz: 3718.0659
CPU min MHz: 1500.0000
BogoMIPS: 4892.41
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 extapicd aperfmpref 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 extatic cr8_legacy abm sse4a misalignsse 3dnowprefetch osvw ibs skinit wdte topoext perfctr_core perfctr_nb bpxext perfctr_llc mwaltx cpb cat_l3 cdp_l3 invpcid_single hw_pstate ssbd mba ibrs ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2 erms invpcid cmqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb avx512cd sha ni avx512bw avx512vl xsaveopt xsaveav xgetbv1 xsaveas cmqm_llc cmqm_occmap_llc cmqm_mbb_total cmqm_mbb_local avx512_bf16 clzero irperf xsaveerptr rdpru wbnoinvd amd_pni arat npt lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter pftime svcrld vmsave_vmlmpuf vgfl v_spec_ctrl avx512vli umip pku ospke avx512_vbmi2 gfni vaes vpcmvlqdq avx512_vnni avx512_bitalg avx512_vpopcntdq 1a57 rdpid overflow_recover succor smca fsrm flush_lid

Virtualization: AMD-V

L1d cache: 4 MiB (128 instances)
L1i cache: 4 MiB (128 instances)
L2 cache: 128 MiB (128 instances)
L3 cache: 512 MiB (16 instances)
NUMA node(s): 2
NUMA node0 CPU(s): 0-63
NUMA node1 CPU(s): 64-127

Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swappgs barriers and __user pointer sanitation
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

(Continued on next page)
Platform Notes (Continued)

```
L1d  32K   4M   8 Data      1  64  1  64
L1i  32K   4M  8 Instruction 1  64  1  64
L2   1M  128M  8 Unified    2 2048 1  64
L3   32M  512M 16 Unified   3 32768 1  64
```

From numactl --hardware
WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 2 nodes (0-1)
node 0 cpus: 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 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56
57 58 59 60 61 62 63
node 0 size: 386634 MB
node 0 free: 384682 MB
node 1 cpus: 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88
89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112
113 114 115 116 117 118 119 120 121 122 123 124 125 126 127
node 1 size: 386775 MB
node 1 free: 386263 MB
node distances:
node 0 1
  0: 10 32
  1: 32 10

From /proc/meminfo
    MemTotal: 791972112 kB
    HugePages_Total: 0
    Hugepagesize: 2048 kB

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance

From /etc/*release*/etc/*version*
    os-release:
      NAME="SLES"
      VERSION="15-SP4"
      VERSION_ID="15.4"
      PRETTY_NAME="SUSE Linux Enterprise Server 15 SP4"
      ID="sles"
      ID_LIKE="suse"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:15:sp4"

    uname -a:
    Linux localhost 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18

(Continued on next page)
Platform Notes (Continued)

UTC 2022 (49db222) 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
- 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: disabled, RSB filling
- CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
- CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Dec 25 20:11

SPEC is set to: /home/cpu2017-1.1.8-amd-aocc400-genoa-B1b

From /sys/devices/virtual/dmi/id
Vendor: Lenovo
Product: ThinkSystem SR665 V3 MB, Genoa, Kauai, DDR5, Kauai, 2U
Product Family: ThinkSystem
Serial: 1234567890

Additional information from dmidecode 3.2 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:
- 5x SK Hynix HMCGB8AEBRA115N 32 GB 2 rank 4800
- 19x SK Hynix HMCGB8AEBRA168N 32 GB 2 rank 4800

BIOS:
- BIOS Vendor: Lenovo
- BIOS Version: KAE105F-1.20
- BIOS Date: 12/01/2022
- BIOS Revision: 1.20
- Firmware Revision: 1.20
Lenovo Global Technology
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Platform Notes (Continued)
(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 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
607.cactuBSSN_s(base, peak)

AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
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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, peak) 649.fotonik3d_s(base, peak)
654.roms_s(base, peak)

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Compiler Version Notes (Continued)

Fortran, C

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

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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

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 -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 -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
- 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

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
- mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
- fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
- DSPEC_OPENMP -zopt -mlllvm -unroll-threshold=100 -finline-aggressive
- mllvm -loop-unswitch-threshold=200000 -Mrecursive -funroll-loops
- mllvm -lsr-in-nested-loop -fopenmp=libomp -lomp -lamdlibm -lamdalloc
- lflang
### Lenovo Global Technology

**ThinkSystem SR665 V3**  
(2.45 GHz, AMD EPYC 9534)

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**SPECspeed®2017_fp_base = 411**  
**SPECspeed®2017_fp_peak = 419**

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### 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`

---

### Peak Portability Flags

Same as Base Portability Flags

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### Peak Optimization Flags

- C benchmarks:
  - `619.lbm_s: basepeak = yes`

  - `638.imagick_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallback-blocks=6 -Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast -march=znver4 -fvecclib=AmdLIBM -ffast-math -fopenmp -flto -fstruct-layout=9 -mllvm -unroll-threshold=50`

(Continued on next page)
Lenovo Global Technology
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Peak Optimization Flags (Continued)

638.imagick_s (continued):
- fremap-arrays -fstrip-mining
- mllvm -inline-threshold=1000
- mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
- fopenmp=libomp -lomp -lamdlibm -lamdaloc -lflang

644.nab_s: basepeak = yes

Fortran benchmarks:

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 -lamdaloc -lflang

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
- fremap-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 -lamdaloc -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
- fremap-arrays -fstrip-mining
- mllvm -inline-threshold=1000
- mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
- Mrecursive -fvector-transform -fscalar-transform

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Peak Optimization Flags (Continued)

628.pop2_s (continued):
-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

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/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Genoa-O.html
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/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Genoa-O.xml
http://www.spec.org/cpu2017/flags/aocc400-flags.xml

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