SPEC CPU®2017 Floating Point Speed Result

ASUSTeK Computer Inc.
ASUS RS720A-E11(KMPP-D32) Server System
2.60 GHz, AMD EPYC 7513

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Threads

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed®2017_fp_base</th>
<th>SPECspeed®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>64</td>
<td>383</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>64</td>
<td>125</td>
</tr>
<tr>
<td>619.ibm_s</td>
<td>64</td>
<td>127</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>64</td>
<td>204</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>64</td>
<td>175</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>64</td>
<td>75.1</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>64</td>
<td>334</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>64</td>
<td>451</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>64</td>
<td>516</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>64</td>
<td>292</td>
</tr>
</tbody>
</table>

Hardware

CPU Name: AMD EPYC 7513
Max MHz: 3650
Nominal: 2600
Enabled: 64 cores, 2 chips, 2 threads/core
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 / 8 cores
Other: None
Memory: 1 TB (16 x 64 GB 4Rx4 PC4-3200AA-L)
Storage: 1 x 240 GB SATA SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP2 (x86_64)
Kernel 5.3.18-22-default
Compiler: C/C++/Fortran: Version 3.0.0 of AOCC
Parallel: Yes
Firmware: Version 0404 released Feb-2021
File System: xfs
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.
## 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>
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<td><strong>84.1</strong></td>
<td><strong>701</strong></td>
<td>84.1</td>
<td>702</td>
<td>84.4</td>
<td>699</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>64</td>
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<td>43.9</td>
<td>380</td>
<td><strong>43.5</strong></td>
<td><strong>383</strong></td>
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<tr>
<td>619.lbm_s</td>
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<td>122</td>
<td><strong>41.9</strong></td>
<td><strong>125</strong></td>
<td>41.9</td>
<td>125</td>
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<tr>
<td>621.wrf_s</td>
<td>64</td>
<td>66.8</td>
<td>198</td>
<td>64.8</td>
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<td><strong>64.8</strong></td>
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</tr>
<tr>
<td>627.cam4_s</td>
<td>64</td>
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<tr>
<td>628.pop2_s</td>
<td>64</td>
<td>158</td>
<td>75.0</td>
<td><strong>158</strong></td>
<td><strong>75.1</strong></td>
<td>158</td>
<td>75.1</td>
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<tr>
<td>638.imagick_s</td>
<td>64</td>
<td>43.1</td>
<td><strong>334</strong></td>
<td>43.2</td>
<td>334</td>
<td>43.0</td>
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<tr>
<td>644.nab_s</td>
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<td>38.8</td>
<td>450</td>
<td><strong>38.8</strong></td>
<td><strong>451</strong></td>
<td>38.7</td>
<td>451</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>64</td>
<td>82.6</td>
<td>110</td>
<td>83.5</td>
<td>109</td>
<td><strong>82.7</strong></td>
<td><strong>110</strong></td>
</tr>
<tr>
<td>654.roms_s</td>
<td>64</td>
<td>66.6</td>
<td><strong>236</strong></td>
<td>67.4</td>
<td>234</td>
<td>66.4</td>
<td>237</td>
</tr>
</tbody>
</table>

### Compiler Notes


### Submit Notes

The config file option 'submit' was used.
'nnumactl' 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
OS set to performance mode via cpupower frequency-set -g performance
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.
To enable Transparent Hugepages (THP) for all allocations,
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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 enable THP only on request for peak runs of 628.pop2_s, and 638.imagick_s,
'echo madvise > /sys/kernel/mm/transparent_hugepage/enabled' 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/enabled' 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 =
"/cpu118/amd_speed_aocc300_milan_B_lib/64;/cpu118/amd_speed_aocc300_milan_B_lib/32;"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "128"

Environment variables set by runcpu during the 619.lbm_s peak run:
GOMP_CPU_AFFINITY = "0-63"

Environment variables set by runcpu during the 644.nab_s peak run:
GOMP_CPU_AFFINITY = "0 64 1 65 2 66 3 67 4 68 5 69 6 70 7 71 8 72 9 73 10 74
11 75 12 76 13 77 14 78 15 79 16 80 17 81 18 82 19 83 20 84 21 85 22 86
23 87 24 88 25 89 26 90 27 91 28 92 29 93 30 94 31 95 32 96 33 97 34 98
35 99 36 100 37 101 38 102 39 103 40 104 41 105 42 106 43 107 44 108 45
109 46 110 47 111 48 112 49 113 50 114 51 115 52 116 53 117 54 118 55
119 56 120 57 121 58 122 59 123 60 124 61 125 62 126 63 64 127"

Environment variables set by runcpu during the 654.roms_s peak run:
GOMP_CPU_AFFINITY = "0-63"

General Notes

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

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.

(Continued on next page)
General Notes (Continued)

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

Platform Notes

BIOS Configuration:
DLWM Support = Disabled
SVM Mode = Disabled
NUMA nodes per socket = NPS1
APBDIS = 1
Fix SOC P-state = P0
Engine Boost = Enabled

Sysinfo program /cpu118/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aca64d64
running on localhost Thu Jun 17 16:25:19 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 7513 32-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 : 32
siblings : 64
physical 0: cores 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
physical 1: cores 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

From lscpu from util-linux 2.33.1:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
Address sizes: 48 bits physical, 48 bits virtual
CPU(s): 128
On-line CPU(s) list: 0-127
Thread(s) per core: 2
Core(s) per socket: 32
Socket(s): 2

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Tested by: ASSUSTeK Computer Inc.
Test Date: Jun-2021
Hardware Availability: Mar-2021
Software Availability: Mar-2021

Platform Notes (Continued)

NUMA node(s): 2
Vendor ID: AuthenticAMD
CPU family: 25
Model: 1
Model name: AMD EPYC 7513 32-Core Processor
Stepping: 1
CPU MHz: 1796.099
CPU max MHz: 2600.0000
CPU min MHz: 1500.0000
BogoMIPS: 5190.11
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 32768K
NUMA node0 CPU(s): 0-31,64-95
NUMA node1 CPU(s): 32-63,96-127
Flags: fpu vme de pse tsc msr pae mca cmov pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb rdtscp lm constant_tsc rep_good nop1 nonstop_tsc cpuid extd_apicid aperfmperf pni pclmulqdq monitor ssse3 fma cx16 pcid sse4_1 sse4_2 movbe popcnt aes avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse dnowprefetch osvw ibr skinit cmp_legacy svm extapic cr8 Legacy abm sse4a misalignsse dnowprefetch osvw
ibs skinit tde topoext perfctr_core perfctr_nb bpext perfctr_llc mwaitx cpb cat_13 cdp_13 invpcid_single hw_pstate ssbd mba ibrs ibpb stibp vmcall fsgsbase bm11 avx2 smep bm12 erms invpcid cmq rdt_a rdseed adx smap clflushopt clwb sha_hi xsaveopt xsaves xgetbv1 xsaves cmq_llc cmq_occup_llc cmq_mbb_total cmq_mbb_local clzero irperf xsaveopt x svm_lock arat npt ibrv svm_c flushbyasid decodeaissists pausefilter pfthreshold v_vmsave_vmload vgif
umip pku ospke vaes vpclmulqdq rdpid overflow_recover succor smca

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 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
 node 0 size: 515860 MB
 node 0 free: 515287 MB
 node 1 cpus: 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 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: 516043 MB
 node 1 free: 515318 MB
node distances:

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

```
node  0  1
0:  10  32
1:  32  10
```

From `/proc/meminfo`
- MemTotal: 1056670052 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-SP2"
  - VERSION_ID="15.2"
  - PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
  - ID="sles"
  - ID_LIKE="suse"
  - ANSI_COLOR="0;32"
  - CPE_NAME="cpe:/o:suse:sles:15:sp2"

```
uname -a:
  Linux localhost 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020 (720aeba) 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/swaps barriers and __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: Full AMD retpoline, IBFB: 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 Jun 17 08:22
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Platform Notes (Continued)

SPEC is set to: /cpu118
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 199G 45G 155G 23% /

From /sys/devices/virtual/dmi/id
Vendor: ASUSTeK COMPUTER INC.
Product: RS720A-E11-DS12E
Product Family: Server
Serial: 123456789012

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:
16x Samsung M386A8K40DM2-CWE 64 GB 4 rank 3200
16x Unknown Unknown

BIOS:
BIOS Vendor: American Megatrends Inc.
BIOS Version: 0404
BIOS Date: 02/02/2021
BIOS Revision: 4.4

(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

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Compiler Version Notes (Continued)

InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin
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Thread model: posix
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---

Base Compiler Invocation

C benchmarks:
clang

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Base Compiler Invocation (Continued)

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 -mno-adx -mno-sse4a -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 -z muldefs
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-flang -flangrti

Fortran benchmarks:
-m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-licm-vrp -Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6

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Base Optimization Flags (Continued):

Fortran benchmarks (continued):
-`-W1,-mlllvm -Wl,-reduce-array-computations=3 -Hz,1,0x1 -O3`
-`-march=znver3 -fveclib=AMDLIBM -ffast-math -Mrecursive`
-`-mlllvm -fuse-tile-inner-loop -funroll-loops`
-`-mlllvm -extra-vectorizer-passes -mlllvm -lsr-in-nested-loop`
-`-mlllvm -enable-licm-vrp -mlllvm -reduce-array-computations=3`
-`-mlllvm -global-vectorize-slp=true -z muldefs -DSPEC_OPENMP -fopenmp`
-`-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang -lflangrti`

Benchmarks using both Fortran and C:
-`-m64 -mno-adx -mno-sse4a -Wl,-mlllvm -Wl,-enable-X86-prefetching`
-`-Wl,-mlllvm -Wl,-enable-licm-vrp -Wl,-mlllvm -Wl,-region-vectorize`
-`-Wl,-mlllvm -Wl,-function-specialize`
-`-Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6`
-`-Wl,-mlllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3`
-`-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5`
-`-mlllvm -unroll-threshold=50 -mlllvm -inline-threshold=1000`
-`-fremap-arrays -mlllvm -function-specialize -flv-function-specialization`
-`-mlllvm -enable-gvn-hoist -mlllvm -global-vectorize-slp=true`
-`-mlllvm -enable-licm-vrp -mlllvm -reduce-array-computations=3 -Hz,1,0x1`
-`-Mrecursive -mlllvm -fuse-tile-inner-loop -funroll-loops`
-`-mlllvm -extra-vectorizer-passes -mlllvm -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,-mlllvm -Wl,-x86-use-vzeroupper=false`
-`-Wl,-mlllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-function-specialize`
-`-Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6`
-`-Wl,-mlllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3`
-`-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5`
-`-mlllvm -unroll-threshold=50 -mlllvm -inline-threshold=1000`
-`-fremap-arrays -mlllvm -function-specialize -flv-function-specialization`
-`-mlllvm -enable-gvn-hoist -mlllvm -global-vectorize-slp=true`
-`-mlllvm -enable-licm-vrp -mlllvm -reduce-array-computations=3`
-`-mlllvm -enable-partial-unswitch -mlllvm -unroll-threshold=100`
-`-finline-aggressive -mlllvm -loop-unswitch-threshold=200000`
-`-mlllvm -reroll-loops -mlllvm -aggressive-loop-unswitch`
-`-mlllvm -extra-vectorizer-passes -mlllvm -convert-pow-exp-to-int=false`
-`-Hz,1,0x1 -Mrecursive -mlllvm -fuse-tile-inner-loop -funroll-loops`
-`-mlllvm -lsr-in-nested-loop -z muldefs -DSPEC_OPENMP -fopenmp`
-`-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang -lflangrti`
ASUSTeK Computer Inc.

ASUS RS720A-E11(KMPP-D32) Server System
2.60 GHz, AMD EPYC 7513

SPECspeed®2017_fp_base = 226
SPECspeed®2017_fp_peak = 235

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

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

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

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,-mllvm -Wl,-function-specialize
- -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
- -Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
- -march=znver3 -fveclib=AMDLIBM -ffast-math -flto
- -fstruct-layout=5 -mllvm -unroll-threshold=50

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

ASUSTeK Computer Inc.

ASUS RS720A-E11(KMPP-D32) Server System
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Software Availability: Mar-2021

Peak Optimization Flags (Continued)

619.lbm_s (continued):
-fremap-arrays -flv-function-specialization
-mllvm -inline-threshold=1000 -mllvm -enable-gvn-hoist
-mllvm -global-vectorize-slp=true
-mllvm -function-specialize -mllvm -enable-licm-vrp
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

638.imagick_s: basepeak = yes

644.nab_s: -m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize -Ofast -march=znver3
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
-mllvm -unroll-threshold=50 -fremap-arrays
-flv-function-specialization -mllvm -inline-threshold=1000
-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
-mllvm -function-specialize -mllvm -enable-licm-vrp
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

Fortran benchmarks:

603.bwaves_s: basepeak = yes

649.fotonik3d_s: basepeak = yes

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

Benchmarks using both Fortran and C:

621.wrf_s: basepeak = yes

627.cam4_s: basepeak = yes

628.pop2_s: basepeak = yes

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ASUSTeK Computer Inc.
ASUS RS720A-E11(KMPP-D32) Server System
2.60 GHz, AMD EPYC 7513

SPECspeed®2017_fp_base = 226
SPECspeed®2017_fp_peak = 235

Table:

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<th>CPU2017 License</th>
<th>Test Date:</th>
<th>Test Sponsor:</th>
<th>Hardware Availability:</th>
<th>Tested by:</th>
<th>Software Availability:</th>
</tr>
</thead>
</table>

Peak Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s; basepeak = yes

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:
http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-AMD-Milan-V1.3.2021-07-06.xml

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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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