



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358

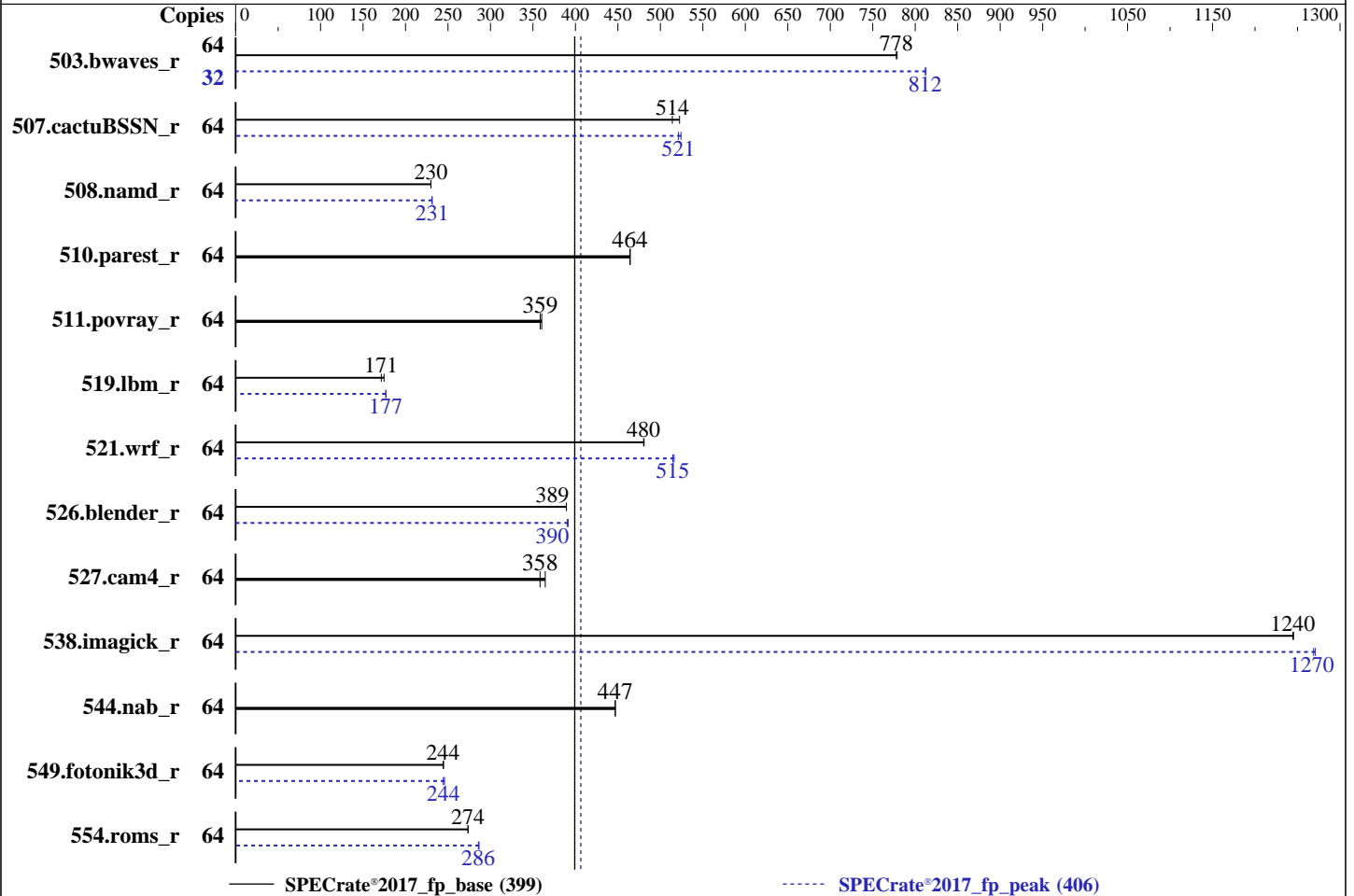
Test Sponsor: Inspur Corporation

Tested by: Inspur Corporation

Test Date: Sep-2022

Hardware Availability: Aug-2022

Software Availability: Dec-2021



Hardware

CPU Name: AMD EPYC 7373X
 Max MHz: 3800
 Nominal: 3050
 Enabled: 32 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: 768 MB I+D on chip per chip, 96 MB shared / 2 cores
 Other: None
 Memory: 1 TB (32 x 32 GB 2Rx8 PC4-3200AA-R)
 Storage: 1 x 480 GB SATA SSD
 Other: None

Software

OS: Red Hat Enterprise Linux release 8.3 (Ootpa) 4.18.0-240.el8.x86_64
 Compiler: C/C++/Fortran: Version 3.2.0 of AOCC
 Parallel: No
 Firmware: Version 7.00.04 released May-2022
 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.



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358
Test Sponsor: Inspur Corporation
Tested by: Inspur Corporation

Test Date: Sep-2022
Hardware Availability: Aug-2022
Software Availability: Dec-2021

Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|-----------------|--------|------------|-------------|-------------|------------|---------|-------|--------|-------------|------------|------------|-------------|---------|-------|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 503.bwaves_r | 64 | 824 | 779 | <u>825</u> | <u>778</u> | | | 32 | 395 | 813 | <u>395</u> | <u>812</u> | | |
| 507.cactuBSSN_r | 64 | 155 | 523 | <u>158</u> | <u>514</u> | | | 64 | 155 | 524 | <u>155</u> | <u>521</u> | | |
| 508.namd_r | 64 | 264 | 230 | <u>265</u> | <u>230</u> | | | 64 | <u>263</u> | <u>231</u> | 263 | 231 | | |
| 510.parest_r | 64 | <u>361</u> | <u>464</u> | 361 | 464 | | | 64 | <u>361</u> | <u>464</u> | 361 | 464 | | |
| 511.povray_r | 64 | 415 | 360 | <u>417</u> | <u>359</u> | | | 64 | 415 | 360 | <u>417</u> | <u>359</u> | | |
| 519.lbm_r | 64 | <u>393</u> | <u>171</u> | 386 | 175 | | | 64 | 381 | 177 | <u>381</u> | <u>177</u> | | |
| 521.wrf_r | 64 | <u>298</u> | <u>480</u> | 298 | 481 | | | 64 | <u>279</u> | <u>515</u> | 278 | 516 | | |
| 526.blender_r | 64 | 250 | 389 | <u>250</u> | <u>389</u> | | | 64 | <u>250</u> | <u>390</u> | 249 | 391 | | |
| 527.cam4_r | 64 | <u>312</u> | <u>358</u> | 307 | 364 | | | 64 | <u>312</u> | <u>358</u> | 307 | 364 | | |
| 538.imagick_r | 64 | <u>128</u> | <u>1240</u> | 128 | 1250 | | | 64 | 125 | 1270 | <u>125</u> | <u>1270</u> | | |
| 544.nab_r | 64 | 241 | 447 | <u>241</u> | <u>447</u> | | | 64 | 241 | 447 | <u>241</u> | <u>447</u> | | |
| 549.fotonik3d_r | 64 | 1019 | 245 | <u>1021</u> | <u>244</u> | | | 64 | <u>1020</u> | <u>244</u> | 1014 | 246 | | |
| 554.roms_r | 64 | 372 | 274 | <u>372</u> | <u>274</u> | | | 64 | 355 | 287 | <u>356</u> | <u>286</u> | | |

SPECrate®2017_fp_base = **399**

SPECrate®2017_fp_peak = **406**

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.

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358

Test Sponsor: Inspur Corporation

Tested by: Inspur Corporation

Test Date: Sep-2022

Hardware Availability: Aug-2022

Software Availability: Dec-2021

Operating System Notes (Continued)

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.

Scaling_Governor set to Performance

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.

Environment Variables Notes

Environment variables set by runcpu before the start of the run:

```
LD_LIBRARY_PATH =  
    "/home/CPU2017/amd_rate_aocc320_milanx_A_lib/lib;/home/CPU2017/amd_rate_  
    aocc320_milanx_A_lib/lib32:"  
MALLOCONF = "retain:true"
```

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.

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:

SVM Mode set to disable

DRAM Scrub time set to disable

NUMA nodes per socket set to NPS4

APBDIS set to 1

Sysinfo program /home/CPU2017/bin/sysinfo

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358

Test Sponsor: Inspur Corporation

Tested by: Inspur Corporation

Test Date: Sep-2022

Hardware Availability: Aug-2022

Software Availability: Dec-2021

Platform Notes (Continued)

Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
running on localhost.localdomain Tue Sep 6 16:24:21 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 7373X 16-Core Processor
 2 "physical id"s (chips)
 64 "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 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 from util-linux 2.32.1:

```
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 64
On-line CPU(s) list: 0-63
Thread(s) per core: 2
Core(s) per socket: 16
Socket(s): 2
NUMA node(s): 16
Vendor ID: AuthenticAMD
CPU family: 25
Model: 1
Model name: AMD EPYC 7373X 16-Core Processor
Stepping: 2
CPU MHz: 1921.454
CPU max MHz: 3050.0000
CPU min MHz: 1500.0000
BogoMIPS: 6088.64
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 98304K
NUMA node0 CPU(s): 0,1,32,33
NUMA node1 CPU(s): 2,3,34,35
NUMA node2 CPU(s): 4,5,36,37
NUMA node3 CPU(s): 6,7,38,39
NUMA node4 CPU(s): 8,9,40,41
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358

Test Sponsor: Inspur Corporation

Tested by: Inspur Corporation

Test Date: Sep-2022

Hardware Availability: Aug-2022

Software Availability: Dec-2021

Platform Notes (Continued)

NUMA node5 CPU(s): 10,11,42,43
 NUMA node6 CPU(s): 12,13,44,45
 NUMA node7 CPU(s): 14,15,46,47
 NUMA node8 CPU(s): 16,17,48,49
 NUMA node9 CPU(s): 18,19,50,51
 NUMA node10 CPU(s): 20,21,52,53
 NUMA node11 CPU(s): 22,23,54,55
 NUMA node12 CPU(s): 24,25,56,57
 NUMA node13 CPU(s): 26,27,58,59
 NUMA node14 CPU(s): 28,29,60,61
 NUMA node15 CPU(s): 30,31,62,63

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 aperfmperf pni pclmulqdq
 monitor ssse3 fma cx16 pcid sse4_1 sse4_2 movbe popcnt aes xsave avx f16c rdrand
 lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osvw
 ibs skinit wdt tce topoext perfctr_core perfctr_nb bpeext perfctr_llc mwaitx cpb
 cat_l3 cdp_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 xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
 cqm_mbm_local clzero irperf xsaveerptr wbnoinvd amd_ppin arat npt lbrv 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: 16 nodes (0-15)
node 0 cpus: 0 1 32 33
node 0 size: 64318 MB
node 0 free: 64182 MB
node 1 cpus: 2 3 34 35
node 1 size: 64506 MB
node 1 free: 64405 MB
node 2 cpus: 4 5 36 37
node 2 size: 64502 MB
node 2 free: 64409 MB
node 3 cpus: 6 7 38 39
node 3 size: 64453 MB
node 3 free: 64381 MB
node 4 cpus: 8 9 40 41
node 4 size: 64500 MB
node 4 free: 64403 MB
node 5 cpus: 10 11 42 43
node 5 size: 64504 MB
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358

Test Sponsor: Inspur Corporation

Tested by: Inspur Corporation

Test Date: Sep-2022

Hardware Availability: Aug-2022

Software Availability: Dec-2021

Platform Notes (Continued)

```

node 5 free: 64361 MB
node 6 cpus: 12 13 44 45
node 6 size: 64500 MB
node 6 free: 64407 MB
node 7 cpus: 14 15 46 47
node 7 size: 64480 MB
node 7 free: 64414 MB
node 8 cpus: 16 17 48 49
node 8 size: 64494 MB
node 8 free: 64424 MB
node 9 cpus: 18 19 50 51
node 9 size: 64492 MB
node 9 free: 64427 MB
node 10 cpus: 20 21 52 53
node 10 size: 64508 MB
node 10 free: 64425 MB
node 11 cpus: 22 23 54 55
node 11 size: 64498 MB
node 11 free: 64427 MB
node 12 cpus: 24 25 56 57
node 12 size: 64502 MB
node 12 free: 64425 MB
node 13 cpus: 26 27 58 59
node 13 size: 64492 MB
node 13 free: 64426 MB
node 14 cpus: 28 29 60 61
node 14 size: 64506 MB
node 14 free: 64428 MB
node 15 cpus: 30 31 62 63
node 15 size: 64461 MB
node 15 free: 64423 MB

```

node distances:

| node | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 0: | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 1: | 11 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 2: | 12 | 12 | 10 | 11 | 12 | 12 | 12 | 12 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 3: | 12 | 12 | 11 | 10 | 12 | 12 | 12 | 12 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 4: | 12 | 12 | 12 | 12 | 10 | 11 | 12 | 12 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 5: | 12 | 12 | 12 | 12 | 11 | 10 | 12 | 12 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 6: | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 11 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 7: | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 10 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 8: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 |
| 9: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 11 | 10 | 12 | 12 | 12 | 12 | 12 | 12 |
| 10: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 12 | 12 | 10 | 11 | 12 | 12 | 12 | 12 |
| 11: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 12 | 12 | 11 | 10 | 12 | 12 | 12 | 12 |
| 12: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 12 | 12 | 12 | 12 | 10 | 11 | 12 | 12 |
| 13: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 12 | 12 | 12 | 12 | 11 | 10 | 12 | 12 |

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358
Test Sponsor: Inspur Corporation
Tested by: Inspur Corporation

Test Date: Sep-2022
Hardware Availability: Aug-2022
Software Availability: Dec-2021

Platform Notes (Continued)

| | | | | | | | | | | | | | | | | | |
|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 14: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 11 |
| 15: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 10 |

From /proc/meminfo

MemTotal: 1056684852 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/sbin/tuned-adm active

Current active profile: throughput-performance

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has 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"
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 localhost.localdomain 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): | 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: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBP: always-on, RSB filling |

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358
Test Sponsor: Inspur Corporation
Tested by: Inspur Corporation

Test Date: Sep-2022
Hardware Availability: Aug-2022
Software Availability: Dec-2021

Platform Notes (Continued)

CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Sep 6 13:15

SPEC is set to: /home/CPU2017

| Filesystem | Type | Size | Used | Avail | Use% | Mounted on |
|-----------------------|------|------|------|-------|------|------------|
| /dev/mapper/rhel-home | xfs | 372G | 8.7G | 363G | 3% | /home |

```

From /sys/devices/virtual/dmi/id
Vendor:          Inspur
Product:         NF5280A6
Product Family: Not specified
Serial:         200857231

```

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:
32x Samsung M393A4K40DB3-CWE 32 GB 2 rank 3200

```

BIOS:
BIOS Vendor:    American Megatrends Inc.
BIOS Version:   7.00.04
BIOS Date:      05/19/2022

```

(End of data from sysinfo program)

Compiler Version Notes

```

=====
C          | 519.lbm_r(base, peak) 538.imagick_r(base, peak)
          | 544.nab_r(base, peak)
=====

```

```

AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on
LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
=====

```

```

=====
C++       | 508.namd_r(base, peak) 510.parest_r(base, peak)
=====

```

```

AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358
Test Sponsor: Inspur Corporation
Tested by: Inspur Corporation

Test Date: Sep-2022
Hardware Availability: Aug-2022
Software Availability: Dec-2021

Compiler Version Notes (Continued)

LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin

=====
C++, C | 511.povray_r(base, peak) 526.blender_r(base, peak)
=====

AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin

=====
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
=====

AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin

=====
Fortran | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak)
| 554.roms_r(base, peak)
=====

AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on LLVM Mirror.Version.13.0.0)

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358

Test Sponsor: Inspur Corporation

Tested by: Inspur Corporation

Test Date: Sep-2022

Hardware Availability: Aug-2022

Software Availability: Dec-2021

Compiler Version Notes (Continued)

Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin

Fortran, C | 521.wrf_r(base, peak) 527.cam4_r(base, peak)

AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on LLVM Mirror.Version.13.0.0)

Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin

AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on LLVM Mirror.Version.13.0.0)

Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/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

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358

Test Sponsor: Inspur Corporation

Tested by: Inspur Corporation

Test Date: Sep-2022

Hardware Availability: Aug-2022

Software Availability: Dec-2021

Base Portability Flags (Continued)

```

507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
526.blender_r: -funsigned-char -D__BOOL_DEFINED -DSPEC_LP64
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,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-loop-fusion -O3 -march=znver3 -fveclib=AMDLIBM
-ffast-math -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-loop-fusion -z muldefs -lamdlibm -ljemalloc -lflang

```

C++ benchmarks:

```

-m64 -std=c++98 -mno-adx -mno-sse4a
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -flto
-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
-Wl,-mllvm -Wl,-enable-loop-fusion -O3 -march=znver3 -fveclib=AMDLIBM
-ffast-math -mllvm -enable-partial-unswitch
-mllvm -unroll-threshold=100 -finline-aggressive
-flv-function-specialization -mllvm -loop-unswitch-threshold=200000
-mllvm -reroll-loops -mllvm -aggressive-loop-unswitch
-mllvm -extra-vectorizer-passes -mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp=true -mllvm -convert-pow-exp-to-int=false
-mllvm -enable-loop-fusion -z muldefs -lamdlibm -ljemalloc -lflang

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358

Test Sponsor: Inspur Corporation

Tested by: Inspur Corporation

Test Date: Sep-2022

Hardware Availability: Aug-2022

Software Availability: Dec-2021

Base Optimization Flags (Continued)

Fortran benchmarks:

```

-m64 -Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-licm-vrp -flto -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
-Wl,-mllvm -Wl,-enable-loop-fusion -Hz,1,0x1 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -Kieee -Mrecursive
-mllvm -fuse-tile-inner-loop -funroll-loops
-mllvm -extra-vectorizer-passes -mllvm -lsr-in-nested-loop
-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp=true -mllvm -enable-loop-fusion
-mllvm -enable-loopinterchange -mllvm -compute-interchange-order
-z muldefs -lamdlibm -ljemalloc -lflang

```

Benchmarks using both Fortran and C:

```

-m64 -Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-licm-vrp -flto -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
-Wl,-mllvm -Wl,-enable-loop-fusion -O3 -march=znver3 -fveclib=AMDLIBM
-ffast-math -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-loop-fusion -Hz,1,0x1 -Kieee -Mrecursive
-mllvm -fuse-tile-inner-loop -funroll-loops
-mllvm -extra-vectorizer-passes -mllvm -lsr-in-nested-loop
-mllvm -enable-loopinterchange -mllvm -compute-interchange-order
-z muldefs -lamdlibm -ljemalloc -lflang

```

Benchmarks using both C and C++:

```

-m64 -std=c++98 -mno-adx -mno-sse4a
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -flto
-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
-Wl,-mllvm -Wl,-enable-loop-fusion -O3 -march=znver3 -fveclib=AMDLIBM
-ffast-math -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-loop-fusion -mllvm -enable-partial-unswitch

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358

Test Sponsor: Inspur Corporation

Tested by: Inspur Corporation

Test Date: Sep-2022

Hardware Availability: Aug-2022

Software Availability: Dec-2021

Base Optimization Flags (Continued)

Benchmarks using both C and C++ (continued):

```
-mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000 -mllvm -reroll-loops
-mllvm -aggressive-loop-unswitch -mllvm -extra-vectorizer-passes
-mllvm -convert-pow-exp-to-int=false -z muldefs -lamdlibm -ljemalloc
-lflang
```

Benchmarks using Fortran, C, and C++:

```
-m64 -std=c++98 -mno-adx -mno-sse4a
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -flto
-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
-Wl,-mllvm -Wl,-enable-loop-fusion -O3 -march=znver3 -fveclib=AMDLIBM
-ffast-math -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-loop-fusion -mllvm -enable-partial-unswitch
-mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000 -mllvm -reroll-loops
-mllvm -aggressive-loop-unswitch -mllvm -extra-vectorizer-passes
-mllvm -convert-pow-exp-to-int=false -Hz,1,0x1 -Kieee -Mrecursive
-mllvm -fuse-tile-inner-loop -funroll-loops -mllvm -lsr-in-nested-loop
-mllvm -enable-loopinterchange -mllvm -compute-interchange-order
-z muldefs -lamdlibm -ljemalloc -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
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358

Test Sponsor: Inspur Corporation

Tested by: Inspur Corporation

Test Date: Sep-2022

Hardware Availability: Aug-2022

Software Availability: Dec-2021

Base Other Flags (Continued)

Benchmarks using Fortran, C, and C++:

-Wno-unused-command-line-argument

Peak 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

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

```
519.lbm_r: -m64 -flto -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
-fstruct-layout=7 -mllvm -unroll-threshold=50
-freemap-arrays -flv-function-specialization
-mllvm -inline-threshold=1000 -mllvm -enable-gvn-hoist
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358

Test Sponsor: Inspur Corporation

Tested by: Inspur Corporation

Test Date: Sep-2022

Hardware Availability: Aug-2022

Software Availability: Dec-2021

Peak Optimization Flags (Continued)

519.lbm_r (continued):

```
-mllvm -global-vectorize-slp=true  
-mllvm -function-specialize -mllvm -enable-licm-vrp  
-mllvm -reduce-array-computations=3 -lamdlibm -ljemalloc
```

538.imagick_r: Same as 519.lbm_r

544.nab_r: basepeak = yes

C++ benchmarks:

```
508.namd_r: -m64 -std=c++98 -mno-adx -mno-sse4a  
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false  
-Wl,-mllvm -Wl,-enable-licm-vrp -flto  
-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  
-finline-aggressive -mllvm -unroll-threshold=100  
-flv-function-specialization -mllvm -enable-licm-vrp  
-mllvm -reroll-loops -mllvm -aggressive-loop-unswitch  
-mllvm -reduce-array-computations=3  
-mllvm -global-vectorize-slp=true -lamdlibm -ljemalloc
```

510.parest_r: basepeak = yes

Fortran benchmarks:

```
503.bwaves_r: -m64 -Wl,-mllvm -Wl,-enable-X86-prefetching  
-Wl,-mllvm -Wl,-enable-licm-vrp -flto  
-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  
-lamdlibm -ljemalloc -lflang
```

```
549.fotonik3d_r: -m64 -Wl,-mllvm -Wl,-enable-X86-prefetching  
-Wl,-mllvm -Wl,-enable-licm-vrp -flto  
-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 -Kieee  
-Mrecursive -mllvm -reduce-array-computations=3  
-mllvm -global-vectorize-slp=true -mllvm -enable-licm-vrp
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358

Test Sponsor: Inspur Corporation

Tested by: Inspur Corporation

Test Date: Sep-2022

Hardware Availability: Aug-2022

Software Availability: Dec-2021

Peak Optimization Flags (Continued)

549.fotonik3d_r (continued):

-lamdlibm -ljemalloc -lflang

554.roms_r: -m64 -Wl,-mllvm -Wl,-enable-X86-prefetching

-Wl,-mllvm -Wl,-enable-licm-vrp -flto

-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

-Hz,1,0x1 -mllvm -fuse-tile-inner-loop -lamdlibm

-ljemalloc -lflang

Benchmarks using both Fortran and C:

521.wrf_r: -m64 -Wl,-mllvm -Wl,-enable-X86-prefetching

-Wl,-mllvm -Wl,-enable-licm-vrp -flto

-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

-fstruct-layout=7 -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 -Mrecursive -lamdlibm

-ljemalloc -lflang

527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

511.povray_r: basepeak = yes

526.blender_r: -m64 -std=c++98 -mno-adx -mno-sse4a

-Wl,-mllvm -Wl,-x86-use-vzeroupper=false

-Wl,-mllvm -Wl,-enable-licm-vrp -flto

-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

-fstruct-layout=7 -mllvm -unroll-threshold=50

-fremap-arrays -flv-function-specialization

-mllvm -inline-threshold=1000 -mllvm -enable-gvn-hoist

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358

Test Sponsor: Inspur Corporation

Tested by: Inspur Corporation

Test Date: Sep-2022

Hardware Availability: Aug-2022

Software Availability: Dec-2021

Peak Optimization Flags (Continued)

526.blender_r (continued):

```
-mllvm -global-vectorize-slp=true
-mllvm -function-specialize -mllvm -enable-licm-vrp
-mllvm -reduce-array-computations=3 -finline-aggressive
-mllvm -unroll-threshold=100 -mllvm -reroll-loops
-mllvm -aggressive-loop-unswitch -lamdlibm -ljemalloc
```

Benchmarks using Fortran, C, and C++:

```
-m64 -std=c++98 -mno-adx -mno-sse4a
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-enable-licm-vrp
-flto -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 -fstruct-layout=7
-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
-mllvm -unroll-threshold=100 -mllvm -loop-unswitch-threshold=200000
-finline-aggressive -mllvm -reroll-loops
-mllvm -aggressive-loop-unswitch -mllvm -extra-vectorizer-passes
-mllvm -convert-pow-exp-to-int=false -Mrecursive -lamdlibm -ljemalloc
-lflang
```

Peak 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



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Inspur Corporation

SPECrate®2017_fp_base = 399

Inspur NF5280A6 (AMD EPYC 7373X)

SPECrate®2017_fp_peak = 406

CPU2017 License: 3358

Test Sponsor: Inspur Corporation

Tested by: Inspur Corporation

Test Date: Sep-2022

Hardware Availability: Aug-2022

Software Availability: Dec-2021

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2017/flags/aocc320-flags-A1.html>

<http://www.spec.org/cpu2017/flags/Inspur-Platform-Settings-amd-V1.6.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2017/flags/aocc320-flags-A1.xml>

<http://www.spec.org/cpu2017/flags/Inspur-Platform-Settings-amd-V1.6.xml>

SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 2022-09-06 16:24:20-0400.

Report generated on 2022-09-27 17:16:23 by CPU2017 PDF formatter v6442.

Originally published on 2022-09-27.