



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

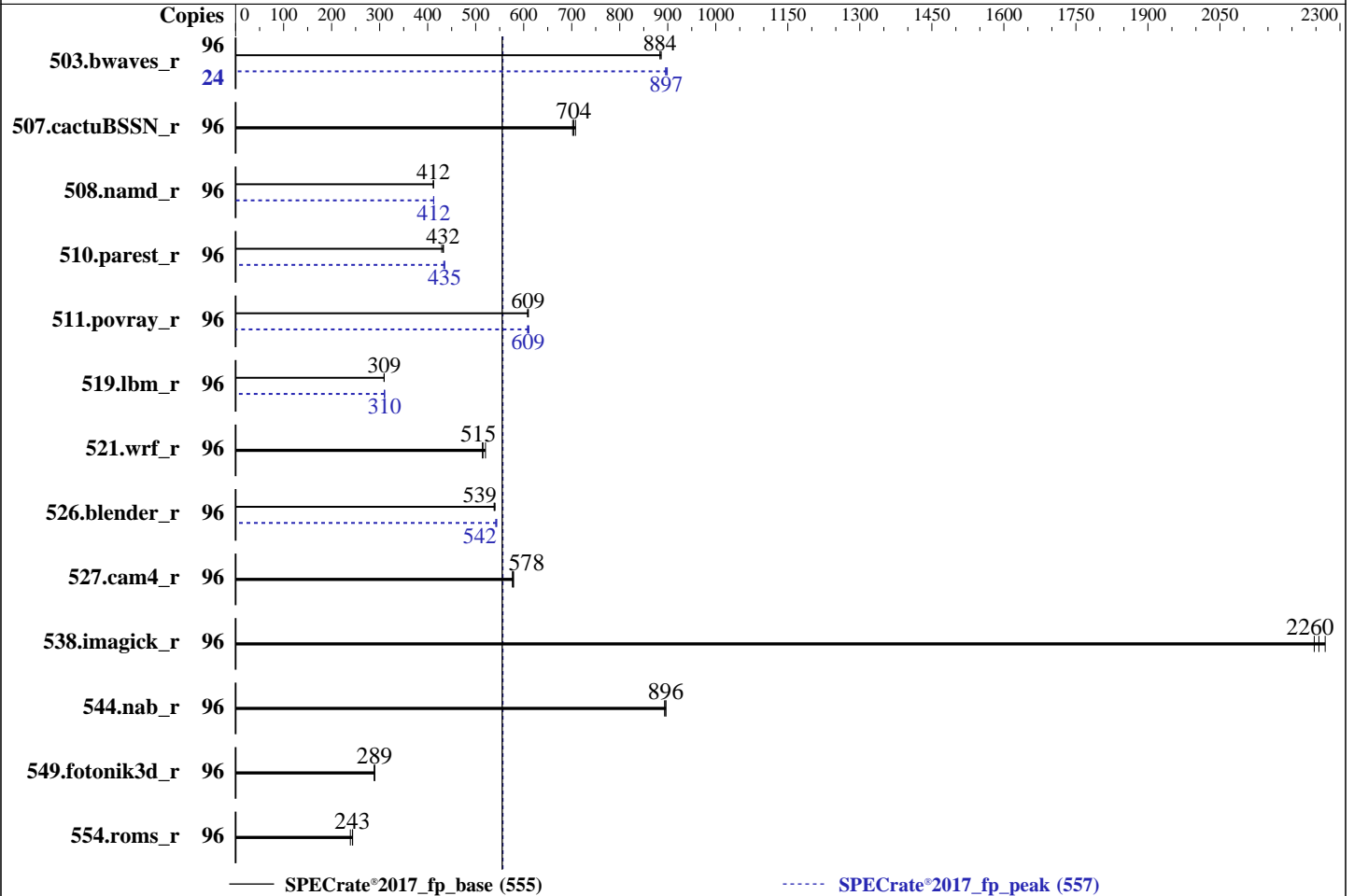
FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

CPU2017 License: 6488  
Test Sponsor: xFusion  
Tested by: xFusion

Test Date: Jul-2024  
Hardware Availability: May-2024  
Software Availability: Dec-2023



### Hardware

CPU Name: AMD EPYC 9454  
 Max MHz: 3800  
 Nominal: 2750  
 Enabled: 48 cores, 1 chip, 2 threads/core  
 Orderable: 1 chip  
 Cache L1: 32 KB I + 32 KB D on chip per core  
 L2: 1 MB I+D on chip per core  
 L3: 256 MB I+D on chip per chip, 32 MB shared / 6 cores  
 Other: None  
 Memory: 384 GB (12 x 32 GB 2Rx4 PC5-4800B-R)  
 Storage: 1 x 480 GB SATA SSD  
 Other: CPU Cooling: Air

### Software

OS: Red Hat Enterprise Linux release 9.0 (Plow)  
 5.14.0-70.13.1.el9\_0.x86\_64  
 Compiler: C/C++/Fortran: Version 4.0.0 of AOCC  
 Parallel: No  
 Firmware: Version 2.09.11 released Jun-2024  
 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



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

CPU2017 License: 6488  
Test Sponsor: xFusion  
Tested by: xFusion

Test Date: Jul-2024  
Hardware Availability: May-2024  
Software Availability: Dec-2023

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	96	1086	886	1089	884	<u>1089</u>	<u>884</u>	24	<u>268</u>	<u>897</u>	269	895	268	899
507.cactuBSSN_r	96	172	708	173	702	<u>173</u>	<u>704</u>	96	172	708	173	702	<u>173</u>	<u>704</u>
508.namd_r	96	<u>221</u>	<u>412</u>	221	412	221	412	96	221	413	<u>221</u>	<u>412</u>	221	412
510.parest_r	96	585	429	580	433	<u>582</u>	<u>432</u>	96	<u>577</u>	<u>435</u>	577	435	579	433
511.povray_r	96	369	608	<u>368</u>	<u>609</u>	368	610	96	<u>368</u>	<u>609</u>	369	608	367	611
519.lbm_r	96	327	309	<u>327</u>	<u>309</u>	327	309	96	<u>326</u>	<u>310</u>	327	310	326	310
521.wrf_r	96	<u>417</u>	<u>515</u>	413	520	418	514	96	<u>417</u>	<u>515</u>	413	520	418	514
526.blender_r	96	271	540	272	538	<u>271</u>	<u>539</u>	96	269	544	270	542	<u>270</u>	<u>542</u>
527.cam4_r	96	291	576	<u>291</u>	<u>578</u>	290	579	96	291	576	<u>291</u>	<u>578</u>	290	579
538.imagick_r	96	106	2250	105	2270	<u>106</u>	<u>2260</u>	96	106	2250	105	2270	<u>106</u>	<u>2260</u>
544.nab_r	96	<u>180</u>	<u>896</u>	180	896	181	893	96	<u>180</u>	<u>896</u>	180	896	181	893
549.fotonik3d_r	96	<u>1293</u>	<u>289</u>	1296	289	1292	290	96	<u>1293</u>	<u>289</u>	1296	289	1292	290
554.roms_r	96	638	239	626	244	<u>627</u>	<u>243</u>	96	638	239	626	244	<u>627</u>	<u>243</u>

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Compiler Notes

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

## Submit Notes

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

## Operating System Notes

'ulimit -s unlimited' was used to set environment stack size limit  
'ulimit -l 2097152' was used to set environment locked pages in memory limit

runcpu command invoked through numactl i.e.:  
numactl --interleave=all runcpu <etc>

To limit dirty cache to 8% of memory, 'sysctl -w vm.dirty\_ratio=8' run as root.  
To limit swap usage to minimum necessary, 'sysctl -w vm.swappiness=1' run as root.  
To free node-local memory and avoid remote memory usage,  
'sysctl -w vm.zone\_reclaim\_mode=1' run as root.  
To clear filesystem caches, 'sync; sysctl -w vm.drop\_caches=3' run as root.  
To disable address space layout randomization (ASLR) to reduce run-to-run  
variability, 'sysctl -w kernel.randomize\_va\_space=0' run as root.

To enable Transparent Hugepages (THP) for all allocations,

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

**CPU2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion

**Test Date:** Jul-2024  
**Hardware Availability:** May-2024  
**Software Availability:** Dec-2023

## Operating System Notes (Continued)

```
'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 = "/cpu2017/amd\_rate\_aocc400\_znver4\_A\_lib/lib:/cpu2017/amd\_rate\_aocc400\_znver4\_A\_lib/lib32:"  
MALLOC\_CONF = "retain:true"

## General Notes

Binaries were compiled on a system with 2x AMD EPYC 9174F CPU + 1.5TiB Memory using RHEL 8.6

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.  
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.  
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

## Platform Notes

BIOS settings:

Determinism Control = Manual  
Determinism Enable = Power  
TDP Control = Manual  
TDP = 400  
PPT Control = Manual  
PPT = 400  
NUMA Nodes Per Socket = NPS4

Sysinfo program /cpu2017/bin/sysinfo  
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197  
running on localhost.localdomain Mon Jul 8 21:10:57 2024

SUT (System Under Test) info as seen by some common utilities.

-----  
Table of contents  
-----

1. uname -a
2. w
3. Username
4. ulimit -a
5. sysinfo process ancestry
6. /proc/cpuinfo
7. lscpu
8. numactl --hardware
9. /proc/meminfo
10. who -r
11. Systemd service manager version: systemd 250 (250-6.el9\_0)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

**CPU2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion

**Test Date:** Jul-2024  
**Hardware Availability:** May-2024  
**Software Availability:** Dec-2023

### Platform Notes (Continued)

```

14. cpupower frequency-info
15. tuned-adm active
16. sysctl
17. /sys/kernel/mm/transparent_hugepage
18. /sys/kernel/mm/transparent_hugepage/khugepaged
19. OS release
20. Disk information
21. /sys/devices/virtual/dmi/id
22. dmidecode
23. BIOS

```

```

1. uname -a
Linux localhost.localdomain 5.14.0-70.13.1.el9_0.x86_64 #1 SMP PREEMPT Thu Apr 14 12:42:38 EDT 2022 x86_64
x86_64 x86_64 GNU/Linux

```

```

2. w
 21:10:57 up 4 min,  1 user,  load average: 0.26, 0.38, 0.19
USER  TTY      LOGIN@  IDLE   JCPU   PCPU   WHAT
root  pts/0    21:10   17.00s  0.95s  0.00s  -bash

```

```

3. Username
From environment variable $USER:  root

```

```

4. ulimit -a
real-time non-blocking time (microseconds, -R) unlimited
core file size              (blocks, -c) 0
data seg size                (kbytes, -d) unlimited
scheduling priority         (-e) 0
file size                    (blocks, -f) unlimited
pending signals              (-i) 3094757
max locked memory            (kbytes, -l) 2097152
max memory size              (kbytes, -m) unlimited
open files                   (-n) 1024
pipe size                    (512 bytes, -p) 8
POSIX message queues         (bytes, -q) 819200
real-time priority           (-r) 0
stack size                   (kbytes, -s) unlimited
cpu time                     (seconds, -t) unlimited
max user processes           (-u) 3094757
virtual memory                (kbytes, -v) unlimited
file locks                   (-x) unlimited

```

```

5. sysinfo process ancestry
/usr/lib/systemd/systemd --switched-root --system --deserialize 30
sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
sshd: root [priv]
sshd: root@pts/0
-bash
python3 ./run_amd_rate_aocc400_znver4_A1.py
/bin/bash ./amd_rate_aocc400_znver4_A1.sh
runcpu --config amd_rate_aocc400_znver4_A1.cfg --tune all --reportable --iterations 3 fprate
runcpu --configfile amd_rate_aocc400_znver4_A1.cfg --tune all --reportable --iterations 3 --nopower
--runmode rate --tune base:peak --size test:train:refrate fprate --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.029/templogs/preenv.fprate.029.0.log --lognum 029.0 --from_runcpu 2

```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

**CPU2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion

**Test Date:** Jul-2024  
**Hardware Availability:** May-2024  
**Software Availability:** Dec-2023

### Platform Notes (Continued)

```
specperl $SPEC/bin/sysinfo
$SPEC = /cpu2017
```

```
-----
6. /proc/cpuinfo
model name      : AMD EPYC 9454 48-Core Processor
vendor_id      : AuthenticAMD
cpu family     : 25
model          : 17
stepping       : 1
microcode      : 0xa101148
bugs           : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
TLB size      : 3584 4K pages
cpu cores     : 48
siblings      : 96
1 physical ids (chips)
96 processors (hardware threads)
physical id 0: core ids 0-5,8-13,16-21,24-29,32-37,40-45,48-53,56-61
physical id 0: apicids 0-11,16-27,32-43,48-59,64-75,80-91,96-107,112-123
Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
virtualized systems. Use the above data carefully.
```

```
-----
7. lscpu

From lscpu from util-linux 2.37.4:
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):                 96
On-line CPU(s) list:   0-95
Vendor ID:              AuthenticAMD
BIOS Vendor ID:        Advanced Micro Devices, Inc.
Model name:             AMD EPYC 9454 48-Core Processor
BIOS Model name:       AMD EPYC 9454 48-Core Processor
CPU family:             25
Model:                  17
Thread(s) per core:    2
Core(s) per socket:    48
Socket(s):              1
Stepping:               1
Frequency boost:        enabled
CPU max MHz:            3810.7910
CPU min MHz:            1500.0000
BogoMIPS:               5491.27
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 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 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 ssbd mba ibrs ibpb stibp vmmcall fsgsbase bmi1
                        avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
                        avx512ifma clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt
                        xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
                        avx512_bf16 clzero irperf xsaveerptr rdpru wbnoinvd amd_ppin arat npt lbrv
                        svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists
                        pausefilter pfthreshold avic v_vmsave_vmload vgif v_spec_ctrl avx512vbmi
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

**CPU2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion

**Test Date:** Jul-2024  
**Hardware Availability:** May-2024  
**Software Availability:** Dec-2023

### Platform Notes (Continued)

```
umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg
avx512_vpoptndq la57 rdpid overflow_recov succor smca fsrm flush_lld
AMD-V
```

```

Virtualization:
L1d cache:      1.5 MiB (48 instances)
L1i cache:      1.5 MiB (48 instances)
L2 cache:       48 MiB (48 instances)
L3 cache:       256 MiB (8 instances)
NUMA node(s):   4
NUMA node0 CPU(s): 0-11,48-59
NUMA node1 CPU(s): 12-23,60-71
NUMA node2 CPU(s): 24-35,72-83
NUMA node3 CPU(s): 36-47,84-95
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
Vulnerability Spectre v1:    Mitigation; usercopy/swaps barriers and __user pointer sanitization
Vulnerability Spectre v2:    Mitigation; Retpolines, IBPB conditional, IBRS_FW, STIBP always-on, 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
L1d   32K      1.5M    8 Data              1     64     1             64
L1i   32K      1.5M    8 Instruction        1     64     1             64
L2    1M       48M    8 Unified            2  2048     1             64
L3    32M     256M   16 Unified            3 32768     1             64

```

```

-----
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
available: 4 nodes (0-3)
node 0 cpus: 0-11,48-59
node 0 size: 95895 MB
node 0 free: 95229 MB
node 1 cpus: 12-23,60-71
node 1 size: 96762 MB
node 1 free: 96286 MB
node 2 cpus: 24-35,72-83
node 2 size: 96762 MB
node 2 free: 96250 MB
node 3 cpus: 36-47,84-95
node 3 size: 96714 MB
node 3 free: 96225 MB
node distances:
node  0  1  2  3
0:   10  12  12  12
1:   12  10  12  12
2:   12  12  10  12
3:   12  12  12  10

```

```

-----
9. /proc/meminfo
MemTotal:      395402684 kB

```

```

-----
10. who -r
run-level 3 Jul 8 21:07

```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

**CPU2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion

**Test Date:** Jul-2024  
**Hardware Availability:** May-2024  
**Software Availability:** Dec-2023

## Platform Notes (Continued)

-----  
11. Systemd service manager version: systemd 250 (250-6.el9\_0)  
Default Target Status  
multi-user running

-----  
12. Services, from systemctl list-unit-files  
STATE UNIT FILES  
enabled NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd crond  
dbus-broker firewalld getty@ irqbalance kdump mdmonitor microcode nis-domainname rhsmcertd  
rsyslog selinux-autorelabel-mark sshd sssd systemd-network-generator tuned udisks2  
enabled-runtime systemd-remount-fs  
disabled console-getty cpupower debug-shell hwloc-dump-hwdata kvm\_stat man-db-restart-cache-update  
nftables rdisc rhsm rhsm-facts rpmdm-rebuild serial-getty@ sshd-keygen@  
systemd-boot-check-no-failures systemd-pstore systemd-sysext  
indirect sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo

-----  
13. Linux kernel boot-time arguments, from /proc/cmdline  
BOOT\_IMAGE=(hd0,msdos2)/vmlinuz-5.14.0-70.13.1.el9\_0.x86\_64  
root=UUID=10976966-ea39-4bac-9efc-bf882faaa099  
ro  
crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M  
resume=UUID=a11e21b6-41a7-47ed-890c-9fb71934ef79  
nohz\_full=1-95

-----  
14. cpupower frequency-info  
analyzing CPU 0:  
current policy: frequency should be within 1.50 GHz and 2.75 GHz.  
The governor "performance" may decide which speed to use  
within this range.  
boost state support:  
Supported: yes  
Active: yes  
Boost States: 0  
Total States: 3  
Pstate-P0: 2750MHz

-----  
15. tuned-adm active  
Current active profile: throughput-performance

-----  
16. sysctl  
kernel.numa\_balancing 1  
kernel.randomize\_va\_space 0  
vm.compaction\_proactiveness 20  
vm.dirty\_background\_bytes 0  
vm.dirty\_background\_ratio 10  
vm.dirty\_bytes 0  
vm.dirty\_expire\_centisecs 3000  
vm.dirty\_ratio 8  
vm.dirty\_writeback\_centisecs 500  
vm.dirtytime\_expire\_seconds 43200  
vm.extfrag\_threshold 500  
vm.min\_unmapped\_ratio 1  
vm.nr\_hugepages 0  
vm.nr\_hugepages\_mempolicy 0

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

**CPU2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion

**Test Date:** Jul-2024  
**Hardware Availability:** May-2024  
**Software Availability:** Dec-2023

### Platform Notes (Continued)

```
vm.nr_overcommit_hugepages      0
vm.swappiness                    1
vm.watermark_boost_factor       15000
vm.watermark_scale_factor       10
vm.zone_reclaim_mode            1
```

```
-----
17. /sys/kernel/mm/transparent_hugepage
defrag          [always] defer defer+madvise madvise never
enabled        [always] madvise never
hpage_pmd_size 2097152
shmem_enabled  always within_size advise [never] deny force
```

```
-----
18. /sys/kernel/mm/transparent_hugepage/khugepaged
alloc_sleep_millisecs  60000
defrag                 1
max_ptes_none          511
max_ptes_shared        256
max_ptes_swap          64
pages_to_scan          4096
scan_sleep_millisecs  10000
```

```
-----
19. OS release
From /etc/*-release /etc/*-version
os-release      Red Hat Enterprise Linux 9.0 (Plow)
redhat-release Red Hat Enterprise Linux release 9.0 (Plow)
system-release Red Hat Enterprise Linux release 9.0 (Plow)
```

```
-----
20. Disk information
SPEC is set to: /cpu2017
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda3       xfs   150G  7.6G  143G   6% /
```

```
-----
21. /sys/devices/virtual/dmi/id
Product:      1158H V7
Product Family: Genoa
```

```
-----
22. dmidecode
Additional information from dmidecode 3.3 follows.  WARNING: Use caution when you interpret this section.
The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately
determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the
"DMTF SMBIOS" standard.
Memory:
  12x Samsung M321R4GA3BB6-CQKDG 32 GB 2 rank 4800
```

```
-----
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor:      INSYDE Corp.
BIOS Version:     2.09.11
BIOS Date:        06/14/2024
BIOS Revision:    2.9
```





# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

**CPU2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion

**Test Date:** Jul-2024  
**Hardware Availability:** May-2024  
**Software Availability:** Dec-2023

### Compiler Version Notes

-----  
C | 519.lbm\_r(base, peak) 538.imagick\_r(base, peak) 544.nab\_r(base, peak)  
-----

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#434 2022\_10\_28) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin  
-----

-----  
C++ | 508.namd\_r(base, peak) 510.parest\_r(base, peak)  
-----

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#434 2022\_10\_28) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin  
-----

-----  
C++, C | 511.povray\_r(base, peak) 526.blender\_r(base, peak)  
-----

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#434 2022\_10\_28) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin  
AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#434 2022\_10\_28) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin  
-----

-----  
C++, C, Fortran | 507.cactuBSSN\_r(base, peak)  
-----

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#434 2022\_10\_28) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin  
AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#434 2022\_10\_28) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin  
AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#434 2022\_10\_28) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin  
-----

-----  
Fortran | 503.bwaves\_r(base, peak) 549.fotonik3d\_r(base, peak) 554.roms\_r(base, peak)  
-----

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#434 2022\_10\_28) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin  
-----

-----  
Fortran, C | 521.wrf\_r(base, peak) 527.cam4\_r(base, peak)  
-----

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

**CPU2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion

**Test Date:** Jul-2024  
**Hardware Availability:** May-2024  
**Software Availability:** Dec-2023

### Compiler Version Notes (Continued)

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#434 2022\_10\_28) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin  
AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#434 2022\_10\_28) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/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  
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 -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



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

**CPU2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion

**Test Date:** Jul-2024  
**Hardware Availability:** May-2024  
**Software Availability:** Dec-2023

## Base Optimization Flags

### C benchmarks:

```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-ldist-scalar-expand -fenable-aggressive-gather -O3
-march=znver4 -fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt -lamdlibm -lamdalloc -lflang
```

### C++ benchmarks:

```
-m64 -flto -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 -mllvm -unroll-threshold=100
-finline-aggressive -mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloc
-lflang
```

### Fortran benchmarks:

```
-m64 -flto -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 -Kieee -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlibm -lamdalloc
-lflang
```

### Benchmarks using both Fortran and C:

```
-m64 -flto -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 -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt -Kieee -Mrecursive -funroll-loops -mllvm -lsr-in-nested-loop
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc -lflang
```

### Benchmarks using both C and C++:

```
-m64 -flto -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 -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt -mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000 -lamdlibm -lamdalloc -lflang
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

**CPU2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion

**Test Date:** Jul-2024  
**Hardware Availability:** May-2024  
**Software Availability:** Dec-2023

## Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:

```
-m64 -flto -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 -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-zopt -mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000 -Kieee -Mrecursive
-funroll-loops -mllvm -lsr-in-nested-loop
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc -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

Benchmarks using Fortran, C, and C++:

-Wno-unused-command-line-argument

## Peak Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

**CPU2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion

**Test Date:** Jul-2024  
**Hardware Availability:** May-2024  
**Software Availability:** Dec-2023

## Peak Compiler Invocation (Continued)

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,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math
-fstruct-layout=7 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc
```

538.imagick\_r: basepeak = yes

544.nab\_r: basepeak = yes

C++ benchmarks:

```
508.namd_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math
-fininline-aggressive -mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

**CPU2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion

**Test Date:** Jul-2024  
**Hardware Availability:** May-2024  
**Software Availability:** Dec-2023

## Peak Optimization Flags (Continued)

```
510.parest_r: -m64 -flto -Wl,-mllvm -Wl,-suppress-fmas
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math
-finline-aggressive -mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc
```

Fortran benchmarks:

```
503.bwaves_r: -m64 -flto -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 -Mrecursive
-mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlibm
-lamdalloc -lflang
```

549.fotonik3d\_r: basepeak = yes

554.roms\_r: basepeak = yes

Benchmarks using both Fortran and C:

521.wrf\_r: basepeak = yes

527.cam4\_r: basepeak = yes

Benchmarks using both C and C++:

```
511.povray_r: -m64 -flto -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 -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-freemap-arrays -mllvm -reduce-array-computations=3 -zopt
-mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000 -lamdlibm
-lamdalloc
```

```
526.blender_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math
-fstruct-layout=7 -mllvm -unroll-threshold=50
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

**CPU2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion

**Test Date:** Jul-2024  
**Hardware Availability:** May-2024  
**Software Availability:** Dec-2023

## Peak Optimization Flags (Continued)

526.blender\_r (continued):  
-fremap-arrays -fstrip-mining  
-mllvm -inline-threshold=1000  
-mllvm -reduce-array-computations=3 -zopt  
-finline-aggressive -mllvm -unroll-threshold=100 -lamdlibm  
-lamdalloc

Benchmarks using Fortran, C, and C++:

507.cactuBSSN\_r: basepeak = yes

## 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

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

<http://www.spec.org/cpu2017/flags/aocc400-flags.html>  
<http://www.spec.org/cpu2017/flags/xFusion-Platform-Settings-AMD-V1.1.html>

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

<http://www.spec.org/cpu2017/flags/aocc400-flags.xml>  
<http://www.spec.org/cpu2017/flags/xFusion-Platform-Settings-AMD-V1.1.xml>



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## xFusion

FusionServer 1158H V7  
(AMD EPYC 9454)

SPECrate®2017\_fp\_base = 555

SPECrate®2017\_fp\_peak = 557

**CPU2017 License:** 6488  
**Test Sponsor:** xFusion  
**Tested by:** xFusion

**Test Date:** Jul-2024  
**Hardware Availability:** May-2024  
**Software Availability:** Dec-2023

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](mailto:info@spec.org).

Tested with SPEC CPU®2017 v1.1.9 on 2024-07-08 09:10:57-0400.  
Report generated on 2024-07-30 19:30:42 by CPU2017 PDF formatter v6716.  
Originally published on 2024-07-30.