



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

CPU2017 License: 001176

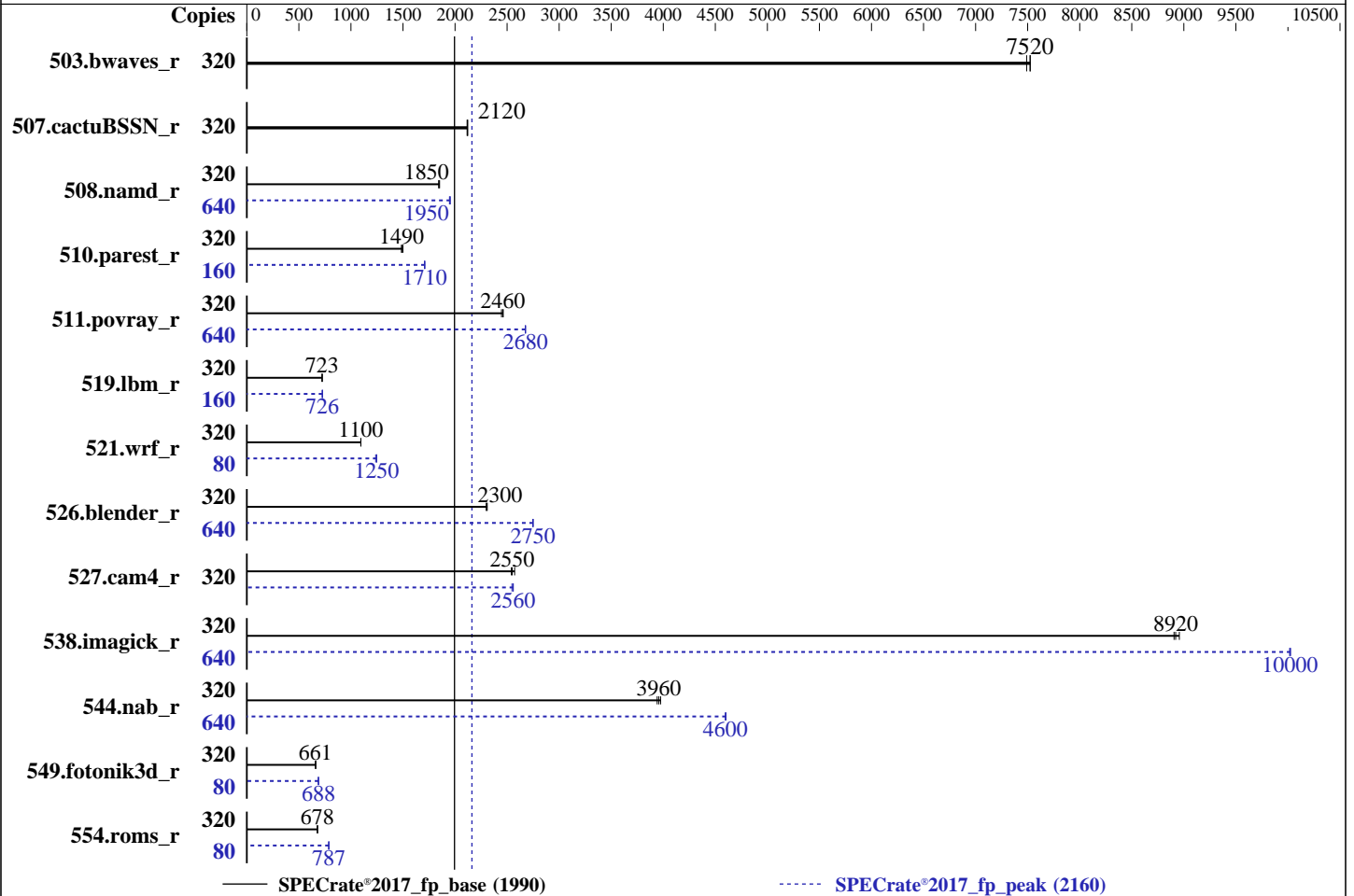
Test Sponsor: Supermicro

Tested by: Supermicro

Test Date: Sep-2024

Hardware Availability: Oct-2024

Software Availability: Oct-2024



### Hardware

CPU Name: AMD EPYC 9845  
 Max MHz: 3700  
 Nominal: 2100  
 Enabled: 320 cores, 2 chips, 2 threads/core  
 Orderable: 1,2 chips  
 Cache L1: 32 KB I + 48 KB D on chip per core  
 L2: 1 MB I+D on chip per core  
 L3: 320 MB I+D on chip per chip, 32 MB shared / 16 cores  
 Other: None  
 Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-6400B-R, running at 6000)  
 Storage: 1 x 3.5 TB NVMe SSD  
 Other: CPU Cooling: Air

### Software

OS: Ubuntu 24.04.1 LTS  
 Kernel 6.8.0-44-generic  
 Compiler: C/C++/Fortran: Version 5.0.0 of AOCC  
 Parallel: No  
 Firmware: Version 1.1 released Sep-2024  
 File System: ext4  
 System State: Run level 5 (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

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

CPU2017 License: 001176  
Test Sponsor: Supermicro  
Tested by: Supermicro

Test Date: Sep-2024  
Hardware Availability: Oct-2024  
Software Availability: Oct-2024

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	320	428	7490	426	7530	<u>427</u>	<u>7520</u>	320	428	7490	426	7530	<u>427</u>	<u>7520</u>
507.cactuBSSN_r	320	191	2120	191	2120	<u>191</u>	<u>2120</u>	320	191	2120	191	2120	<u>191</u>	<u>2120</u>
508.namd_r	320	<u>165</u>	<u>1850</u>	165	1840	164	1850	640	311	1950	312	1950	<u>312</u>	<u>1950</u>
510.parest_r	320	<u>563</u>	<u>1490</u>	563	1490	558	1500	160	245	1710	<u>245</u>	<u>1710</u>	245	1710
511.povray_r	320	303	2460	<u>304</u>	<u>2460</u>	305	2450	640	559	2670	558	2680	<u>558</u>	<u>2680</u>
519.lbm_r	320	466	724	466	723	<u>466</u>	<u>723</u>	160	233	724	232	727	<u>232</u>	<u>726</u>
521.wrf_r	320	655	1090	<u>654</u>	<u>1100</u>	654	1100	80	144	1250	145	1240	<u>144</u>	<u>1250</u>
526.blender_r	320	<u>212</u>	<u>2300</u>	211	2310	212	2300	640	<u>355</u>	<u>2750</u>	354	2750	355	2750
527.cam4_r	320	220	2540	218	2570	<u>220</u>	<u>2550</u>	320	220	2550	<u>219</u>	<u>2560</u>	219	2560
538.imagick_r	320	<u>89.2</u>	<u>8920</u>	88.9	8960	89.4	8910	640	159	10000	159	10000	<u>159</u>	<u>10000</u>
544.nab_r	320	137	3940	<u>136</u>	<u>3960</u>	135	3970	640	<u>234</u>	<u>4600</u>	234	4600	234	4600
549.fotonik3d_r	320	<u>1887</u>	<u>661</u>	1886	661	1888	661	80	<u>453</u>	<u>688</u>	453	688	453	688
554.roms_r	320	<u>750</u>	<u>678</u>	749	679	750	678	80	161	788	<u>162</u>	<u>787</u>	162	787

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

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,  
'echo always > /sys/kernel/mm/transparent\_hugepage/enabled' and

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Sep-2024  
**Hardware Availability:** Oct-2024  
**Software Availability:** Oct-2024

## Operating System Notes (Continued)

'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 =  
    "/spec/cpu2017aocc500zen5A1/amd_rate_aocc500_znver5_A_lib/lib:/spec/cpu2017aocc500zen5A1/amd_rate_aocc  
    500_znver5_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:  
NUMA Nodes Per Socket = NPS2  
Determinism Control = Manual  
Determinism Enable = Power  
TDP Control = Manual  
TDP = 400  
Package Power Limit Control = Manual  
Package Power Limit = 400

```
Sysinfo program /spec/cpu2017aocc500zen5A1/bin/sysinfo  
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197  
running on smc4708turin-u2404os Thu Sep 19 13:25:02 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 255 (255.4-lubuntu8.4)
12. Failed units, from systemctl list-units --state=failed
13. Services, from systemctl list-unit-files

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Sep-2024  
**Hardware Availability:** Oct-2024  
**Software Availability:** Oct-2024

### Platform Notes (Continued)

- 14. Linux kernel boot-time arguments, from /proc/cmdline
- 15. cpupower frequency-info
- 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 smc4708turin-u2404os 6.8.0-44-generic #44-Ubuntu SMP PREEMPT_DYNAMIC Tue Aug 13 13:35:26 UTC 2024
x86_64 x86_64 x86_64 GNU/Linux
-----
```

```
-----
2. w
13:25:02 up 6:47, 2 users, load average: 219.46, 513.02, 564.06
USER  TTY      FROM          LOGIN@   IDLE   JCPU   PCPU WHAT
root  tty1    -             06:39    6:45m  0.07s  ?    -bash
root  -       172.31.22.108 06:40    6:47m  0.00s  0.22s sshd: root@pts/0
-----
```

```
-----
3. Username
From environment variable $USER: root
-----
```

```
-----
4. ulimit -a
time(seconds)      unlimited
file(blocks)       unlimited
data(kbytes)       unlimited
stack(kbytes)      unlimited
coredump(blocks)   0
memory(kbytes)     unlimited
locked memory(kbytes) 2097152
process            6188882
nofiles            1024
vmemory(kbytes)    unlimited
locks              unlimited
rtprio             0
-----
```

```
-----
5. sysinfo process ancestry
/sbin/init
SCREEN -S cpu
/bin/bash
python3 ./run_amd_rate_aocc500_znver5_A1.py
/bin/bash ./amd_rate_aocc500_znver5_A1.sh
runcpu --config amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 fprate
runcpu --configfile amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 --nopower
--runmode rate --tune base:peak --size test:train:refrate fprate --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.002/temlogs/preenv.fprate.002.0.log --lognum 002.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /spec/cpu2017aocc500zen5A1
-----
```

```
-----
6. /proc/cpuinfo
model name      : AMD EPYC 9845 160-Core Processor
-----
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Sep-2024  
**Hardware Availability:** Oct-2024  
**Software Availability:** Oct-2024

### Platform Notes (Continued)

```

vendor_id      : AuthenticAMD
cpu family    : 26
model         : 17
stepping      : 0
microcode     : 0xb101021
bugs          : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
TLB size     : 192 4K pages
cpu cores     : 160
siblings      : 320
2 physical ids (chips)
640 processors (hardware threads)
physical id 0: core ids 0-159
physical id 1: core ids 0-159
physical id 0: apicids 0-319
physical id 1: apicids 512-831

```

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 2.39.3:

```

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):                640
On-line CPU(s) list:  0-639
Vendor ID:             AuthenticAMD
BIOS Vendor ID:       Advanced Micro Devices, Inc.
Model name:            AMD EPYC 9845 160-Core Processor
BIOS Model name:      AMD EPYC 9845 160-Core Processor
BIOS CPU family:      107
CPU family:            26
Model:                 17
Thread(s) per core:   2
Core(s) per socket:   160
Socket(s):             2
Stepping:              0
Frequency boost:       enabled
CPU(s) scaling MHz:   57%
CPU max MHz:           3718.0659
CPU min MHz:           1500.0000
BogoMIPS:              4193.61
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 amd_lbr_v2 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 bpext
perfctr_llc mwaitx cpb cat_l3 cdp_l3 hw_pstate ssbd mba perfmon_v2
ibrs ibpb stibp ibrs_enhanced vmmcall fsgsbase tsc_adjust 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 user_shstk avx_vnni avx512_bf16 clzero irperf
xsaveerptr rdpru wbnoinvd amd_ppin cppc arat npt lbrv svm_lock
nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter
pfthreshold avic v_vmsave_vmload vgif x2avic v_spec_ctrl vnmi

```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Sep-2024  
**Hardware Availability:** Oct-2024  
**Software Availability:** Oct-2024

### Platform Notes (Continued)

```

Virtualization:
Lld cache:
L1i cache:
L2 cache:
L3 cache:
NUMA node(s):
NUMA node0 CPU(s):
NUMA node1 CPU(s):
NUMA node2 CPU(s):
NUMA node3 CPU(s):
Vulnerability Gather data sampling:
Vulnerability Itlb multihit:
Vulnerability L1tf:
Vulnerability Mds:
Vulnerability Meltdown:
Vulnerability Mmio stale data:
Vulnerability Reg file data sampling:
Vulnerability Retbleed:
Vulnerability Spec rstack overflow:
Vulnerability Spec store bypass:
Vulnerability Spectre v1:
Vulnerability Spectre v2:
Vulnerability Srbds:
Vulnerability Tsx async abort:

```

avx512vbmi umip pku ospke avx512\_vbmi2 gfni vaes vpclmulqdq  
avx512\_vnni avx512\_bitalg avx512\_vpopcntdq la57 rdpid bus\_lock\_detect  
movdiri movdir64b overflow\_recov succor smca fsrm avx512\_vp2intersect  
flush\_lld debug\_swap  
AMD-V  
15 MiB (320 instances)  
10 MiB (320 instances)  
320 MiB (320 instances)  
640 MiB (20 instances)  
4  
0-79,320-399  
80-159,400-479  
160-239,480-559  
240-319,560-639  
Not affected  
Not affected  
Not affected  
Not affected  
Not affected  
Not affected  
Not affected  
Not affected  
Not affected  
Mitigation; Speculative Store Bypass disabled via prctl  
Mitigation; usercopy/swaps barriers and \_\_user pointer sanitization  
Mitigation; Enhanced / Automatic IBRS; IBPB conditional; STIBP  
always-on; RSB filling; PBRSE-eIBRS Not affected; BHI Not affected  
Not affected  
Not affected

```

From lscpu --cache:
NAME ONE-SIZE ALL-SIZE WAYS TYPE          LEVEL  SETS  PHY-LINE  COHERENCY-SIZE
L1d      48K      15M    12 Data             1      64      1           64
L1i      32K      10M     8 Instruction       1      64      1           64
L2       1M      320M   16 Unified          2    1024      1           64
L3       32M      640M   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: 0-79,320-399
node 0 size: 386392 MB
node 0 free: 380048 MB
node 1 cpus: 80-159,400-479
node 1 size: 387017 MB
node 1 free: 382072 MB
node 2 cpus: 160-239,480-559
node 2 size: 386974 MB
node 2 free: 382033 MB
node 3 cpus: 240-319,560-639
node 3 size: 386906 MB
node 3 free: 381123 MB
node distances:
node  0  1  2  3
0:  10  12  32  32
1:  12  10  32  32
2:  32  32  10  12
3:  32  32  12  10

```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Sep-2024  
**Hardware Availability:** Oct-2024  
**Software Availability:** Oct-2024

### Platform Notes (Continued)

9. /proc/meminfo  
MemTotal: 1584426372 kB

10. who -r  
run-level 5 Sep 19 06:39

11. Systemd service manager version: systemd 255 (255.4-lubuntu8.4)  
Default Target Status  
graphical degraded

12. Failed units, from systemctl list-units --state=failed  
UNIT LOAD ACTIVE SUB DESCRIPTION  
\* systemd-networkd-wait-online.service loaded failed failed Wait for Network to be Configured  
Legend: LOAD -> Reflects whether the unit definition was properly loaded.  
ACTIVE -> The high-level unit activation state, i.e. generalization of SUB.  
SUB -> The low-level unit activation state, values depend on unit type.  
1 loaded units listed.

13. Services, from systemctl list-unit-files  
STATE UNIT FILES  
enabled ModemManager apparmor appport blk-availability cloud-config cloud-final cloud-init cloud-init-local console-setup cron dmesg e2scrub\_reap finalrd getty@ gpu-manager grub-common grub-initrd-fallback keyboard-setup lvm2-monitor multipathd networkd-dispatcher nvme-fc-boot-connections nvme-autoconnect open-iscsi open-vm-tools pollinate rsyslog secureboot-db setvtrgb snapd sysstat systemd-networkd systemd-networkd-wait-online systemd-pstore systemd-resolved systemd-timesyncd thermald ua-reboot-cmds ubuntu-advantage udisks2 ufw unattended-upgrades vgauth  
enabled-runtime netplan-ovs-cleanup systemd-fsck-root systemd-remount-fs  
disabled console-getty debug-shell ipmievd iscsid nftables rsync serial-getty@ ssh systemd-boot-check-no-failures systemd-confext systemd-network-generator systemd-networkd-wait-online@ systemd-pcrlock-file-system systemd-pcrlock-firmware-code systemd-pcrlock-firmware-config systemd-pcrlock-machine-id systemd-pcrlock-make-policy systemd-pcrlock-secureboot-authority systemd-pcrlock-secureboot-policy systemd-sysext systemd-time-wait-sync upower  
generated openipmi  
indirect systemd-sysupdate systemd-sysupdate-reboot uuid  
masked cryptdisks cryptdisks-early hwclock multipath-tools-boot screen-cleanup sudo x11-common

14. Linux kernel boot-time arguments, from /proc/cmdline  
BOOT\_IMAGE=/boot/vmlinuz-6.8.0-44-generic  
root=UUID=7434a739-6d8b-459f-b16c-dd9667f397b8  
ro

15. cpupower frequency-info  
analyzing CPU 1:  
current policy: frequency should be within 1.50 GHz and 2.10 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

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Sep-2024  
**Hardware Availability:** Oct-2024  
**Software Availability:** Oct-2024

### Platform Notes (Continued)

Pstate-P0: 32800MHz

-----  
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
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 Ubuntu 24.04.1 LTS
```

-----  
20. Disk information

```
SPEC is set to: /spec/cpu2017aocc500zen5A1
Filesystem Type Size Used Avail Use% Mounted on
/dev/nvme2n1p2 ext4 3.5T 89G 3.2T 3% /
```

-----  
21. /sys/devices/virtual/dmi/id

```
Vendor: Supermicro
Product: AS -2126HS-TN
Product Family: SMC H14
Serial: S920464X4524708
```

(Continued on next page)





# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Sep-2024  
**Hardware Availability:** Oct-2024  
**Software Availability:** Oct-2024

### Platform Notes (Continued)

#### 22. dmidecode

Additional information from dmidecode 3.5 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:

24x Samsung M321R8GA0PB1-CCPWC 64 GB 2 rank 6400, configured at 6000

#### 23. BIOS

(This section combines info from /sys/devices and dmidecode.)

BIOS Vendor: American Megatrends International, LLC.  
BIOS Version: 1.1  
BIOS Date: 09/09/2024  
BIOS Revision: 5.35

### Compiler Version Notes

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

AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin  
=====

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

AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin  
=====

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

AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin  
AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin  
=====

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

AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin  
AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)  
Target: x86\_64-unknown-linux-gnu

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Sep-2024  
**Hardware Availability:** Oct-2024  
**Software Availability:** Oct-2024

### Compiler Version Notes (Continued)

Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin  
AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin

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

AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin

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

AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin  
AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/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



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Sep-2024  
**Hardware Availability:** Oct-2024  
**Software Availability:** Oct-2024

## 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
```

## Base Optimization Flags

C benchmarks:

```
-m64 -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=znver5 -fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloc
-lflang -ldl
```

C++ benchmarks:

```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-extra-inliner
-O3 -march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-mllvm -unroll-threshold=100 -mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloc
-lflang -ldl
```

Fortran benchmarks:

```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-aggressive-gather=true
-Wl,-mllvm -Wl,-enable-masked-gather-sequence=false -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -flto -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlibm -lamdalloc
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Sep-2024  
**Hardware Availability:** Oct-2024  
**Software Availability:** Oct-2024

## Base Optimization Flags (Continued)

Fortran benchmarks (continued):

-lflang -ldl

Benchmarks using both Fortran and C:

-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6  
-Wl,-mllvm -Wl,-reduce-array-computations=3  
-Wl,-mllvm -Wl,-enable-X86-prefetching  
-Wl,-mllvm -Wl,-enable-aggressive-gather=true  
-Wl,-mllvm -Wl,-enable-masked-gather-sequence=false -O3 -march=znver5  
-fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie -flto  
-fstruct-layout=7 -mllvm -unroll-threshold=50  
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining  
-mllvm -reduce-array-computations=3 -zopt -Mrecursive -funroll-loops  
-mllvm -lsr-in-nested-loop -fepilog-vectorization-of-inductions  
-lamdlibm -lamdalloc -lflang -ldl

Benchmarks using both C and C++:

-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6  
-Wl,-mllvm -Wl,-reduce-array-computations=3  
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-extra-inliner  
-O3 -march=znver5 -fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie  
-flto -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  
-mllvm -loop-unswitch-threshold=200000 -lamdlibm -lamdalloc -lflang  
-ldl

Benchmarks using Fortran, C, and C++:

-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6  
-Wl,-mllvm -Wl,-reduce-array-computations=3  
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-extra-inliner  
-O3 -march=znver5 -fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie  
-flto -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  
-mllvm -loop-unswitch-threshold=200000 -Mrecursive -funroll-loops  
-mllvm -lsr-in-nested-loop -fepilog-vectorization-of-inductions  
-lamdlibm -lamdalloc -lflang -ldl

## Base Other Flags

C benchmarks:

-Wno-unused-command-line-argument

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Sep-2024  
**Hardware Availability:** Oct-2024  
**Software Availability:** Oct-2024

## Base Other Flags (Continued)

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++

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



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Sep-2024  
**Hardware Availability:** Oct-2024  
**Software Availability:** Oct-2024

## Peak Optimization Flags

C benchmarks:

```
519.lbm_r: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl
```

538.imagick\_r: Same as 519.lbm\_r

```
544.nab_r: -m64 -flto -Wl,-mllvm -Wl,-ldist-scalar-expand
-fenable-aggressive-gather -Ofast -march=znver5
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl
```

C++ benchmarks:

```
508.namd_r: -m64 -std=c++14
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl
```

```
510.parest_r: -m64 -std=c++14 -flto -Wl,-mllvm -Wl,-suppress-fmas
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math
-mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl
```

Fortran benchmarks:

503.bwaves\_r: basepeak = yes

```
549.fotonik3d_r: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Sep-2024  
**Hardware Availability:** Oct-2024  
**Software Availability:** Oct-2024

## Peak Optimization Flags (Continued)

549.fotonik3d\_r (continued):

```
-Mrecursive -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -fvector-transform
-fscalar-transform -lamdlibm -lamdalloc -ldl -lflang
```

```
554.roms_r: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-Mrecursive -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlibm
-lamdalloc -ldl -lflang
```

Benchmarks using both Fortran and C:

```
521.wrf_r: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -Mrecursive
-funroll-loops -mllvm -lsr-in-nested-loop
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc
-ldl -lflang
```

```
527.cam4_r: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -freemap-arrays
-mllvm -reduce-array-computations=3 -zopt -Mrecursive
-funroll-loops -mllvm -lsr-in-nested-loop
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc
-ldl -lflang
```

Benchmarks using both C and C++:

```
511.povray_r: -m64 -std=c++14
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false
-Wl,-mllvm -Wl,-extra-inliner -Ofast -march=znver5
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-freemap-arrays -mllvm -reduce-array-computations=3 -zopt
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Sep-2024  
**Hardware Availability:** Oct-2024  
**Software Availability:** Oct-2024

## Peak Optimization Flags (Continued)

511.povray\_r (continued):

```
-mllvm -unroll-threshold=100
-mllvm -loop-unswitch-threshold=200000 -lamdlibm
-lamdalloc -ldl
```

526.blender\_r: -m64 -std=c++14

```
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -fltto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt
-mllvm -unroll-threshold=100 -lamdlibm -lamdalloc -ldl
```

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/aocc500-flags.html>

<http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-Turin-revB.html>





# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Supermicro

Hyper A+ Server AS -2126HS-TN  
(H14DSH , AMD EPYC 9845)

SPECrate®2017\_fp\_base = 1990

SPECrate®2017\_fp\_peak = 2160

**CPU2017 License:** 001176

**Test Sponsor:** Supermicro

**Tested by:** Supermicro

**Test Date:** Sep-2024

**Hardware Availability:** Oct-2024

**Software Availability:** Oct-2024

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

<http://www.spec.org/cpu2017/flags/aocc500-flags.xml>

<http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-Turin-revB.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](mailto:info@spec.org).

Tested with SPEC CPU®2017 v1.1.9 on 2024-09-19 09:25:01-0400.

Report generated on 2024-10-10 09:54:47 by CPU2017 PDF formatter v6716.

Originally published on 2024-10-10.