

# SPEC® CPU2017 Integer Rate Result

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## Supermicro

MegaDC ARS-211M-NR  
(R13SPD , Ampere AmpereOne A192-32X)

SPECrate2017\_int\_base = 3.56

SPECrate2017\_int\_peak = Not Run

CPU2017 License: 001176

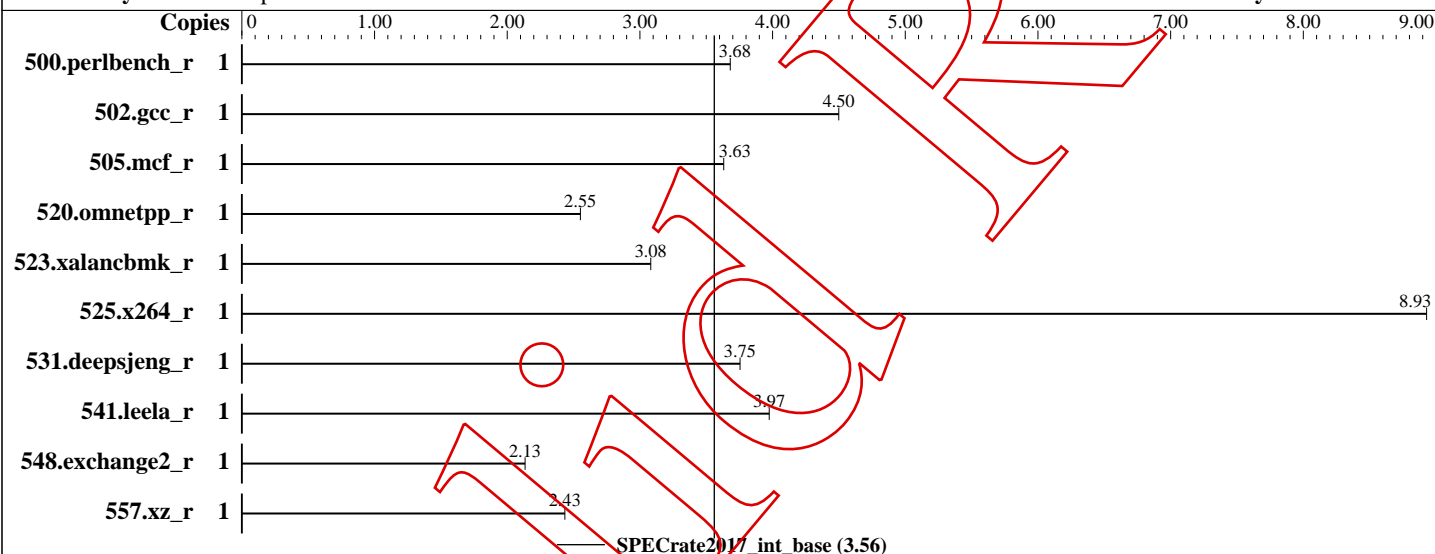
Test Sponsor: Supermicro

Tested by: Supermicro

Test Date: Aug-2025

Hardware Availability: Aug-2024

Software Availability: Jul-2023



### Hardware

CPU Name: AmpereOne A192-32X  
Max MHz.: 3200  
Nominal: 3200  
Enabled: 192 cores, 1 chip  
Orderable: 1 chip  
Cache L1: 16 KB I + 64 KB D on chip per core  
L2: 2 MB I+D on chip per core  
L3: 64 MB I+D on chip per chip  
Other: None  
Memory: 512 GB (8 x 64 GB 2Rx4 PC5-5600B-R,  
502.223 GB fixme: If using DDR4, the format is:  
'N GB (N x N GB nRxn PC4-nnnnX-X)'  
Storage: 828 GB add more disk info here  
Other: CPU Cooling: Air

### Software

OS: Fedora release 42 (Adams)  
6.14.0-63.fc42.aarch64  
Compiler: C/C++/Fortran: Version 13.2.0 of GCC, the  
GNU Compiler Collection  
Parallel: No  
Firmware: Version 1.0 released Jul-2024  
File System: xfs  
System State: Run level 3 (multi-user)  
Base Pointers: 64-bit  
Peak Pointers: Not Applicable  
Other: Jemalloc memory allocator library v5.3.0

## Errors

'reportable' flag not set during run  
523.xalancbmk\_r (base) did not have enough runs!  
548.exchange2\_r (base) did not have enough runs!  
505.mcf\_r (base) did not have enough runs!  
502.gcc\_r (base) did not have enough runs!  
541.leela\_r (base) did not have enough runs!  
557.xz\_r (base) did not have enough runs!  
520.omnetpp\_r (base) did not have enough runs!  
531.deepsjeng\_r (base) did not have enough runs!  
525.x264\_r (base) did not have enough runs!

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## Errors (Continued)

500.perlbench\_r (base) did not have enough runs!

Unknown flags were used! See

<https://www.spec.org/cpu2017/Docs/runcpu.html#flagsurl>  
for information about how to get rid of this error.

## Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	1	<u>432</u>	<u>3.68</u>													
502.gcc_r	1	<u>315</u>	<u>4.50</u>													
505.mcf_r	1	<u>445</u>	<u>3.63</u>													
520.omnetpp_r	1	<u>514</u>	<u>2.55</u>													
523.xalancbmk_r	1	<u>343</u>	<u>3.08</u>													
525.x264_r	1	<u>196</u>	<u>8.93</u>													
531.deepsjeng_r	1	<u>305</u>	<u>3.75</u>													
541.leela_r	1	<u>417</u>	<u>3.97</u>													
548.exchange2_r	1	<u>1227</u>	<u>2.13</u>													
557.xz_r	1	<u>444</u>	<u>2.43</u>													

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SPECrate2017\_int\_peak = Not Run

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

## Compiler Notes

Binaries were compiled on a system with 1x AmpereOne CPU  
chip + 512 GB Memory using Fedora Linux 37

## Submit Notes

The config file option 'submit' was used.  
'numactl' was used to bind copies to the cores.

## Operating System Notes

'ulimit -s unlimited' was used to set environment stack size  
Set dirty\_ratio=8 to limit dirty cache to 8% of memory  
echo 8 | sudo tee /proc/sys/vm/dirty\_ratio  
Set swappiness=1 to swap only if necessary  
echo 1 | sudo tee /proc/sys/vm/swappiness  
Set zone\_reclaim\_mode=1 to free local node memory and avoid remote memory  
echo 1 | sudo tee /proc/sys/vm/zone\_reclaim\_mode

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## Operating System Notes (Continued)

```
Set drop_caches=3 to reset caches before invoking runcpu
echo 3 | sudo tee /proc/sys/vm/drop_caches
Set numa_balancing=0 to disable automatic numa balancing
echo 0 | sudo tee /proc/sys/kernel/numa_balancing
Switch off all ktune and tuned settings
sudo tuned-adm off
Transparent huge pages set to 'never'
sudo bash -c "echo never > /sys/kernel/mm/transparent_hugepage/enabled"

runcpu command invoked through numactl i.e
1P: numactl --interleave=0-3 runcpu <etc>
2P: numactl --interleave=all runcpu <etc>
```

## General Notes

Jemalloc v5.3.0 is available via  
<https://github.com/jemalloc/jemalloc/releases/download/5.3.0/jemalloc-5.3.0.tar.bz2>  
It was built on Fedora Linux 37 using Version 13.2.0 of GCC  
The configure options are  
"--with-lg-page=16" for building libjemalloc.so, and  
"--with-lg-quantum=3 --with-lg-page=18" for building libjemalloc\_ext.so  
Tuned MALLOC\_CONF in terms of <https://jemalloc.net/jemalloc.3.html>

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

Note: lscpu is not able to detect the SLC.  
SLC is defined at <https://developer.arm.com/documentation/100180/0103/bry1436285730281>  
BIOS Settings:  
Sub-NUMA Mode = Quadrant  
Sysinfo program /root/mte/spec17/bin/sysinfo  
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9  
running on fedora Tue Aug 19 00:20:53 2025

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  
\*

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## Platform Notes (Continued)

\* Did not identify cpu model. If you would  
\* like to write your own sysinfo program, see  
\* [www.spec.org/cpu2017/config.html#sysinfo](http://www.spec.org/cpu2017/config.html#sysinfo)  
\*  
\*

\* 0 "physical id" tags found. Perhaps this is an older system,  
\* or a virtualized system. Not attempting to guess how to  
\* count chips/cores for this system.  
\*

192 "processors"  
cores, siblings (Caution: counting these is hw and system dependent. The following  
excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

From lscpu:

```
Architecture:          aarch64
CPU op-mode(s):        64-bit
Byte Order:            Little Endian
CPU(s):                192
On-line CPU(s) list:   0-191
Vendor ID:             Ampere
BIOS Vendor ID:        Ampere (R)
Model name:            Ampere-1a
BIOS Model name:       AmpereOne (R) A192-32X CPU @ 3.2GHz
BIOS CPU family:       257
Model:                 0
Thread(s) per core:    1
Core(s) per socket:    192
Socket(s):             1
Stepping:              0x0
Frequency boost:       disabled
CPU(s) scaling MHz:    81%
CPU max MHz:           3200.0000
CPU min MHz:           1000.0000
BogoMIPS:              2000.00
Flags:                 fp asimd evtstrm aes pmull sha1 sha2 crc32
                        atomics fphp asimdhp cpuid asimdrdm jscvt fcma lrcpc dcpop sha3 sm3 sm4 asimdpp
                        sha512 asimdfhm dit uscat ilrcpc flagm ssbs sb paca pacg dcpodp flagm2 frint i8mm
                        bfi6 rng bti mte ecv mte3
L1d cache:             12 MiB (192 instances)
L1i cache:             3 MiB (192 instances)
L2 cache:              384 MiB (192 instances)
NUMA node(s):          1
NUMA node0 CPU(s):     0-191
Vulnerability Gather data sampling: Not affected
Vulnerability Ghostwrite: Not affected
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf:     Not affected
```

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## Platform Notes (Continued)

Vulnerability Mds: Not affected  
Vulnerability Meltdown: Not affected  
Vulnerability Mmio stale data: Not affected  
Vulnerability Reg file data sampling: Not affected  
Vulnerability Retbleed: Not affected  
Vulnerability Spec rstack overflow: Not affected  
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl  
Vulnerability Spectre v1: Mitigation; \_\_user pointer sanitization  
Vulnerability Spectre v2: Not affected  
Vulnerability Srbds: Not affected  
Vulnerability Tsx async abort: Not affected  
WARNING: the 'lscpu' utility claims that 1 "Socket(s)" were seen, which does not match the could not determine "physical id"s seen in /proc/cpuinfo. The tester should verify the count independently

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.

From /proc/meminfo

MemTotal: 526618652 kB  
HugePages\_Total: 0  
Hugepagesize: 2048 kB

From /etc/\*release\* /etc/\*version\*

fedora-release: Fedora release 42 (Adams)  
os-release:  
NAME="Fedora Linux"  
VERSION="42 (Adams)"  
RELEASE\_TYPE=stable  
ID=fedora  
VERSION\_ID=42  
VERSION\_CODENAME=""  
PLATFORM\_ID="platform:f42"  
PRETTY\_NAME="Fedora Linux 42 (Adams)"  
redhat-release: Fedora release 42 (Adams)  
system-release: Fedora release 42 (Adams)  
system-release-cpe: cpe:/o:fedoraproject:fedora:42

uname -a:

Linux fedora 6.14.0-63.fc42.aarch64 #1 SMP PREEMPT\_DYNAMIC Mon Mar 24 20:18:11 UTC 2025 aarch64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2017-5754 (Meltdown): Not affected  
CVE-2017-5753 (Spectre variant 1): Mitigation: \_\_user pointer sanitization

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## Platform Notes (Continued)

CVE-2017-5715 (Spectre variant 2): Not affected

SPEC is set to: /root/mte/spec17

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/nvme0n1p4	xfs	828G	120G	708G	15%	/

Additional information from dmidecode 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.

BIOS EDK II 04.04.00004001 2025-02-04 22:23:30 02/04/2025

Memory:

8x SK Hynix HMC94AGBR181N 64 GB 2 rank 5600

(End of data from sysinfo program)

## Compiler Version Notes

FC 548.exchange2\_r(base)

GNU Fortran (GCC) 12.3.1 20230605 [releases/gcc-12 revision  
256cb821273d328e98d87aae2a061e0e889ec408]

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This is free software; see the source for copying conditions. There is NO  
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

CC 500.perlbench\_r(base) 502.gcc\_r(base) 505.mcf\_r(base) 525.x264\_r(base)  
557.xz\_r(base)

clang version 18.1.0rc (git@github.com:UT-Security/llvm-mte.git  
464a00b150ec9bb9d88363bf3016ce0778bc0dde)

Target: aarch64-unknown-linux-gnu

Thread model: posix

InstalledDir: /home/noah/code/llvm-mte/tagcfi/build/bin

CXXC 520.omnetpp\_r(base) 523.xalancbmk\_r(base) 531.deepsjeng\_r(base)  
541.leela\_r(base)

clang version 18.1.0rc (git@github.com:UT-Security/llvm-mte.git  
464a00b150ec9bb9d88363bf3016ce0778bc0dde)

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## Compiler Version Notes (Continued)

Target: aarch64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /home/noah/code/llvm-mte/tagcffi/build//bin  
-----

## Base Unknown Flags

```
500.perlbench_r: "/home/noah/code/llvm-mte/tagcffi/build//bin/clang
-std=c99 --target=aarch64-linux-gnu
-march=armv8-a+memtag
--gcc-toolchain=/home/noah/code/llvm-mte/tagcffi/build//.../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86_64_aarch64-linux-gnu/"
(in CC)
"/home/noah/code/llvm-mte/tagcffi/build//bin/clang
-std=c99 --target=aarch64-linux-gnu
-march=armv8-a+memtag
--gcc-toolchain=/home/noah/code/llvm-mte/tagcffi/build//.../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86_64_aarch64-linux-gnu/"
(in LD)
"-g -O2 -mcpu=amperela -flto=fullARRAY(0x3064d2e8)
-fgnu89-inline -fcommonARRAY(0x3064d3a0)
-static -unwindlib=libunwindARRAY(0x306bff40)
"/home/noah/code/llvm-mte/tagcffi/downloads/glibc/.build//libc.aARRAY(0x306bf138)

502.gcc_r: "/home/noah/code/llvm-mte/tagcffi/build//bin/clang
-std=c99 --target=aarch64-linux-gnu
-march=armv8-a+memtag
--gcc-toolchain=/home/noah/code/llvm-mte/tagcffi/build//.../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86_64_aarch64-linux-gnu/"
(in CC)
"/home/noah/code/llvm-mte/tagcffi/build//bin/clang
-std=c99 --target=aarch64-linux-gnu
-march=armv8-a+memtag
--gcc-toolchain=/home/noah/code/llvm-mte/tagcffi/build//.../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86_64_aarch64-linux-gnu/"
(in LD)
"-g -O2 -mcpu=amperela -flto=fullARRAY(0x3064d0d8)
-fgnu89-inline -fcommonARRAY(0x3064d720)
-static -unwindlib=libunwindARRAY(0x30764fc8)
"/home/noah/code/llvm-mte/tagcffi/downloads/glibc/.build//libc.aARRAY(0x307c7140)

505.mcf_r: "/home/noah/code/llvm-mte/tagcffi/build//bin/clang
-std=c99 --target=aarch64-linux-gnu
-march=armv8-a+memtag
--gcc-toolchain=/home/noah/code/llvm-mte/tagcffi/build//.../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86_64_aarch64-linux-gnu/"
(in CC)
"/home/noah/code/llvm-mte/tagcffi/build//bin/clang
-std=c99 --target=aarch64-linux-gnu
-march=armv8-a+memtag
--gcc-toolchain=/home/noah/code/llvm-mte/tagcffi/build//.../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86_64_aarch64-linux-gnu/"
```

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## Base Unknown Flags (Continued)

505.mcf\_r (continued):

(in LD)

```
"-g -O2 -mcpu=amperela -flto=fullARRAY(0x3064d5e8)
"-fgnu89-inline -fcommonARRAY(0x30769740)
"-static -unwindlib=libunwindARRAY(0x307c7170)
"/home/noah/code/llvm-mte/tagcffi/downloads/glibc/.build//libc.aARRAY(0x307c8fc8)
```

520.omnetpp\_r: "/home/noah/code/llvm-mte/tagcffi/build//bin/clang++

-std=c++03 --target=aarch64-linux-gnu

-march=armv8-a+memtag

--gcc-toolchain=/home/noah/code/llvm-mte/tagcffi/build//../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86\_64\_aarch64-linux-gnu/"

(in CXX)

"/home/noah/code/llvm-mte/tagcffi/build//bin/clang++

-std=c++03 --target=aarch64-linux-gnu

-march=armv8-a+memtag

--gcc-toolchain=/home/noah/code/llvm-mte/tagcffi/build//../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86\_64\_aarch64-linux-gnu/"

(in LD)

```
"-g -O2 -mcpu=amperela -flto=fullARRAY(0x307c9208)
"-static -unwindlib=libunwindARRAY(0x307b3c90)
"/home/noah/code/llvm-mte/tagcffi/downloads/glibc/.build//libc.aARRAY(0x307c9088)
```

523.xalancbmk\_r: "/home/noah/code/llvm-mte/tagcffi/build//bin/clang++

-std=c++03 --target=aarch64-linux-gnu

-march=armv8-a+memtag

--gcc-toolchain=/home/noah/code/llvm-mte/tagcffi/build//../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86\_64\_aarch64-linux-gnu/"

(in CXX)

"/home/noah/code/llvm-mte/tagcffi/build//bin/clang++

-std=c++03 --target=aarch64-linux-gnu

-march=armv8-a+memtag

--gcc-toolchain=/home/noah/code/llvm-mte/tagcffi/build//../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86\_64\_aarch64-linux-gnu/"

(in LD)

```
"-g -O2 -mcpu=amperela -flto=fullARRAY(0x306c1a08)
"-static -unwindlib=libunwindARRAY(0x307c8c50)
"/home/noah/code/llvm-mte/tagcffi/downloads/glibc/.build//libc.aARRAY(0x307cdc48)
```

525.x264\_r: "/home/noah/code/llvm-mte/tagcffi/build//bin/clang

-std=c99 --target=aarch64-linux-gnu

-march=armv8-a+memtag

--gcc-toolchain=/home/noah/code/llvm-mte/tagcffi/build//../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86\_64\_aarch64-linux-gnu/"

(in CC)

"/home/noah/code/llvm-mte/tagcffi/build//bin/clang

-std=c99 --target=aarch64-linux-gnu

-march=armv8-a+memtag

--gcc-toolchain=/home/noah/code/llvm-mte/tagcffi/build//../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86\_64\_aarch64-linux-gnu/"

(in LD)

```
"-g -O2 -mcpu=amperela -flto=fullARRAY(0x3064d780)
```

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## Base Unknown Flags (Continued)

525.x264\_r (continued):

```
"-fgnu89-inline -fcommonARRAY(0x30653ca8)
"-static -unwindlib=libunwindARRAY(0x3064d210)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x307d37b8)
```

531.deepsjeng\_r: "/home/noah/code/llvm-mte/tagcfi/build//bin/clang++

-std=c++03 --target=aarch64-linux-gnu

-march=armv8-a+memtag

--gcc-toolchain=/home/noah/code/llvm-mte/tagcfi/build/../../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86\_64\_aarch64-linux-gnu/"  
(in CXX)

"/home/noah/code/llvm-mte/tagcfi/build//bin/clang++

-std=c++03 --target=aarch64-linux-gnu

-march=armv8-a+memtag

--gcc-toolchain=/home/noah/code/llvm-mte/tagcfi/build/../../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86\_64\_aarch64-linux-gnu/"  
(in LD)

"-g -O2 -mcpu=amperela -flto=fullARRAY(0x307d3b78)

"-static -unwindlib=libunwindARRAY(0x307d1e08)

"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x307d3878)

541.leela\_r: "/home/noah/code/llvm-mte/tagcfi/build//bin/clang++

-std=c++03 --target=aarch64-linux-gnu

-march=armv8-a+memtag

--gcc-toolchain=/home/noah/code/llvm-mte/tagcfi/build/../../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86\_64\_aarch64-linux-gnu/"  
(in CXX)

"/home/noah/code/llvm-mte/tagcfi/build//bin/clang++

-std=c++03 --target=aarch64-linux-gnu

-march=armv8-a+memtag

--gcc-toolchain=/home/noah/code/llvm-mte/tagcfi/build/../../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86\_64\_aarch64-linux-gnu/"  
(in LD)

"-g -O2 -mcpu=amperela -flto=fullARRAY(0x307d8208)

"-static -unwindlib=libunwindARRAY(0x307d3290)

"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x307d81f0)

548.exchange2\_r: "/home/noah/code/llvm-mte/tagcfi/build/../../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86\_64\_aarch64-linux-gnu//bin/aarch64-linux-gnu-gfortranARRAY(0x307d4148)

"/home/noah/code/llvm-mte/tagcfi/build/../../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86\_64\_aarch64-linux-gnu//bin/aarch64-linux-gnu-gfortranARRAY(0x307c91a8)

"-static -unwindlib=libunwindARRAY(0x30668fd8)

557.xz\_r: "/home/noah/code/llvm-mte/tagcfi/build//bin/clang

-std=c99 --target=aarch64-linux-gnu

-march=armv8-a+memtag

--gcc-toolchain=/home/noah/code/llvm-mte/tagcfi/build/../../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86\_64\_aarch64-linux-gnu/"  
(in CC)

"/home/noah/code/llvm-mte/tagcfi/build//bin/clang

-std=c99 --target=aarch64-linux-gnu

-march=armv8-a+memtag

--gcc-toolchain=/home/noah/code/llvm-mte/tagcfi/build/../../downloads/gcc/gcc-linaro-12.3.1-2023.06-x86\_64\_aarch64-linux-gnu/"

(Continued on next page)

# SPEC CPU2017 Integer Rate Result

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**Supermicro**

MegaDC ARS-211M-NR  
(R13SPD , Ampere AmpereOne A192-32X)

SPECrate2017\_int\_base = 3.56

SPECrate2017\_int\_peak = Not Run

CPU2017 License: 001176

Test Sponsor: Supermicro

Tested by: Supermicro

Test Date: Aug-2025

Hardware Availability: Aug-2024

Software Availability: Jul-2023

## Base Unknown Flags (Continued)

557.xz\_r (continued):  
(in LD)  
"-g -O2 -mcpu=amperela -flto=fullARRAY(0x307dfd38)  
"-fgnu89-inline -fcommonARRAY(0x307e00c8)  
"-static -unwindlib=libunwindARRAY(0x307e03b0)  
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x307e0680)

## Base Portability Flags

500.perlbench\_r: -DSPEC\_LINUX\_AARCH64 -DSPEC\_LP64  
502.gcc\_r: -DSPEC\_LP64  
505.mcf\_r: -DSPEC\_LP64  
520.omnetpp\_r: -DSPEC\_LP64  
523.xalancbmk\_r: -DSPEC\_LINUX -DSPEC\_LP64  
525.x264\_r: -DSPEC\_LP64  
531.deepsjeng\_r: -DSPEC\_LP64  
541.leela\_r: -DSPEC\_LP64  
548.exchange2\_r: -DSPEC\_LP64  
557.xz\_r: -DSPEC\_LP64

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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

Tested with SPEC CPU2017 v1.0.5 on 2025-08-19 00:20:52-0700.  
Report generated on 2025-08-19 01:39:24 by CPU2017 PDF formatter v5866.