

SPEC® CPU2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Supermicro

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

SPECrate2017_int_base = 3.31

SPECrate2017_int_peak = Not Run

CPU2017 License: 001176

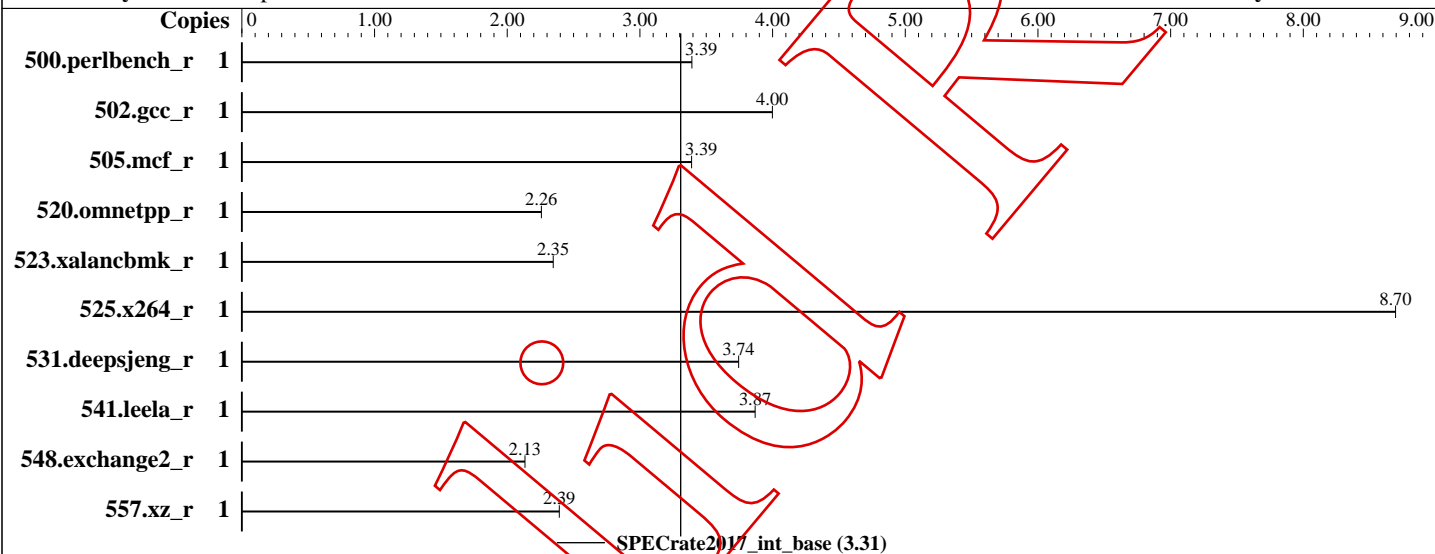
Test Sponsor: Supermicro

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
541.leela_r (base) did not have enough runs!
525.x264_r (base) did not have enough runs!
520.omnetpp_r (base) did not have enough runs!
502.gcc_r (base) did not have enough runs!
548.exchange2_r (base) did not have enough runs!
531.deepsjeng_r (base) did not have enough runs!
557.xz_r (base) did not have enough runs!
523.xalancbmk_r (base) did not have enough runs!
500.perlbench_r (base) did not have enough runs!

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Errors (Continued)

505.mcf_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>469</u>	<u>3.39</u>													
502.gcc_r	1	<u>354</u>	<u>4.00</u>													
505.mcf_r	1	<u>477</u>	<u>3.39</u>													
520.omnetpp_r	1	<u>581</u>	<u>2.26</u>													
523.xalancbmk_r	1	<u>450</u>	<u>2.35</u>													
525.x264_r	1	<u>201</u>	<u>8.70</u>													
531.deepsjeng_r	1	<u>306</u>	<u>3.74</u>													
541.leela_r	1	<u>428</u>	<u>3.87</u>													
548.exchange2_r	1	<u>1228</u>	<u>2.13</u>													
557.xz_r	1	<u>451</u>	<u>2.39</u>													

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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 01:39:26 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

* 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:          aaarch64
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	121G	707G	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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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(0x455e6e38)

"-fgnu89-inline -fcommonARRAY(0x455e6ef8)

"-static -unwindlib=libunwindARRAY(0x456669e8)

"/home/noah/code/llvm-mte/tagcffi/downloads/glibc/.build//libc.aARRAY(0x45665be0)

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(0x455e6988)

"-fgnu89-inline -fcommonARRAY(0x455e71f8)

"-static -unwindlib=libunwindARRAY(0x4570c330)

"/home/noah/code/llvm-mte/tagcffi/downloads/glibc/.build//libc.aARRAY(0x4576b8f8)

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(0x455c75e8)
"-fgnu89-inline -fcommonARRAY(0x4570eba8)
"-static -unwindlib=libunwindARRAY(0x4576b928)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x4576e530)
```

520.omnetpp_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(0x4576e770)
"-static -unwindlib=libunwindARRAY(0x4574e928)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x4576e5f0)
```

523.xalancbmk_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(0x456684b0)
"-static -unwindlib=libunwindARRAY(0x4576e0c8)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x45774080)
```

525.x264_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/"

(in LD)

```
"-g -O2 -mcpu=amperela -flto=fullARRAY(0x455deba0)
```

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Base Unknown Flags (Continued)

525.x264_r (continued):

```
"-fgnu89-inline -fcommonARRAY(0x455f53e8)
"-static -unwindlib=libunwindARRAY(0x455e6838)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x457797e0)
```

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(0x45779ba0)
"-static -unwindlib=libunwindARRAY(0x45777380)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x457798a0)
```

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(0x4577e140)
"-static -unwindlib=libunwindARRAY(0x457793a8)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x4577e128)
```

```
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(0x4577a170)
"/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(0x4576e710)
"-static -unwindlib=libunwindARRAY(0x4560fc30)
```

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 = 3.31

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(0x45785d70)

"-fgnu89-inline -fcommonARRAY(0x45786100)

"-static -unwindlib=libunwindARRAY(0x457863e8)

"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x457866b8)

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.

Tested with SPEC CPU2017 v1.0.5 on 2025-08-19 01:39:25-0700.

Report generated on 2025-08-19 03:03:15 by CPU2017 PDF formatter v5866.