SPEC® CPU2017 Integer Speed Result

Supermicro

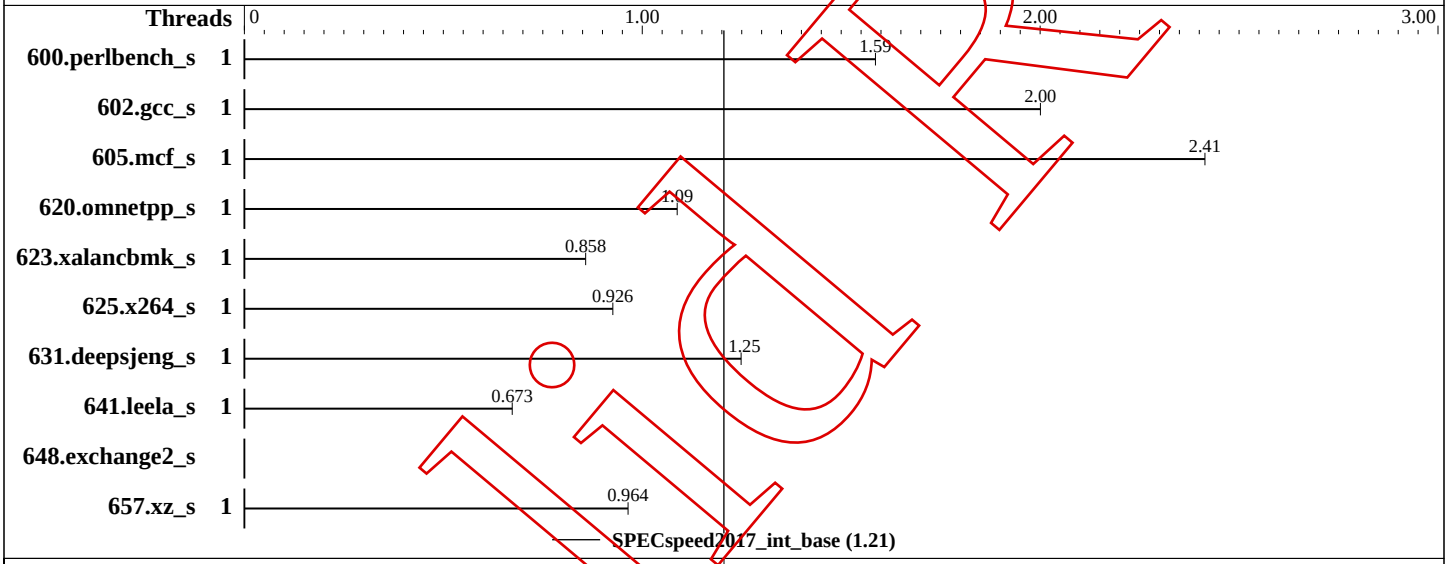
MegaDC ARS-211M-NR
(R13SPD , Ampere AmpereOne A192-32X)

SPECspeed2017_int_base = 1.21

SPECspeed2017_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
623.xalancbmk_s (base) did not have enough runs!
657.xz_s (base) did not have enough runs!
600.perlbench_s (base) did not have enough runs!
605.mcf_s (base) did not have enough runs!
648.exchange2_s (base) did not have enough runs!
625.x264_s (base) did not have enough runs!
631.deepsjeng_s (base) did not have enough runs!
620.omnetpp_s (base) did not have enough runs!
641.leela_s (base) did not have enough runs!

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Errors (Continued)

602.gcc_s (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						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	1	**1119**	**1.59**											
602.gcc_s	1	**1990**	**2.00**											
605.mcf_s	1	**1956**	**2.41**											
620.omnetpp_s	1	**1499**	**1.09**											
623.xalancbmk_s	1	**1652**	**0.858**											
625.x264_s	1	**1905**	**0.926**											
631.deepsjeng_s	1	**1148**	**1.25**											
641.leela_s	1	**2534**	**0.673**											
648.exchange2_s														
657.xz_s	1	**6411**	**0.964**											

SPECspeed2017_int_base = 1.21

SPECspeed2017_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 12 07:13:24 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:                    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 asimddp
      sha512 asimdfhm dit uscat ilrcpc flagm ssbs sb paca pacg dcpodp flagm2 frint i8mm
      bf16 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 "physyical 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:       526618656 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   45G  783G   6% /

 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 HMCG94AGBRA181N 64 GB 2 rank 5600

 (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
 CC  600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base)
     657.xz_s(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 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
     641.leela_s(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
------------------------------------------------------------------------------
```

Base Unknown Flags

600.perlbench_s: "/home/noah/code/llvm-mte/tagcfi/build//bin/clang
-std=c99 --target=aarch64-linux-gnu

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Base Unknown Flags (Continued)

600.perlbench_s (continued):
-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) "-fgnu89-inline -fcommonARRAY(0x174ab768)
"-static -unwindlib=libunwindARRAY(0x17499890)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x175d5920)

602.gcc_s: "/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) "-fgnu89-inline -fcommonARRAY(0x175b5a58)
"-static -unwindlib=libunwindARRAY(0x175c3c88)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x175d53b0)

605.mcf_s: "/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) "-fgnu89-inline -fcommonARRAY(0x175d5050)
"-static -unwindlib=libunwindARRAY(0x168f2988)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x175d50c8)

620.omnetpp_s: "/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

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Base Unknown Flags (Continued)

620.omnetpp_s (continued):

--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)
"-static -unwindlib=libunwindARRAY(0x174a6790)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x175d4e28)

623.xalancbmk_s: "/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)
"-static -unwindlib=libunwindARRAY(0x174b0288)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x175e0078)

625.x264_s: "/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) "-fgnu89-inline -fcommonARRAY(0x176225c0)
"-static -unwindlib=libunwindARRAY(0x17622338)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x176292c0)

631.deepsjeng_s: "/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)
"-static -unwindlib=libunwindARRAY(0x175c4610)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x17629608)

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Base Unknown Flags (Continued)

641.leela_s: "/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)
"-static -unwindlib=libunwindARRAY(0x175ddeb0)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x17629b30)

657.xz_s: "/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) "-fgnu89-inline -fcommonARRAY(0x17632490)
"-static -unwindlib=libunwindARRAY(0x17632058)
"/home/noah/code/llvm-mte/tagcfi/downloads/glibc/.build//libc.aARRAY(0x17635910)

Base Portability Flags

600.perlbench_s: -DSPEC_LINUX_AARCH64 -DSPEC_LP64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LINUX -DSPEC_LP64
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Tested with SPEC CPU2017 v1.0.5 on 2025-08-12 07:13:23-0700.
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