



SPEC CPU®2026 Integer Speed Result

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Apple

(Test Sponsor: SPEC CPU Supporting Contributor jhenning)

SPECspeed®2026_int_base = 3.90

MacBook Pro (16-inch, M5 Pro)

SPECspeed®2026_int_peak = Not Run

CPU2026 License: 7

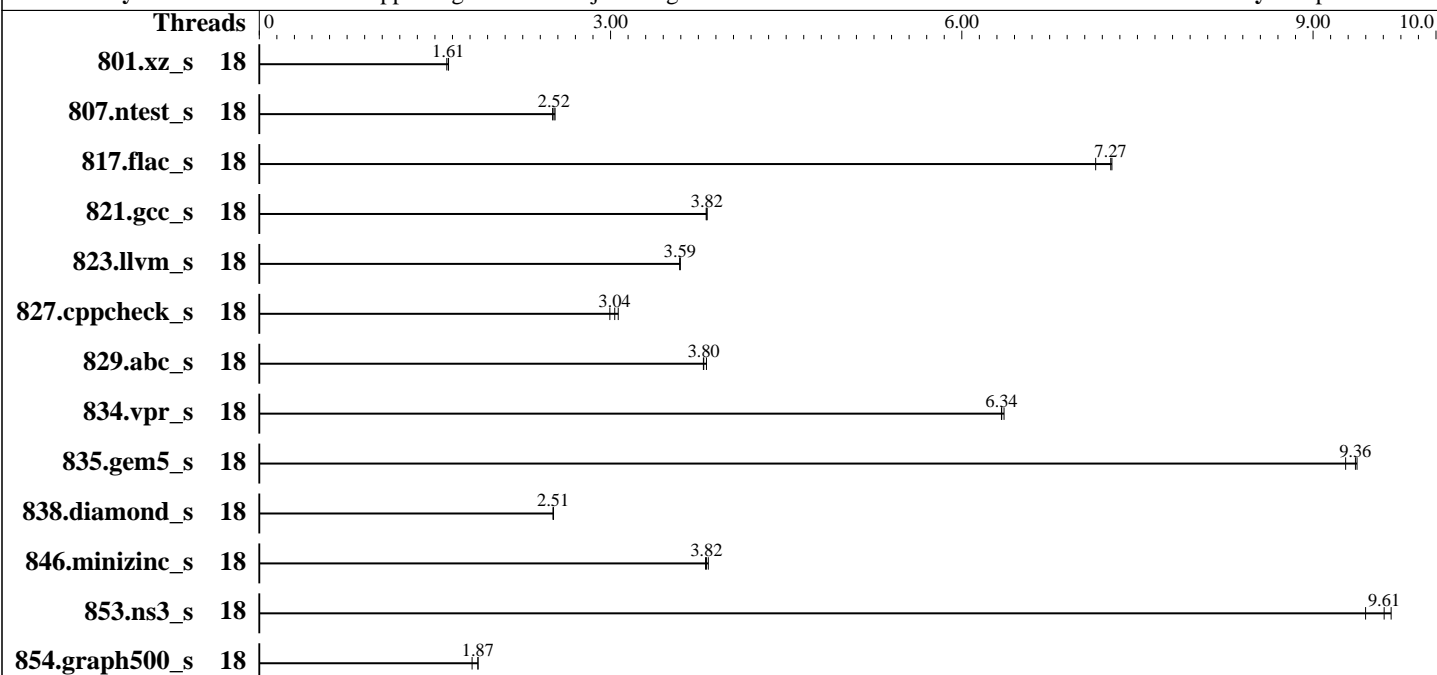
Test Sponsor: SPEC CPU Supporting Contributor jhenning

Tested by: SPEC CPU Supporting Contributor jhenning

Test Date: Apr-2026

Hardware Availability: Mar-2026

Software Availability: Apr-2026



Hardware

CPU Name: Apple M5 Pro
 Max MHz: 4600 (approximate; see notes)
 Nominal: 4600 (approximate; see notes)
 Enabled: 18 (6 Super and 12 Performance) cores, 1 chip
 Orderable: 1 chip
 Cache L1: 192 KB I + 128 KB D on chip per core (Super);
 128 KB I + 64 KB D on chip per core (Performance)
 L2: 32 MB I+D on chip per chip,
 (16 MB per 6 Super cores, 8 MB per 6
 Performance cores)
 L3: None disclosed
 Other: None disclosed
 Memory: 64.0 GB
 Storage: 4 TB APPLE SSD AP4096Z
 Cooling: Air
 Other: None

Software

OS: macOS 26.4.1 (25E253)
 Compiler: C/C++: Version 22.1.3 of LLVM;
 Fortran: Version 22.1.3 of Homebrew flang
 Compiler Category: Community
 Firmware: Version 18000.101.7 released Apr-2026
 File System: apfs
 System State: Default
 Base Pointers: 64-bit
 Peak Pointers: Not Applicable
 Other: See notes
 Power Management: Default



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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
801.xz_s	18	369	1.60	366	1.61	366	1.62							
807.ntest_s	18	455	2.50	453	2.52	451	2.53							
817.flac_s	18	243	7.14	239	7.28	239	7.27							
821.gcc_s	18	542	3.82	541	3.82	541	3.82							
823.llvm_s	18	393	3.59	393	3.59	393	3.59							
827.cppcheck_s	18	374	2.99	365	3.07	369	3.04							
829.abc_s	18	218	3.82	219	3.80	219	3.79							
834.vpr_s	18	150	6.36	151	6.34	150	6.34							
835.gem5_s	18	121	9.38	123	9.28	122	9.36							
838.diamond_s	18	399	2.51	399	2.51	398	2.51							
846.minizinc_s	18	175	3.83	176	3.81	175	3.82							
853.ns3_s	18	120	9.61	122	9.45	119	9.67							
854.graph500_s	18	327	1.87	327	1.87	336	1.82							

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

Compiler Notes

NOTE - MODERATE COMPILER TUNING

The results on this page intentionally use only moderate compiler tuning. This page differs from many other SPEC CPU results which are published to demonstrate the best performance that can be achieved by a system. Such tests often use compilers that are optimized for specific chip vendors and use advanced tuning options.

Moderate optimization may be of interest to users who prefer a simple build process, or who do not know whether their application works correctly with advanced tuning options. Specifically, these tests:

- Use an open source, community-supported compiler, rather than a vendor-specific compiler.
- Specify only one optimization option, namely -O3.
- Avoid options that disregard strict standards compliance, such as -Ofast, -ffinite-math-only, or -funsafe-math-optimizations.
- Avoid options such as -march=native or -mcpu=native. Without those, the code generator cannot assume that the program will run only on systems that use the same chip as the current system.

There are many other kinds of testing can be done with SPEC CPU, such as:

- Performance modeling prior to CPU chip development.
- Hardware validation.
- Compiler regression testing (both correctness and performance).
- Academic and industrial research into new optimizations for CPUs, memory systems, and compilers.



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Environment Variables Notes

Environment variables set by runcpu before the start of the run:
OMP_STACKSIZE = "120M"

General Notes

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.
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-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
The above 3 statements are based on <https://support.apple.com/en-us/101886>

Other software includes:

Xcode 26.4.1.0.1775747724, installed via xcode-select --install
libomp 22.1.3, installed via brew install libomp

Platform Notes

Sysinfo program /Volumes/ScratchVolume/spec/cpu2026/1.0.0/bin/sysinfo
Rev: 779ab21020787073335a329f3a45e2cd
running on i4gots-MacBook-Pro Wed Apr 22 05:23:15 2026

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

uname -srvm

Darwin 25.4.0 Darwin Kernel Version 25.4.0: Thu Mar 19 19:33:50 PDT 2026;
root:xnu-12377.101.15~1/RELEASE_ARM64_T6050 arm64

w

5:23 up 3 mins, 3 users, load averages: 6.01 5.55 2.55
USER TTY FROM LOGIN@ IDLE WHAT
i4got console - 5:20 2 -
i4got s000 - 5:21 - -bash
i4got s001 - 5:23 - -bash

Username

From environment variable \$USER: i4got

ulimit -a

core file size (blocks, -c) 0

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Platform Notes (Continued)

```

data seg size      (kbytes, -d) unlimited
file size          (blocks, -f) unlimited
max locked memory  (kbytes, -l) unlimited
max memory size    (kbytes, -m) unlimited
open files         (-n) 256
pipe size          (512 bytes, -p) 1
stack size         (kbytes, -s) 65000
cpu time           (seconds, -t) unlimited
max user processes (-u) 10666
virtual memory     (kbytes, -v) unlimited

```

sysinfo process ancestry

```

/sbin/launchd
/System/Applications/Utilities/Terminal.app/Contents/MacOS/Terminal
login -pf i4got
-bash
/bin/bash ./run.6.sh
runcpu -c clang5 -n 3 --reportable --nobuild intspeerd
runcpu --configfile clang5 --iterations 3 --reportable --nobuild --nopower --runmode speed --tune base
--size refspeerd intspeerd --nopreenv --note-preenv --logfile
$GOTmp/CPU2026.158/templogs/preenv.intspeerd.158.0.log --lognum 158.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /Volumes/ScratchVolume/spec/cpu2026/1.0.0
$GO    = /Volumes/ScratchVolume/spec/cpu2026/out/1.0.0/

```

Hardware:

Hardware Overview:

```

Model Name: MacBook Pro
Model Identifier: Mac17,8
Model Number: Z1N0001A3LL/A
Chip: Apple M5 Pro
Total Number of Cores: 18 (6 Super and 12 Performance)
Memory: 64 GB
System Firmware Version: 18000.101.7
OS Loader Version: 18000.101.7

```

Software:

System Software Overview:

```

System Version: macOS 26.4.1 (25E253)
Kernel Version: Darwin 25.4.0
Boot Volume: Macintosh HD
Boot Mode: Normal
Computer Name: i4got's MacBook Pro

```

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Platform Notes (Continued)

User Name: i4got (i4got)
Secure Virtual Memory: Enabled
System Integrity Protection: Enabled
Time since boot: 3 minutes, 4 seconds

Memory:

Memory: 64 GB
Type: LPDDR5
Manufacturer: Micron

Developer:

Developer Tools:

Version: 26.4.1 (17E202)
Location: /Applications/Xcode.app
Applications:
Xcode: 26.4.1 (24909.0.3)
Instruments: 26.4.1 (64575.156)

SDKs:

DriverKit:
25.4:
iOS:
26.4: (23E252)
iOS Simulator:
26.4: (23E252)
macOS:
26.4: (25E251)
tvOS:
26.4: (23L236)
tvOS Simulator:
26.4: (23L236)
visionOS:
26.4: (23O248)
visionOS Simulator:
26.4: (23O248)
watchOS:
26.4: (23T238)
watchOS Simulator:
26.4: (23T238)

From sysctl:

machdep.cpu.core_count: 18
machdep.cpu.thread_count: 18
machdep.cpu.brand_string: Apple M5 Pro

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Platform Notes (Continued)

```

hw.memsize: 68719476736
hw.activecpu: 18
hw.perflevel0.llicachesize: 196608
hw.perflevel0.l1dcachesize: 131072
hw.perflevel0.l2cachesize: 16777216
hw.perflevel1.llicachesize: 131072
hw.perflevel1.l1dcachesize: 65536
hw.perflevel1.l2cachesize: 8388608
hw.physicalcpu: 18
hw.physicalcpu_max: 18
hw.logicalcpu: 18
hw.logicalcpu_max: 18
hw.cacheconfig: 18 1 6 0 0 0 0 0 0 0
hw.cachesize: 2995912704 65536 8388608 0 0 0 0 0 0 0
hw.pagesize: 16384
hw.pagesize32: 16384
hw.cachelinesize: 128
hw.llicachesize: 131072
hw.l1dcachesize: 65536
hw.l2cachesize: 8388608
hw.memsize_usable: 67420422144

```

SPEC is set to: /Volumes/ScratchVolume/spec/cpu2026/1.0.0

Filesystem	Size	Used	Avail	Capacity	iused	ifree	%iused	Mounted on
/dev/disk3s1	1998G	581G	1416G	30%	1.4M	14G	0%	/Volumes/ScratchVolume

(End of data from sysinfo program)

ADDITIONAL INFORMATION FROM SYSCTL

```

$ sysctl hw | grep perflevel0
hw.perflevel0.physicalcpu: 6
hw.perflevel0.physicalcpu_max: 6
hw.perflevel0.logicalcpu: 6
hw.perflevel0.logicalcpu_max: 6
hw.perflevel0.llicachesize: 196608
hw.perflevel0.l1dcachesize: 131072
hw.perflevel0.l2cachesize: 16777216
hw.perflevel0.cpusperl2: 6
hw.perflevel0.name: Super
$ sysctl hw | grep perflevel1
hw.perflevel1.physicalcpu: 12
hw.perflevel1.physicalcpu_max: 12
hw.perflevel1.logicalcpu: 12
hw.perflevel1.logicalcpu_max: 12
hw.perflevel1.llicachesize: 131072

```

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Platform Notes (Continued)

```
hw.perflevel1.l1dcachesize: 65536
hw.perflevel1.l2cachesize: 8388608
hw.perflevel1.cpusperl2: 6
hw.perflevel1.name: Performance
$
```

The above shows cache sizes for both core types, and "cpusperl2" indicates sharing among cores. See https://developer.apple.com/documentation/kernel/1387446-sysctlbyname/determining_system_capabilities
Note: it is possible that the sysctl cache information may be incomplete. There might be other cache types or other cache characteristics that are not disclosed by the above 'sysctl' command.

ADDITIONAL INFORMATION FROM POWERMETRICS

Regarding the CPU MHz fields above, note that:

- The vendor does not state CPU frequencies in their marketing materials.
- Frequency levels are printed by the vendor-provided 'powermetrics' utility; these might or might not correspond to traditional "nominal" or "maximum" MHz. Therefore, the values on this page for Nominal and Maximum MHz must be considered approximate.
- The table below lists all of the MHz values mentioned in the dvfm_states section of powermetrics.
- On the tested system, the maximum frequencies mentioned are 4608 for the S-cluster and 4380 for the P-Clusters

CPU Dynamic Frequencies

From 'powermetrics --format=plist'

```
-----
processor
clusters    dvfm_states
name        freq
-----
P0-Cluster  1344 1644 1992 2304 2652 2964 3240 3504 3696 3876 4044 4176 4284 4308 4380
P1-Cluster  1344 1644 1992 2304 2652 2964 3240 3504 3696 3876 4044 4176 4284 4308 4380
S-Cluster   1308 1620 1980 2292 2580 2880 3180 3432 3648 3828 3984 4104 4188 4236 4284 4308 4332 4428 4512 4608
```

The table above was extracted from powermetrics via Perl code:

```
open P, "powermetrics --sample-count=0 --show-initial-usage --samplers=cpu_power --format=plist|"
or die "cannot run powermetrics";
while (<P>) {
    if (m{<key>name</key><string>(\S+Cluster)</string>}) {
        printf "%-10s  ", $1;
        $printing = 1;
        @freqs    = ();
    }
    next if ! $printing;
    if (m{^</array>}) {
        print join(" ", @freqs), "\n";
    }
}
```

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Platform Notes (Continued)

```

    $printing = 0;
  }
  if (m{<key>freq</key><integer>(\d+)</integer>}) {
    push @freqs, $1;
  }
}

```

Compiler Version Notes

```

=====
C      | 854.graph500_s(base)
-----

```

```

Homebrew clang version 22.1.3
Target: arm64-apple-darwin25.4.0
Thread model: posix
InstalledDir: /opt/homebrew/Cellar/llvm/22.1.3/bin
Configuration file:
  /opt/homebrew/Cellar/llvm/22.1.3/etc/clang/arm64-apple-darwin25.cfg
-----

```

```

=====
C++    | 807.ntest_s(base) 827.cppcheck_s(base) 853.ns3_s(base)
-----

```

```

Homebrew clang version 22.1.3
Target: arm64-apple-darwin25.4.0
Thread model: posix
InstalledDir: /opt/homebrew/Cellar/llvm/22.1.3/bin
Configuration file:
  /opt/homebrew/Cellar/llvm/22.1.3/etc/clang/arm64-apple-darwin25.cfg
-----

```

```

=====
C++, C | 801.xz_s(base) 817.flac_s(base) 821.gcc_s(base) 823.llvm_s(base)
      | 829.abc_s(base) 834.vpr_s(base) 835.gem5_s(base) 838.diamond_s(base)
      | 846.minizinc_s(base)
-----

```

```

Homebrew clang version 22.1.3
Target: arm64-apple-darwin25.4.0
Thread model: posix
InstalledDir: /opt/homebrew/Cellar/llvm/22.1.3/bin
Configuration file:
  /opt/homebrew/Cellar/llvm/22.1.3/etc/clang/arm64-apple-darwin25.cfg
-----

```



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Base Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

Benchmarks using both C and C++:

clang++ clang

Base Optimization Flags

C benchmarks:

-std=c18 -g -O3 -Wno-implicit-function-declaration -fopenmp
-DSPEC_OPENMP

C++ benchmarks:

807.ntest_s: -std=c++17 -g -O3 -Wno-implicit-function-declaration
-fopenmp -DSPEC_OPENMP

827.cppcheck_s: -std=c++17 -g -O3 -Wno-implicit-function-declaration

853.ns3_s: Same as 827.cppcheck_s

Benchmarks using both C and C++:

-std=c++17 -std=c18 -g -O3 -Wno-implicit-function-declaration

Base Other Flags

C benchmarks:

-L/opt/homebrew/opt/libomp/lib

C++ benchmarks:

807.ntest_s: -L/opt/homebrew/opt/libomp/lib
-I/opt/homebrew/opt/libomp/include

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2026/results/flags/llvm-rev-A3.html>



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You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2026/results/flags/llvm-rev-A3.xml>

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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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