SPEC® MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Supermicro

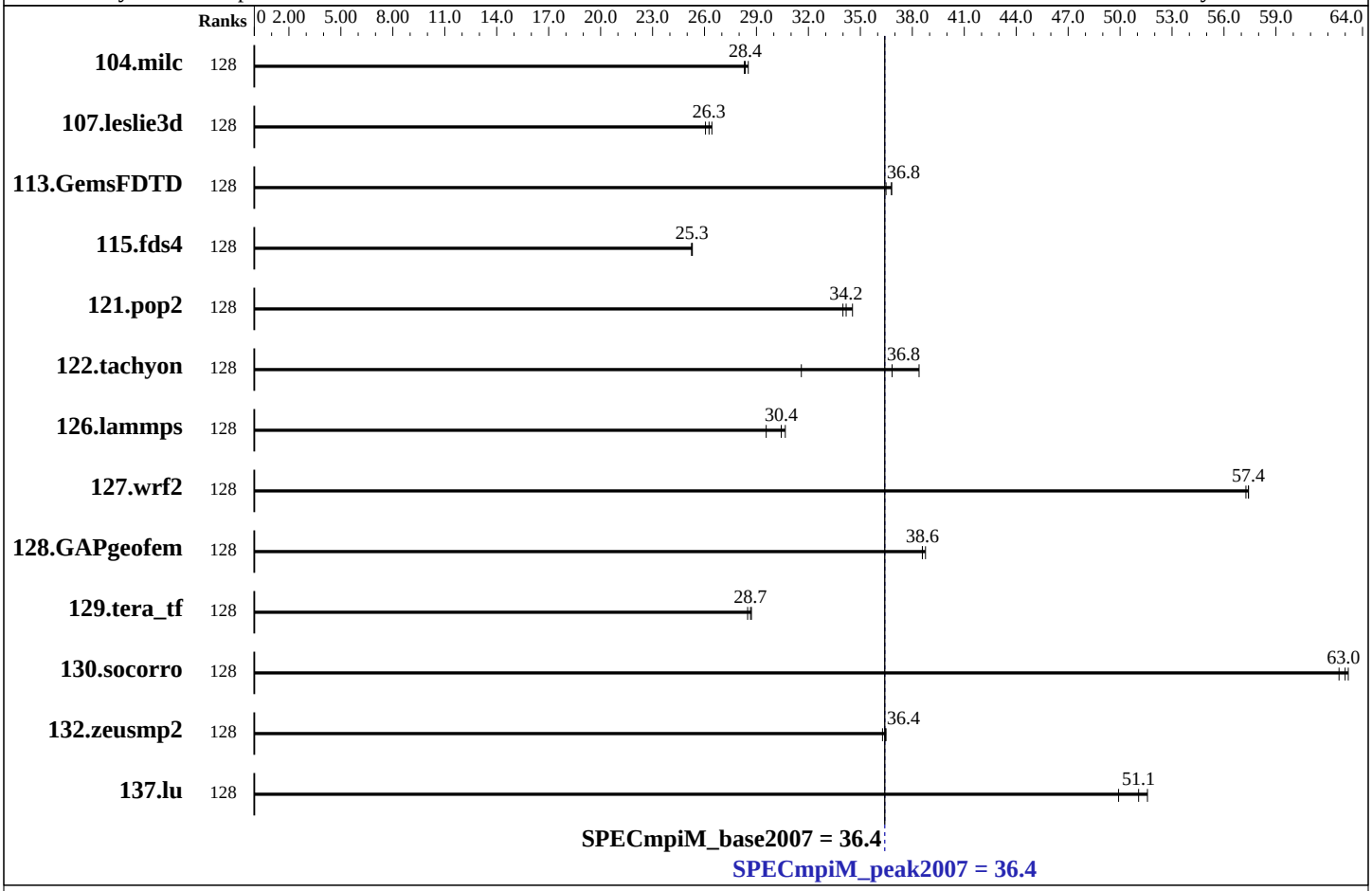
A+ Server 1025CS-TNR (AMD EPYC 9754)

SPECmpiM_peak2007 = 36.4

SPECmpiM_base2007 = 36.4

MPI2007 license: 6569
Test sponsor: Supermicro
Tested by: Supermicro

Test date: May-2023
Hardware Availability: Jun-2023
Software Availability: Nov-2022



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	128	54.9	28.5	**55.2**	**28.4**	55.3	28.3	128	54.9	28.5	**55.2**	**28.4**	55.3	28.3
107.leslie3d	128	200	26.1	198	26.4	**199**	**26.3**	128	200	26.1	198	26.4	**199**	**26.3**
113.GemsFDTD	128	173	36.5	171	36.8	**171**	**36.8**	128	173	36.5	171	36.8	**171**	**36.8**
115.fds4	128	77.3	25.3	77.1	25.3	**77.2**	**25.3**	128	77.3	25.3	77.1	25.3	**77.2**	**25.3**
121.pop2	128	119	34.5	121	34.0	**121**	**34.2**	128	119	34.5	121	34.0	**121**	**34.2**
122.tachyon	128	72.9	38.4	**75.9**	**36.8**	88.5	31.6	128	72.9	38.4	**75.9**	**36.8**	88.5	31.6
126.lammps	128	**95.8**	**30.4**	95.1	30.7	98.6	29.6	128	**95.8**	**30.4**	95.1	30.7	98.6	29.6
127.wrf2	128	**136**	**57.4**	136	57.4	136	57.3	128	**136**	**57.4**	136	57.4	136	57.3
128.GAPgeofem	128	53.3	38.8	**53.5**	**38.6**	53.5	38.6	128	53.3	38.8	**53.5**	**38.6**	53.5	38.6
129.tera_tf	128	97.2	28.5	**96.6**	**28.7**	96.4	28.7	128	97.2	28.5	**96.6**	**28.7**	96.4	28.7

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

SPEC MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Supermicro

A+ Server 1025CS-TNR (AMD EPYC 9754)

SPECmpiM_peak2007 = 36.4

SPECmpiM_base2007 = 36.4

MPI2007 license: 6569
Test sponsor: Supermicro
Tested by: Supermicro

Test date: May-2023
Hardware Availability: Jun-2023
Software Availability: Nov-2022

Results Table (Continued)

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
130.socorro	128	60.4	63.2	60.9	62.6	**60.6**	**63.0**	128	60.4	63.2	60.9	62.6	**60.6**	**63.0**
132.zeusmp2	128	85.1	36.5	**85.1**	**36.4**	85.5	36.3	128	85.1	36.5	**85.1**	**36.4**	85.5	36.3
137.lu	128	71.3	51.6	73.6	49.9	**72.0**	**51.1**	128	71.3	51.6	73.6	49.9	**72.0**	**51.1**

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

Hardware Summary

Type of System:	Homogeneous
Compute Node:	A+ Server 1025CS-TNR
Total Compute Nodes:	1
Total Chips:	1
Total Cores:	128
Total Threads:	256
Total Memory:	768 GB
Base Ranks Run:	128
Minimum Peak Ranks:	128
Maximum Peak Ranks:	128

Software Summary

C Compiler:	AMD Optimizing C/C++ and Fortran Compilers (AOCC) Version 4.0.0 Build 389 for Linux
C++ Compiler:	AMD Optimizing C/C++ and Fortran Compilers (AOCC) Version 4.0.0 Build 389 for Linux
Fortran Compiler:	AMD Optimizing C/C++ and Fortran Compilers (AOCC) Version 4.0.0 Build 389 for Linux
Base Pointers:	64-bit
Peak Pointers:	64-bit
MPI Library:	Open MPI Library for Linux Version 4.1.5
Other MPI Info:	None
Pre-processors:	No
Other Software:	None

Node Description: A+ Server 1025CS-TNR

Hardware

Number of nodes:	1
Uses of the node:	compute
Vendor:	Supermicro
Model:	A+ Server 1025CS-TNR
CPU Name:	AMD EPYC 9754
CPU(s) orderable:	1 chip
Chips enabled:	1
Cores enabled:	128
Cores per chip:	128
Threads per core:	2
CPU Characteristics:	Max. Boost Clock upto 3.1GHz
CPU MHz:	2250
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	256 MB I+D on chip per chip 16 MB shared / 8 cores
Other Cache:	None
Memory:	768 GB (12 x 64 GB 2Rx4 PC5-4800B-R)
Disk Subsystem:	1 x 480 GB NVMe PCIe Gen4.0
Other Hardware:	None
Adapter:	None
Number of Adapters:	0
Slot Type:	None
Data Rate:	None

Continued on next page

Software

Adapter:	None
Adapter Driver:	None
Adapter Firmware:	None
Operating System:	Ubuntu 22.04.2 LTS Kernel 5.15.0-71-generic
Local File System:	ext4
Shared File System:	None
System State:	Multi-user, run level 3
Other Software:	None

Node Description: A+ Server 1025CS-TNR

Ports Used: 0
Interconnect Type: None

Submit Notes

```
The config file option 'submit' was used.
mpirun --allow-run-as-root -np $ranks $command
```

General Notes

```
Environment variables set by runspec before the start of the run:
GOMP_CPU_AFFINITY = "0-128"
KMP_BLOCKTIME = "200"
KMP_LIBRARY = "turnaround"
OMP_DYNAMIC = "false"
OMP_NESTED = "FALSE"
OMP_PLACES = "threads"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "128"

 MPI startup command:
   mpirun command was used to start MPI jobs.
 RAM configuration:
   Compute nodes have 1 x 64 GB RDIMM on each memory channel.
 BIOS settings:
   NUMA nodes per socket = NPS4
   L3 Cache as NUMA Domain = Enabled
   Determinism Control = Manual
   Determinism Slider = Power
   TDP Control = Manual
   TDP = 400
   PPT Control = Manual
   PPT = 400


 Yes: 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.

Submitted_by: Henry Lai <henryl@supermicro.com.tw>
Submitted: Tue May 16 23:42:20 EDT 2023
Submission: mpi2007-20230516-00691.sub
```

Base Compiler Invocation

C benchmarks:
mpicc

C++ benchmarks:

126.lammps: mpic++

Fortran benchmarks:
mpif90

Benchmarks using both Fortran and C:
mpicc mpif90

Base Portability Flags

104.milc: -DSPEC_MPI_LP64
115.fds4: -DSPEC_MPI_LP64
121.pop2: -DSPEC_MPI_CASE_FLAG -DSPEC_MPI_LP64
122.tachyon: -DSPEC_MPI_LP64
126.lammps: -DMPICH_IGNORE_CXX_SEEK
127.wrf2: -DSPEC_MPI_CASE_FLAG -DSPEC_MPI_LINUX -DSPEC_MPI_LP64
128.GAPgeofem: -DSPEC_MPI_LP64
130.socorro: -DSPEC_MPI_LP64
132.zeusmp2: -DSPEC_MPI_LP64

Base Optimization Flags

C benchmarks:
-Ofast -flto -ffast-math -march=znver4 -lamdlibm -ljemalloc -lflang

C++ benchmarks:

126.lammps: -Ofast -flto -ffast-math -march=znver4 -lamdlibm
-ljemalloc -lflang

Fortran benchmarks:
-Ofast -flto -ffast-math -march=znver4 -funroll-loops -lamdlibm
-ljemalloc -lflang

Benchmarks using both Fortran and C:
-Ofast -flto -ffast-math -march=znver4 -funroll-loops -lamdlibm
-ljemalloc -lflang

Base Other Flags

Benchmarks using both Fortran and C:

127.wrf2: `-Wno-return-type`

Peak Optimization Flags

C benchmarks:

104.milc: `basepeak = yes`

122.tachyon: `basepeak = yes`

C++ benchmarks:

126.lammps: `basepeak = yes`

Fortran benchmarks:

107.leslie3d: `basepeak = yes`

113.GemsFDTD: `basepeak = yes`

129.tera_tf: `basepeak = yes`

137.lu: `basepeak = yes`

Benchmarks using both Fortran and C:

115.fds4: `basepeak = yes`

121.pop2: `basepeak = yes`

127.wrf2: `basepeak = yes`

128.GAPgeofem: `basepeak = yes`

130.socorro: `basepeak = yes`

132.zeusmp2: `basepeak = yes`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/mpi2007/flags/amd2021_flags.20230614.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/mpi2007/flags/amd2021_flags.20230614.xml`

SPEC and SPEC MPI 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 webmaster@spec.org.

Tested with SPEC MPI2007 v2.0.1.
Report generated on Wed Jun 14 11:33:38 2023 by SPEC MPI2007 PS/PDF formatter v1463.
Originally published on 14 June 2023.