SPEC® MPIM2007 Result

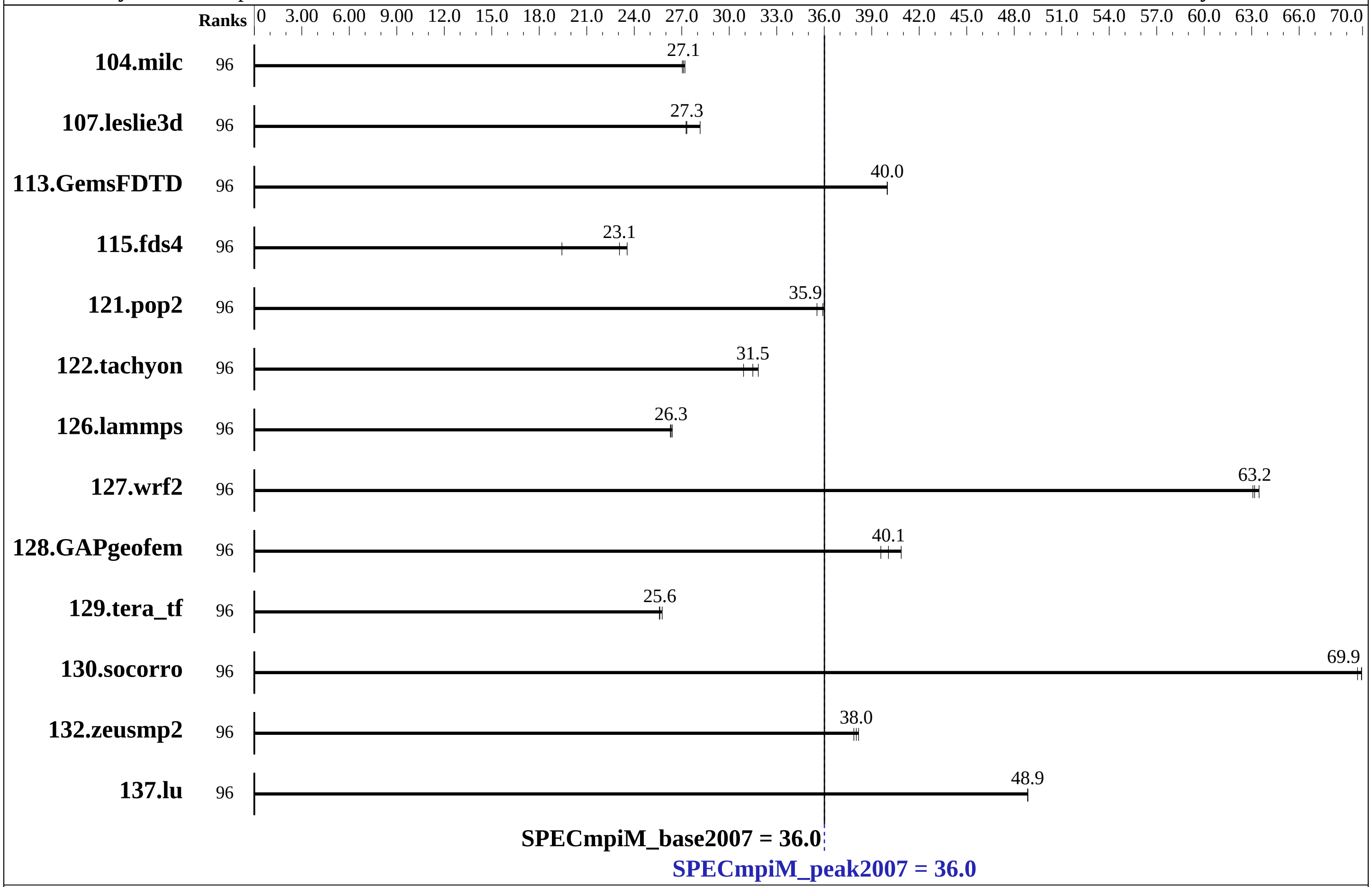
Supermicro

A+ Server 1115CS-TNR (AMD EPYC 9654)

SPECmpiM_peak2007 = 36.0

SPECmpiM_base2007 = 36.0

MPI2007 license:	6569	**Test date:**	Oct-2022
Test sponsor:	Supermicro	**Hardware Availability:**	Nov-2022
Tested by:	Supermicro	**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	96	**57.7**	**27.1**	57.9	27.0	57.5	27.2	96	**57.7**	**27.1**	57.9	27.0	57.5	27.2
107.leslie3d	96	185	28.2	**191**	**27.3**	191	27.3	96	185	28.2	**191**	**27.3**	191	27.3
113.GemsFDTD	96	158	40.0	**158**	**40.0**	158	40.0	96	158	40.0	**158**	**40.0**	158	40.0
115.fds4	96	82.8	23.6	100	19.4	**84.6**	**23.1**	96	82.8	23.6	100	19.4	**84.6**	**23.1**
121.pop2	96	**115**	**35.9**	116	35.5	115	36.0	96	**115**	**35.9**	116	35.5	115	36.0
122.tachyon	96	87.9	31.8	90.5	30.9	**88.8**	**31.5**	96	87.9	31.8	90.5	30.9	**88.8**	**31.5**
126.lammps	96	111	26.3	110	26.4	**111**	**26.3**	96	111	26.3	110	26.4	**111**	**26.3**
127.wrf2	96	124	63.1	**123**	**63.2**	123	63.5	96	124	63.1	**123**	**63.2**	123	63.5
128.GAPgeofem	96	52.2	39.6	**51.6**	**40.1**	50.5	40.9	96	52.2	39.6	**51.6**	**40.1**	50.5	40.9
129.tera_tf	96	108	25.6	**108**	**25.6**	107	25.8	96	108	25.6	**108**	**25.6**	107	25.8

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

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Test sponsor: Supermicro
Tested by: Supermicro
Test date: Oct-2022
Hardware Availability: Nov-2022
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	96	54.8	69.7	54.6	69.9	**54.6**	**69.9**	96	54.8	69.7	54.6	69.9	**54.6**	**69.9**
132.zeusmp2	96	**81.6**	**38.0**	81.3	38.2	81.9	37.9	96	**81.6**	**38.0**	81.3	38.2	81.9	37.9
137.lu	96	75.3	48.8	75.2	48.9	**75.2**	**48.9**	96	75.3	48.8	75.2	48.9	**75.2**	**48.9**

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 1115CS-TNR
Total Compute Nodes:	1
Total Chips:	1
Total Cores:	96
Total Threads:	192
Total Memory:	768 GB
Base Ranks Run:	96
Minimum Peak Ranks:	96
Maximum Peak Ranks:	96

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 4.1.1
Other MPI Info:	None
Pre-processors:	No
Other Software:	None

Node Description: A+ Server 1115CS-TNR

Hardware

Number of nodes:	1
Uses of the node:	compute
Vendor:	Supermicro
Model:	A+ Server 1115CS-TNR
CPU Name:	AMD EPYC 9654
CPU(s) orderable:	1 chip
Chips enabled:	1
Cores enabled:	96
Cores per chip:	96
Threads per core:	2
CPU Characteristics:	Max. Boost Clock upto 3.7GHz
CPU MHz:	2400
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	384 MB I+D on chip per chip 32 MB shared / 8 cores
Other Cache:	None
Memory:	768 GB (12 x 64 GB 2Rx4 PC5-4800B-R)
Disk Subsystem:	1 x 960 GB NVMe PCIe Gen4.0
Other Hardware:	None
Adapter:	MCX556A-EDAT
Number of Adapters:	1
Slot Type:	PCIeGen4 x16
Data Rate:	100GbE

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Software

Adapter:	MCX556A-EDAT
Adapter Driver:	Mellanox
Adapter Firmware:	5.7-1.0.2.0
Operating System:	SUSE Linux Enterprise Server 15 SP4 Kernel 5.14.21-150400.24.21-default
Local File System:	ext4
Shared File System:	None
System State:	Multi-user, run level 3
Other Software:	None

Node Description: A+ Server 1115CS-TNR

Ports Used:	1
Interconnect Type:	Mellanox Technologies MT28800 Family [ConnectX-5 Ex]

Submit Notes

```
The config file option 'submit' was used.
```

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:
   mpiexec 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
   xGMI Link Configuration = 4 xGMI Links
   4 Link xGMI max speed = 32Gbps
   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.
```

Base Compiler Invocation

C benchmarks:

```
mpicc
```

Continued on next page

Base Compiler Invocation (Continued)

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`
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 -DMPICH_IGNORE_CXX_SEEK(*) -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`

(*) Indicates an optimization flag that was found in a portability variable.

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.html`

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

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

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