SPEC® MPIM2007 Result

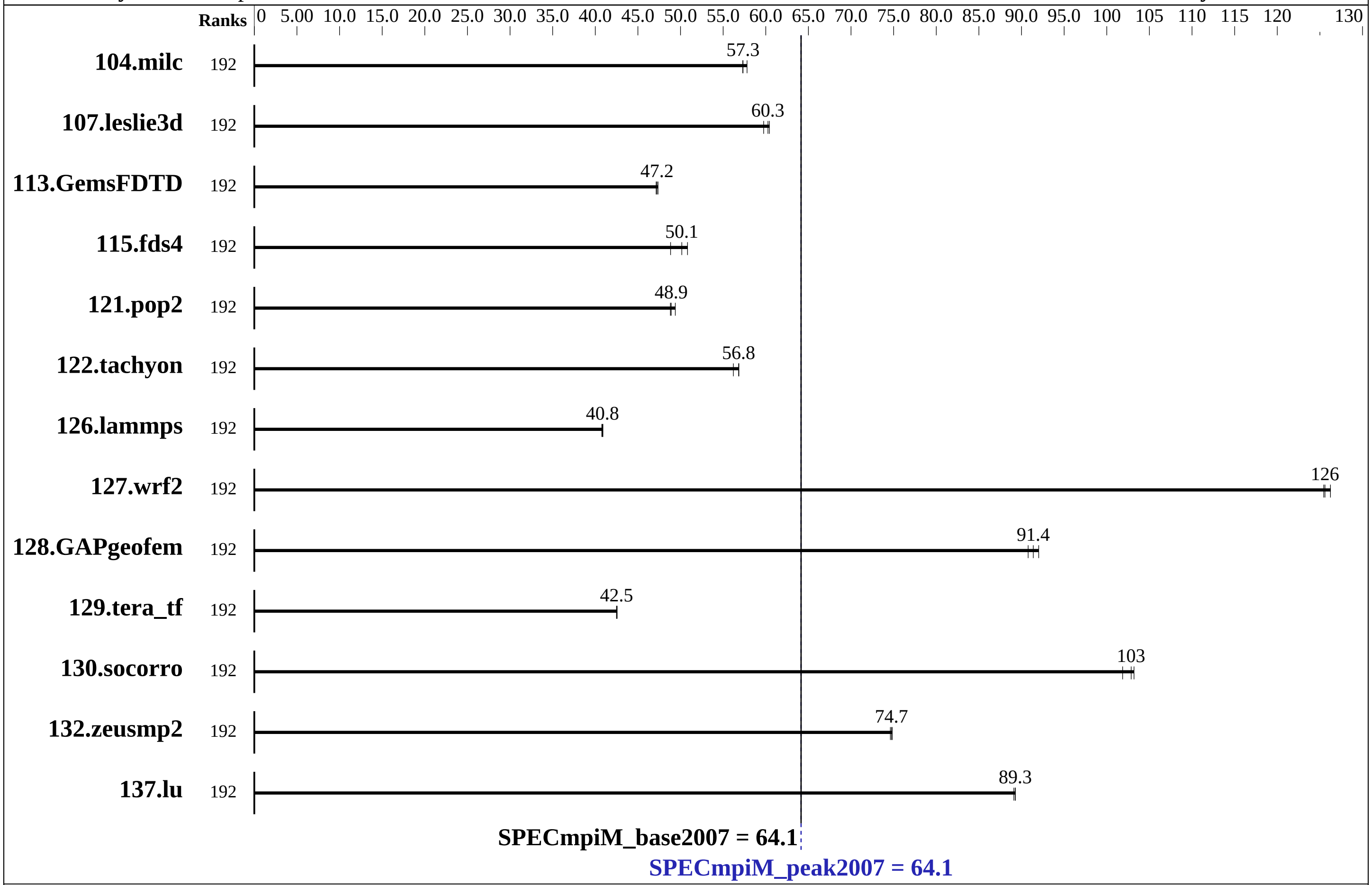
Supermicro

A+ Server 2125HS-TNR (AMD EPYC 9654)

SPECmpiM_peak2007 = 64.1

SPECmpiM_base2007 = 64.1

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	192	27.1	57.8	27.3	57.3	**27.3**	**57.3**	192	27.1	57.8	27.3	57.3	**27.3**	**57.3**
107.leslie3d	192	87.4	59.8	**86.6**	**60.3**	86.4	60.4	192	87.4	59.8	**86.6**	**60.3**	86.4	60.4
113.GemsFDTD	192	134	47.1	133	47.4	**134**	**47.2**	192	134	47.1	133	47.4	**134**	**47.2**
115.fds4	192	**38.9**	**50.1**	40.0	48.8	38.4	50.8	192	**38.9**	**50.1**	40.0	48.8	38.4	50.8
121.pop2	192	**84.4**	**48.9**	83.6	49.4	84.6	48.8	192	**84.4**	**48.9**	83.6	49.4	84.6	48.8
122.tachyon	192	49.8	56.2	**49.2**	**56.8**	49.2	56.8	192	49.8	56.2	**49.2**	**56.8**	49.2	56.8
126.lammps	192	**71.4**	**40.8**	71.5	40.8	71.3	40.9	192	**71.4**	**40.8**	71.5	40.8	71.3	40.9
127.wrf2	192	61.8	126	62.1	125	**62.1**	**126**	192	61.8	126	62.1	125	**62.1**	**126**
128.GAPgeofem	192	**22.6**	**91.4**	22.4	92.0	22.7	90.8	192	**22.6**	**91.4**	22.4	92.0	22.7	90.8
129.tera_tf	192	65.0	42.6	65.1	42.5	**65.1**	**42.5**	192	65.0	42.6	65.1	42.5	**65.1**	**42.5**

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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Tested by:	Supermicro		**Software Availability:**	Nov-2022

Results Table (Continued)

	Base							Peak						
Benchmark	**Ranks**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Ranks**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
130.socorro	192	37.0	103	37.5	102	**37.1**	**103**	192	37.0	103	37.5	102	**37.1**	**103**
132.zeusmp2	192	41.6	74.6	41.5	74.8	**41.5**	**74.7**	192	41.6	74.6	41.5	74.8	**41.5**	**74.7**
137.lu	192	41.3	89.1	41.2	89.3	**41.2**	**89.3**	192	41.3	89.1	41.2	89.3	**41.2**	**89.3**

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 2125HS-TNR
Total Compute Nodes:	1
Total Chips:	2
Total Cores:	192
Total Threads:	384
Total Memory:	1536 GB
Base Ranks Run:	192
Minimum Peak Ranks:	192
Maximum Peak Ranks:	192

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 2125HS-TNR

Hardware

Number of nodes:	1
Uses of the node:	compute
Vendor:	Supermicro
Model:	A+ Server 2125HS-TNR
CPU Name:	AMD EPYC 9654
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	192
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:	1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)
Disk Subsystem:	1 x 960 GB NVMe PCIe Gen4.0
Other Hardware:	None
Adapter:	None
Number of Adapters:	1
Slot Type:	None
Data Rate:	None

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Software

Adapter:	None
Adapter Driver:	None
Adapter Firmware:	None
Adapter:	--
Adapter Driver:	--
Adapter Firmware:	--
Operating System:	Ubuntu 22.04 Kernel 5.15.0-50-generic
Local File System:	ext4
Shared File System:	None
System State:	Multi-user, run level 3
Other Software:	None

Node Description: A+ Server 2125HS-TNR

Ports Used:	0
Interconnect Type:	None
Adapter:	--
Number of Adapters:	--
Slot Type:	--
Data Rate:	--
Ports Used:	--
Interconnect Type:	--

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`

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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