SPEC® MPIM2007 Result

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Lenovo Global Technology

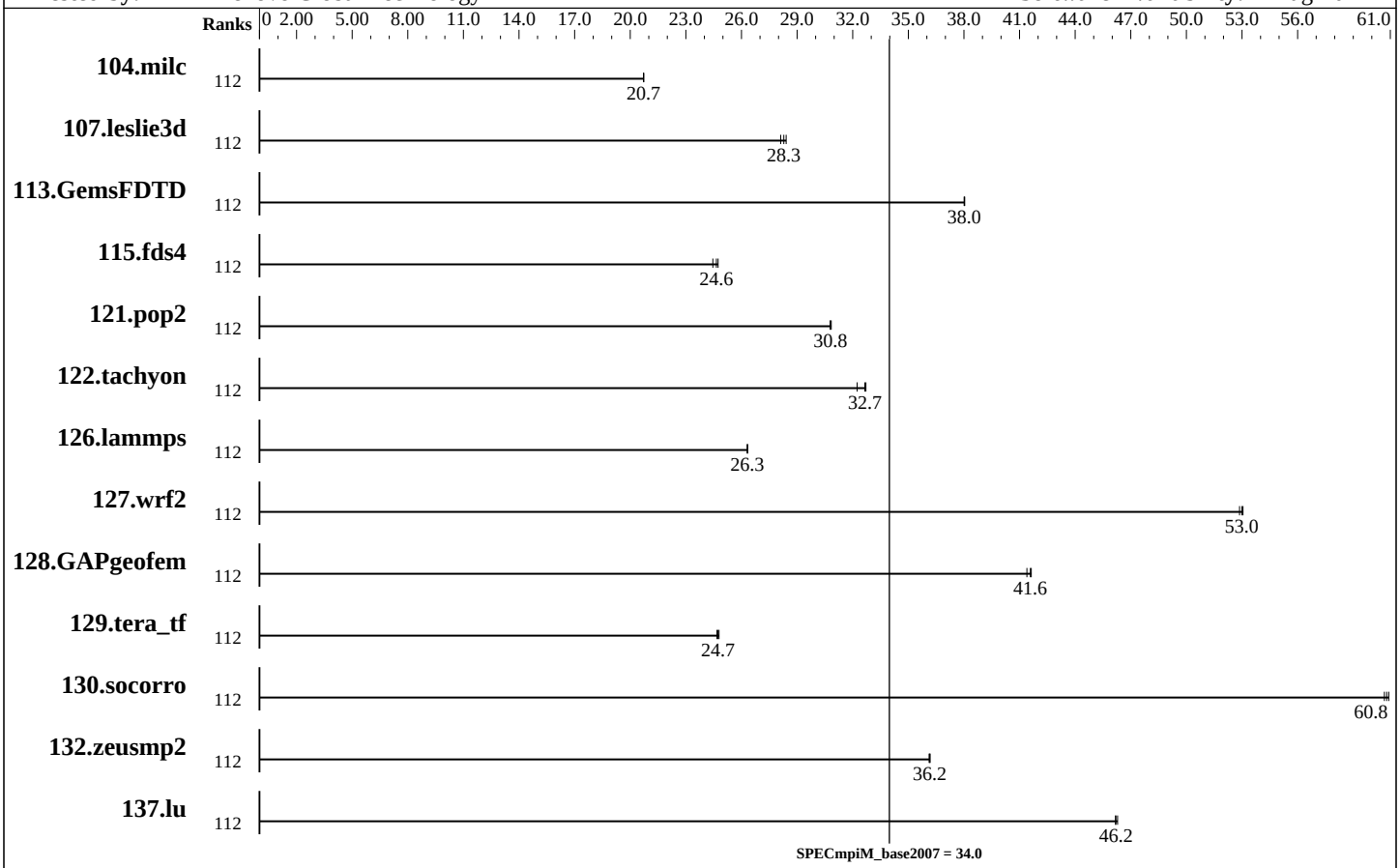
ThinkSystem SR650
(Intel Xeon Platinum 8180 CPU, 2.50 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 34.0

MPI2007 license: 28
Test sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test date: Sep-2017
Hardware Availability: Aug-2017
Software Availability: Aug-2017



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	112	75.6	20.7	75.5	20.7	**75.5**	**20.7**							
107.leslie3d	112	186	28.1	184	28.4	**185**	**28.3**							
113.GemsFDTD	112	166	38.0	**166**	**38.0**	166	38.0							
115.fds4	112	78.9	24.7	79.8	24.5	**79.2**	**24.6**							
121.pop2	112	134	30.8	**134**	**30.8**	134	30.8							
122.tachyon	112	86.8	32.2	**85.7**	**32.7**	85.5	32.7							
126.lammps	112	**111**	**26.3**	111	26.3	111	26.3							
127.wrf2	112	147	53.1	**147**	**53.0**	147	52.9							
128.GAPgeofem	112	49.9	41.4	**49.7**	**41.6**	49.6	41.6							
129.tera_tf	112	112	24.8	**112**	**24.7**	112	24.7							

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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Results Table (Continued)

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
130.socorro	112	62.9	60.7	**62.8**	**60.8**	62.7	60.9							
132.zeusmp2	112	85.8	36.2	85.9	36.1	**85.8**	**36.2**							
137.lu	112	79.6	46.2	**79.6**	**46.2**	79.4	46.3							

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:	ThinkSystem SR650
Interconnect:	Intel Omni-Path
Total Compute Nodes:	2
Total Chips:	4
Total Cores:	112
Total Threads:	112
Total Memory:	1536 GB
Base Ranks Run:	112
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--

Software Summary

C Compiler:	Intel C++ Compiler 17.0 Update 4 for Linux Version 17.0.4 Buiild 20170411
C++ Compiler:	Intel C++ Compiler 17.0 Update 4 for Linux Version 17.0.4 Build 20170411
Fortran Compiler:	Intel Fortran Compiler 17.0 Update 4 for Linux
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
MPI Library:	Intel MPI Library for Linux* OS Version 2017 Update 3 Build 20170405
Other MPI Info:	None
Pre-processors:	No
Other Software:	None

Node Description: ThinkSystem SR650

Hardware

Number of nodes:	2
Uses of the node:	compute
Vendor:	Lenovo Global Technology
Model:	SR650
CPU Name:	Intel Xeon Platinum 8180
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	56
Cores per chip:	56
Threads per core:	1
CPU Characteristics:	None
CPU MHz:	2500
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	38.5 MB I+D on chip per chip shared / 28 cores
Other Cache:	None
Memory:	768 GB (24 x 32 GB 2Rx4 PC4-2666V)
Disk Subsystem:	800 GB 12 Gbps SAS 2.5" SSD (JBOD)
Other Hardware:	ThinkSystem RAID 930-8i 2GB Flash
Adapter:	Intel Omni-Path Fabric Adapter 100 Series
Number of Adapters:	1
Slot Type:	PCI-Express x16
Data Rate:	100 Gb/s

Continued on next page

Software

Adapter:	Intel Omni-Path Fabric Adapter 100 Series
Adapter Driver:	IFS 10.4.2.0.7
Adapter Firmware:	10.4.0.0.146
Operating System:	Red Hat Enterprise Linux Server release 7.3, Kernel 3.10.0-514.el7.x86_64
Local File System:	xfs
Shared File System:	nfs
System State:	Multi-user
Other Software:	NONE

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Node Description: ThinkSystem SR650

Ports Used:	1
Interconnect Type:	Direct Attached Cable (DAC)

Interconnect Description: Intel Omni-Path

Hardware

Vendor:	Intel
Model:	Intel Omni-Path Fabric Adapter 100 Series
Switch Model:	N/A
Number of Switches:	0
Number of Ports:	0
Data Rate:	N/A
Firmware:	N/A
Topology:	Direct Connect
Primary Use:	MPI Traffic

Software

Submit Notes

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

General Notes

```
MPI startup command:
  mpiexec command was used to start MPI jobs.

RAM configuration:
  Compute nodes have 2x32GB RDIMM on each memory channel.

Add "intel_idle.max_cstate=0 intel_pstate=disable" into grub

BIOS settings:
  Operating Mode : Maximum Performance Mode
  Intel Hyper-Threading Technology (SMT): Disabled
  SNC (Sub-NUMA Cluster) : Enable
```

Base Compiler Invocation

C benchmarks:

```
mpiicc
```

C++ benchmarks:

Continued on next page

Base Compiler Invocation (Continued)

126.lammps: `mpiicpc`

Fortran benchmarks:
`mpiifort`

Benchmarks using both Fortran and C:
`mpiicc mpiifort`

Base Portability Flags

121.pop2: `-DSPEC_MPI_CASE_FLAG`
126.lammps: `-DMPICH_IGNORE_CXX_SEEK`
127.wrf2: `-DSPEC_MPI_CASE_FLAG -DSPEC_MPI_LINUX`
130.socorro: `-assume nostd_intent_in`

Base Optimization Flags

C benchmarks:
`-O3 -ipo -xCORE-AVX512 -no-prec-div`

C++ benchmarks:

126.lammps: `-O3 -ipo -xCORE-AVX512 -no-prec-div`

Fortran benchmarks:
`-O3 -ipo -xCORE-AVX512 -no-prec-div`

Benchmarks using both Fortran and C:
`-O3 -ipo -xCORE-AVX512 -no-prec-div`

The flags files that were used to format this result can be browsed at
http://www.spec.org/mpi2007/flags/Lenovo-SPECmpiM_Platform_Flags.html
http://www.spec.org/mpi2007/flags/EM64T_Intel17_flags.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/mpi2007/flags/Lenovo-SPECmpiM_Platform_Flags.xml
http://www.spec.org/mpi2007/flags/EM64T_Intel17_flags.xml

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

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