



SPEC® MPIL2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR665
(AMD EPYC 7H12, 2.6 GHz)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 24.8

MPI2007 license: 28

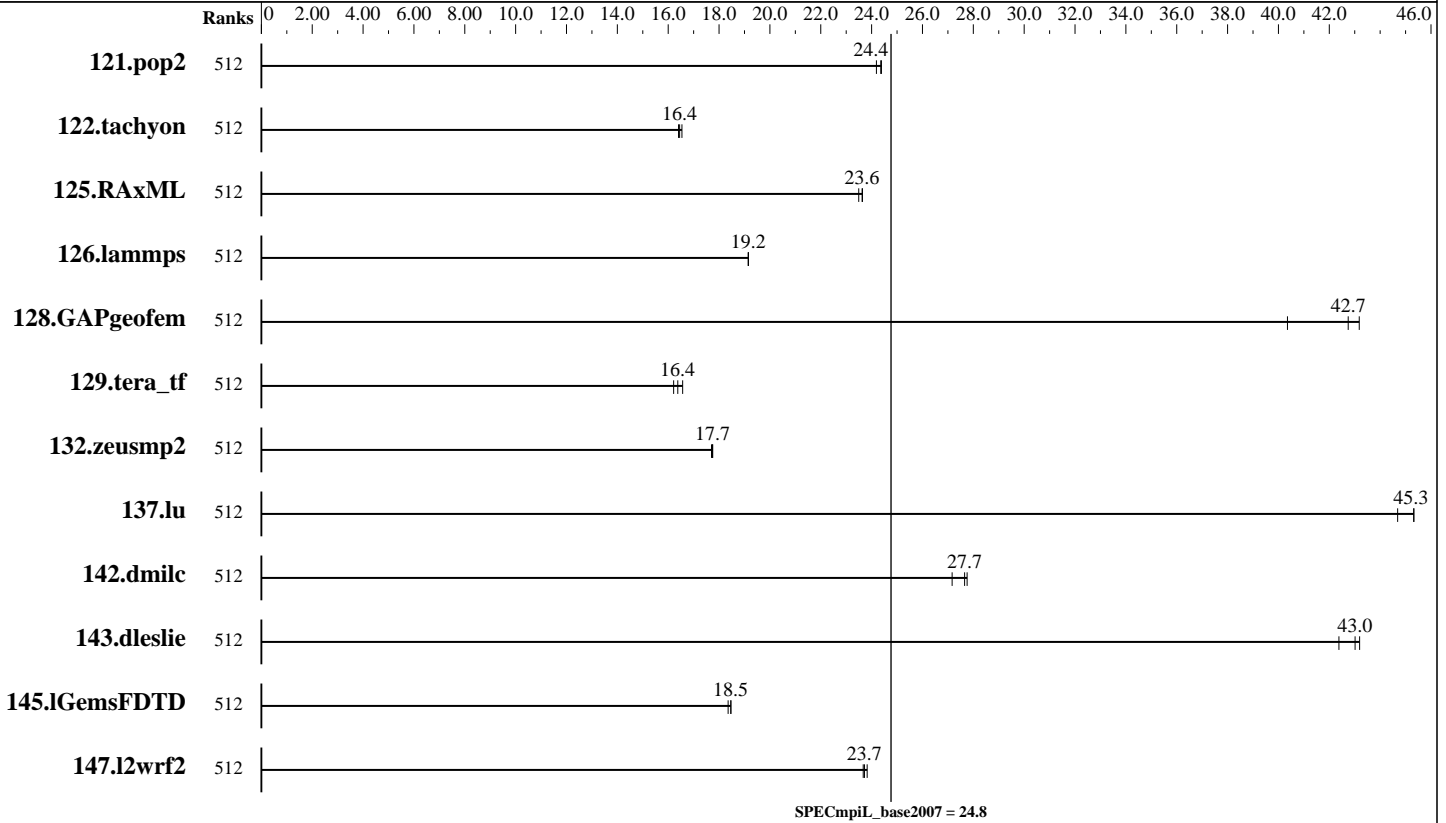
Test sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test date: Jan-2020

Hardware Availability: Jun-2020

Software Availability: Jun-2020



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
121.pop2	512	160	24.4	161	24.2	160	24.4							
122.tachyon	512	118	16.5	118	16.4	118	16.4							
125.RAxML	512	123	23.6	124	23.5	124	23.6							
126.lammps	512	128	19.2	128	19.2	128	19.2							
128.GAPgeofem	512	137	43.2	147	40.4	139	42.7							
129.tera_tf	512	66.3	16.6	67.1	16.4	67.8	16.2							
132.zeusmp2	512	119	17.7	120	17.7	119	17.7							
137.lu	512	94.0	44.7	92.7	45.3	92.7	45.3							
142.dmilc	512	133	27.7	136	27.2	133	27.8							
143.dleslie	512	71.8	43.2	72.1	43.0	73.1	42.4							
145.lGemsFDTD	512	240	18.4	239	18.5	239	18.5							
147.l2wrf2	512	344	23.8	347	23.7	346	23.7							

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

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http://www.spec.org/



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Hardware Summary

Type of System: Homogeneous
 Compute Node: ThinkSystem SR665
 Interconnect: Mellanox ConnectX-6 HDR
 File Server Node: NFS
 Total Compute Nodes: 4
 Total Chips: 8
 Total Cores: 512
 Total Threads: 512
 Total Memory: 4 TB
 Base Ranks Run: 512
 Minimum Peak Ranks: --
 Maximum Peak Ranks: --

Software Summary

C Compiler: Intel C++ Compiler 20.0 for Linux
 Version 19.1.0.166 Build 20191121
 C++ Compiler: Intel C++ Compiler 20.0 for Linux
 Version 19.1.0.166 Build 20191121
 Fortran Compiler: Intel Fortran Compiler 20.0 for Linux
 Version 19.1.0.166 Build 20191121
 Base Pointers: 64-bit
 Peak Pointers: Not Applicable
 MPI Library: Open MPI Library
 Version 4.0.2
 Other MPI Info: None
 Pre-processors: No
 Other Software: None

Node Description: ThinkSystem SR665

Hardware

Number of nodes: 4
 Uses of the node: compute
 Vendor: Lenovo Global Technology
 Model: SR665
 CPU Name: AMD EPYC 7H12
 CPU(s) orderable: 1-2 chips
 Chips enabled: 2
 Cores enabled: 128
 Cores per chip: 64
 Threads per core: 1
 CPU Characteristics: None
 CPU MHz: 2600
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 512 KB I+D on chip per core
 L3 Cache: 256 MB I+D on chip per chip
 16 MB shared / 4 cores
 Other Cache: None
 Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R)
 Disk Subsystem: 1 x 480 GB SATA 2.5" SSD
 Other Hardware: None
 Adapter: Mellanox ConnectX-6 HDR Infiniband
 Number of Adapters: 1
 Slot Type: PCI-Express 4.0 x16
 Data Rate: 200 Gbs/s
 Ports Used: 1
 Interconnect Type: Mellanox ConnectX-6 HDR Infiniband Adapter

Software

Adapter: Mellanox ConnectX-6 HDR Infiniband
 Adapter Driver: 4.7-1.0.0.1.2
 Adapter Firmware: 20.25.2006
 Operating System: Red Hat Enterprise Linux Server release 8.1,
 4.18.0-147.el8.x86_64
 Local File System: xfs
 Shared File System: None
 System State: Multi-user, run level 3
 Other Software: None



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Software Availability: Jun-2020

Node Description: NFS

Hardware		Software	
Number of nodes:	1	Adapter:	Mellanox ConnectX-6 HDR Infiniband
Uses of the node:	Fileserver	Adapter Driver:	4.7-1.0.0.1.2
Vendor:	Lenovo Global Technology	Adapter Firmware:	20.25.2006
Model:	ThinkSystem SR665	Operating System:	Red Hat Enterprise Linux Server release 8.1
CPU Name:	AMD EPYC 7H12 CPU	Local File System:	None
CPU(s) orderable:	1-2 chips	Shared File System:	NFS
Chips enabled:	2	System State:	Multi-User, run level 3
Cores enabled:	128	Other Software:	None
Cores per chip:	64		
Threads per core:	1		
CPU Characteristics:	None		
CPU MHz:	2600		
Primary Cache:	32 KB I + 32 KB D on chip per core		
Secondary Cache:	512 KB I+D on chip per core		
L3 Cache:	256 MB I+D on chip per chip 16 MB shared / 4 cores		
Other Cache:	None		
Memory:	1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R)		
Disk Subsystem:	1 x 480 GB SATA 2.5" SSD		
Other Hardware:	None		
Adapter:	Mellanox ConnectX-6 HDR Infiniband		
Number of Adapters:	1		
Slot Type:	PCI-Express 4.0 x16		
Data Rate:	200 Gb/s		
Ports Used:	1		
Interconnect Type:	Mellanox ConnectX-6 HDR Infiniband		

Interconnect Description: Mellanox ConnectX-6 HDR

Hardware		Software	
Vendor:	Mellanox		
Model:	Infiniband EDR 100Gb/s Switch		
Switch Model:	SB7800 Series		
Number of Switches:	1		
Number of Ports:	36		
Data Rate:	100 Gb/s		
Firmware:	3.9.0300		
Topology:	Mesh		
Primary Use:	MPI Traffic		

Submit Notes

The config file option 'submit' was used.



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General Notes

MPI startup command:

`mpiexec` command was used to start MPI jobs.

RAM configuration:

Compute nodes have 1 x 32 GB RDIMM on each memory channel.

Add "idle=poll" into grub

BIOS settings:

Operating Mode : Maximum Performance Mode

Hyper-Threading Technology (SMT): Enabled

NPS4

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:

`/opt/OMPI/O402_I20_H47_R81/bin/mpicc`

C++ benchmarks:

`126.lammps: /opt/OMPI/O402_I20_H47_R81/bin/mpicxx`

Fortran benchmarks:

`/opt/OMPI/O402_I20_H47_R81/bin/mpif90`

Benchmarks using both Fortran and C:

`/opt/OMPI/O402_I20_H47_R81/bin/mpicc`

`/opt/OMPI/O402_I20_H47_R81/bin/mpif90`

Base Portability Flags

`121.pop2: -DSPEC_MPI_CASE_FLAG`

`126.lammps: -DMPICH_IGNORE_CXX_SEEK`

Base Optimization Flags

C benchmarks:

`-O3 -march=core-avx2 -no-prec-div -ipo`

C++ benchmarks:

`126.lammps: -O3 -march=core-avx2 -no-prec-div -ipo`

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Base Optimization Flags (Continued)

Fortran benchmarks:

-O3 -march=core-avx2 -no-prec-div -ipo

Benchmarks using both Fortran and C:

-O3 -march=core-avx2 -no-prec-div -ipo

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

http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20200506.html

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

http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.20200506.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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