



SPEC® MPIM2007 Result

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NEC

NEC HPC1812Rg-2 (Intel Xeon E5-2650 v4, 2.20 GHz, DDR4-2400 MHz, SMT ON, Turbo ON)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 47.3

MPI2007 license: 055A

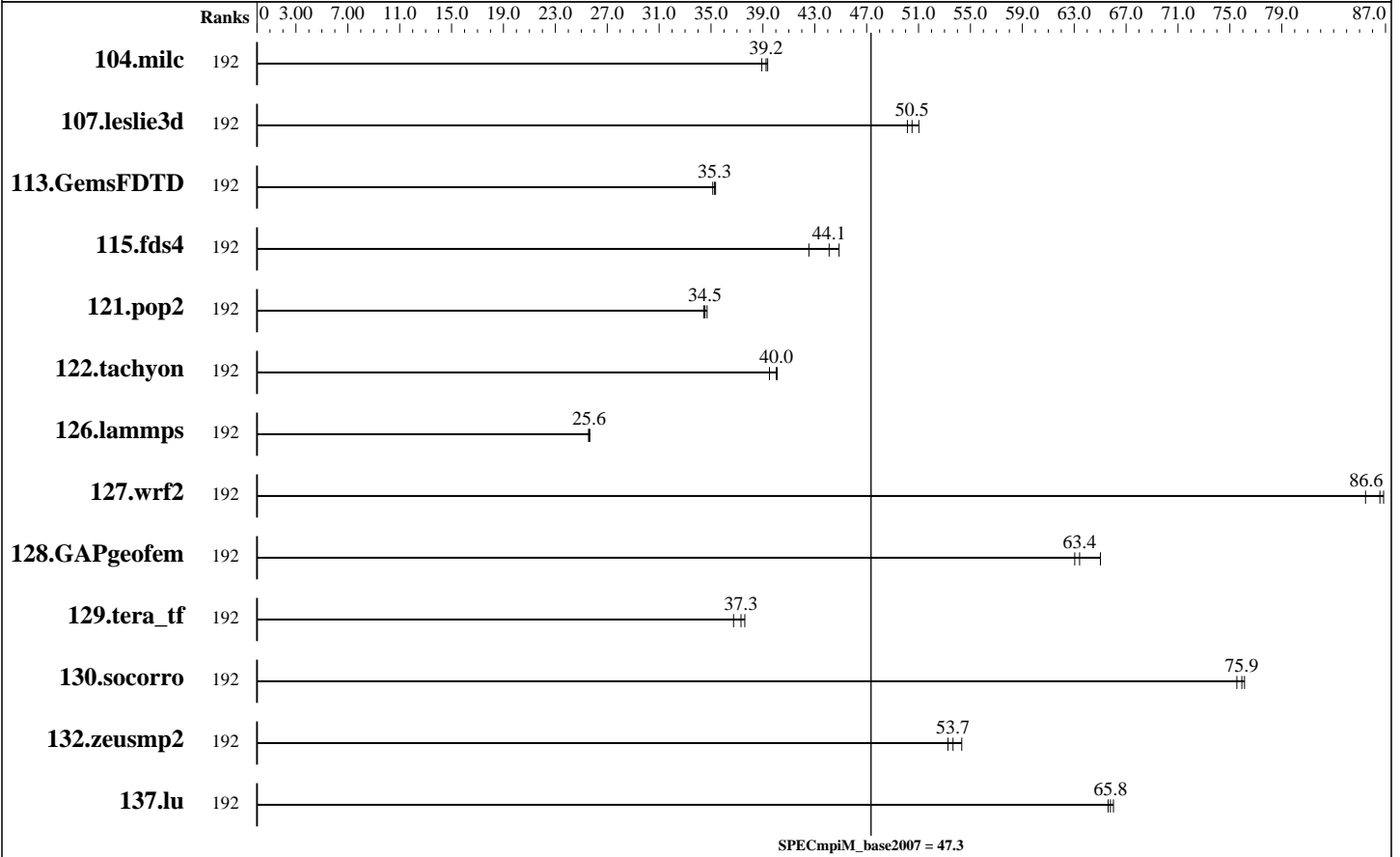
Test sponsor: RWTH University Aachen

Tested by: Bo Wang

Test date: Sep-2017

Hardware Availability: Oct-2016

Software Availability: Oct-2016



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	192	<u>39.9</u>	<u>39.2</u>	40.2	38.9	39.8	39.4							
107.leslie3d	192	104	50.1	<u>103</u>	<u>50.5</u>	102	51.0							
113.GemsFDTD	192	178	35.4	180	35.1	<u>179</u>	<u>35.3</u>							
115.fds4	192	45.9	42.5	<u>44.2</u>	<u>44.1</u>	43.5	44.9							
121.pop2	192	120	34.4	119	34.7	<u>120</u>	<u>34.5</u>							
122.tachyon	192	<u>69.9</u>	<u>40.0</u>	69.7	40.1	70.8	39.5							
126.lammps	192	<u>114</u>	<u>25.6</u>	114	25.6	114	25.7							
127.wrf2	192	91.2	85.5	<u>90.1</u>	<u>86.6</u>	89.8	86.9							
128.GAPgeofem	192	32.8	63.0	31.8	65.0	<u>32.6</u>	<u>63.4</u>							
129.tera_tf	192	75.3	36.7	<u>74.2</u>	<u>37.3</u>	73.6	37.6							

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	192	50.5	75.5	50.1	76.1	50.3	75.9							
132.zeusmp2	192	57.8	53.7	57.1	54.3	58.2	53.3							
137.lu	192	55.9	65.8	55.7	66.0	56.0	65.6							

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: NEC HPC
 Interconnects: Omni-Path Architecture(MPI)
 Gigabit Ethernet(I/O)
 File Server Node: NFSv3
 Total Compute Nodes: 8
 Total Chips: 16
 Total Cores: 192
 Total Threads: 384
 Total Memory: 1 TB
 Base Ranks Run: 192
 Minimum Peak Ranks: --
 Maximum Peak Ranks: --

Software Summary

C Compiler: Intel C++ Composer XE 2017 for Linux, Version 17.0.2.174
 C++ Compiler: Intel C++ Composer XE 2017 for Linux, Version 17.0.2.174
 Fortran Compiler: Intel Fortran Composer XE 2017 for Linux, Version 17.0.2.174
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 MPI Library: Intel MPI Library 2017 for Linux, Version 2017.1.132
 Other MPI Info: None
 Pre-processors: No
 Other Software: None

Node Description: NEC HPC

Hardware

Number of nodes: 8
 Uses of the node: compute
 Vendor: Intel
 Model: NEC HPC 1812Rg
 CPU Name: Intel Xeon E5-2650 v4
 CPU(s) orderable: 1-2 chips
 Chips enabled: 2
 Cores enabled: 24
 Cores per chip: 12
 Threads per core: 2
 CPU Characteristics: 12 core, 2.2 GHz, 9.6 GT/s QPI
 Intel Turbo Boost Technology up to 2.9 GHz
 Hyper-Threading Technology enabled
 CPU MHz: 2200
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 256 KB I+D on chip per core
 L3 Cache: 30 MB I+D on chip per chip
 shared / 12 cores
 Other Cache: None
 Memory: 128 GB (8 x 16 GB 2Rx8 PC4-2400T-R)
 Disk Subsystem: SATA, Samsung SM863, 120GB, SSD
 Other Hardware: None
 Adapter: Intel Omni-Path Host Fabric Interface Adapter 100
 Series 1 Port PCIe x8

Software

Adapter: Intel Omni-Path Host Fabric Interface Adapter 100
 Series 1 Port PCIe x8
 Adapter Driver: Intel Omni-Path Host Fabric Interface
 Adapter Firmware: 2.33.5100
 Operating System: CentOS Linux release 7.3.1611 (Core)
 Kernel 3.10.0-514.26.1.el7.x86_64
 Local File System: Linux/xfs
 Shared File System: NFSv3
 System State: Multi-User, run level 3
 Other Software: None

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Software Availability: Oct-2016

Node Description: NEC HPC

Number of Adapters: 1
Slot Type: PCI-E x8
Data Rate: 58Gb/s
Ports Used: 1
Interconnect Type: Omni-Path

Node Description: NFSv3

Hardware	
Number of nodes:	1
Uses of the node:	fileserver
Vendor:	NETAPP
Model:	FAS6240
CPU Name:	Intel Xeon CPU X5670
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	12
Cores per chip:	6
Threads per core:	2
CPU Characteristics:	None
CPU MHz:	2930
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	12 MB I+D on chip per chip
Other Cache:	None
Memory:	96 GB
Disk Subsystem:	216 disks, 2 TB/disk, 432TB total
Other Hardware:	None
Adapter:	10 Gigabit Ethernet Controller IX1-SFP+
Number of Adapters:	2
Slot Type:	PCI-Express x8
Data Rate:	10Gbps Ethernet
Ports Used:	2
Interconnect Type:	Ethernet

Software	
Adapter:	10 Gigabit Ethernet Controller IX1-SFP+
Adapter Driver:	N/A
Adapter Firmware:	1.8-0
Operating System:	NetApp Release 8.2.3P2 7-Mode
Local File System:	None
Shared File System:	NFSv3
System State:	Multi-User, run level 3
Other Software:	None

Interconnect Description: Omni-Path Architecture(MPI)

Hardware	
Vendor:	Intel
Model:	Intel Omni-Path 100 Series
Switch Model:	Intel Omni-Path 100 Series
Number of Switches:	25
Number of Ports:	48
Data Rate:	100Gbps

Software

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Interconnect Description: Omni-Path Architecture(MPI)

Firmware: 10.3.0.0.81
Topology: 2:1 Blocking Fat tree
Primary Use: MPI traffic

Interconnect Description: Gigabit Ethernet(I/O)

	Hardware	Software
Vendor:	Cisco	
Model:	Ethernet 40 Gbps	
Switch Model:	Cisco Nexus5020, N5K-C5020P-BF	
Number of Switches:	1	
Number of Ports:	96	
Data Rate:	40Gbps	
Firmware:	5.2(1)N1(9a)	
Topology:	Star	
Primary Use:	Cluster File System	

Submit Notes

The config file option 'submit' was used.

General Notes

130.socorro (base): "nullify_ptrs" src.alt was used.

Base Compiler Invocation

C benchmarks:
mpiicc

C++ benchmarks:

126.lammps: mpiicpc

Fortran benchmarks:
mpiifort

Benchmarks using both Fortran and C:
mpiicc mpiifort



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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 -xCORE-AVX2 -no-prec-div

C++ benchmarks:

126.lammps: -O3 -xCORE-AVX2 -no-prec-div

Fortran benchmarks:

-O3 -xCORE-AVX2 -no-prec-div

Benchmarks using both Fortran and C:

-O3 -xCORE-AVX2 -no-prec-div

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

<http://www.spec.org/mpi2007/flags/RWTH-Aachen-CLAIX-MPI-2017-SEP.html>

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

<http://www.spec.org/mpi2007/flags/RWTH-Aachen-CLAIX-MPI-2017-SEP.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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