SPEC® MPIM2007 Result

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NEC

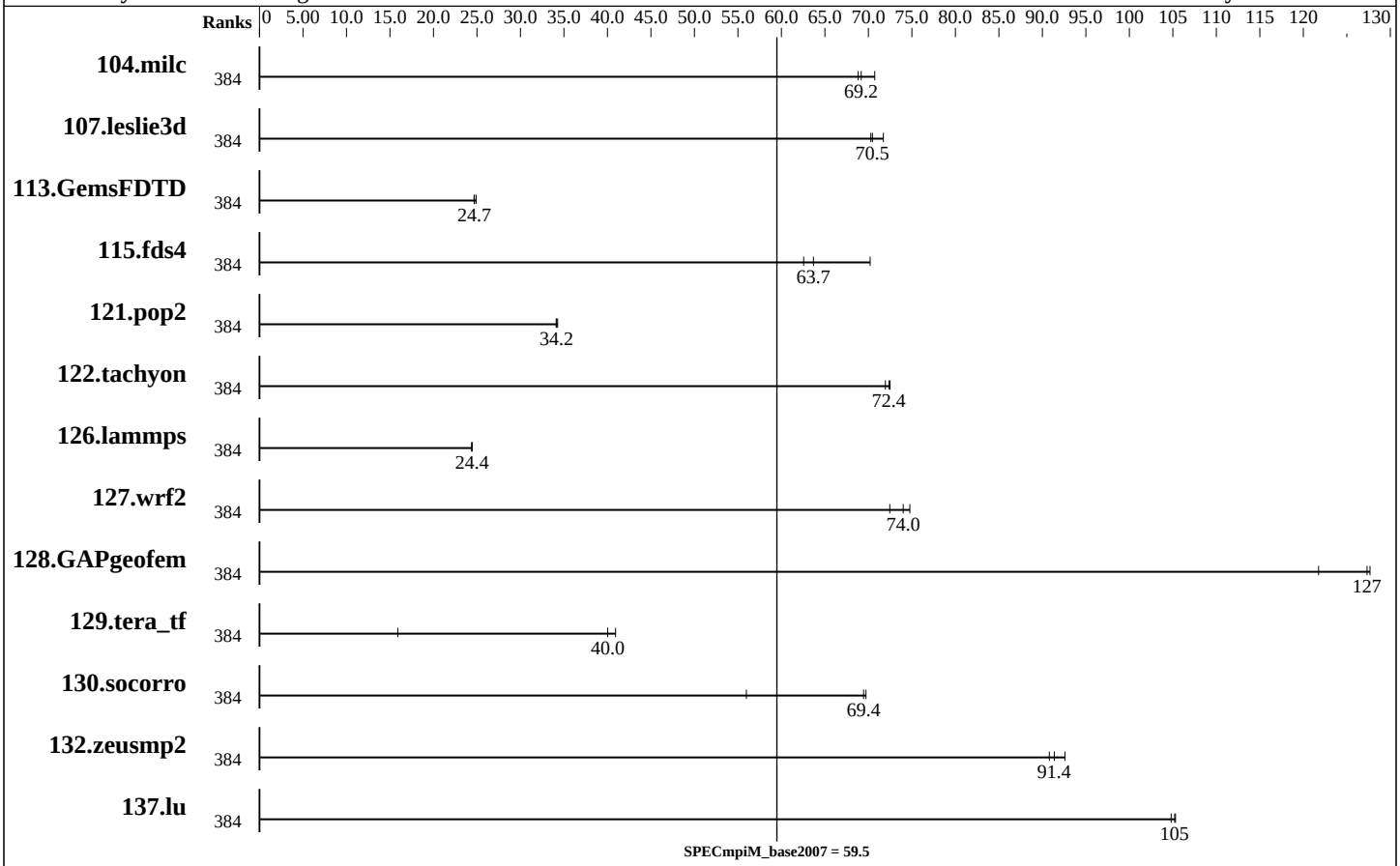
NEC HPC1812Rg-2 (Intel Xeon E5-2650 v4, 2.20 GHz, DDR4-2400 MHz, SMT ON, Turbo ON)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 59.5

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	384	**22.6**	**69.2**	22.1	70.7	22.7	68.8							
107.leslie3d	384	74.3	70.3	72.8	71.7	**74.1**	**70.5**							
113.GemsFDTD	384	253	24.9	**255**	**24.7**	256	24.7							
115.fds4	384	**30.6**	**63.7**	31.2	62.6	27.8	70.2							
121.pop2	384	**121**	**34.2**	120	34.3	121	34.1							
122.tachyon	384	**38.7**	**72.4**	38.6	72.5	38.9	72.0							
126.lammps	384	119	24.4	119	24.4	**119**	**24.4**							
127.wrf2	384	104	74.8	**105**	**74.0**	108	72.5							
128.GAPgeofem	384	16.2	128	**16.2**	**127**	17.0	122							
129.tera_tf	384	**69.1**	**40.0**	67.6	40.9	174	15.9							

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	384	54.7	69.7	**55.0**	**69.4**	68.2	56.0							
132.zeusmp2	384	**34.0**	**91.4**	34.2	90.8	33.5	92.6							
137.lu	384	35.1	105	34.9	105	**34.9**	**105**							

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:	16
Total Chips:	32
Total Cores:	384
Total Threads:	768
Total Memory:	2 TB
Base Ranks Run:	384
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:	16
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

Continued on next page

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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MPI2007 license: 055A
Test sponsor: RWTH University Aachen
Tested by: Bo Wang

Test date: Sep-2017
Hardware Availability: Oct-2016
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

Continued on next page

Software

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	
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

Software

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`

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 -xSSE4.2 -no-prec-div`

C++ benchmarks:

126.lammps: `-O3 -xSSE4.2 -no-prec-div`

Fortran benchmarks:
`-O3 -xSSE4.2 -no-prec-div`

Benchmarks using both Fortran and C:
`-O3 -xSSE4.2 -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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