



# SPEC<sup>®</sup> MPIL2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

## NEC

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

SPECmpiL\_peak2007 = Not Run

SPECmpiL\_base2007 = 18.5

MPI2007 license: 055A

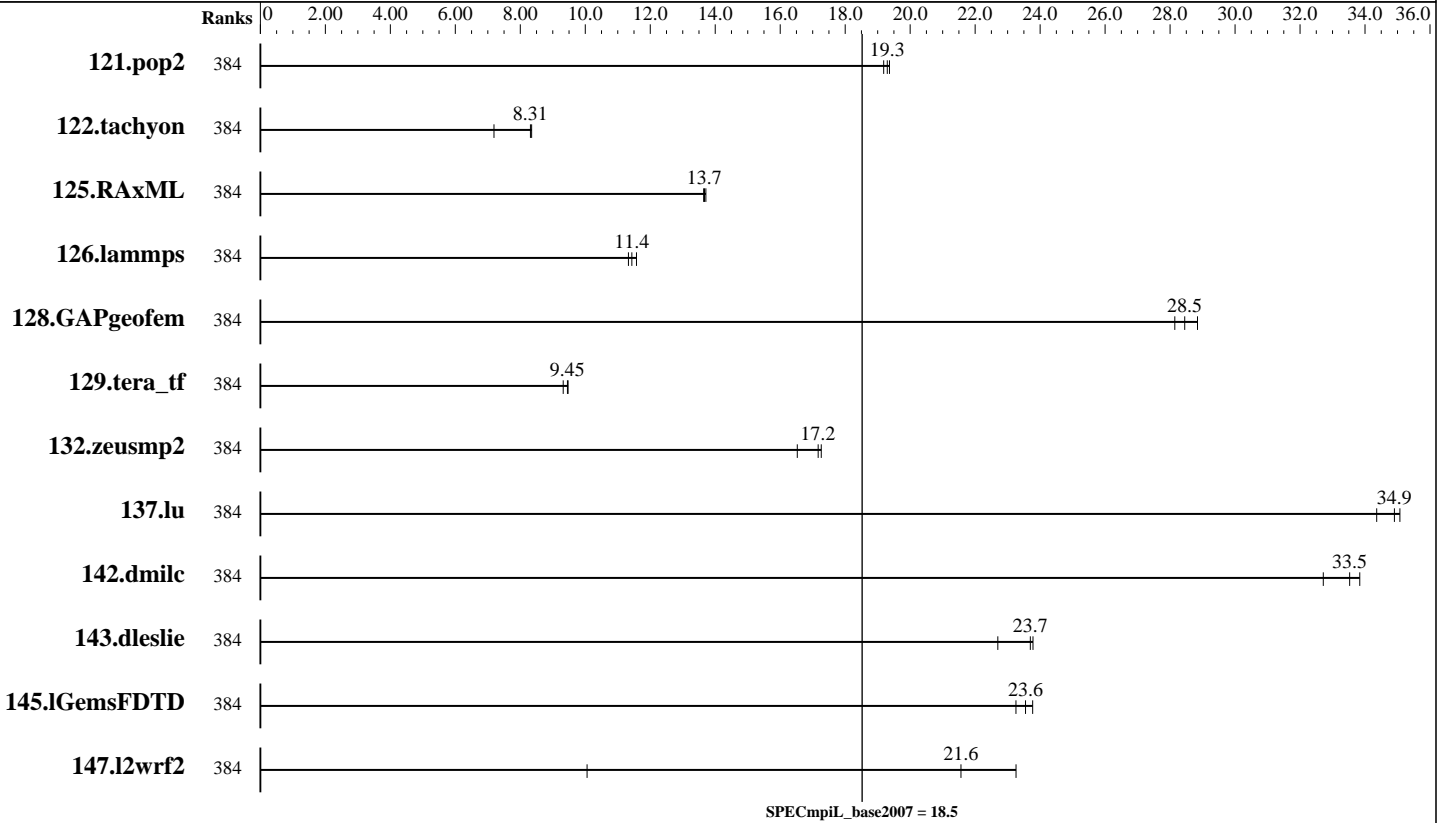
Test sponsor: RWTH University Aachen

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
121.pop2	384	<u>202</u>	<u>19.3</u>	203	19.2	201	19.4							
122.tachyon	384	<u>234</u>	<u>8.31</u>	270	7.19	233	8.35							
125.RAxML	384	<u>214</u>	<u>13.7</u>	214	13.6	213	13.7							
126.lammps	384	212	11.6	<u>215</u>	<u>11.4</u>	217	11.3							
128.GAPgeofem	384	206	28.8	211	28.1	<u>209</u>	<u>28.5</u>							
129.tera_tf	384	<u>116</u>	<u>9.45</u>	116	9.47	118	9.32							
132.zeusmp2	384	128	16.5	<u>123</u>	<u>17.2</u>	123	17.3							
137.lu	384	120	35.1	<u>120</u>	<u>34.9</u>	122	34.4							
142.dmilc	384	<u>110</u>	<u>33.5</u>	109	33.8	113	32.7							
143.dleslie	384	130	23.8	<u>131</u>	<u>23.7</u>	137	22.7							
145.lGemsFDTD	384	186	23.8	<u>187</u>	<u>23.6</u>	190	23.3							
147.l2wrf2	384	<u>380</u>	<u>21.6</u>	353	23.3	816	10.1							

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

Standard Performance Evaluation Corporation

info@spec.org

http://www.spec.org/



# SPEC MPIL2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

## NEC

SPECmpiL\_peak2007 = Not Run

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

SPECmpiL\_base2007 = 18.5

MPI2007 license: 055A

Test date: Sep-2017

Test sponsor: RWTH University Aachen

Hardware Availability: Oct-2016

Tested by: Bo Wang

Software Availability: Oct-2016

### Hardware Summary

Type of System: Homogeneous  
 Compute Node: NEC HPC  
 Interconnects: Omni-Path Architecture  
 Gigabit Ethernet  
 File Server Node: NFS  
 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: Intel Turbo Boost Technology up to 2.9 GHz (single)/2.2 GHz (all), 9.6 GT/s QPI, Hyper-Threading 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  
 Number of Adapters: 1  
 Slot Type: PCI-E x8  
 Data Rate: 58Gb/s  
 Ports Used: 1  
 Interconnect Type: Omni-Path

### Software

Adapter: Intel Omni-Path Host Fabric Interface Adapter 100 Series 1 Port PCIe X8  
 Adapter Driver: hfi1  
 Adapter Firmware: 2.33.5100  
 Operating System: CentOS Linux release 7.3.1611 (Core)  
 Local File System: Linux/xfs  
 Shared File System: NFS  
 System State: Multi-User  
 Other Software: None



# SPEC MPIL2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

## NEC

SPECmpiL\_peak2007 = Not Run

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

SPECmpiL\_base2007 = 18.5

MPI2007 license: 055A

Test date: Sep-2017

Test sponsor: RWTH University Aachen

Hardware Availability: Oct-2016

Tested by: Bo Wang

Software Availability: Oct-2016

### Node Description: NFS

Hardware		Software	
Number of nodes:	1	Adapter:	10 Gigabit Ethernet Controller
Uses of the node:	fileserver		IX1-SFP+
Vendor:	NETAPP	Adapter Driver:	N/A
Model:	FAS6240	Adapter Firmware:	1.8-0
CPU Name:	Intel Xeon CPU X5670	Operating System:	NetApp Release 8.2.3P2 7-Mode
CPU(s) orderable:	1-2 chips	Local File System:	None
Chips enabled:	2	Shared File System:	NFS
Cores enabled:	12	System State:	Multi-User
Cores per chip:	6	Other Software:	None
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		

### Interconnect Description: Omni-Path Architecture

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



# SPEC MPIL2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

## NEC

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

SPECmpiL\_peak2007 = Not Run

SPECmpiL\_base2007 = 18.5

MPI2007 license: 055A

Test sponsor: RWTH University Aachen

Tested by: Bo Wang

Test date: Sep-2017

Hardware Availability: Oct-2016

Software Availability: Oct-2016

## Interconnect Description: Gigabit Ethernet

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.

## 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

## Base Optimization Flags

C benchmarks:  
-O3 -xCORE-AVX2 -no-prec-div

C++ benchmarks:

Continued on next page



# SPEC MPIL2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

## NEC

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

SPECmpiL\_peak2007 = Not Run

SPECmpiL\_base2007 = 18.5

MPI2007 license: 055A

Test sponsor: RWTH University Aachen

Tested by: Bo Wang

Test date: Sep-2017

Hardware Availability: Oct-2016

Software Availability: Oct-2016

## Base Optimization Flags (Continued)

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>

SPEC and SPEC MPI are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC MPI2007 v2.0.  
Report generated on Wed Oct 4 12:53:46 2017 by SPEC MPI2007 PS/PDF formatter v1463.  
Originally published on 4 October 2017.