



# SPEC<sup>®</sup> MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Cray

SPECmpiM\_peak2007 = Not Run

Big Red II (AMD Opteron 6380, 2.5 GHz)

SPECmpiM\_base2007 = 29.0

MPI2007 license: 3440A

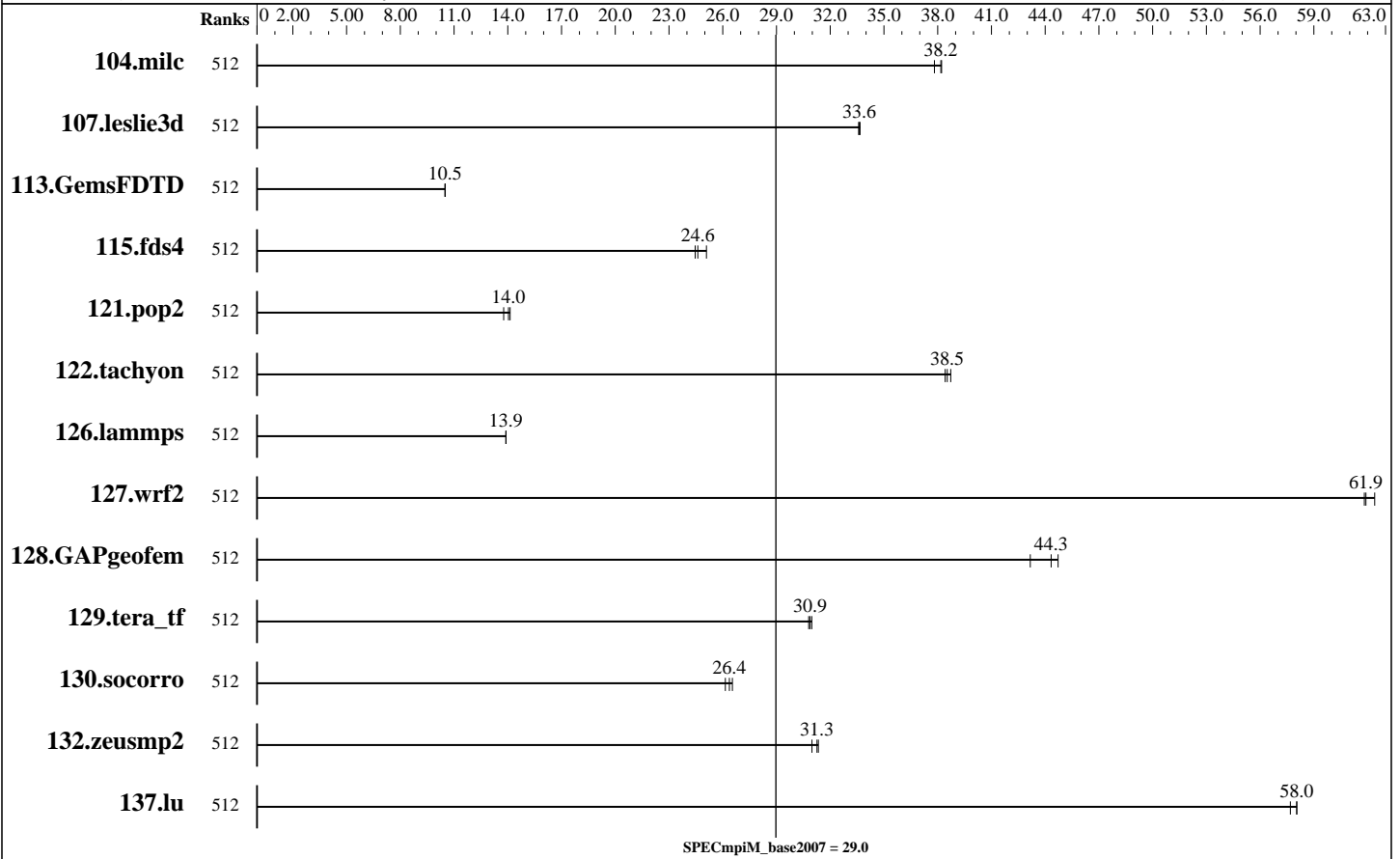
Test date: Mar-2015

Test sponsor: Indiana University

Hardware Availability: Apr-2013

Tested by: Indiana University

Software Availability: Jun-2013



## Results Table

Benchmark	Base								Peak					
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	512	41.4	37.8	40.9	38.2	<u>41.0</u>	<u>38.2</u>							
107.leslie3d	512	155	33.7	155	33.6	<u>155</u>	<u>33.6</u>							
113.GemsFDTD	512	601	10.5	<u>601</u>	<u>10.5</u>	600	10.5							
115.fds4	512	77.8	25.1	79.8	24.5	<u>79.3</u>	<u>24.6</u>							
121.pop2	512	300	13.8	<u>294</u>	<u>14.0</u>	292	14.1							
122.tachyon	512	<u>72.6</u>	<u>38.5</u>	72.8	38.4	72.2	38.7							
126.lammps	512	<u>210</u>	<u>13.9</u>	210	13.9	210	13.9							
127.wrf2	512	<u>126</u>	<u>61.9</u>	125	62.4	126	61.8							
128.GAPgeofem	512	<u>46.6</u>	<u>44.3</u>	46.2	44.7	47.8	43.2							
129.tera_tf	512	89.9	30.8	<u>89.6</u>	<u>30.9</u>	89.4	31.0							

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	512	<b>145</b>	<b>26.4</b>	144	26.5	146	26.1									
132.zeusmp2	512	99.0	31.3	100	31.0	<b>99.3</b>	<b>31.3</b>									
137.lu	512	63.7	57.7	63.3	58.0	<b>63.3</b>	<b>58.0</b>									

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: Big Red II Node  
 Interconnects: Infiniband (QDR)  
 Cray Gemini  
 File Server Node: Data Capacitor II  
 Total Compute Nodes: 16  
 Total Chips: 32  
 Total Cores: 512  
 Total Threads: 512  
 Total Memory: 1 TB  
 Base Ranks Run: 512  
 Minimum Peak Ranks: --  
 Maximum Peak Ranks: --

### Software Summary

C Compiler: Intel C Composer XE 2013 for Linux, Version 13.1.3.192 Build 20130607  
 C++ Compiler: Intel C++ Composer XE 2013 for Linux, Version 13.1.3.192 Build 20130607  
 Fortran Compiler: Intel Fortran Composer XE 2013 for Linux, Version 13.1.3.192 Build 20130607  
 Base Pointers: 64-bit  
 Peak Pointers: 64-bit  
 MPI Library: Cray MPI (MPT) 7.1.2  
 Other MPI Info: None  
 Pre-processors: No  
 Other Software: None

## Node Description: Big Red II Node

### Hardware

Number of nodes: 16  
 Uses of the node: compute  
 Vendor: Cray  
 Model: XE6  
 CPU Name: AMD Opteron 6380  
 CPU(s) orderable: 1-2 chips  
 Chips enabled: 2  
 Cores enabled: 32  
 Cores per chip: 16  
 Threads per core: 1  
 CPU Characteristics: AMD Turbo CORE technology up to 3.40 GHz  
 CPU MHz: 2500  
 Primary Cache: 512 KB I on chip per chip, 64 KB I shared / 2 cores; 16 KB D on chip per core  
 Secondary Cache: 16 MB I+D on chip per chip, 2 MB shared / 2 cores  
 L3 Cache: 16 MB I+D on chip per chip, 8 MB shared / 8 cores  
 Other Cache: None  
 Memory: 64 GB (8 x 8 GB 2Rx4 PC3L-12800R-11, ECC running at 1600 MHz and CL11)  
 Disk Subsystem: None  
 Other Hardware: None  
 Adapter: Mellanox ConnectX MHQH29-XTC  
 Number of Adapters: 1  
 Slot Type: PCIe x8 Gen 2

### Software

Adapter: Mellanox ConnectX MHQH29-XTC  
 Adapter Driver: 1.0-ofed1.5.4  
 Adapter Firmware: 2.9.1000  
 Adapter: Cray Gemini  
 Adapter Driver: Proprietary Cray\_kgni  
 Adapter Firmware: 0.17  
 Operating System: SUSE Linux Enterprise Server 11 (x86\_64), Cray Linux Environment 4.2, Kernel 2.6.32.59-0.7.1\_1.0402.7496-cray\_gem\_c  
 Local File System: None  
 Shared File System: lustre  
 System State: Multi-User  
 Other Software: TORQUE-2.5.7

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### Node Description: Big Red II Node

Data Rate:	40Gbps
Ports Used:	1
Interconnect Type:	40 Gigabit Infiniband (QDR)
Adapter:	Cray Gemini
Number of Adapters:	1
Slot Type:	AMD HyperTransport 3
Data Rate:	76.8Gbps
Ports Used:	1
Interconnect Type:	Gemini

### Node Description: Data Capacitor II

Hardware	
Number of nodes:	2
Uses of the node:	fileserver
Vendor:	DDN
Model:	DDN SFA12K
CPU Name:	Intel Xeon CPU E5-2620
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	12
Cores per chip:	6
Threads per core:	1
CPU Characteristics:	Intel Turbo Boost Technology up to 2.50 GHz
CPU MHz:	2000
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	15 MB I+D on chip per chip
Other Cache:	None
Memory:	96 GB
Disk Subsystem:	30 TB RAID 6, 10 (8 + 2) x 3 TB SATA (Hitachi, 7200RPM, 6.0Gbps)
Other Hardware:	None
Adapter:	Mellanox ConnectX MHQH29-XTC
Number of Adapters:	1
Slot Type:	PCIe x8 Gen 2
Data Rate:	40Gbps
Ports Used:	1
Interconnect Type:	40 Gigabit Infiniband (QDR)

Software	
Adapter:	Mellanox ConnectX MHQH29-XTC
Adapter Driver:	1.0-ofed1.5.4
Adapter Firmware:	2.9.1000
Operating System:	CentOS 6.2
Local File System:	Linux/ext4
Shared File System:	lustre
System State:	Multi-User
Other Software:	None

### Interconnect Description: Infiniband (QDR)

Hardware	
Vendor:	DDN
Model:	Mellanox SX6506
Switch Model:	Mellanox SX6506

### Software

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## Interconnect Description: Infiniband (QDR)

Number of Switches:	1
Number of Ports:	108
Data Rate:	56 Gbps
Firmware:	mellanox SX6506
Topology:	switched
Primary Use:	Lustre fileserver

## Interconnect Description: Cray Gemini

	Hardware	Software
Vendor:	Cray	
Model:	Cray Gemini	
Switch Model:	Cray Gemini	
Number of Switches:	264	
Number of Ports:	48	
Data Rate:	9.36 GB/s	
Firmware:	0.17	
Topology:	3D Torus	
Primary Use:	MPI traffic	

## Submit Notes

The config file option 'submit' was used.

## General Notes

130.socorro (base): "nullify\_ptrs" src.alt was used.

MPI startup command:

aprun command was used to start MPI jobs.

export MPICH\_NO\_BUFFER\_ALIAS\_CHECK=true

If set, the buffer alias error check for collectives is disabled. The MPI standard does not allow aliasing of type OUT or INOUT parameters on the same collective function call. The default is false.

Network:

3D Torus

Job placement:

PBS is used for job placement.

Compute nodes are selected by PBS.

No specific node selection is used.



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## Base Compiler Invocation

C benchmarks:

cc

C++ benchmarks:

126.lammps: CC

Fortran benchmarks:

ftn

Benchmarks using both Fortran and C:

cc ftn

## 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 -no-prec-div

C++ benchmarks:

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

Fortran benchmarks:

-O3 -no-prec-div

Benchmarks using both Fortran and C:

-O3 -no-prec-div

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

[http://www.spec.org/mpi2007/flags/EM64T\\_Intel140\\_flags.20150429.html](http://www.spec.org/mpi2007/flags/EM64T_Intel140_flags.20150429.html)

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

[http://www.spec.org/mpi2007/flags/EM64T\\_Intel140\\_flags.20150429.xml](http://www.spec.org/mpi2007/flags/EM64T_Intel140_flags.20150429.xml)



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

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