# SPEC® MPIM2007 Result



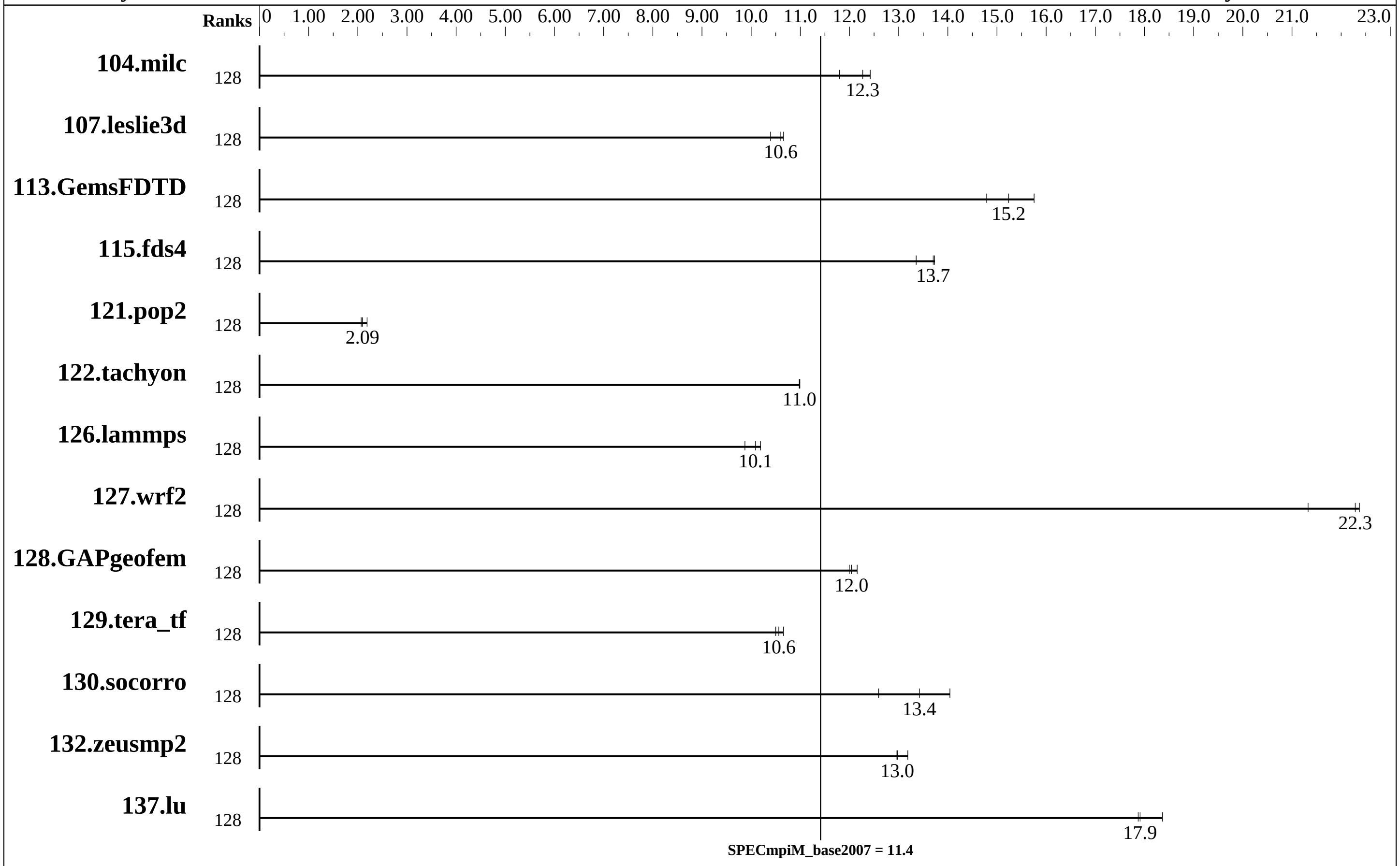
## Indiana University

Mason (Intel Xeon L7555, base frequency 1.87 GHz, PC3-10600R, ECC, running at 1066 MHz and CL9, Turbo on, Max Turbo Frequency 2.53 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 11.4

| | | | |
|---|---|---|---|
| **MPI2007 license:** | 3440 | **Test date:** | Dec-2011 |
| **Test sponsor:** | Indiana University | **Hardware Availability:** | Jun-2010 |
| **Tested by:** | Huian Li | **Software Availability:** | Jan-2011 |




## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ranks | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Ranks | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 104.milc | 128 | 126 | 12.4 | **128** | **12.3** | 133 | 11.8 | | | | | | | |
| 107.leslie3d | 128 | 502 | 10.4 | 490 | 10.7 | **492** | **10.6** | | | | | | | |
| 113.GemsFDTD | 128 | 426 | 14.8 | 400 | 15.8 | **414** | **15.2** | | | | | | | |
| 115.fds4 | 128 | 146 | 13.4 | 142 | 13.7 | **142** | **13.7** | | | | | | | |
| 121.pop2 | 128 | 1996 | 2.07 | 1886 | 2.19 | **1971** | **2.09** | | | | | | | |
| 122.tachyon | 128 | **255** | **11.0** | 255 | 11.0 | 254 | 11.0 | | | | | | | |
| 126.lammps | 128 | **289** | **10.1** | 295 | 9.87 | 286 | 10.2 | | | | | | | |
| 127.wrf2 | 128 | **350** | **22.3** | 348 | 22.4 | 366 | 21.3 | | | | | | | |
| 128.GAPgeofem | 128 | 170 | 12.2 | 172 | 12.0 | **171** | **12.0** | | | | | | | |
| 129.tera_tf | 128 | **262** | **10.6** | 264 | 10.5 | 260 | 10.7 | | | | | | | |

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Results Table (Continued)

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ranks | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Ranks | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 130.socorro | 128 | 272 | 14.0 | **284** | **13.4** | 303 | 12.6 | | | | | | | |
| 132.zeusmp2 | 128 | **239** | **13.0** | 240 | 12.9 | 235 | 13.2 | | | | | | | |
| 137.lu | 128 | 200 | 18.4 | 206 | 17.9 | **205** | **17.9** | | | | | | | |

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: | Mason Node |
| Interconnects: | 10Gigabit Ethernet<br>Gigabit Ethernet |
| File Server Node: | HOME |
| Total Compute Nodes: | 4 |
| Total Chips: | 16 |
| Total Cores: | 128 |
| Total Threads: | 128 |
| Total Memory: | 2 TB |
| Base Ranks Run: | 128 |
| Minimum Peak Ranks: | -- |
| Maximum Peak Ranks: | -- |

### Software Summary

| | |
|---|---|
| C Compiler: | Intel C Composer XE 2011 for Linux<br>Version 12.0, Build 20110112 |
| C++ Compiler: | Intel C++ Composer XE 2011 for Linux<br>Version 12.0, Build 20110112 |
| Fortran Compiler: | Intel Fortran Composer XE 2011 for Linux<br>Version 12.0, Build 20110112 |
| Base Pointers: | 64-bit |
| Peak Pointers: | 64-bit |
| MPI Library: | OpenMPI-1.4.3 |
| Other MPI Info: | None |
| Pre-processors: | No |
| Other Software: | None |

## Node Description: Mason Node

### Hardware

| | |
|---|---|
| Number of nodes: | 4 |
| Uses of the node: | compute |
| Vendor: | HP |
| Model: | Proliant DL580 G7 Server Series |
| CPU Name: | Intel Xeon L7555 |
| CPU(s) orderable: | 1-4 chips |
| Chips enabled: | 4 |
| Cores enabled: | 32 |
| Cores per chip: | 8 |
| Threads per core: | 1 |
| CPU Characteristics: | Intel Turbo Boost Technology enabled,<br>5.86 GT/s QPI |
| CPU MHz: | 1866 |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 256 KB I+D on chip per core |
| L3 Cache: | 24 MB I+D on chip per chip, 24 MB shared / 8 cores |
| Other Cache: | None |
| Memory: | 512 GB (64 x 8 GB 2Rx4 PC3-10600R, ECC running at 1066 MHz and CL9) |
| Disk Subsystem: | Two 500 GB 7200 RPM 2.5" SAS hard drives,in RAID 1 mirror |
| Other Hardware: | None |
| Adapter: | HP NC375i 1G w/NC524SFP 10G Module |
| Number of Adapters: | 1 |

Continued on next page

### Software

| | |
|---|---|
| Adapter: | HP NC375i 1G w/NC524SFP 10G Module |
| Adapter Driver: | netxen_nic v 4.0.75 |
| Adapter Firmware: | 4.0.544 |
| Adapter: | HP NC375i 1G |
| Adapter Driver: | netxen_nic v 4.0.75 |
| Adapter Firmware: | 4.0.544 |
| Operating System: | RHEL6.0 (x86_64) 2.6.32-71.14.1.el6<br>Kernel 2.6.32-71.14.1.el6 |
| Local File System: | Linux/ext2 |
| Shared File System: | NFS |
| System State: | Multi-User |
| Other Software: | TORQUE-2.5.7 |

# SPEC MPIM2007 Result



## Indiana University

Mason (Intel Xeon L7555, base frequency 1.87 GHz, PC3-10600R, ECC, running at 1066 MHz and CL9, Turbo on, Max Turbo Frequency 2.53 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 11.4

| | | | |
|---|---|---|---|
| **MPI2007 license:** | 3440 | **Test date:** | Dec-2011 |
| **Test sponsor:** | Indiana University | **Hardware Availability:** | Jun-2010 |
| **Tested by:** | Huian Li | **Software Availability:** | Jan-2011 |

## Node Description: Mason Node

| | |
|---|---|
| Slot Type: | PCIe x8 Gen2 |
| Data Rate: | 10Gbps |
| Ports Used: | 1 |
| Interconnect Type: | 10 Gigabit Ethernet |
| Adapter: | HP NC375i 1G |
| Number of Adapters: | 1 |
| Slot Type: | PCIe x8 Gen2 |
| Data Rate: | 1Gbps |
| Ports Used: | 1 |
| Interconnect Type: | 1 Gigabit Ethernet |

## Node Description: HOME

### Hardware

| | |
|---|---|
| Number of nodes: | 1 |
| Uses of the node: | fileserver |
| Vendor: | IBM |
| Model: | IBM N5500 NAS |
| CPU Name: | Intel Xeon CPU |
| CPU(s) orderable: | 1-4 chips |
| Chips enabled: | 4 |
| Cores enabled: | 32 |
| Cores per chip: | 8 |
| Threads per core: | 1 |
| CPU Characteristics: | -- |
| CPU MHz: | 1866 |
| Primary Cache: | 32 KB I + 32 KB D on chip per chip |
| Secondary Cache: | 256 KB I+D on chip per core |
| L3 Cache: | None |
| Other Cache: | None |
| Memory: | 6 GB |
| Disk Subsystem: | 10 disks, 320GB/disk, 2.6TB total |
| Other Hardware: | None |
| Adapter: | Intel 82546GB Dual-Port Gigabit Ethernet Controller |
| Number of Adapters: | 1 |
| Slot Type: | PCI-Express x8 |
| Data Rate: | 1Gbps Ethernet |
| Ports Used: | 1 |
| Interconnect Type: | Ethernet |

### Software

| | |
|---|---|
| Adapter: | Intel 82546GB Dual-Port Gigabit Ethernet Controller |
| Adapter Driver: | e1000 |
| Adapter Firmware: | N/A |
| Operating System: | RedHat EL 4 Update 4 |
| Local File System: | None |
| Shared File System: | NFS |
| System State: | Multi-User |
| Other Software: | None |

## Indiana University

Mason (Intel Xeon L7555, base frequency 1.87 GHz, PC3-10600R, ECC, running at 1066 MHz and CL9, Turbo on, Max Turbo Frequency 2.53 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 11.4

| | | | |
|---|---|---|---|
| **MPI2007 license:** | 3440 | **Test date:** | Dec-2011 |
| **Test sponsor:** | Indiana University | **Hardware Availability:** | Jun-2010 |
| **Tested by:** | Huian Li | **Software Availability:** | Jan-2011 |

## Interconnect Description: 10Gigabit Ethernet

### Hardware

| | |
|---|---|
| Vendor: | HP |
| Model: | HP NC375i 1G w/NC524SFP 10G Module |
| Switch Model: | Cisco 7018 (Line card module: N7K-M132XP-12) |
| Number of Switches: | 1 |
| Number of Ports: | 16 |
| Data Rate: | 10 Gbps Ethernet |
| Firmware: | EPLD 5.0.2 |
| Topology: | switched |
| Primary Use: | MPI traffic and NFS traffic |

### Software

## Interconnect Description: Gigabit Ethernet

### Hardware

| | |
|---|---|
| Vendor: | HP |
| Model: | Cisco SGE2010 |
| Switch Model: | Cisco SGE2010 |
| Number of Switches: | 1 |
| Number of Ports: | 48 |
| Data Rate: | 1 Gbps Ethernet |
| Firmware: | 3.0.0.18 |
| Topology: | switched |
| Primary Use: | Network management |

### Software

## Submit Notes

```
The config file option 'submit' was used.
```

## General Notes

```
MPI startup command:
  mpirun command was used to start MPI jobs.
  eth0 (10 GigE) was specified at the mpirun command line for MPI message passing
  eth3 (1 GigE) was specified for non-MPI communication.
BIOS settings:
  Intel Turbo Boost Technology (Turbo)  : Enabled (the default)
RAM configuration:
  Each compute node has 64x8-GB RDIMMs.
Network:
  Four compute nodes connect to one Cisco Nexus 7018 switch
  via 10 GigE port.
Job placement:
  Each MPI job was assigned to a topologically compact set of nodes, i.e.
  the minimal needed number of compute nodes was used for each job:
  1 compute node for 32 ranks, 2 for 64 ranks, 4 for 128 ranks, and 8 for 256 ranks
```

Continued on next page

## General Notes (Continued)

```
PBS Pro was used for job submission. It has no impact on performance.
  Can be found at: http://www.altair.com
```

## Base Compiler Invocation

C benchmarks:
`mpicc`

C++ benchmarks:

126.lammps: `mpicxx`

Fortran benchmarks:
`mpif90`

Benchmarks using both Fortran and C:
`mpicc mpif90`

## Base Portability Flags

121.pop2: `-DSPEC_MPI_CASE_FLAG`
126.lammps: `-DMPICH_IGNORE_CXX_SEEK`
127.wrf2: `-DSPEC_MPI_LINUX -DSPEC_MPI_CASE_FLAG`

## Base Optimization Flags

C benchmarks:
`-O3 -xSSE4.1 -no-prec-div`

C++ benchmarks:

126.lammps: `-O3 -xSSE4.1 -no-prec-div`

Fortran benchmarks:
`-O3 -xSSE4.1 -no-prec-div`

Benchmarks using both Fortran and C:
`-O3 -xSSE4.1 -no-prec-div`

The flags file that was used to format this result can be browsed at
http://www.spec.org/mpi2007/flags/EM64T_Intel111_flags.20120720.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/EM64T_Intel111_flags.20120720.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC MPI2007 v2.0.
Report generated on Tue Jul 22 13:44:34 2014 by SPEC MPI2007 PS/PDF formatter v1463.
Originally published on 12 January 2012.