# SPEC® MPIM2007 Result

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## IBM Corporation

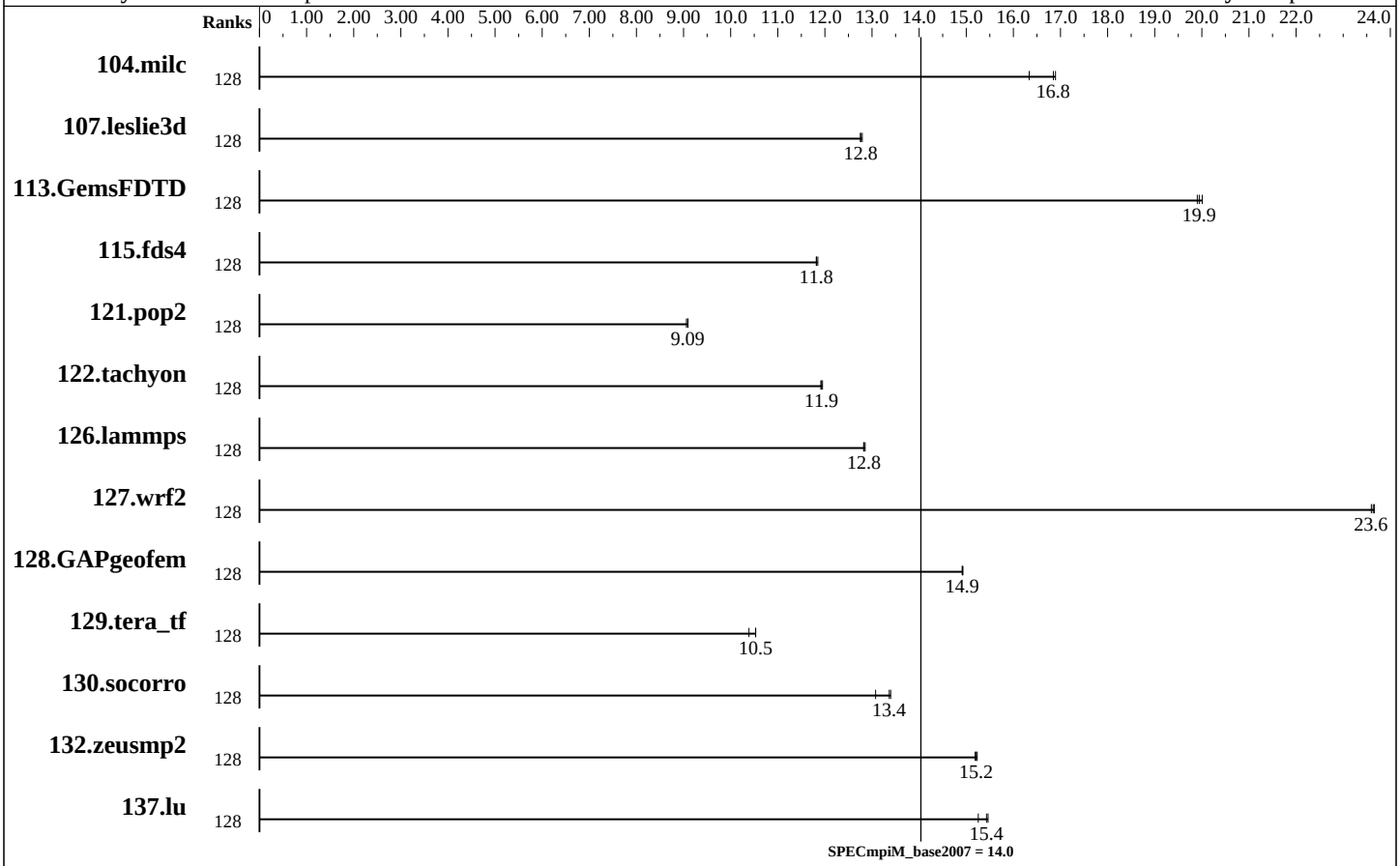
System x3550 M2 (Intel Xeon X5570, 2.93 GHz
SMT on, Turbo on)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 14.0

**MPI2007 license:** 005
**Test sponsor:** IBM Corporation
**Tested by:** IBM Corporation

**Test date:** Jun-2009
**Hardware Availability:** Apr-2009
**Software Availability:** Apr-2009




## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ranks | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Ranks | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 104.milc | 128 | 95.8 | 16.3 | **92.9** | **16.8** | 92.6 | 16.9 | | | | | | | |
| 107.leslie3d | 128 | 409 | 12.8 | **409** | **12.8** | 408 | 12.8 | | | | | | | |
| 113.GemsFDTD | 128 | 315 | 20.0 | **316** | **19.9** | 317 | 19.9 | | | | | | | |
| 115.fds4 | 128 | 165 | 11.8 | **165** | **11.8** | 165 | 11.8 | | | | | | | |
| 121.pop2 | 128 | **454** | **9.09** | 454 | 9.09 | 456 | 9.06 | | | | | | | |
| 122.tachyon | 128 | 234 | 11.9 | **234** | **11.9** | 235 | 11.9 | | | | | | | |
| 126.lammps | 128 | 227 | 12.9 | 227 | 12.8 | **227** | **12.8** | | | | | | | |
| 127.wrf2 | 128 | **330** | **23.6** | 330 | 23.6 | 330 | 23.7 | | | | | | | |
| 128.GAPgeofem | 128 | 138 | 14.9 | **138** | **14.9** | 138 | 14.9 | | | | | | | |
| 129.tera_tf | 128 | 266 | 10.4 | **263** | **10.5** | 263 | 10.5 | | | | | | | |

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 | 128 | **286** | **13.4** | 292 | 13.1 | 285 | 13.4 | | | | | | | |
| 132.zeusmp2 | 128 | **204** | **15.2** | 204 | 15.2 | 204 | 15.2 | | | | | | | |
| 137.lu | 128 | **238** | **15.4** | 238 | 15.5 | 241 | 15.3 | | | | | | | |

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: | IBM System x3550 M2 |
| Interconnects: | InfiniBand<br>Ethernet |
| File Server Node: | IBM System x346 8840 |
| Head Node: | IBM System x3550 M2 |
| Total Compute Nodes: | 8 |
| Total Chips: | 16 |
| Total Cores: | 64 |
| Total Threads: | 128 |
| Total Memory: | 192 GB |
| Base Ranks Run: | 128 |
| Minimum Peak Ranks: | -- |
| Maximum Peak Ranks: | -- |

### Software Summary

| | |
|---|---|
| C Compiler: | Intel C++ Compiler 11.0.083 for Linux |
| C++ Compiler: | Intel C++ Compiler 11.0.083 for Linux |
| Fortran Compiler: | Intel Fortran Compiler 11.0.083 for Linux |
| Base Pointers: | 64-bit |
| Peak Pointers: | 64-bit |
| MPI Library: | Intel MPI Library 3.2.1.009 for Linux |
| Other MPI Info: | None |
| Pre-processors: | No |
| Other Software: | Intel MPI Library 3.2.1.009 for Linux<br>Multi-Purpose<br>Daemon (MPD) |

## Node Description: IBM System x3550 M2

### Hardware

| | |
|---|---|
| Number of nodes: | 8 |
| Uses of the node: | compute, head |
| Vendor: | IBM Corporation |
| Model: | 7946-92U |
| CPU Name: | Intel Xeon X5570 |
| CPU(s) orderable: | 1-2 chips |
| Chips enabled: | 2 |
| Cores enabled: | 8 |
| Cores per chip: | 4 |
| Threads per core: | 2 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.33 GHz, 6.4 GT/s<br>QPI, Hyper-Threading enabled |
| CPU MHz: | 2933 |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 256 KB I+D on chip per core |
| L3 Cache: | 8 MB I+D on chip per chip, 8 MB shared / 4 cores |
| Other Cache: | None |
| Memory: | 24 GB (RDIMM 6x4-GB DDR3-1333 MHz) |
| Disk Subsystem: | 73.4GB 10K-rpm SAS SFF Slim-HS 2.5" HDD |
| Other Hardware: | None |
| Adapter: | Integrated Broadcom Corporation NetXtreme II BCM5709 Gigabit Ethernet (rev 20) |

Continued on next page

### Software

| | |
|---|---|
| Adapter: | Integrated Broadcom Corporation NetXtreme II BCM5709 Gigabit Ethernet (rev 20) |
| Adapter Driver: | bnx2 1.7.9-1 |
| Adapter Firmware: | 4.6.4 NCSI 1.0.6 |
| Adapter: | Mellanox ConnectX |
| Adapter Driver: | OFED 1.4-20090301-0600 |
| Adapter Firmware: | 2.6.000 |
| Operating System: | Red Hat EL 5.3, kernel 2.6.18-128.el5 |
| Local File System: | Linux/ext3 |
| Shared File System: | NFS |
| System State: | Multi-User |
| Other Software: | None |

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**Test date:** Jun-2009
**Hardware Availability:** Apr-2009
**Software Availability:** Apr-2009

## Node Description: IBM System x3550 M2

| | |
|---|---|
| Number of Adapters: | 1 |
| Slot Type: | PCIe x16 Gen2 |
| Data Rate: | 10/100/1000 |
| Ports Used: | 1 |
| Interconnect Type: | Ethernet |
| Adapter: | Mellanox ConnectX |
| Number of Adapters: | 1 |
| Slot Type: | PCIe x16 Gen2 |
| Data Rate: | InfiniBand 4x DDR |
| Ports Used: | 1 |
| Interconnect Type: | InfiniBand |

## General Notes

```
BIOS settings notes:
  Intel Hyper-Threading Technology (SMT): Enabled
  Intel Turbo Boost Technology (Turbo)  : Enabled

RAM configuration notes: Each compute node has
  1x4-GB RDIMM on each memory channel.
```

## Node Description: IBM System x346 8840

### Hardware

| | |
|---|---|
| Number of nodes: | 1 |
| Uses of the node: | fileserver |
| Vendor: | IBM Corporation |
| Model: | 884045Y |
| CPU Name: | Intel Xeon EM64T |
| CPU(s) orderable: | 2 chips |
| Chips enabled: | 2 |
| Cores enabled: | 2 |
| Cores per chip: | 1 |
| Threads per core: | 1 |
| CPU Characteristics: | 800 MHz FSB |
| CPU MHz: | 3600 |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 1 MB I+D on chip per chip |
| L3 Cache: | None |
| Other Cache: | None |
| Memory: | 4 GB |
| Disk Subsystem: | SCSI |
| Other Hardware: | None |
| Adapter: | Integrated Broadcom Corporation NetXtreme BCM5721 Gigabit Ethernet PCI Express (rev 11) |
| Number of Adapters: | 1 |
| Slot Type: | PCI-X |
| Data Rate: | 10/100/1000 |

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### Software

| | |
|---|---|
| Adapter: | Integrated Broadcom Corporation NetXtreme BCM5721 Gigabit Ethernet PCI Express (rev 11) |
| Adapter Driver: | tg3 3.86 |
| Adapter Firmware: | 5721-v3.29a, ASFIPMI v6.08 |
| Operating System: | Red Hat EL 5.2, kernel 2.6.18-92.el5 |
| Local File System: | None |
| Shared File System: | NFS |
| System State: | Multi-User |
| Other Software: | None |

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**Test date:** Jun-2009
**Hardware Availability:** Apr-2009
**Software Availability:** Apr-2009

## Node Description: IBM System x346 8840

| | |
|---|---|
| Ports Used: | 1 |
| Interconnect Type: | Ethernet |

## Interconnect Description: InfiniBand

| Hardware | | Software |
|---|---|---|
| Vendor: | Voltaire | |
| Model: | 24 4X DDR port Bundle | |
| Switch Model: | ISR 9024D-M | |
| Number of Switches: | 1 | |
| Number of Ports: | 24 | |
| Data Rate: | 4X DDR | |
| Firmware: | 1.0.0 | |
| Topology: | Single Switch | |
| Primary Use: | MPI traffic | |

## Interconnect Description: Ethernet

| Hardware | | Software |
|---|---|---|
| Vendor: | Cisco | |
| Model: | 3750G | |
| Switch Model: | WS-C3750G-24TS-E1U | |
| Number of Switches: | 1 | |
| Number of Ports: | 28 | |
| Data Rate: | Fullduplex 1000 | |
| Firmware: | 12.2 (35SE5) | |
| Topology: | Single Switch | |
| Primary Use: | File system traffic | |

## Submit Notes

```
The config file option 'submit' was used.
submit = mpiexec -genv -np $ranks $command
```

## Base Compiler Invocation

C benchmarks:
`mpiicc`

C++ benchmarks:

Continued on next page

## Base Compiler Invocation (Continued)

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`

## 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/EM64T_Intel111_flags.20090729.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/mpi2007/flags/EM64T_Intel111_flags.20090729.xml`

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| **Tested by:** | IBM Corporation | **Software Availability:** | Apr-2009 |

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For other inquiries, please contact webmaster@spec.org.

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