# SPEC® MPIM2007 Result

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## Gateway

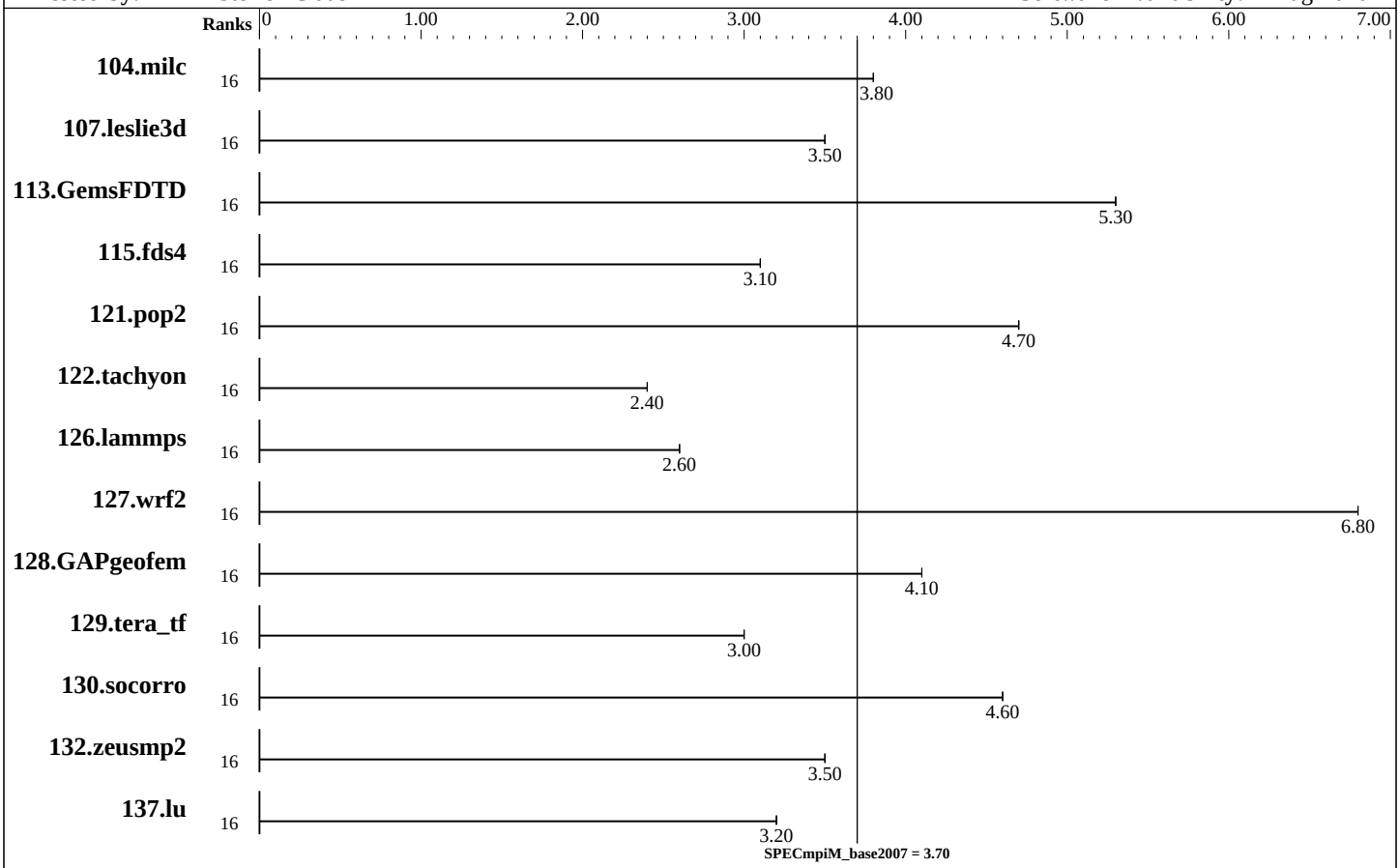
GW2000h-GW170hq (Intel Xeon X5570, 2.93 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 3.70

**MPI2007 license:** 4113
**Test sponsor:** Fraunhofer SCAI
**Tested by:** Steffen Claus

**Test date:** Mar-2011
**Hardware Availability:** Jan-2010
**Software Availability:** Aug-2010




## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ranks | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Ranks | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 104.milc | 16 | 412 | 3.80 | 412 | 3.80 | **412** | **3.80** | | | | | | | |
| 107.leslie3d | 16 | 1506 | 3.50 | 1507 | 3.50 | **1507** | **3.50** | | | | | | | |
| 113.GemsFDTD | 16 | 1183 | 5.30 | **1183** | **5.30** | 1182 | 5.30 | | | | | | | |
| 115.fds4 | 16 | **628** | **3.10** | 629 | 3.10 | 627 | 3.10 | | | | | | | |
| 121.pop2 | 16 | **883** | **4.70** | 883 | 4.70 | 885 | 4.70 | | | | | | | |
| 122.tachyon | 16 | 1173 | 2.40 | **1173** | **2.40** | 1173 | 2.40 | | | | | | | |
| 126.lammps | 16 | 1136 | 2.60 | 1137 | 2.60 | **1137** | **2.60** | | | | | | | |
| 127.wrf2 | 16 | 1142 | 6.80 | **1143** | **6.80** | 1143 | 6.80 | | | | | | | |
| 128.GAPgeofem | 16 | **504** | **4.10** | 504 | 4.10 | 504 | 4.10 | | | | | | | |
| 129.tera_tf | 16 | 912 | 3.00 | 912 | 3.00 | **912** | **3.00** | | | | | | | |

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 | 16 | **834** | **4.60** | 834 | 4.60 | 834 | 4.60 | | | | | | | |
| 132.zeusmp2 | 16 | 891 | 3.50 | **883** | **3.50** | 882 | 3.50 | | | | | | | |
| 137.lu | 16 | 1154 | 3.20 | 1152 | 3.20 | **1152** | **3.20** | | | | | | | |

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: | Gateway GW2000h |
| Interconnects: | Infiniband Switch<br>Ethernet Switch |
| Total Compute Nodes: | 2 |
| Total Chips: | 4 |
| Total Cores: | 16 |
| Total Threads: | 16 |
| Total Memory: | 48 GB |
| Base Ranks Run: | 16 |
| Minimum Peak Ranks: | -- |
| Maximum Peak Ranks: | -- |

### Software Summary

| | |
|---|---|
| C Compiler: | Intel C++ Compiler 11.1 for Windows (11.1.067) |
| C++ Compiler: | Intel C++ Compiler 11.1 for Windows (11.1.067) |
| Fortran Compiler: | Intel Fortran Compiler 11.1 for Windows (11.1.067) |
| Base Pointers: | 64-bit |
| Peak Pointers: | 64-bit |
| MPI Library: | MS MPI Version 4.0 Update 1 Build 8/18/2010 |
| Other MPI Info: | -- |
| Pre-processors: | No |
| Other Software: | -- |

## Node Description: Gateway GW2000h

### Hardware

| | |
|---|---|
| Number of nodes: | 2 |
| Uses of the node: | compute |
| Vendor: | Gateway |
| Model: | GW2000h-GW170hq |
| CPU Name: | Intel Xeon X5570 @ 2.93 GHz |
| CPU(s) orderable: | 1-2 chips |
| Chips enabled: | 2 |
| Cores enabled: | 8 |
| Cores per chip: | 4 |
| Threads per core: | 1 |
| CPU Characteristics: | -- |
| 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: | 8 MB I+D on chip per chip, 8 MB shared / 4 cores |
| Other Cache: | None |
| Memory: | 24 GB |
| Disk Subsystem: | -- |
| Other Hardware: | None |
| Adapter: | Intel 82574L Gigabit Network Connection |
| Number of Adapters: | 2 |
| Slot Type: | onboard |
| Data Rate: | Gigabit Ethernet |
| Ports Used: | 1 |

Continued on next page

### Software

| | |
|---|---|
| Adapter: | Intel 82574L Gigabit Network Connection |
| Adapter Driver: | -- |
| Adapter Firmware: | -- |
| Adapter: | Mellanox Technologies MT26418 |
| Adapter Driver: | Mellanox WinOF (v. 2.1.2) |
| Adapter Firmware: | 2.7.200 |
| Operating System: | Windows HPC Server 2008 R2 Service Pack 1 |
| Local File System: | -- |
| Shared File System: | Network shared Ramdisk |
| System State: | -- |
| Other Software: | -- |

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## Node Description: Gateway GW2000h

| | |
|---|---|
| Interconnect Type: | Ethernet |
| Adapter: | Mellanox Technologies MT26418 |
| Number of Adapters: | 1 |
| Slot Type: | onboard |
| Data Rate: | QDR |
| Ports Used: | 1 |
| Interconnect Type: | InfiniBand |

## Interconnect Description: Infiniband Switch

| Hardware | |
|---|---|
| Vendor: | Mellanox |
| Model: | MTS3600 |
| Switch Model: | Mellanox MTS3600 |
| Number of Switches: | 1 |
| Number of Ports: | 36 |
| Data Rate: | QDR |
| Firmware: | EFM_PPC_405EX |
| Topology: | Single switch |
| Primary Use: | MPI traffic |

**Software**

## Interconnect Description: Ethernet Switch

| Hardware | |
|---|---|
| Vendor: | Extreme Networks |
| Model: | Summit |
| Switch Model: | Summit X450-24 t |
| Number of Switches: | 1 |
| Number of Ports: | 24 |
| Data Rate: | Gigabit Ethernet |
| Firmware: | ExtremeWare XOS 11.4.3.4 v1143b4 |
| Topology: | Single Switch |
| Primary Use: | CIFS traffic |

**Software**

## Submit Notes

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

## General Notes

```
MPI startup command:
  mpiexec command was used to start MPI jobs. This command starts
  an independent ring of mpd daemons, launches an MPI job, and shuts
  down the mpd ring upon the job termination.
```

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## General Notes (Continued)

```
Batch system:
  The internal Job Scheduler of Windows HPC Server 2008 was used.

BIOS settings:
  Intel Hyper-Threading Technology (SMT): Disabled (default is Enabled)
  Intel Turbo Boost Technology (Turbo)  : Enabled (default is Enabled)

RAM configuration:
  Compute nodes have 6x4-GB dual rank DDR3-1333 RAM.
  Head node has 4x2GB single rank DDR2-667 RAM.

Network:
  Windows HPC Server topology no. 3. Head node and all compute nodes are interconnected
  by 1GB Ethernet and QDR Infiniband. Each interconnect type has one single switch.
```

## Base Compiler Invocation

C benchmarks:
`icl`

C++ benchmarks:

126.lammps: `icl`

Fortran benchmarks:
`ifort`

Benchmarks using both Fortran and C:
`icl ifort`

## Base Portability Flags

115.fds4: `/DSPEC_MPI_UC_NO_TRAILING_UNDERSCORE /fpscomp:general`
121.pop2: `/DSPEC_MPI_WINDOWS_ICL`
127.wrf2: `/DSPEC_MPI_WINDOWS_ICL /DSPEC_MPI_COMM_F2C /DSPEC_MPI_CASE_FLAG /us /Qlowercase`
129.tera_tf: `/fpscomp:general`
130.socorro: `/DSPEC_NO_UNDERSCORE /DSPEC_MPI_COMM_F2C /Qlowercase`
132.zeusmp2: `/DSPEC_MPI_WINDOWS_ICL /fpscomp:general`

## Base Optimization Flags

C benchmarks:
`/O3 /QxSSE4.2 /Qipo /Qprec-div- /F3950000000`

Continued on next page

## Base Optimization Flags (Continued)

C++ benchmarks:

126.lammps: /O3 /QxSSE4.2 /Qipo /Qprec-div- /F3950000000

Fortran benchmarks:
/O3 /QxSSE4.2 /Qipo /Qprec-div- /F3950000000

Benchmarks using both Fortran and C:
/O3 /QxSSE4.2 /Qipo /Qprec-div- /F3950000000

## Base Other Flags

C benchmarks:
/I:C:/Program Files/Microsoft HPC Pack 2008 SDK/Include /link
/libpath:C:/Program Files/Microsoft HPC Pack 2008 SDK/Lib/amd64 msmpifec.lib msmpifmc.lib msmpi.lib
/out:options.exe

C++ benchmarks:

126.lammps: /I:C:/Program Files/Microsoft HPC Pack 2008 SDK/Include /link
/libpath:C:/Program Files/Microsoft HPC Pack 2008 SDK/Lib/amd64 msmpifec.lib msmpifmc.lib msm
/out:options.exe

Fortran benchmarks:
/I:C:/Program Files/Microsoft HPC Pack 2008 SDK/Include /link
/libpath:C:/Program Files/Microsoft HPC Pack 2008 SDK/Lib/amd64 msmpifec.lib msmpifmc.lib msmpi.lib
/out:options.exe

Benchmarks using both Fortran and C:
/I:C:/Program Files/Microsoft HPC Pack 2008 SDK/Include /link
/libpath:C:/Program Files/Microsoft HPC Pack 2008 SDK/Lib/amd64 msmpifec.lib msmpifmc.lib msmpi.lib
/out:options.exe

The flags file that was used to format this result can be browsed at
http://www.spec.org/mpi2007/flags/dell.ic10.windows.flags.20120720.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/dell.ic10.windows.flags.20120720.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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