SPEC® MPIM2007 Result

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SGI

SGI Altix ICE 8200EX
(Xeon Processor X5472 3GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = NC

MPI2007 license: 037	**Test date:** Jun-2008
Test sponsor: ZIH	**Hardware Availability:** Mar-2008
Tested by: Matthias Jurenz	**Software Availability:** Apr-2008

Ranks

- 104.milc |
- 107.leslie3d |
- 113.GemsFDTD |
- 115.fds4 |
- 121.pop2 |
- 122.tachyon |
- 126.lammps |
- 127.wrf2 |
- 128.GAPgeofem |
- 129.tera_tf |
- 130.socorro |
- 132.zeusmp2 |
- 137.lu |

Results Table

Benchmark	Ranks	Base Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	32	NC	NC	NC	NC	NC	NC							
107.leslie3d	32	NC	NC	NC	NC	NC	NC							
113.GemsFDTD	32	NC	NC	NC	NC	NC	NC							
115.fds4	32	NC	NC	NC	NC	NC	NC							
121.pop2	32	NC	NC	NC	NC	NC	NC							
122.tachyon	32	NC	NC	NC	NC	NC	NC							
126.lammps	32	NC	NC	NC	NC	NC	NC							
127.wrf2	32	NC	NC	NC	NC	NC	NC							
128.GAPgeofem	32	NC	NC	NC	NC	NC	NC							

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 Ranks	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Ranks	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
129.tera_tf	32	NC	NC	NC	NC	NC	NC							
130.socorro	32	NC	NC	NC	NC	NC	NC							
132.zeusmp2	32	NC	NC	NC	NC	NC	NC							
137.lu	32	NC	NC	NC	NC	NC	NC							

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

Hardware Summary

Type of System:	Homogenous
Compute Node:	SGI Altix ICE 8200EX Compute Node
Interconnects:	InfiniBand (MPI)
	InfiniBand (I/O)
File Server Node:	SGI InfiniteStorage NEXIS 2000 SAS
Head Node:	SGI Altix ICE 8200EX Head Node
Total Compute Nodes:	4
Total Chips:	8
Total Cores:	32
Total Threads:	32
Total Memory:	64 GB
Base Ranks Run:	32
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--

Software Summary

C Compiler:	Intel C
	Applications Version 10.1 (Build 20080112)
C++ Compiler:	Intel C++
	Applications Version 10.1 (Build 20080112)
Fortran Compiler:	Intel Fortran
	Applications Version 10.1 (Build 20080112)
Base Pointers:	64-bit
Peak Pointers:	64-bit
MPI Library:	SGI Message Passing Toolkit (MPT) Version 1.19
Other MPI Info:	None
Pre-processors:	None
Other Software:	None

Node Description: SGI Altix ICE 8200EX Compute Node

Hardware

Number of nodes:	4
Uses of the node:	compute
Vendor:	SGI
Model:	Altix ICE 8200EX (Xeon Processor X5472 3GHz)
CPU Name:	Intel Xeon X5472
CPU(s) orderable:	2 chips
Chips enabled:	2
Cores enabled:	8
Cores per chip:	4
Threads per core:	1
CPU Characteristics:	Quad Core, 3.0GHz, 1600MHz system bus
CPU MHz:	3000
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	12 MB I+D on chip per chip, 6 MB shared / 2 cores
L3 Cache:	None
Other Cache:	None
Memory:	16 GB (8*2GB PC2-6400 CL5-5-5 FB-DIMMs)
Disk Subsystem:	NFS
Other Hardware:	None

Software

Adapter:	Mellanox MT26418 ConnectX IB DDR (PCIe x8 Gen2 5 GT/s)
Adapter Driver:	OFED 1.3.0 (mlx4_ib.ko 0.01)
Adapter Firmware:	2.3.0
Operating System:	SLES10 SP1
Local File System:	NFS (v3)
Shared File System:	NFS (RDMA InfiniBand, NAS Nexis2000)
System State:	Multi-user, run level 3
Other Software:	SGI ProPack 5 SP4

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SPEC MPIM2007 Result

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SGI Altix ICE 8200EX
(Xeon Processor X5472 3GHz)

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Test sponsor: ZIH		**Hardware Availability:**	Mar-2008
Tested by: Matthias Jurenz		**Software Availability:**	Apr-2008

Node Description: SGI Altix ICE 8200EX Compute Node

Adapter:	Mellanox MT26418 ConnectX IB DDR (PCIe x8 Gen2 5 GT/s)
Number of Adapters:	1
Slot Type:	PCIe x8 Gen2
Data Rate:	InfiniBand 4x DDR
Ports Used:	2
Interconnect Type:	InfiniBand

Node Description: SGI Altix ICE 8200EX Head Node

Hardware

Number of nodes:	1
Uses of the node:	head
Vendor:	SGI
Model:	Altix ICE 8200EX (Xeon Processor X5365 3GHz)
CPU Name:	Intel Xeon X5365
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	8
Cores per chip:	4
Threads per core:	1
CPU Characteristics:	Quad Core, 3.0GHz, 1333MHz system bus
CPU MHz:	3000
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	8 MB I+D on chip per chip, 4 MB shared / 2 cores
L3 Cache:	None
Other Cache:	None
Memory:	16 GB (8 x 2 GB PC2-6400 CL5-5-5 FB-DIMMs)
Disk Subsystem:	Seagate Cheetah 15K.5 147GB SAS (ST3146855SS)
Other Hardware:	None
Adapter:	Mellanox MT25208 InfiniHost III Ex (rev 20) (PCIe x8 Gen1 2.5 GT/s)
Number of Adapters:	1
Slot Type:	PCIe x8 Gen1
Data Rate:	InfiniBand 4x DDR
Ports Used:	1
Interconnect Type:	InfiniBand

Software

Adapter:	Mellanox MT25208 InfiniHost III Ex (rev 20) (PCIe x8 Gen1 2.5 GT/s)
Adapter Driver:	OFED 1.3.0 (mlx4_ib.ko 0.01)
Adapter Firmware:	5.2.0
Operating System:	SLES10 SP1
Local File System:	XFS
Shared File System:	NFS (RDMA InfiniBand, NAS Nexis2000)
System State:	Multi-user, run level 3
Other Software:	SGI ProPack 5 SP4

Node Description: SGI InfiniteStorage NEXIS 2000 SAS

Hardware

Number of nodes:	1
Uses of the node:	fileserver
Vendor:	SGI

Software

Adapter:	Mellanox MT25204 InfiniHost III Lx (rev 20) (PCIe x8 Gen1 2.5 GT/s)
Adapter Driver:	OFED 1.2.6 (ib_mthca.ko 0.08)
Adapter Firmware:	1.2.0

Non-Compliant

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MPI2007 license:	037	**Test date:**	Jun-2008
Test sponsor:	ZIH	**Hardware Availability:**	Mar-2008
Tested by:	Matthias Jurenz	**Software Availability:**	Apr-2008

Node Description: SGI InfiniteStorage NEXIS 2000 SAS

Model:	InfiniteStorage NEXIS 2000 SAS
CPU Name:	Intel Xeon 5140
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	4
Cores per chip:	2
Threads per core:	1
CPU Characteristics:	Dual Core, 2.33GHz, 1333MHz system bus
CPU MHz:	2333
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	4 MB I+D on chip per chip, 4 MB shared / 2 cores
L3 Cache:	None
Other Cache:	None
Memory:	32 GB
Disk Subsystem:	72 disks, 280GB/disk, 10TB total, 6 Shelves (striped RAID 5)
Other Hardware:	None
Adapter:	Mellanox MT25204 InfiniHost III Lx (rev 20) (PCIe x8 Gen1 2.5 GT/s)
Number of Adapters:	1
Slot Type:	PCIe x8 Gen1
Data Rate:	InfiniBand 4x DDR
Ports Used:	1
Interconnect Type:	InfiniBand

Operating System:	SLES10 SP1
Local File System:	XFS
Shared File System:	None
System State:	Multi-user, run level 3
Other Software:	SGI ProPack 5 SP2
	SGI InfiniteStorage Appliance Manager 4
	SGI XVM 4.2.2.1
	XFS 64-bit journaled file system

Interconnect Description: InfiniBand (MPI)

Hardware		**Software**
Vendor:	Mellanox Technologies	
Model:	MT26418 ConnectX	
Switch Model:	Mellanox MT47396 InfiniScale III	
Number of Switches:	8	
Number of Ports:	24	
Data Rate:	InfiniBand 4x DDR	
Firmware:	1.3.0	
Topology:	Hypercube with express links	
Primary Use:	MPI traffic	

Interconnect Description: InfiniBand (I/O)

Hardware		**Software**
Vendor:	Mellanox Technologies	
Model:	MT26418 ConnectX	
Switch Model:	Mellanox MT47396 InfiniScale III	
Number of Switches:	8	

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Test sponsor: ZIH
Tested by: Matthias Jurenz

Test date: Jun-2008
Hardware Availability: Mar-2008
Software Availability: Apr-2008

Interconnect Description: InfiniBand (I/O)

Number of Ports: 24
Data Rate: InfiniBand 4x DDR
Firmware: 1.3.0
Topology: Hypercube with express links
Primary Use: I/O traffic

General Notes

```
  srcalt's:
    104.milc: calloc
    113.GemsFDTD: maxprocandstop
    127.wrf2: fixcalling
    129.tera_tf: fixbuffer
    130.socorro: second_undersco

  Environment:
    export MPI_REQUEST_MAX=65536
      Determines the maximum number of nonblocking sends and
      receives that can simultaneously exist for any single MPI
      process.  MPI generates an error message if this limit
      (or the default, if not set) exceeded.  Default:  16384
    export MPI_TYPE_MAX=32768
      Determines the maximum number of data types that can
      simultaneously exist for any single MPI process.
      MPI generates an error message if this limit (or the default,
      if not set) is exceeded.  Default:  8192
    export MPI_BUFS_PER_HOST=512
      Determines the number of shared message buffers (16 KB each)
      that MPI is to allocate for each host. These buffers are used
      to send and receive long inter-host messages.
      Default:  32 pages (1 page = 16KB)
    export MPI_NUM_QUICKS=16
      Controls the number of other ranks that a rank can receive from
      over InfiniBand using a short message fast path. This is 8 by
      default and can be any value between 0 and 32.

    limit -s unlimited
      Removes limits on the maximum size of the automatically-
      extended stack region of the current process and each
      process it creates.
```

Base Compiler Invocation

C benchmarks:
```
    icc
```

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Base Compiler Invocation (Continued)

C++ benchmarks:

126.lammps: `icpc`

Fortran benchmarks:
`ifort`

Benchmarks using both Fortran and C:
`icc ifort`

Base Portability Flags

121.pop2: `-DSPEC_MPI_CASE_FLAG`
127.wrf2: `-DSPEC_MPI_LINUX -DSPEC_MPI_CASE_FLAG`

Base Optimization Flags

C benchmarks:
`-O3 -xT -ipo -no-prec-div`

C++ benchmarks:

126.lammps: `-O3 -xT -ipo -ansi-alias -no-prec-div`

Fortran benchmarks:
`-O3 -xT -ipo -no-prec-div`

Benchmarks using both Fortran and C:
`-O3 -xT -ipo -no-prec-div`

Base Other Flags

C benchmarks:
`-I/opt/sgi-mpt/1.19/include -L/opt/sgi-mpt/1.19/lib64 -lmpi`

C++ benchmarks:

126.lammps: `-I/opt/sgi-mpt/1.19/include -L/opt/sgi-mpt/1.19/lib64 -lmpi`

Fortran benchmarks:
`-I/opt/sgi-mpt/1.19/include -L/opt/sgi-mpt/1.19/lib64 -lmpi`

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Base Other Flags (Continued)

Benchmarks using both Fortran and C:
          -I/opt/sgi-mpt/1.19/include -L/opt/sgi-mpt/1.19/lib -lmpi

The flags file that was used to format this result can be browsed at
http://www.spec.org/mpi2007/flags/EM64T_Intel101_flags.20080611.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/EM64T_Intel101_flags.20080611.xml

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

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