SPEC® MPIM2007 Result

SGI

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

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = NC

MPI2007 license: 037
Test sponsor: ZIH
Tested by: Matthias Jurenz

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

Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	16	NC	NC	NC	NC									
107.leslie3d	16	NC	NC	NC	NC									
113.GemsFDTD	16	NC	NC	NC	NC									
115.fds4	16	NC	NC	NC	NC									
121.pop2	16	NC	NC	NC	NC									
122.tachyon	16	NC	NC	NC	NC									
126.lammps	16	NC	NC	NC	NC									
127.wrf2	16	NC	NC	NC	NC									
128.GAPgeofem	16	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							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
129.tera_tf	16	NC	NC	NC	NC									
130.socorro	16	NC	NC	NC	NC									
132.zeusmp2	16	NC	NC	NC	NC									
137.lu	16	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 NAS
Head Node:	SGI Altix ICE 8200EX Head Node
Total Compute Nodes:	2
Total Chips:	4
Total Cores:	16
Total Threads:	16
Total Memory:	32 GB
Base Ranks Run:	16
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:	2
Uses of the node:	compute
Vendor:	SGI
Model:	Altix ICE 8200EX (Xeon Processor X5472 3GHz)
CPU Name:	Intel Xeon X5472
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, 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

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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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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

Continued on next page

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

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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

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

Software

Interconnect Description: InfiniBand (I/O)

Hardware

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

Software

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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_underscore

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) is 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.

  ulimit -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/lib64 -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

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

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