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 sponsor: ZIH
Tested by: Matthias Jurenz

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

Non-Compliant

Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	64	NC	NC	NC	NC	NC	NC							
107.leslie3d	64	NC	NC	NC	NC	NC	NC							
113.GemsFDTD	64	NC	NC	NC	NC	NC	NC							
115.fds4	64	NC	NC	NC	NC	NC	NC							
121.pop2	64	NC	NC	NC	NC	NC	NC							
122.tachyon	64	NC	NC	NC	NC	NC	NC							
126.lammps	64	NC	NC	NC	NC	NC	NC							
127.wrf2	64	NC	NC	NC	NC	NC	NC							
128.GAPgeofem	64	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							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
129.tera_tf	64	NC	NC	NC	NC	NC	NC							
130.socorro	64	NC	NC	NC	NC	NC	NC							
132.zeusmp2	64	NC	NC	NC	NC	NC	NC							
137.lu	64	NC	NC	NC	NC	NC	NC							

Results appear in the order in which they were run. Bold underlined text indicates 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:	8
Total Chips:	16
Total Cores:	64
Total Threads:	64
Total Memory:	128 GB
Base Ranks Run:	64
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:	8
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

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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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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 Proce[illegible]5365 3G[illegible]
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, 1333MH[illegible]n bus
CPU MHz:	3000
Primary Cache:	32 KB I + 32 KB D[illegible] chip per core
Secondary Cache:	8 MB I+D on[illegible] per chip, 4 MB shared / 2 cores
L3 Cache:	None
Other Cache:	None
Memory:	16 GB (8[illegible] PC2-6400[illegible]5-5-5 FB-DIMMs)
Disk Subsystem:	Seagate Cheeta[illegible]K.5 147GB SAS (ST3146855SS)
Other Hardware:	[illegible]
Adapter:	Mellano[illegible]T25208 InfiniHost III Ex (rev 20) (PCIe x8 G[illegible]1 2.5 GT/s)
Number of [illegible]apters:	[illegible]
Slot Type:	[illegible]e x8 Gen1
Data Rate:	InfiniBand 4x DDR
Ports [illegible]:	1
Int[illegible]nnect Type:	[illegible]finiBand

Software

Adapt[illegible]	Mellanox MT25208 InfiniHost III Ex (rev 20) (PCIe x8 Gen1 2.5 GT/s)
A[illegible]pter Driver:	OFED 1.3.0 (mlx4_ib.ko 0.01)
Ada[illegible]ter Firmware:	5.2.0
Op[illegible]rating System:	SLES10 SP1
[illegible]ocal 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

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Tested by: Matthias Jurenz

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

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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_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 will 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[illegible] -lmpi`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/mpi2007/flags/EM64T_Intel101_flags.200[illegible].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 questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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