SPEC® MPIM2007 Result

Linux Networx
Linux Networx LS-1

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = NA

MPI2007 license: 021
Test sponsor: Scali, Inc
Tested by: Scali, Inc

Test date: Sep-2007
Hardware Availability: Apr-2007
Software Availability: Aug-2007

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

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	128	NA	NA	NA	NA	NA	NA							
130.socorro	128	NA	NA	NA	NA	NA	NA							
132.zeusmp2	128	NA	NA	NA	NA	NA	NA							
137.lu	128	NA	NA	NA	NA	NA	NA							

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

Hardware Summary

Type of System:	Heterogenous
Compute Nodes:	Linux Networx LS-1 Linux Networx LS-1
Interconnect:	InfiniBand
File Server Node:	Linux Networx Evolocity 1
Total Compute Nodes:	32
Total Chips:	64
Total Cores:	128
Total Threads:	128
Total Memory:	304 GB
Base Ranks Run:	128
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--

Software Summary

C Compiler:	QLogic PathScale C Compiler 3.0
C++ Compiler:	QLogic PathScale C++ Compiler 3.0
Fortran Compiler:	QLogic PathScale Fortran Compiler 3.0
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
MPI Library:	Scali MPI Connect 5.5
Other MPI Info:	IB Gold VAPI
Pre-processors:	None
Other Software:	None

Node Description: Linux Networx LS-1

Hardware

Number of nodes:	26
Uses of the node:	compute
Vendor:	Linux Networx, Inc.
Model:	LS-1
CPU Name:	Intel Xeon 51
CPU(s) orderable:	1 chips
Chips enabled:	2
Cores enabled:	4
Cores per chip:	
Threads per core:	
CPU Characteristics:	1333 Mhz FSB
CPU MHz:	3000
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	4 MB I+D on chip per chip
L3 Cache:	None
Other Cache:	None
Memory:	8 GB (8 x 1GB DIMMs)
Disk Subsystem:	250GB SAS hard drive
Other Hardware:	None
Adapter:	Mellanox MHGA28-XTC

Software

Adapter:	Mellanox MHGA28-XTC
Adapter Driver:	IBGD 1.8.2
Adapter Firmware:	5.1.4
Operating System:	SLES9 SP3
Local File System:	Not applicable
Shared File System:	GPFS
System State:	multi-user
Other Software:	None

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Test date: Sep-2007
Hardware Availability: Apr-2007
Software Availability: Aug-2007

Node Description: Linux Networx LS-1

Number of Adapters:	1
Slot Type:	PCIe x8
Data Rate:	InfiniBand 4x DDR
Ports Used:	1
Interconnect Type:	InfiniBand

Node Description: Linux Networx LS-1

Hardware

Number of nodes:	6
Uses of the node:	compute
Vendor:	Linux Networx, Inc.
Model:	LS-1
CPU Name:	Intel Xeon 5160
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	4
Cores per chip:	2
Threads per core:	1
CPU Characteristics:	1333 Mhz FSB
CPU MHz:	3000
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	4 MB I+D on chip per chip
L3 Cache:	None
Other Cache:	None
Memory:	16 GB (8 x GB DIMMs)
Disk Subsystem:	250GB SAS drive
Other Hardware:	None
Adapter:	Mellanox MHGA28-XTC
Number of Adapters:	1
Slot Type:	PCIe x8
Data Rate:	InfiniBand 4x DDR
Ports Used:	1
Interconnect Type:	InfiniBand

Software

Adapter:	Mellanox MHGA28-XTC
Adapter Driver:	IBGD 1.8.2
Adapter Firmware:	5.1.4
Operating System:	SLES9 SP3
Local File System:	Not applicable
Shared File System:	GPFS
System State:	multi-user
Other Software:	None

Node Description: Linux Networx Evolocity 1

Hardware

Number of nodes:	8
Uses of the node:	file server
Vendor:	Linux Networx, Inc.
Model:	Evolocity 1
CPU Name:	AMD Opteron 248
CPU(s) orderable:	1-2 chips

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Software

Adapter:	Mellanox MHXL-CF128-T
Adapter Driver:	IBGD 1.8.2
Adapter Firmware:	3.5.0
Operating System:	SLES9 SP3
Local File System:	Not applicable
Shared File System:	GPFS

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Test sponsor: Scali, Inc
Tested by: Scali, Inc

Test date: Sep-2007
Hardware Availability: Apr-2007
Software Availability: Aug-2007

Node Description: Linux Networx Evolocity

Chips enabled:	2
Cores enabled:	2
Cores per chip:	1
Threads per core:	1
CPU Characteristics:	--
CPU MHz:	2200
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	None
Other Cache:	None
Memory:	8 GB (8 x 1GB DIMMs)
Disk Subsystem:	18 TB SAN interconnected by FC2
Other Hardware:	--
Adapter:	Mellanox MHXL-CF128-T
Number of Adapters:	1
Slot Type:	PCI-X
Data Rate:	InfiniBand 4x SDR
Ports Used:	1
Interconnect Type:	InfiniBand

System State:	multi-user
Other Software:	--

Interconnect Description: InfiniBand

Hardware

Vendor:	QLogic
Model:	QLogic SilverStorm 9120 Fabric Director
Switch Model:	9120
Number of Switches:	1
Number of Ports:	144
Data Rate:	InfiniBand 4x SDR and InfiniBand 4x DDR
Firmware:	4.0.0.5.5
Topology:	Single switch (star)
Primary Use:	MPI and filesystem traffic

Software

Submit Notes

```
Scali MPI Connect's mpirun wrapper has been
used to submit the jobs. Description of switches:
  -aff manual:0x1:0x2:0x4:0x8: instruct the launcher to
     bind rank N..N+3 to the cores corresponding to the
     masks 1,2,4, and 8 respectively on each node.
  -npn 4: launch 4 processes per node.
  -rsh rsh: use rsh as method to connect to nodes.
  -mstdin none: do not connect the processes' STDIN
     to anything.
  -q: quiet mode, no output from launcher.
```

Continued on next page

Submit Notes (Continued)

```
-machinefile: file selecting the hosts to run on.
-net smp,ib: prioritized list of networks used
   for communication between processes.
```

General Notes

```
Scali, Inc has executed the benchmark on Linux Networx's
Solution Center. We are grateful for the support from
Linux Networx and in particular Justin Wood in order to
finalize the submissions.
```

Base Compiler Invocation

C benchmarks:
```
/opt/scali/bin/mpicc  -ccl pathcc
```

C++ benchmarks:

126.lammps: `/opt/scali/bin/mpicc  -ccl pathCC`

Fortran benchmarks:
```
/opt/scali/bin/mpif77 -ccl pathf90
```

Benchmarks using both Fortran and C:
```
/opt/scali/bin/mpicc  -ccl pathcc /opt/scali/bin/mpif77 -ccl pathf90
```

Base Portability Flags

```
104.milc: -DSPEC_MPI_LP64
115.fds4: -DSPEC_MPI_LC_TRAILING_DOUBLE_UNDERSCORE -DSPEC_MPI_LP64
121.pop2: -DSPEC_MPI_DOUBLE_UNDERSCORE -DSPEC_MPI_LP64
122.tachyon: -DSPEC_MPI_LP64
127.wrf2: -DF2CSTYLE -DSPEC_MPI_DOUBLE_UNDERSCORE -DSPEC_MPI_LINUX
          -DSPEC_MPI_LP64
128.GAPgeofem: -DSPEC_MPI_LP64
130.socorro: -fno-second-underscore -DSPEC_MPI_LP64
132.zeusmp2: -DSPEC_MPI_LP64
```

Base Optimization Flags

C benchmarks:
```
-march=core -Ofast -OPT:malloc_alg=1
```

Continued on next page

Base Optimization Flags (Continued)

C++ benchmarks:

126.lammps: -march=core -O3 -OPT:Ofast -CG:local_fwd_sched=on

Fortran benchmarks:
-march=core -O3 -OPT:Ofast -OPT:malloc_alg=1 -LANG:copyinout=off

Benchmarks using both Fortran and C:
-march=core -Ofast -OPT:malloc_alg=1 -O3 -OPT:Ofast
-LANG:copyinout=off

Base Other Flags

C benchmarks:
-IPA:max_jobs=4

C++ benchmarks:

126.lammps: -IPA:max_jobs=4

Fortran benchmarks:
-IPA:max_jobs=4

Benchmarks using both Fortran and C:
-IPA:max_jobs=4

The flags file that was used to format this result can be browsed at
http://www.spec.org/mpi2007/flags/MPI2007_flags.20071107.00.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/MPI2007_flags.20071107.00.xml

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

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