SPEC® MPIM2007 Result

SGI

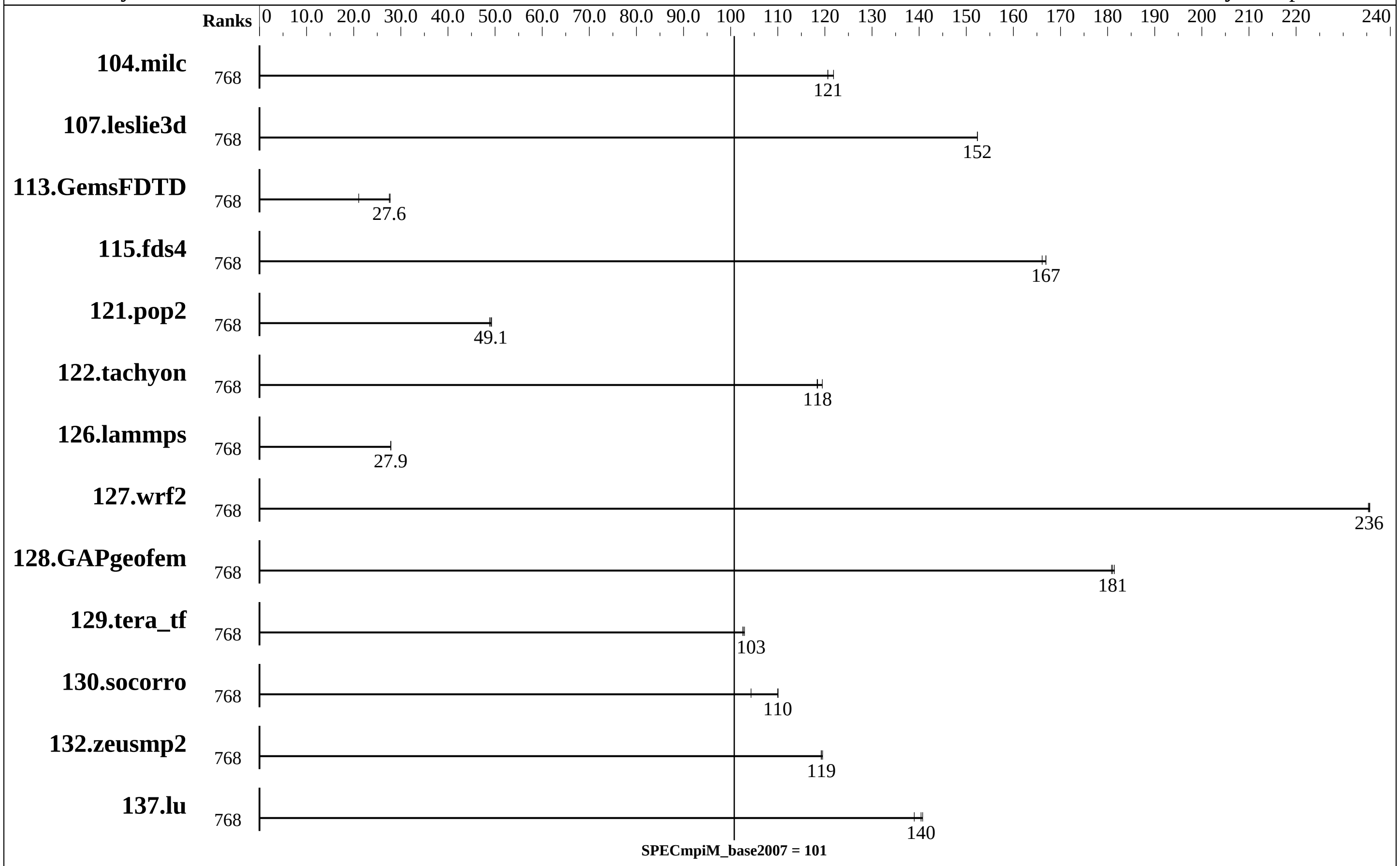
SGI ICE X
(Intel Xeon E5-2690 v3, 2.6 GHz)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 101

MPI2007 license: 14
Test sponsor: SGI
Tested by: SGI

Test date: Jul-2014
Hardware Availability: Sep-2014
Software Availability: Apr-2014



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	768	**13.0**	**121**	12.8	122	13.0	121							
107.leslie3d	768	34.3	152	**34.3**	**152**	34.3	152							
113.GemsFDTD	768	300	21.1	227	27.7	**229**	**27.6**							
115.fds4	768	**11.7**	**167**	11.7	167	11.7	166							
121.pop2	768	**84.1**	**49.1**	83.8	49.3	84.6	48.8							
122.tachyon	768	23.6	118	23.4	119	**23.6**	**118**							
126.lammps	768	**105**	**27.9**	104	27.9	105	27.9							
127.wrf2	768	33.1	235	33.1	236	**33.1**	**236**							
128.GAPgeofem	768	11.4	181	11.4	181	**11.4**	**181**							
129.tera_tf	768	27.0	103	26.9	103	**27.0**	**103**							

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	768	34.7	110	**34.7**	**110**	36.6	104							
132.zeusmp2	768	26.0	119	26.0	120	**26.0**	**119**							
137.lu	768	26.1	141	**26.2**	**140**	26.5	139							

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:	SGI ICE X IP-131 Compute Node
Interconnect:	InfiniBand (MPI and I/O)
File Server Node:	SGI Rackable C1103-TY12
Total Compute Nodes:	32
Total Chips:	64
Total Cores:	768
Total Threads:	768
Total Memory:	4 TB
Base Ranks Run:	768
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--

Software Summary

C Compiler:	Intel C++ Composer XE 2013 for Linux, Version 14.0.3.174 Build 20140422
C++ Compiler:	Intel C++ Composer XE 2013 for Linux Version 14.0.3.174 Build 20140422
Fortran Compiler:	Intel Fortran Composer XE 2013 for Linux, Version 14.0.3.174 Build 20140422
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
MPI Library:	SGI MPT 2.09 Patch 11049
Other MPI Info:	OFED 1.5.4
Pre-processors:	None
Other Software:	None

Node Description: SGI ICE X IP-131 Compute Node

Hardware

Number of nodes:	32
Uses of the node:	compute
Vendor:	SGI
Model:	SGI ICE X (Intel Xeon E6-2690 v3, 2.6 GHz)
CPU Name:	Intel Xeon E5-2690 v3
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	24
Cores per chip:	12
Threads per core:	1
CPU Characteristics:	12 Core, 2.60 GHz, 9.6 GT/s QPI Intel Turbo Boost Technology up to 3.50 GHz Hyper-Threading Technology disabled
CPU MHz:	2600
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	30 MB I+D on chip per chip
Other Cache:	None
Memory:	128 GB (8 x 16 GB 2Rx4 PC4-17000R-15, ECC)
Disk Subsystem:	None
Other Hardware:	None
Adapter:	Mellanox MT27500 with ConnectX-3 ASIC (PCIe x8 Gen3 8 GT/s)
Number of Adapters:	2
Slot Type:	PCIe x8 Gen3

Continued on next page

Software

Adapter:	Mellanox MT27500 with ConnectX-3 ASIC (PCIe x8 Gen3 8 GT/s)
Adapter Driver:	OFED-1.5.4
Adapter Firmware:	2.30.3000
Operating System:	SUSE Linux Enterprise Server 11 SP3 (x86_64), Kernel 3.0.93-0.8-default
Local File System:	NFSv3
Shared File System:	NFSv3 IPoIB
System State:	Multi-user, run level 3
Other Software:	SGI Tempo Service Node 2.8.1, Build 709rp49.sles11sp3-1402182002

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Test sponsor:	SGI	**Hardware Availability:**	Sep-2014
Tested by:	SGI	**Software Availability:**	Apr-2014

Node Description: SGI ICE X IP-131 Compute Node

Data Rate:	InfiniBand 4x FDR
Ports Used:	2
Interconnect Type:	InfiniBand

Node Description: SGI Rackable C1103-TY12

Hardware

Number of nodes:	1
Uses of the node:	fileserver
Vendor:	SGI
Model:	SGI Rackable C1103-TY12 (Intel Xeon X5670, 2.93 GHz)
CPU Name:	Intel Xeon X5670
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	12
Cores per chip:	6
Threads per core:	2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.33 GHz Hyper-Threading Technology enabled
CPU MHz:	2933
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per chip
L3 Cache:	12 MB I+D on chip per chip
Other Cache:	None
Memory:	96 GB (12 * 8 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem:	12 TB RAID 6 12 x 1 TB SATA (Seagate Constellation, 7200RPM)
Other Hardware:	None
Adapter:	Mellanox MT27500 with ConnectX-3 ASIC (PCIe x8 Gen3 8 GT/s)
Number of Adapters:	2
Slot Type:	PCIe x8 Gen3
Data Rate:	InfiniBand 4x FDR
Ports Used:	2
Interconnect Type:	InfiniBand

Software

Adapter:	Mellanox MT27500 with ConnectX-3 ASIC (PCIe x8 Gen3 8 GT/s)
Adapter Driver:	OFED-1.5.2
Adapter Firmware:	2.30.3000
Operating System:	SUSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.46-0.3-default
Local File System:	xfs
Shared File System:	--
System State:	Multi-user, run level 3
Other Software:	SGI Foundation Software 2.5, Build 705r10.sles11-1110192111

Interconnect Description: InfiniBand (MPI and I/O)

Hardware

Vendor:	Mellanox Technologies and SGI
Model:	None
Switch Model:	SGI FDR Integrated IB Switch Blade 2SW9x27 with Mellanox SwitchX device 51000
Number of Switches:	8
Number of Ports:	36
Data Rate:	InfiniBand 4x FDR

Software

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Tested by:	SGI	**Software Availability:**	Apr-2014

Interconnect Description: InfiniBand (MPI and I/O)

Firmware:	09.02.3000
Topology:	Enhanced Hypercube
Primary Use:	MPI and I/O traffic

Submit Notes

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

General Notes

```
Software environment:
  export MPI_REQUEST_MAX=65536
  export MPI_TYPE_MAX=32768
  export MPI_IB_RAILS=2
  ulimit -s unlimited

BIOS settings:
  AMI BIOS version DY2E6044
  Hyper-Threading Technology disabled
  Intel Turbo Boost Technology enabled (default)
  Intel Turbo Boost Technology activated with
    modprobe acpi_cpufreq
    cpupower frequency-set -u 2601MHz -d 2601MHz -g performance

Job Placement:
  Each MPI job was assigned to a topologically compact set
  of nodes, i.e. the minimal needed number of switches was
  used for each job: 2 switches for up to 192 ranks,
  4 switches for up to 384 ranks, 8 switches for 768 ranks,
  and 16 switches for 1536 ranks.

Additional notes regarding interconnect:
  The Infiniband network consists of two independent planes,
  with half the switches in the system allocated to each plane.
  I/O traffic is restricted to one plane, while MPI traffic can
  use both planes.
```

Base Compiler Invocation

C benchmarks:
`icc`

C++ benchmarks:

126.lammps: `icpc`

Continued on next page

Base Compiler Invocation (Continued)

Fortran benchmarks:
`ifort`

Benchmarks using both Fortran and C:
`icc ifort`

Base Portability Flags

121.pop2: `-DSPEC_MPI_CASE_FLAG`
127.wrf2: `-DSPEC_MPI_CASE_FLAG -DSPEC_MPI_LINUX`
130.socorro: `-assume nostd_intent_in`

Base Optimization Flags

C benchmarks:
`-O3 -xCORE-AVX2 -no-prec-div`

C++ benchmarks:

126.lammps: `-O3 -xCORE-AVX2 -no-prec-div -ansi-alias`

Fortran benchmarks:
`-O3 -xCORE-AVX2 -no-prec-div`

Benchmarks using both Fortran and C:
`-O3 -xCORE-AVX2 -no-prec-div`

Base Other Flags

C benchmarks:
`-lmpi`

C++ benchmarks:

126.lammps: `-lmpi`

Fortran benchmarks:
`-lmpi`

Benchmarks using both Fortran and C:
`-lmpi`

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The flags file that was used to format this result can be browsed at
http://www.spec.org/mpi2007/flags/SGI_x86_64_Intel14_flags.20140908.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/SGI_x86_64_Intel14_flags.20140908.xml

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

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