# SPEC® MPIL2007 Result

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## SGI

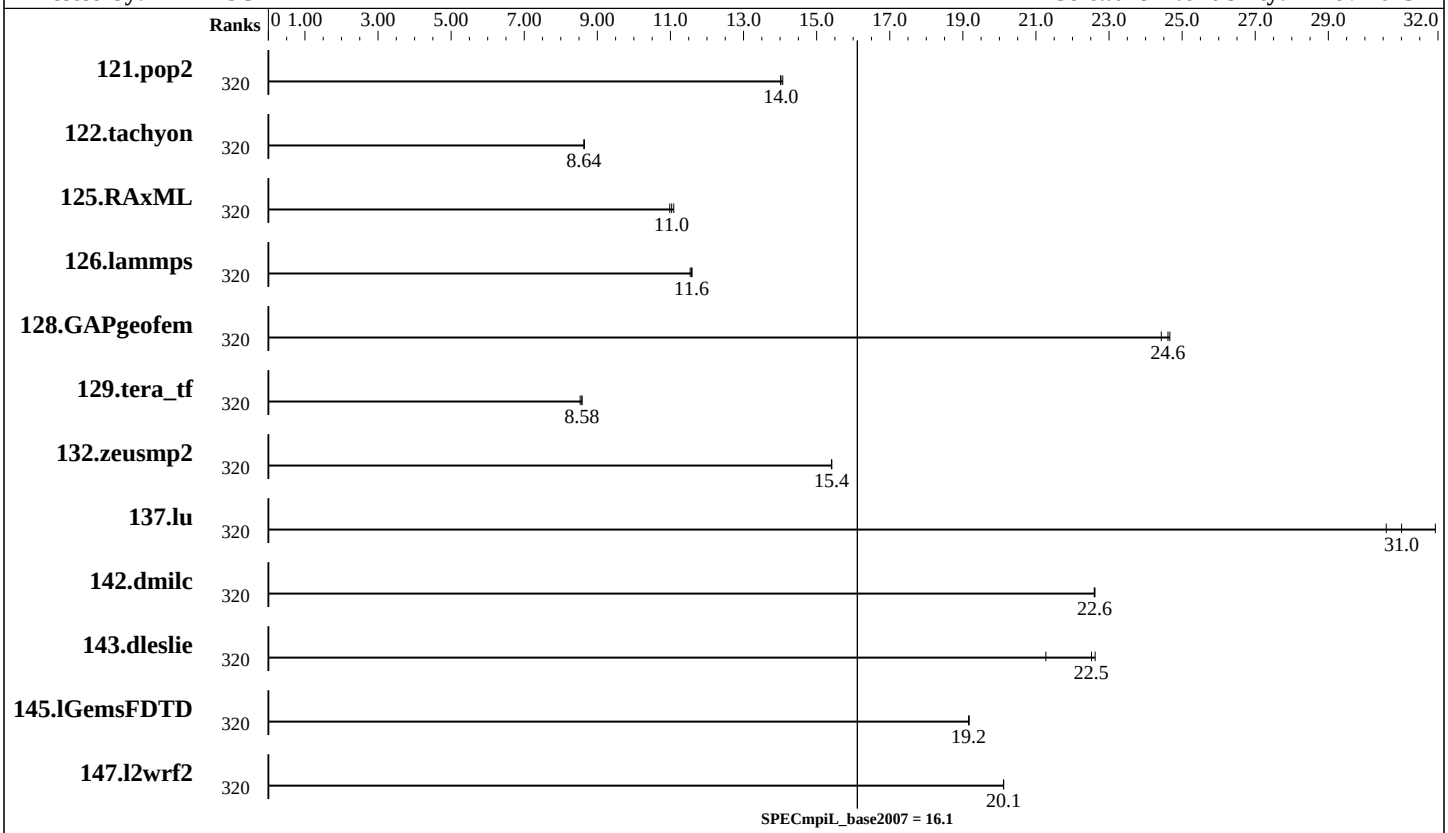
SGI ICE X (Intel Xeon E5-2690 v2, 3.0 GHz)

SPECmpiL_peak2007 = Not Run

SPECmpiL_base2007 = 16.1

**MPI2007 license:** 4
**Test sponsor:** SGI
**Tested by:** SGI

**Test date:** Dec-2013
**Hardware Availability:** Sep-2013
**Software Availability:** Nov-2013




## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ranks | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Ranks | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 121.pop2 | 320 | 278 | 14.0 | 276 | 14.1 | **277** | **14.0** | | | | | | | |
| 122.tachyon | 320 | 225 | 8.64 | 225 | 8.64 | **225** | **8.64** | | | | | | | |
| 125.RAxML | 320 | 266 | 11.0 | **265** | **11.0** | 263 | 11.1 | | | | | | | |
| 126.lammps | 320 | 213 | 11.5 | 212 | 11.6 | **212** | **11.6** | | | | | | | |
| 128.GAPgeofem | 320 | **241** | **24.6** | 241 | 24.7 | 243 | 24.4 | | | | | | | |
| 129.tera_tf | 320 | 129 | 8.53 | **128** | **8.58** | 128 | 8.58 | | | | | | | |
| 132.zeusmp2 | 320 | 138 | 15.4 | 138 | 15.4 | **138** | **15.4** | | | | | | | |
| 137.lu | 320 | 132 | 31.9 | **136** | **31.0** | 137 | 30.6 | | | | | | | |
| 142.dmilc | 320 | 163 | 22.6 | **163** | **22.6** | 163 | 22.6 | | | | | | | |
| 143.dleslie | 320 | 146 | 21.3 | **138** | **22.5** | 137 | 22.6 | | | | | | | |
| 145.lGemsFDTD | 320 | 230 | 19.2 | **230** | **19.2** | 230 | 19.2 | | | | | | | |
| 147.l2wrf2 | 320 | **408** | **20.1** | 408 | 20.1 | 408 | 20.1 | | | | | | | |

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

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### Hardware Summary

| | |
|---|---|
| Type of System: | Homogeneous |
| Compute Node: | SGI ICE X IP-113 Compute Node |
| Interconnect: | InfiniBand (MPI and I/O) |
| File Server Node: | SGI Modular InfiniteStorage Server |
| Total Compute Nodes: | 16 |
| Total Chips: | 32 |
| Total Cores: | 320 |
| Total Threads: | 640 |
| Total Memory: | 1 TB |
| Base Ranks Run: | 320 |
| Minimum Peak Ranks: | -- |
| Maximum Peak Ranks: | -- |

### Software Summary

| | |
|---|---|
| C Compiler: | Intel C++ Composer XE 2011 for Linux, Version 14.0.0.080 Build 20130728 |
| C++ Compiler: | Intel C++ Composer XE 2011 for Linux, Version 14.0.0.080 Build 20130728 |
| Fortran Compiler: | Intel Fortran Composer XE 2011 for Linux, Version 14.0.0.080 Build 20130728 |
| Base Pointers: | 64-bit |
| Peak Pointers: | 64-bit |
| MPI Library: | SGI MPT 2.09 |
| Other MPI Info: | OFED 1.5.2 |
| Pre-processors: | None |
| Other Software: | None |

## Node Description: SGI ICE X IP-113 Compute Node

### Hardware

| | |
|---|---|
| Number of nodes: | 16 |
| Uses of the node: | compute |
| Vendor: | SGI |
| Model: | SGI ICE X IP-113 (Intel Xeon E5-2690 v2, 3.0 GHz) |
| CPU Name: | Intel Xeon E5-2690 v2 |
| CPU(s) orderable: | 1-2 chips |
| Chips enabled: | 2 |
| Cores enabled: | 20 |
| Cores per chip: | 10 |
| Threads per core: | 2 |
| CPU Characteristics: | Ten Core, 3.0 GHz, 8.0 GT/s QPI<br>Intel Turbo Boost Technology up to 3.60 GHz<br>Hyper-Threading Technology enabled |
| CPU MHz: | 3000 |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 256 KB I+D on chip per core |
| L3 Cache: | 25 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 64 GB (8 x 8 GB 2Rx4 PC3-14900R-13, 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 |
| 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: | 2.11.312 |
| Operating System: | SUSE Linux Enterprise Server 11 SP2, Kernel 3.0.80-0.7-default |
| Local File System: | NFSv3 |
| Shared File System: | NFSv3 IPoIB |
| System State: | Multi-user, run level 3 |
| Other Software: | SGI Tempo Compute Node 2.7.3, Build 708rp14.sles11sp2-1305311204 |

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**MPI2007 license:** 4
**Test sponsor:** SGI
**Tested by:** SGI

**Test date:** Dec-2013
**Hardware Availability:** Sep-2013
**Software Availability:** Nov-2013

## Node Description: SGI Modular InfiniteStorage Server

### Hardware

| | |
|---|---|
| Number of nodes: | 1 |
| Uses of the node: | fileserver |
| Vendor: | SGI |
| Model: | SGI Modular InfiniteStorage Server |
| CPU Name: | Intel Xeon E5-2670 |
| CPU(s) orderable: | 1-2 chips |
| Chips enabled: | 2 |
| Cores enabled: | 16 |
| Cores per chip: | 8 |
| Threads per core: | 2 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.33 GHz<br>Hyper-Threading Technology enabled |
| CPU MHz: | 2600 |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 256 KB I+D on chip per chip |
| L3 Cache: | 20 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 128 GB (8 * 16 GB 2Rx4 PC3-12800R-11, ECC) |
| Disk Subsystem: | 64.8 TB RAID 6<br>72 x 900 GB SAS (Western Digital, 10K RPM) |
| 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-1.5.0 |
| Adapter Firmware: | 2.11.312 |
| Operating System: | SUSE Linux Enterprise Server 11 SP3<br>Kernel |
| Local File System: | xfs |
| Shared File System: | -- |
| System State: | Multi-user, run level 3 |
| Other Software: | SGI Foundation Software 2.9,<br>Build 700r3.sles11-1004061553 |

## 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: | 4 |
| Number of Ports: | 36 |
| Data Rate: | InfiniBand 4x FDR |
| Firmware: | 07130007_LLR and 08130007_LLR |
| Topology: | Enhanced Hypercube |
| Primary Use: | MPI and I/O traffic |

### Software

## Submit Notes

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

## General Notes

```
130.socorro (base): "nullify_ptrs" src.alt was used.

 Software environment:
   export MPI_REQUEST_MAX=65536
   export MPI_TYPE_MAX=32768
   export MPI_BUFS_THRESHOLD=1
   export MPI_IB_RAILS=2
   ulimit -s unlimited

 BIOS settings:
   AMI BIOS version 3.0
   Hyper-Threading Technology enabled (default)
   Intel Turbo Boost Technology enabled (default)
   Intel Turbo Boost Technology activated in the OS via
     /etc/init.d/acpid start
     /etc/init.d/powersaved start
     powersave -f

 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 180 ranks,
   4 switches for up to 320 ranks, 8 switches for 640 ranks,
   10 switches for 800 ranks, 16 switches for 1280 ranks,
   22 switches for 1920 ranks, and 30 switches for 2560 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`

Fortran benchmarks:
`ifort`

Continued on next page

## Base Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
icc ifort

## Base Portability Flags

121.pop2: -DSPEC_MPI_CASE_FLAG

## Base Optimization Flags

C benchmarks:
-O3 -xAVX -no-prec-div

C++ benchmarks:

126.lammps: -O3 -xAVX -no-prec-div -ansi-alias

Fortran benchmarks:
-O3 -xAVX -no-prec-div

Benchmarks using both Fortran and C:
-O3 -xAVX -no-prec-div

## Base Other Flags

C benchmarks:
-lmpi

C++ benchmarks:

126.lammps: -lmpi

Fortran benchmarks:
-lmpi

Benchmarks using both Fortran and C:
-lmpi

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.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.xml

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

Tested with SPEC MPI2007 v2.0.1.
Report generated on Tue Jul 22 13:48:22 2014 by SPEC MPI2007 PS/PDF formatter v1463.
Originally published on 22 January 2014.