SPEC® MPIM2007 Result

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Intel Corporation

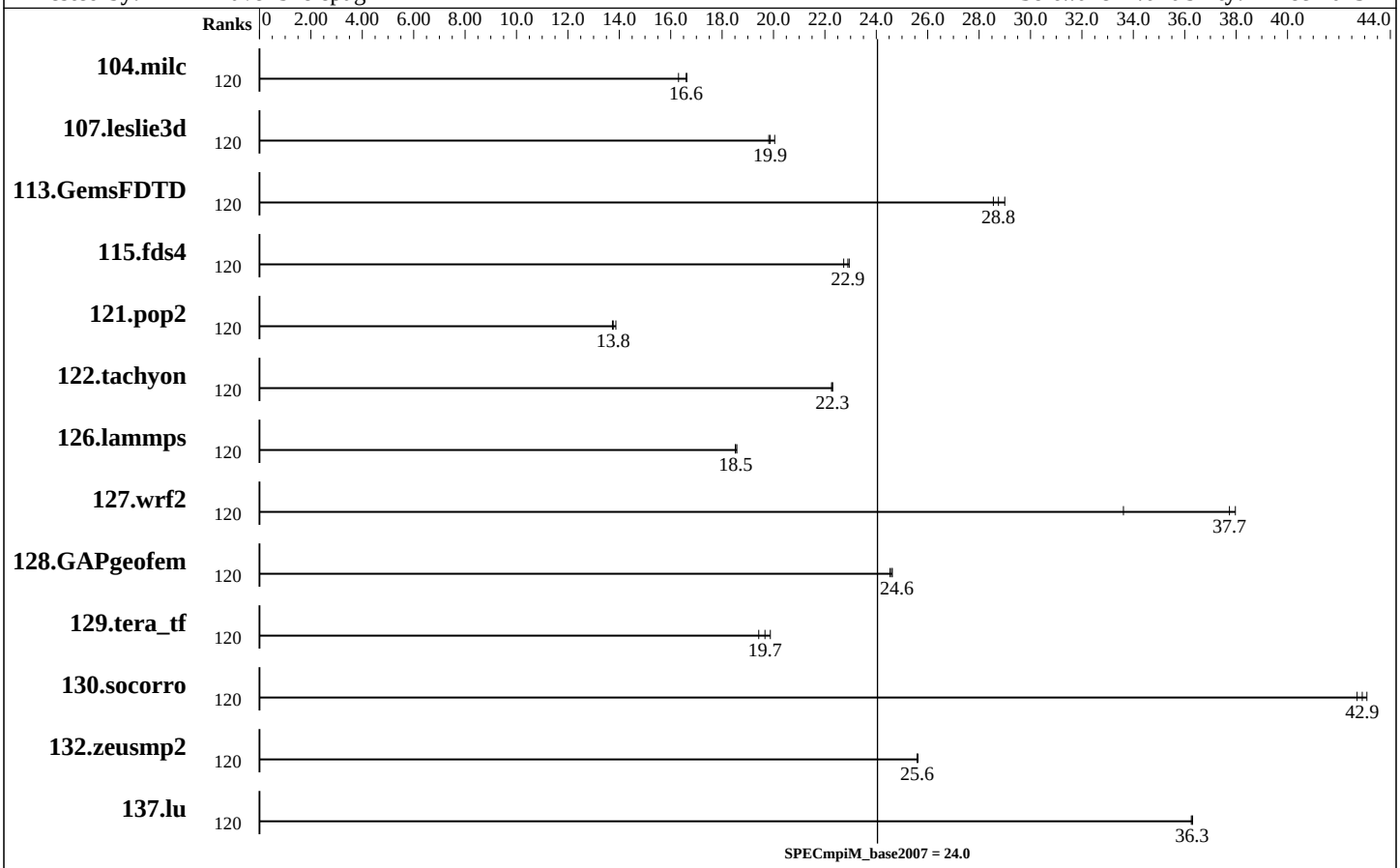
Endeavor (Intel Xeon E7-4890 v2, 2.80 GHz,
DDR3-1600 MHz, SMT on, Turbo off)

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 24.0

MPI2007 license: 13
Test sponsor: Intel Corporation
Tested by: Pavel Shelepugin

Test date: Feb-2014
Hardware Availability: Feb-2014
Software Availability: Dec-2013



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	120	96.0	16.3	94.1	16.6	**94.3**	**16.6**							
107.leslie3d	120	263	19.8	**263**	**19.9**	260	20.0							
113.GemsFDTD	120	**219**	**28.8**	218	29.0	221	28.6							
115.fds4	120	**85.2**	**22.9**	85.0	22.9	85.8	22.7							
121.pop2	120	**300**	**13.8**	298	13.9	301	13.7							
122.tachyon	120	**125**	**22.3**	125	22.3	126	22.3							
126.lammps	120	**157**	**18.5**	157	18.5	157	18.6							
127.wrf2	120	232	33.6	**207**	**37.7**	205	38.0							
128.GAPgeofem	120	**84.0**	**24.6**	84.2	24.5	83.9	24.6							
129.tera_tf	120	**141**	**19.7**	142	19.4	139	19.9							

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	120	89.4	42.7	**89.0**	**42.9**	88.6	43.1							
132.zeusmp2	120	**121**	**25.6**	121	25.6	121	25.6							
137.lu	120	101	36.3	101	36.3	**101**	**36.3**							

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:	Endeavor Node
Interconnects:	IB Switch Gigabit Ethernet
File Server Node:	NFS
Total Compute Nodes:	2
Total Chips:	8
Total Cores:	120
Total Threads:	240
Total Memory:	1 TB
Base Ranks Run:	120
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--

Software Summary

C Compiler:	Intel C++ Composer XE 2013 for Linux, Version 14.0.0.080 Build 20130728
C++ Compiler:	Intel C++ Composer XE 2013 for Linux, Version 14.0.0.080 Build 20130728
Fortran Compiler:	Intel Fortran Composer XE 2013 for Linux, Version 14.0.0.080 Build 20130728
Base Pointers:	64-bit
Peak Pointers:	64-bit
MPI Library:	Intel MPI Library 4.1.3.045 for Linux
Other MPI Info:	None
Pre-processors:	No
Other Software:	None

Node Description: Endeavor Node

Hardware

Number of nodes:	2
Uses of the node:	compute
Vendor:	Intel
Model:	S4TR1SY4Q
CPU Name:	Intel Xeon E7-4890 v2
CPU(s) orderable:	1-4 chips
Chips enabled:	4
Cores enabled:	60
Cores per chip:	15
Threads per core:	2
CPU Characteristics:	Intel Turbo Boost Technology disabled, 8.0 GT/s QPI, Hyper-Threading enabled
CPU MHz:	2800
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	38400 KB I+D on chip per chip, 38400 KB shared / 15 cores
Other Cache:	None
Memory:	512 GB (32 x 16 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem:	2 x 300 GB SAS HDDs
Other Hardware:	None
Adapter:	Intel (ESB2) 82575EB Dual-Port Gigabit Ethernet Controller
Number of Adapters:	1

Continued on next page

Software

Adapter:	Intel (ESB2) 82575EB Dual-Port Gigabit Ethernet Controller
Adapter Driver:	e1000
Adapter Firmware:	None
Adapter:	Mellanox MCX353A-FCAT ConnectX-3
Adapter Driver:	OFED 1.5.3.1
Adapter Firmware:	2.10.0
Operating System:	Red Hat EL 6.4, kernel 2.6.32-358
Local File System:	Linux/ext2
Shared File System:	NFS
System State:	Multi-User
Other Software:	Platform LSF 9.1.1.1

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Test sponsor: Intel Corporation
Tested by: Pavel Shelepugin

Test date: Feb-2014
Hardware Availability: Feb-2014
Software Availability: Dec-2013

Node Description: Endeavor Node

Slot Type:	PCI-Express x8
Data Rate:	1Gbps Ethernet
Ports Used:	2
Interconnect Type:	Ethernet
Adapter:	Mellanox MCX353A-FCAT ConnectX-3
Number of Adapters:	1
Slot Type:	PCIe x8 Gen3
Data Rate:	InfiniBand 4x FDR
Ports Used:	1
Interconnect Type:	InfiniBand

Node Description: NFS

Hardware

Number of nodes:	1
Uses of the node:	fileserver
Vendor:	Intel
Model:	S7000FC4UR
CPU Name:	Intel Xeon CPU
CPU(s) orderable:	1-4 chips
Chips enabled:	4
Cores enabled:	16
Cores per chip:	4
Threads per core:	2
CPU Characteristics:	--
CPU MHz:	2926
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:	64 GB
Disk Subsystem:	8 disks, 500GB/disk, 2.7TB total
Other Hardware:	None
Adapter:	Intel 82563GB Dual-Port Gigabit Ethernet Controller
Number of Adapters:	1
Slot Type:	PCI-Express x8
Data Rate:	1Gbps Ethernet
Ports Used:	1
Interconnect Type:	Ethernet

Software

Adapter:	Intel 82563GB Dual-Port Gigabit Ethernet Controller
Adapter Driver:	e1000e
Adapter Firmware:	N/A
Operating System:	RedHat EL 5 Update 4
Local File System:	None
Shared File System:	NFS
System State:	Multi-User
Other Software:	None

Interconnect Description: IB Switch

Hardware		Software
Vendor:	Mellanox	
Model:	Mellanox MSX6025F-1BFR	
Switch Model:	Mellanox MSX6025F-1BFR	
Number of Switches:	46	
Number of Ports:	36	
Data Rate:	InfiniBand 4x FDR	
Firmware:	7.2.0	
Topology:	Fat tree	
Primary Use:	MPI traffic	

Interconnect Description: Gigabit Ethernet

Hardware		Software
Vendor:	Force10 Networks	
Model:	Force10 S50, Force10 C300	
Switch Model:	Force10 S50, Force10 C300	
Number of Switches:	15	
Number of Ports:	48	
Data Rate:	1Gbps Ethernet, 10Gbps Ethernet	
Firmware:	8.2.1.0	
Topology:	Fat tree	
Primary Use:	Cluster File System	

Submit Notes

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

General Notes

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

 MPI startup command:
   mpiexec.hydra command was used to start MPI jobs.

 BIOS settings:
   Intel Hyper-Threading Technology (SMT): Enabled (default is Enabled)
   Intel Turbo Boost Technology (Turbo)  : Disabled (default is Enabled)

 RAM configuration:
   Compute nodes have 4x16-GB RDIMM on each memory channel.

 Network:
   Forty six 36-port switches: 18 core switches and 28 leaf switches.
   Each leaf has one link to each core. Remaining 18 ports on 25 of 28 leafs
   are used for compute nodes. On the remaining 3 leafs the ports are used
```

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General Notes (Continued)

```
    for FS nodes and other peripherals.

  Job placement:
    Each MPI job was assigned to a topologically compact set of nodes, i.e.
    the minimal needed number of leaf switches was used for each job: 1 switch
    for 60/120/240/480 ranks.

  Platform LSF was used for job submission. It has no impact on performance.
    Information can be found at: http://www.platform.com
```

Base Compiler Invocation

C benchmarks:
`mpiicc`

C++ benchmarks:

126.lammps: `mpiicpc`

Fortran benchmarks:
`mpiifort`

Benchmarks using both Fortran and C:
`mpiicc mpiifort`

Base Portability Flags

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

Base Optimization Flags

C benchmarks:
`-O3 -xCORE-AVX-I -no-prec-div`

C++ benchmarks:

126.lammps: `-O3 -xCORE-AVX-I -no-prec-div`

Fortran benchmarks:
`-O3 -xCORE-AVX-I -no-prec-div`

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

The flags file that was used to format this result can be browsed at
http://www.spec.org/mpi2007/flags/EM64T_Intel140_flags.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/mpi2007/flags/EM64T_Intel140_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 13:47:42 2014 by SPEC MPI2007 PS/PDF formatter v1463.
Originally published on 5 March 2014.