SPEC® MPIM2007 Result

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Dell Inc.

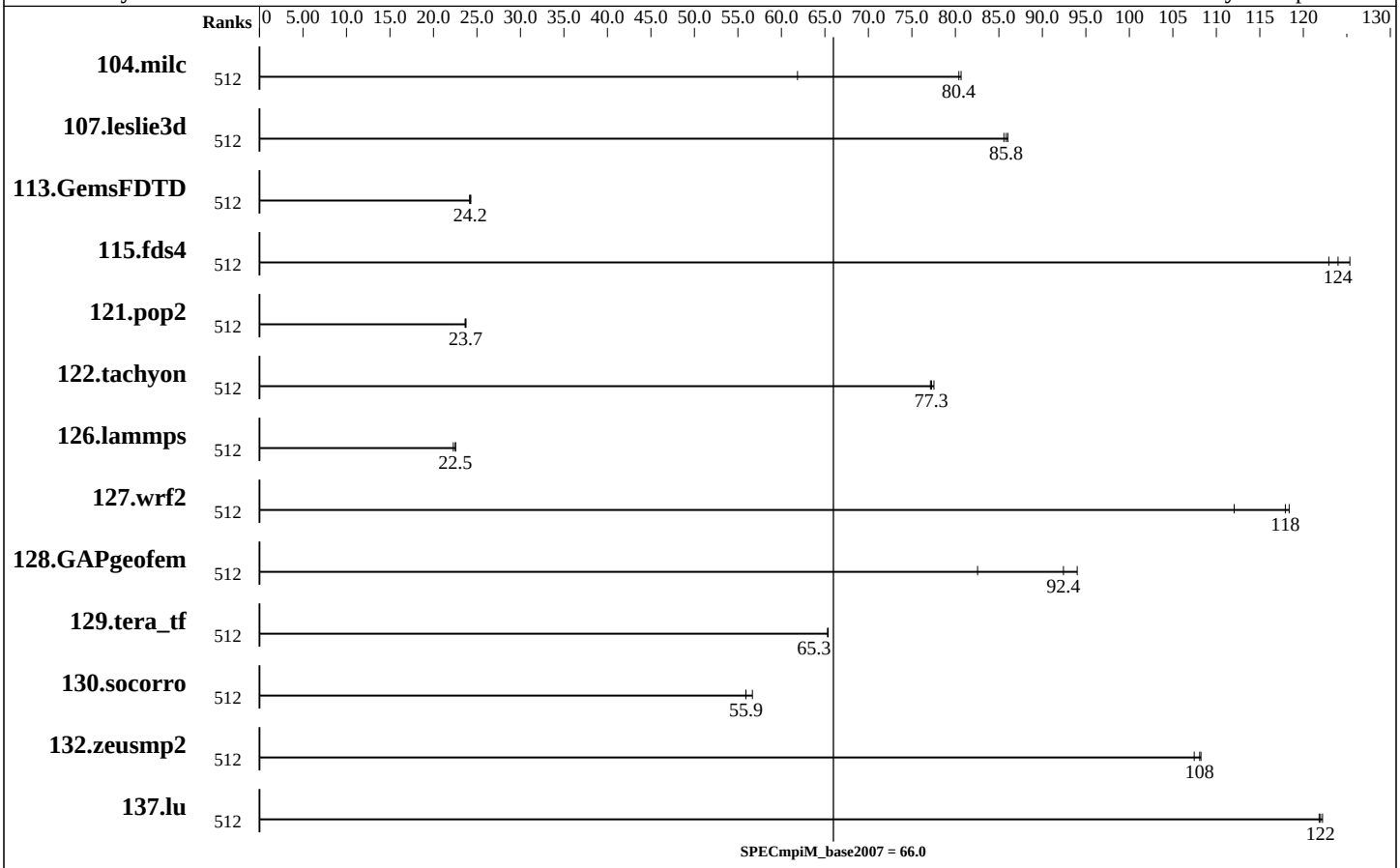
PowerEdge M420 (Intel Xeon E5-2470, 2.30 GHz)
DDR3-1600 MHz

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 66.0

MPI2007 license: 25
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Oct-2012
Hardware Availability: Jun-2012
Software Availability: Sep-2011



Results Table

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
104.milc	512	25.3	61.9	19.4	80.7	**19.5**	**80.4**							
107.leslie3d	512	**60.8**	**85.8**	61.0	85.6	60.7	86.0							
113.GemsFDTD	512	261	24.2	**260**	**24.2**	260	24.3							
115.fds4	512	15.6	125	**15.7**	**124**	15.9	123							
121.pop2	512	175	23.6	174	23.7	**174**	**23.7**							
122.tachyon	512	36.3	77.1	36.1	77.5	**36.2**	**77.3**							
126.lammps	512	131	22.3	**129**	**22.5**	129	22.5							
127.wrf2	512	69.6	112	**66.1**	**118**	65.9	118							
128.GAPgeofem	512	22.0	94.0	25.0	82.6	**22.3**	**92.4**							
129.tera_tf	512	42.4	65.3	42.3	65.4	**42.4**	**65.3**							

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	512	67.4	56.7	68.3	55.9	**68.2**	**55.9**							
132.zeusmp2	512	**28.7**	**108**	28.7	108	28.9	107							
137.lu	512	30.2	122	30.1	122	**30.1**	**122**							

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:	PowerEdge M420
Interconnects:	IB Switch Gigabit Ethernet
File Server Node:	PowerEdge R620
Total Compute Nodes:	32
Total Chips:	64
Total Cores:	512
Total Threads:	512
Total Memory:	1536 GB
Base Ranks Run:	512
Minimum Peak Ranks:	--
Maximum Peak Ranks:	--

Software Summary

C Compiler:	Intel C++ Composer XE 2011 for Linux, Version 12.0.5.220 Build 20110719
C++ Compiler:	Intel C++ Composer XE 2011 for Linux, Version 12.0.5.220 Build 20110719
Fortran Compiler:	Intel Fortran Composer XE 2011 for Linux, Version 12.0.5.220 Build 20110719
Base Pointers:	64-bit
Peak Pointers:	64-bit
MPI Library:	Intel MPI Library 4.0.3.008 Build 20110824 for Linux
Other MPI Info:	None
Pre-processors:	No
Other Software:	None

Node Description: PowerEdge M420

Hardware

Number of nodes:	32
Uses of the node:	compute
Vendor:	Dell
Model:	PowerEdge M420 installed in PowerEdge M1000e blade chassis
CPU Name:	Intel Xeon E5-2470
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	16
Cores per chip:	8
Threads per core:	1
CPU Characteristics:	Intel Turbo Boost Technology up to 3.10 GHz, 8.0 GT/s QPI, Hyper-Threading disabled
CPU MHz:	2300
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	20 MB I+D on chip per chip, 20 MB shared / 8 cores
Other Cache:	None
Memory:	48 GB (6 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem:	Seagate 146 GB SAS ST9146803SS
Other Hardware:	None
Adapter:	Onboard Broadcom Dual Port 10Gb Ethernet (BCM57810S) Ethernet Controller

Continued on next page

Software

Adapter:	Onboard Broadcom Dual Port 10Gb Ethernet (BCM57810S) Ethernet Controller
Adapter Driver:	1.70.00-0
Adapter Firmware:	7.2.23
Adapter:	Mellanox ConnectX-3 SFF FDR10
Adapter Driver:	MLNX_OFED_LINUX-1.5.3-3.0.0-rhel6.2-x86_64
Adapter Firmware:	2.10.4562
Operating System:	Red Hat EL 6.2, kernel 2.6.32-220.el6.x86_64
Local File System:	Linux/ext2
Shared File System:	NFS
System State:	Multi-User
Other Software:	None

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MPI2007 license: 25
Test sponsor: Dell Inc.
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Test date: Oct-2012
Hardware Availability: Jun-2012
Software Availability: Sep-2011

Node Description: PowerEdge M420

Number of Adapters:	1
Slot Type:	PCI-Express x8
Data Rate:	10GbE
Ports Used:	1
Interconnect Type:	Ethernet
Adapter:	Mellanox ConnectX-3 SFF FDR10
Number of Adapters:	1
Slot Type:	PCIe x8 Gen3
Data Rate:	InfiniBand 4x 10Gbps FDR10
Ports Used:	1
Interconnect Type:	InfiniBand

Node Description: PowerEdge R620

Hardware

Number of nodes:	1
Uses of the node:	fileserver
Vendor:	Intel
Model:	PowerEdge R620
CPU Name:	Intel Xeon CPU E5-2680
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	16
Cores per chip:	8
Threads per core:	2
CPU Characteristics:	2.7GHz
CPU MHz:	2700
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	20 MB I+D on chip per chip
Other Cache:	None
Memory:	64 GB
Disk Subsystem:	5 disks, 146GB 15K SAS (RAID 0)
Other Hardware:	None
Adapter:	Quad port Intel I350 Gigabit Network Controller Ethernet Controller
Number of Adapters:	1
Slot Type:	Integrated
Data Rate:	1Gbps Ethernet
Ports Used:	1
Interconnect Type:	Ethernet

Software

Adapter:	Quad port Intel I350 Gigabit Network Controller Ethernet Controller
Adapter Driver:	3.0.6-k
Adapter Firmware:	1.5-6
Operating System:	Red Hat EL 6.2, kernel 2.6.32-220.el6.x86_64
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 M4001F	
Switch Model:	Mellanox M4001F installed in PowerEdge M1000e blade chassis (Installed in slot B1 and C1)	
Number of Switches:	2	
Number of Ports:	16	
Data Rate:	InfiniBand FDR10	
Firmware:	9.1.3180	
Topology:	Fat tree	
Primary Use:	MPI traffic	

Interconnect Description: Gigabit Ethernet

Hardware		Software
Vendor:	Dell Inc.	
Model:	Onboard Broadcom Dual Port 10Gb Ethernet(BCM57810S)	
Switch Model:	PowerConnect M6220 (Modular Layer 3 blade switch for PowerEdge M1000e blade chassis) in slot A1 and A2	
Number of Switches:	2	
Number of Ports:	40	
Data Rate:	1Gbps Ethernet	
Firmware:	4.2.0.4	
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): Disabled (default is Enabled)
   Intel Turbo Boost Technology (Turbo)  : Enabled (default is Enabled)

 RAM configuration:
   Compute nodes have 1x8-GB RDIMM on each memory channel.
```

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General Notes (Continued)

```
Network:
  Two 20-port switch

Compute Node Environment:
  ulimit -s = unlimited
  ulimit -l = unlimited
  File "/etc/modprobe.d/mlx4_core.conf" modified to contain "options
  mlx4_core log_mtts_per_seg=5"
```

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`

Base Optimization Flags

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

C++ benchmarks:

126.lammps: `-O3 -xAVX -no-prec-div`

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Base Optimization Flags (Continued)

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

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

The flags file that was used to format this result can be browsed at
`http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/mpi2007/flags/EM64T_Intel121_flags.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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