SPEC® MPIM2007 Result

Dell Inc.

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

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 66.0

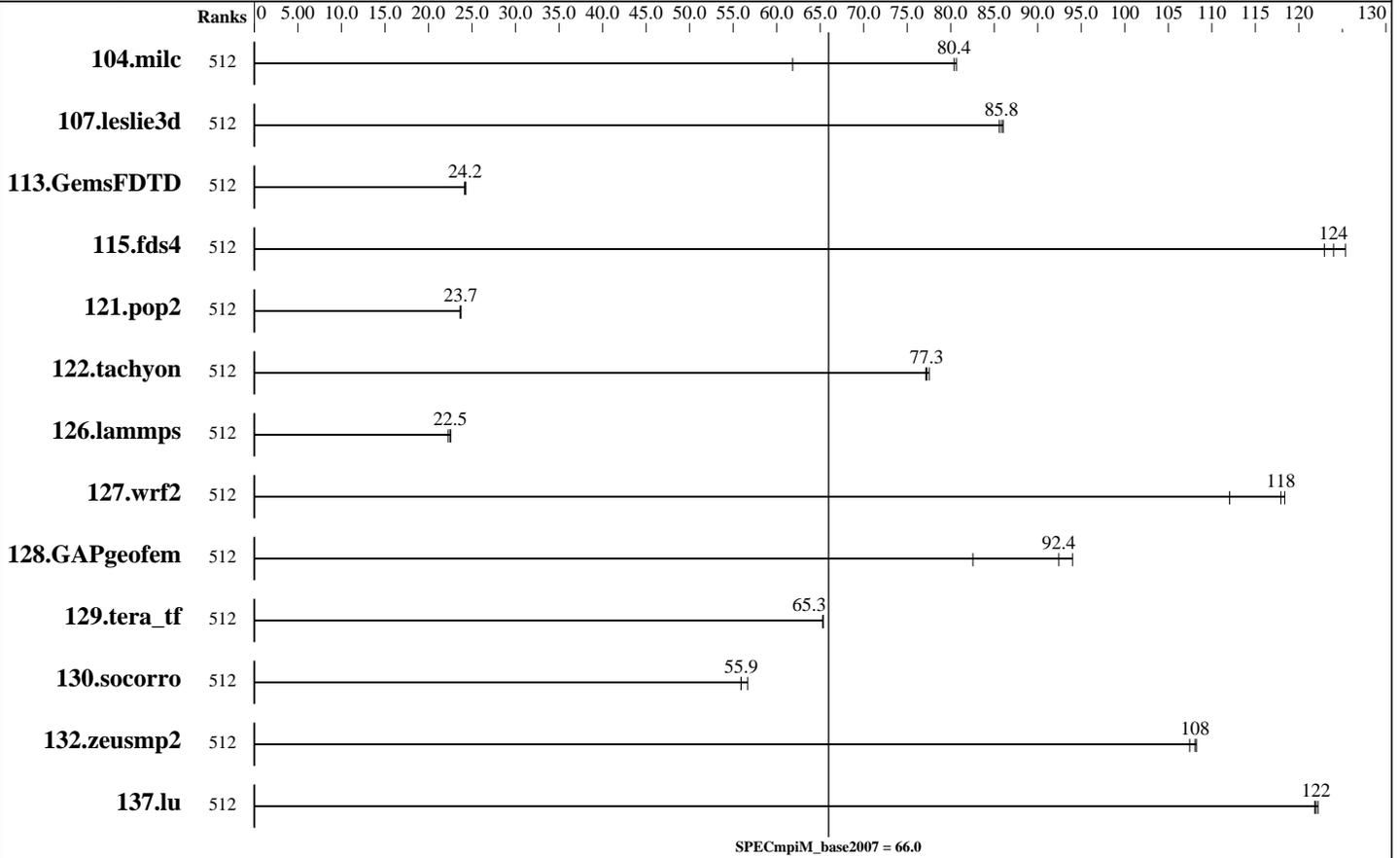|	
MPI2007 license: 25	**Test date:** Oct-2012
Test sponsor: Dell Inc.	**Hardware Availability:** Jun-2012
Tested by: Dell Inc.	**Software Availability:** Sep-2011

Ranks | 0 5.00 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0 50.0 55.0 60.0 65.0 70.0 75.0 80.0 85.0 90.0 95.0 100 105 110 115 120 130

Benchmark	Ranks	Value
104.milc	512	80.4
107.leslie3d	512	85.8
113.GemsFDTD	512	24.2
115.fds4	512	124
121.pop2	512	23.7
122.tachyon	512	77.3
126.lammps	512	22.5
127.wrf2	512	118
128.GAPgeofem	512	92.4
129.tera_tf	512	65.3
130.socorro	512	55.9
132.zeusmp2	512	108
137.lu	512	122

SPECmpiM_base2007 = 66.0

Results Table

Benchmark	Ranks	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Ranks	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak 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	Ranks	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Ranks	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak 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

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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Test sponsor:	Dell Inc.	**Hardware Availability:**	Jun-2012
Tested by:	Dell Inc.	**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

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Tested by:	Dell Inc.	**Software Availability:**	Sep-2011

Interconnect Description: IB Switch

Hardware
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

Software

Interconnect Description: Gigabit Ethernet

Hardware
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

Software

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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