SPEC® MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Dell Inc.

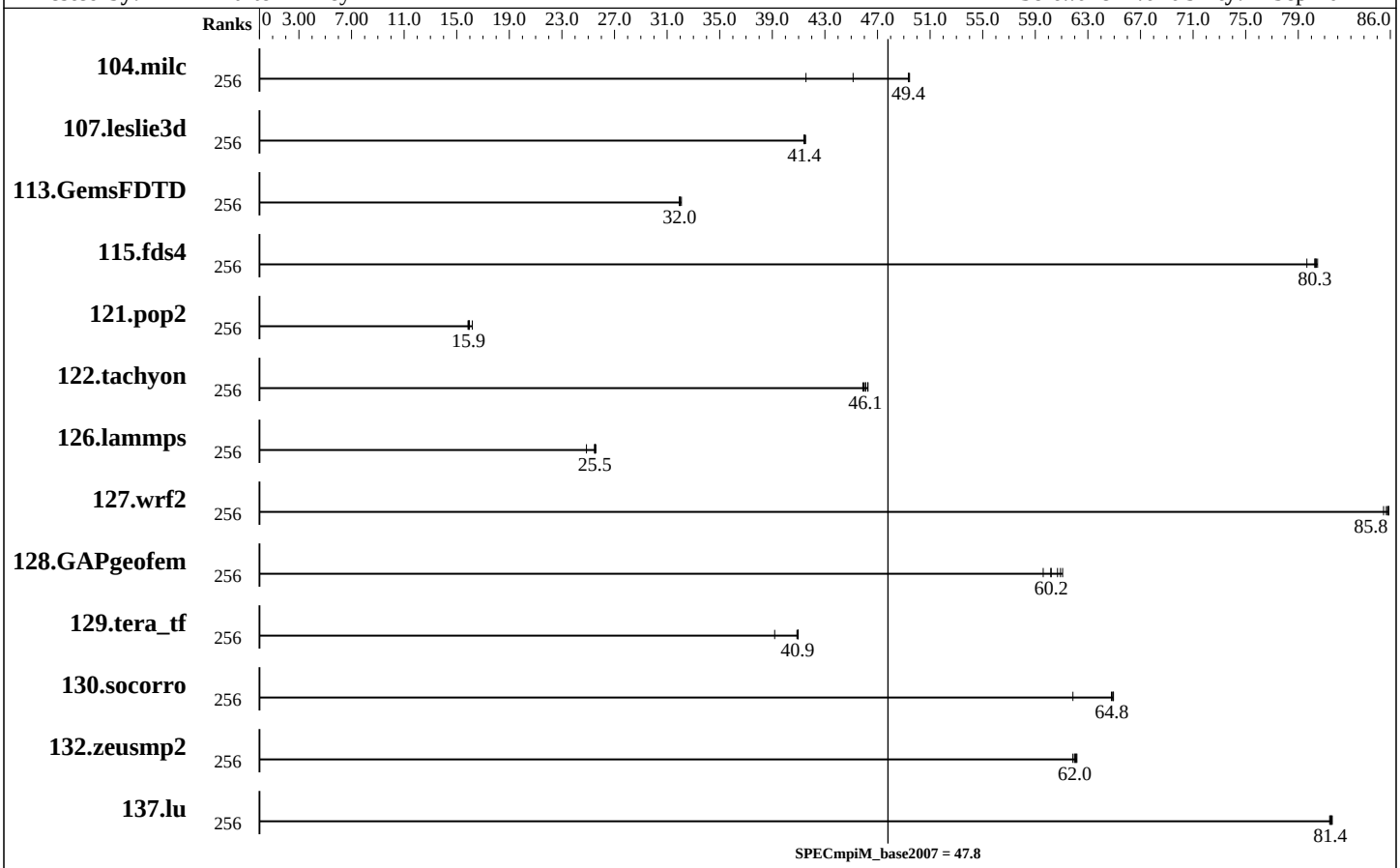
PowerEdge M620 (Intel Xeon E5-2680, 2.70 GHz, DDR3-1600 MHz

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 47.8

MPI2007 license: 25
Test sponsor: Dell
Tested by: Burton Finley

Test date: May-2012
Hardware Availability: Mar-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	256	37.7	41.6	31.7	49.4	31.7	49.4							
107.leslie3d	256	126	41.4	126	41.5	126	41.4							
113.GemsFDTD	256	197	32.0	198	31.9	197	32.1							
115.fds4	256	24.5	79.7	24.3	80.4	24.2	80.5							
121.pop2	256	255	16.2	259	16.0	260	15.9							
122.tachyon	256	60.4	46.3	61.0	45.9	61.0	45.9							
126.lammps	256	**114**	**25.5**	114	25.6	117	24.9							
127.wrf2	256	91.2	85.5	**90.9**	**85.8**	90.8	85.9							
128.GAPgeofem	256	33.9	60.9	33.8	61.1	34.6	59.6							
129.tera_tf	256	67.6	41.0	67.7	40.9	70.6	39.2							

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

SPEC MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge M620 (Intel Xeon E5-2680, 2.70 GHz, DDR3-1600 MHz

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 47.8

MPI2007 license: 25
Test sponsor: Dell
Tested by: Burton Finley

Test date: May-2012
Hardware Availability: Mar-2012
Software Availability: Sep-2011

Results Table (Continued)

Benchmark	Base							Peak						
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
130.socorro	256	58.8	64.9	58.8	64.9	61.7	61.9							
132.zeusmp2	256	49.9	62.2	49.9	62.2	50.2	61.9							
137.lu	256	45.1	81.6	45.1	81.6	45.2	81.4							

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 M620
Interconnects:	IB Switch Gigabit Ethernet
File Server Node:	PowerEdge R410
Total Compute Nodes:	16
Total Chips:	32
Total Cores:	256
Total Threads:	256
Total Memory:	1 TB
Base Ranks Run:	256
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 M620

Hardware

Number of nodes:	16
Uses of the node:	compute
Vendor:	Dell
Model:	PowerEdge M620 Installed in PowerEdge M1000e blade chassis
CPU Name:	Intel Xeon E5-2680
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 3.5 GHz, 8.0 GT/s QPI, Hyper-Threading disabled
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, 20 MB shared / 8 cores
Other Cache:	None
Memory:	64 GB (8 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem:	Seagate 146 GB SAS ST9146803SS
Other Hardware:	None
Adapter:	Onboard Intel X520-k Ethernet Controller
Number of Adapters:	1

Continued on next page

Software

Adapter:	Onboard Intel X520-k Ethernet Controller
Adapter Driver:	3.4.8-k
Adapter Firmware:	13.1.9
Adapter:	Mellanox ConnectX2 Quad Data Rate IB PCIe 2.0 (Installed in Fabric C)
Adapter Driver:	MLNX_OFED_LINUX-1.5.3-3.0.0-rhel6.2-x86_64
Adapter Firmware:	2.9.1000
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

SPEC MPIM2007 Result

Copyright 2006-2010 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge M620 (Intel Xeon E5-2680, 2.70 GHz, DDR3-1600 MHz

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 47.8

MPI2007 license: 25
Test sponsor: Dell
Tested by: Burton Finley

Test date: May-2012
Hardware Availability: Mar-2012
Software Availability: Sep-2011

Node Description: PowerEdge M620

Slot Type:	PCI-Express x16
Data Rate:	1Gbps Ethernet
Ports Used:	1
Interconnect Type:	Ethernet
Adapter:	Mellanox ConnectX2 Quad Data Rate IB PCIe 2.0 (Installed in Fabric C)
Number of Adapters:	1
Slot Type:	PCIe x8 Gen2
Data Rate:	InfiniBand 4x QDR
Ports Used:	1
Interconnect Type:	InfiniBand

Node Description: PowerEdge R410

Hardware

Number of nodes:	1
Uses of the node:	fileserver
Vendor:	Intel
Model:	PowerEdge R410
CPU Name:	Intel Xeon X5570 CPU
CPU(s) orderable:	1-2 chips
Chips enabled:	2
Cores enabled:	8
Cores per chip:	4
Threads per core:	1
CPU Characteristics:	N/A
CPU MHz:	2930
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	8 MB I+D on chip per chip
Other Cache:	None
Memory:	32 GB
Disk Subsystem:	1 disks, 500GB/disk
Other Hardware:	None
Adapter:	Dual port Broadcom BCM 5716 Ethernet Controller
Number of Adapters:	1
Slot Type:	Integrated
Data Rate:	1Gbps Ethernet
Ports Used:	1
Interconnect Type:	Ethernet

Software

Adapter:	Dual port Broadcom BCM 5716 Ethernet Controller
Adapter Driver:	2.1.11
Adapter Firmware:	9-6.2.0.17.fw
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

Copyright 2006-2010 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge M620 (Intel Xeon E5-2680, 2.70 GHz, DDR3-1600 MHz

SPECmpiM_peak2007 = Not Run

SPECmpiM_base2007 = 47.8

MPI2007 license: 25
Test sponsor: Dell
Tested by: Burton Finley

Test date: May-2012
Hardware Availability: Mar-2012
Software Availability: Sep-2011

Interconnect Description: IB Switch

Hardware		Software
Vendor:	Mellanox	
Model:	Mellanox M3601Q	
Switch Model:	Mellanox M3601Q Installed in PowerEdge M1000e blade chassis (Installed in slot C1)	
Number of Switches:	1	
Number of Ports:	32	
Data Rate:	InfiniBand 4x QDR	
Firmware:	7.4.0000	
Topology:	Fat tree	
Primary Use:	MPI traffic	

Interconnect Description: Gigabit Ethernet

Hardware		Software
Vendor:	Dell Inc.	
Model:	Intel X520-k Ethernet Controller	
Switch Model:	PowerConnect M6220 (Modular Layer 3 blade switch for PowerEdge M1000e blade chassis) in slot A1	
Number of Switches:	1	
Number of Ports:	20	
Data Rate:	1Gbps Ethernet	
Firmware:	3.1.3.9	
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 2x8-GB RDIMM on each memory channel.

 Network:
   One 20-port switch
```

Continued on next page

General Notes (Continued)

```
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`

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

Continued on next page

Base Optimization Flags (Continued)

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`

SPEC and SPEC MPI are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 13:46:16 2014 by SPEC MPI2007 PS/PDF formatter v1463.
Originally published on 8 August 2012.