



# SPEC<sup>®</sup> MPIM2007 Result

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Hewlett Packard Company

SPECmpiM\_peak2007 = Not Run

HP Proliant BL460c blade Cluster Platform 3000BL

SPECmpiM\_base2007 = NC

MPI2007 license: 0001

Test sponsor: Hewlett-Packard Company

Tested by: HPCD

Test date: May-2007

Hardware Availability: May-2007

Software Availability: May-2007

**SPEC has determined that this result was not in compliance with the SPEC MPI2007 run and reporting rules. Specifically, the result did not meet the requirement for baseline optimization flags to not use assertion flags (the flag -fno-alias is a violation of this rule). The result was found to be performance neutral compared to runs without -fno-alias. Replacement results could not be produced because of system access limitations.**

Ranks
104.milc
107.leslie3d
113.GemsFDTD
115.fds4
121.pop2
122.tachyon
126.lammps
127.wrf2
128.GAPgeofem
129.tera_tf
132.zeus_np2
137.lu



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### Results Table

Benchmark	Base								Peak							
	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Ranks	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
104.milc	64	NC	NC	NC	NC	NC	NC									
107.leslie3d	64	NC	NC	NC	NC	NC	NC									
113.GemsFDTD	64	NC	NC	NC	NC	NC	NC									
115.fds4	64	NC	NC	NC	NC	NC	NC									
121.pop2	64	NC	NC	NC	NC	NC	NC									
122.tachyon	64	NC	NC	NC	NC	NC	NC									
126.lammgs	64	NC	NC	NC	NC	NC	NC									
127.wrf2	64	NC	NC	NC	NC	NC	NC									
128.GAPgeofem	64	NC	NC	NC	NC	NC	NC									
129.tera_tf	64	NC	NC	NC	NC	NC	NC									
130.socorro	64	NC	NC	NC	NC	NC	NC									
132.zeusmp2	64	NC	NC	NC	NC	NC	NC									
137.lu	64	NC	NC	NC	NC	NC	NC									

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

#### Hardware Summary

Type of System: Homogenous  
 Compute Node: HP XC Cluster  
 Interconnect: DDR InfiniBand  
 File Server Node: HP ProLiant DL380 G4 file server  
 Total Compute Nodes: 16  
 Total Chips: 32  
 Total Cores: 64  
 Total Threads: 64  
 Total Memory: 128 GB  
 Base Ranks Run: 64  
 Minimum Peak Ranks: --  
 Maximum Peak Ranks: --

#### Software Summary

C Compiler: Intel C 9.1.045  
 C++ Compiler: Intel C++ 9.1.045  
 Fortran Compiler: Intel Fortran 9.1.040  
 Base Pointers: 64-bit  
 Peak Pointers: 64-bit  
 MPI Library: HP-MPI 2.2.5  
 Other MPI Info: None  
 Pre-processors: No  
 Other Software: None



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## Node Description: HP XC Cluster

Hardware		Software	
Number of nodes:	16	Adapter:	PCI-Express DDR InfiniBand HCA
Uses of the node:	compute	Adapter Driver:	Voltaire GridStack 3.5.5_25
Vendor:	Hewlett-Packard Company	Adapter Firmware:	Hp 1.2
Model:	XC3000	Operating System:	Redhat 4 Update 4
CPU Name:	Intel Xeon 5160	Local File System:	VXFS
CPU(s) orderable:	1-2 chips	Shared File System:	NFS
Chips enabled:	2	System State:	Multi User
Cores enabled:	4	Other Software:	None
Cores per chip:	2		
Threads per core:	1		
CPU Characteristics:	1333 MHz FSB		
CPU MHz:	3000		
Primary Cache:	32 KB I-Cache, 32 KB D-Cache on chip per core		
Secondary Cache:	4 MB D-Cache on chip per chip		
L3 Cache:	None		
Other Cache:	None		
Memory:	8 GB		
Disk Subsystem:	Ext 3		
Other Hardware:	None		
Adapter:	PCI-Express DDR InfiniBand HCA		
Number of Adapters:	1		
Slot Type:	Mezzanine - PCIe x8		
Data Rate:	Infiniband 4x DDR		
Ports Used:	1		
Interconnect Type:	InfiniBand		



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## Node Description: HP ProLiant DL380 G4 file server

Hardware		Software	
Number of nodes:	1	Adapter:	PCI-Express DDR InfiniBand HCA
Uses of the node:	file server	Adapter Driver:	Voltaire GridStack 3.5.5_25
Vendor:	Hewlett-Packard Company	Adapter Firmware:	Hp 1.2
Model:	DL380 G4	Operating System:	Redhat 4 Update 4
CPU Name:	Intel Xeon	Local File System:	2 x 146GB Ultra320 SCSI 10k RPM Disks RAID 0+1
CPU(s) orderable:	1-2 chips	Shared File System:	N/A
Chips enabled:	2	System State:	Multi User
Cores enabled:	2	Other Software:	None
Cores per chip:	1		
Threads per core:	1		
CPU Characteristics:	None		
CPU MHz:	3800		
Primary Cache:	32 KB L1 32 KB L2 on chip per core		
Secondary Cache:	2 MB L3 on chip per chip		
L3 Cache:	None		
Other Cache:	None		
Memory:	8 GB		
Disk Subsystem:	SCSI		
Other Hardware:	None		
Adapter:	PCI-Express DDR InfiniBand HCA		
Number of Adapters:	1		
Slot Type:	PCIe x4		
Data Rate:	Infiniband 4x DDR		
Ports Used:	1		
Interconnect Type:	InfiniBand		



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## Interconnect Description: DDR InfiniBand

	Hardware	Software
Vendor:	Voltaire	
Model:	ISR	
Switch Model:	HP 4X DDR IB Switch Module for HP BladeSystem C-Class	
Number of Switches:	1	
Number of Ports:	16	
Data Rate:	Infiniband 4x DDR	
Firmware:	1.30	
Switch Model:	Voltaire 24 port External for subnet management ISR 9024	
Number of Switches:	1	
Number of Ports:	24	
Data Rate:	Infiniband 4x DDR	
Firmware:	0.8.6	
Topology:	two levels for subnet manager, and 1 for leaf.	
Primary Use:	MPI and HPC system traffic	

## General Notes

```

# Run MPI2007 on XC3000 cluster.
module load mpi
. ./shrc
. /opt/intel/fc/9.1.040/bin/ifortvars.sh
. /opt/intel/cc/9.1.045/bin/iccvars.sh
runspec -c linux_cmd_intel medium --reportable --ranks=NN --define CMD_PREFIX= --define MPIRUN_OPTIONS= --flagsurl=hpmpi-intel.xml -o cfg,txt,html,check
cluster launch performed via slurm's srun
submit= \ $MPI_ROOT/bin/mpirun -srun $command

```



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## Base Compiler Invocation

C benchmarks:

mpicc -mpicc icc

C++ benchmarks:

126.lammps: mpiCC -mpicxx icpc

Fortran benchmarks:

107.leslie3d: mpif90 -mpif90 ifort

113.GemsFDTD: mpif90 -mpif90 ifort

115.fds4: mpif90 -mpif90 ifort

129.tera\_tf: mpif90 -mpif90 ifort

132.zeusmp2: mpif90 -mpif90 ifort

137.lu: mpif90 -mpif90 ifort

Benchmarks using both Fortran and C (except as noted below):

mpicc -mpicc icc mpif90 -mpif90 ifort

## Base Portability Flags

121.pop2: -DSPEC\_MPI\_CASE\_FLAG

127.wrf2: -DSPEC\_MPI\_LINUX -DSPEC\_MPI\_CASE\_FLAG



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## Base Optimization Flags

C benchmarks:

103.peak2007: -O3 -no-prec-div -ftz -fno-alias -xT

C++ benchmarks:

126.lammps: -O3 -no-prec-div -ftz -fno-alias -xT

Fortran benchmarks:

107.leslie3d: -O3 -no-prec-div -ftz -fno-alias -xT

113.GemsFDTD: -O3 -no-prec-div -ftz -fno-alias -xT

115.fds4: -O3 -no-prec-div -ftz -fno-alias -xT

129.tera\_tf: -O3 -no-prec-div -ftz -fno-alias -xT

132.zeusmp2: -O3 -no-prec-div -ftz -fno-alias -xT

137.lu: -O3 -no-prec-div -ftz -fno-alias -xT

Benchmarks using both Fortran and C:

121.pop2: -O3 -no-prec-div -ftz -fno-alias -xT

127.wrf2: Same as 121.pop2

128.GAPgem: Same as 121.pop2

130.socorro: Same as 121.pop2



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The flags file that was used to format this result can be browsed at [http://www.spec.org/mpi2007/flags/MPI2007\\_flags.html](http://www.spec.org/mpi2007/flags/MPI2007_flags.html).

You can also download the XML flags source by saving the following link: [http://www.spec.org/mpi2007/flags/MPI2007\\_flags.xml](http://www.spec.org/mpi2007/flags/MPI2007_flags.xml)

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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