



HPC2002 Result

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IBM Corporation eServer 325 Cluster

SPECenvM2002 = 189

SPEC license #: HPG0005 | Tested by: IBM Corporation | Test site: Research Triangle Park, NC | Test date: Oct-2003 | HW Avail: Oct-2003 | SW Avail: Jul-2003

Benchmark	Reference Time	Runtime	Ratio
361.wrf_m	86400	458	189

Hardware		Software	
CPU:	AMD Opteron (246)	Parallel:	MPI
CPU MHz:	2000	Processes-Threads:	48
FPU:	Integrated	MPI Processes:	48
CPU(s) enabled:	48	OpenMP Threads:	N/A
CPU(s) orderable:	1 or 2 per node	Operating System:	SuSE Linux 8.0 SLES 64 bit Kernel k_smp-2.4.19-249 (from Service Pack 2)
Primary Cache:	64KBI + 64KBD on chip	Compiler:	Fortran: Portland Group 5.0-2 Fortran 90 C: Portland Group 5.0-2 C
Secondary Cache:	1024KB(I+D) on chip	File System:	Linux/reiserfs
L3 Cache:	None	System State:	Multi-user
Other Cache:	None	Other Software:	MPICH-GM 1.2.5..10 GM 2.0.6_Linux
Memory:	4GB DDR333 CL2.5 Registered ECC per node		
Disk Subsystem:	1 x 36GB 10K RPM SCSI per node		
Other Hardware:	See Notes.		

Notes/Tuning Information

Flags:

```

Fortran:
  -O3 -fast
C:
  -O3 -fast
Preprocessor:
  -E -I. -I$(CDF_INC) -I$(MPI_INC)
Extra Libraries:
  -lnetcdf -lmpich -lgm -lpthread

```

Submit command to run applications:

```

cp -rf 361.wrf_m.env ~/.ssh/environment ;
mpirun.ch_gm -np 48 -machinefile n00x2.mf --gm-recv
  blocking -wd `pwd` --gm-no-shmem $command ;
rm -rf ~/.ssh/environment

```

Cluster Configuration:

```

Two CPUs per node, 24 nodes
All benchmark files are on a shared file server
Nodes and file server use NFS shared file system
$(CDF_INC) is the NETCDF include directory
$(MPI_INC) is the MPICH include directory
361.wrf_m.env contains "SPEC_HPG_PARALLEL=MPI"
Submit cp and rm were later found not to be necessary

```

Computation Network:

```

Myrinet M3F-PCIXD-2 Adapters (one per node)
Myrinet M3-E32 Switch Enclosure
4 x Myrinet M3-SW16-8F 8-Port Line Cards

```

x345 File Server:

```

2 x 2.4 GHz Xeon Processors
512MB DDR266 CL2.5 Registered ECC Memory
1 x 36GB 10K RPM Internal SCSI Drives
ServerRAID 4H SCSI RAID Adapter
10 x 36GB 10K RPM SCSI Drives
SuSE 8.0 Pro Kernel 2.4.20-40
Reiserfs Local File System

```



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Notes/Tuning Information (Continued)

NFS Shared File System

File Server Network:

Cisco 4003 GbE Copper Switch
Built-in Gigabit Ethernet Adapters

Set the following BIOS parameters:

DRAM Interleave = AUTO
Node Interleave = Disabled
ACPI SRAT = Enabled