



HPC2002 Result

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Hewlett-Packard Company
hp server rx2600 cluster (1500MHz Itanium2)

SPECchemM2002 = 54.8

SPEC license #: HPG2116 | Tested by: Hewlett-Packard Company | Test site: Richardson, Texas | Test date: Nov-2003 | HW Avail: Oct-2003 | SW Avail: Oct-2003

Benchmark	Reference Time	Runtime	Ratio
371.gamess_m	86400	1575	54.8

Hardware		Software	
CPU:	Intel Itanium 2	Parallel:	MPI
CPU MHz:	1500	Processes-Threads:	64
FPU:	Integrated	MPI Processes:	64
CPU(s) enabled:	64	OpenMP Threads:	N/A
CPU(s) orderable:	1 to 2 per node, up to 64 nodes	Operating System:	HPUX11i-TCOE B.11.23
Primary Cache:	L1 Inst/Data: 16 KB, associativity = 4	Compiler:	HP C/ANSI C Compiler B.11.23
Secondary Cache:	L2 Unified: 256 KB, associativity = 8		HP aC++ Compiler B.11.23
L3 Cache:	L3 Unified: 6144 KB, associativity = 24		HP Fortran 90 Compiler B.11.23
Other Cache:	None		HP LIBF90 PHSS_29620
Memory:	12GB (12 x 1 GB DDR 266 DIMMS per node)		HP F90 Compiler PHSS_29663
Disk Subsystem:	1x36GB 10k RPM SCSI disk		HP aC++ Compiler PHSS_29655
Other Hardware:	See Notes section below.		HP C Compiler PHSS_29656
			u2comp/be/plugin library PHSS_29657
			HP MPI 02.00.00.00 B6060B
		File System:	vxfs (system), vxfs through NFS (benchmark files)
		System State:	Multi-user
		Other Software:	--

Notes/Tuning Information

CPU(s) enabled: 64 (two per node, 32 nodes)

Other Hardware:

Computation Network:

Myrinet M3-E64 Switch Enclosure (Fiber)
 Myrinet M3-SW16-8F 8-Port Line Card (8)
 HP A6386 PCI HyperFabric2 Adapter
 GigaBit on-board adapter for Administration and NFS
 PCI GigaBit card for NFS traffic (GigE-TX adapter A6825A)

NFS file server:

rp5470 (PA-RISC) NFS File Server
 4 PA8700 CPUs 750 MHz. 16 GB of memory
 4 internal disks 73 GB Ultra2 SCSI
 20 external disks 18 GB U160 SCSI striped with LVM across 4 SCSI controllers
 15 external disks 73 GB FibreChannel mirrored with LVM across 2 FC controllers
 which contain the NFS filesystems accessed by the benchmark. These
 NFS filesystems are optimized for security rather than performance.

File Server Network:

HP ProCurve 9308 64-port copper Gigabit Ethernet Switch
 Built-in Gigabit Ethernet Adapters (one per node)

Peak Flags: MPI

```
mpif90 +Ofast +Onodataprefetch $(DAFLAG) +Onolimit
mpicc +Ofast +Onodataprefetch -DNOUNDERSCORE $(DAFLAG) +Onolimit
OPTIMIZE = -I /opt/mpi/include
DAFLAG = +DD64 +i8 +r8
CPPFLAGS = -I. -C -P
EXTRA_LIBS= +U77 $(DAFLAG) +FPD -minshared
MPILIB=/opt/mpi/lib/hpux64
```



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Notes/Tuning Information (Continued)

Alternate Source used for Peak:
None

Kernel Parameters (/stand/system):

```
maxdsiz      0x7b03a000
maxdsiz_64bit 0x4000000000
maxssiz      0x10000000
maxssiz_64bit 0x40000000
maxtsiz      1073741824
maxtsiz_64bit 4294967296
vps_pagesize 4
vps_ceiling  64
dbc_min_pct  3
dbc_max_pct  3
```

Peak User Environment:

```
use_submit_for_speed=1
submit = /home/f90pack/clust_mpirungames $command
```

clust_mpirungames:

```
mpirun -f appfile
```

appfile:

```
-h rx17 -np 2 -e MPI_WORKDIR=$cwd $command
...
-h rx48 -np 2 -e MPI_WORKDIR=$cwd $command
```

environment variables in .cshrc

```
setenv MPI_ENABLED ENABLED
setenv IRCDATA ./gamess_us.irc
setenv INPUT ./gamess_us.F05
setenv PUNCH ./gamess_us.dat
setenv INTGRS ./gamess_us.F08
setenv AOINTS ./gamess_us.F08
setenv MOINTS ./gamess_us.F09
setenv DICTNRY ./gamess_us.F10
setenv DRTFILE ./gamess_us.F11
setenv CIVECTR ./gamess_us.F12
setenv NTNFMFLA ./gamess_us.F13
setenv CIINTS ./gamess_us.F14
setenv WORK15 ./gamess_us.F15
setenv WORK16 ./gamess_us.F16
setenv CSFSAVE ./gamess_us.F17
setenv FOCKDER ./gamess_us.F18
setenv DASORT ./gamess_us.F20
setenv JKFILE ./gamess_us.F23
setenv ORDINT ./gamess_us.F24
setenv EFPIND ./gamess_us.F25
```