



HPC2002 Result

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

SPECenvM2002 = 275

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 |
|-----------|----------------|---------|-------|
| 361.wrf_m | 86400 | 314 | 275 |

| Hardware | | Software | |
|-------------------|---|--------------------|---|
| CPU: | Intel Itanium 2 | Parallel: | MPI |
| CPU MHz: | 1500 | Processes-Threads: | 40 |
| FPU: | Integrated | MPI Processes: | 40 |
| CPU(s) enabled: | 40 | 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 | | 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: | NetCDF 3.5.0 |

Notes/Tuning Information

CPU(s) enabled: 40 (two per node, 20 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 +DD64 +noppu +Ofast +Oinfo
mpicc +DD64 +Ofast -DNOUNDERSCORE -DSPEC_HPG_MPI2
OPTIMIZE =
ENV_SPEC_HPG_PARALLEL=MPI
CPPFLAGS = -I. -C -P
EXTRA_LIBS= -minshared -L${NETCDF}/lib/hpux64 -lnetcdf
```



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Notes/Tuning Information (Continued)

```
NETCDF = /home/clpack/netcdf-3.5.0
FPORABILITY= -I${NETCDF}/include
```

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_mpirun $command
```

clust_mpirun:

```
mpirun -hmp -f appfile
```

appfile:

```
-h rx17-hf -np 2 -e MPI_HMP=ON -e MPI_WORKDIR=$cwd $command
...
-h rx36-hf -np 2 -e MPI_HMP=ON -e MPI_WORKDIR=$cwd $command
```