HPC2002 Result

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Hewlett-Packard Company

hp server rx2600 cluster (1500MHz Itanium2)

SPECenvM2002 = 545

SPEC license #: HPG2116	Tested by: Hewlett-Packard Company	Test site: Richardson, Texas	Test date: Feb-2004	HW Avail:May-2004	SW Avail: May-2004

Benchmark	Reference Time	Runtime	Ratio
361.wrf_m	86400	158	545

Hardware

CPU:	Intel Itanium 2
CPU MHz:	1500
FPU:	Integrated
CPU(s) enabled:	76
CPU(s) orderable:	1 to 2 per node, up to 64 nodes
Primary Cache:	L1 Inst/Data: 16 KB, associativity = 4
Secondary Cache:	L2 Unified: 256 KB, associativity = 8
L3 Cache:	L3 Unified: 6144 KB, associativity = 24
Other Cache:	None
Memory:	12GB per node (12 x 1 GB DDR 266 DIMMS)
Disk Subsystem:	36GB 10k RPM SCSI system disk per node
Other Hardware:	See Notes section below.

Software

Parallel:	MPI
Processes-Threads:	76
MPI Processes:	76
OpenMP Threads:	N/A
Operating System:	HPUX11i-TCOE B.11.23
Compiler:	HP C/ANSI C Compiler B.11.23 HP aC++ Compiler B.11.23 HP Fortran 90 Compiler B.11.23 HP LIBF90 PHSS_29620 HP F90 Compiler PHSS_29663 HP aC++ Compiler PHSS_29655 HP C Compiler PHSS_29656 u2comp/be/plugin library PHSS_29657 HP MPI 02.00.01.00 B6060B
File System:	vxfs (system), vxfs through NFS (benchmark files)
System State:	Multi-user
Other Software:	NetCDF 3.5.0, HP MPI v2.00.01

Notes/Tuning Information

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CPU(s) enabled: 76 (two per node, 38 nodes)

Other Hardware:
  Computation Network:
    AB286A PCI-X 2-port Infiniband HCA for HPC
    AB346A 5m copper cable PCI-X Infiniband
    AB353A 7m copper cable PCI-X Infiniband
    AB291A PCI-X 12-port InfiniBand Copper Switch
    Topspin 96-port IB copper switch 99-00020-01 TS170
      98-00045-01 12-port leaf boards (8)
      98-00047-01 power supply
      98-00044-01 controller module


    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)
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Notes/Tuning Information (Continued)

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 Peak Flags:  MPI
   mpif90  +DD64 +noppu +Ofast   +Oinfo   +U77
   mpicc  -Ae +DD64 +Ofast -DNOUNDERSCORE -DSPEC_HPG_MPI2
   OPTIMIZE =
   ENV_SPEC_HPG_PARALLEL=MPI
   CPPFLAGS = -I. -C -P
   EXTRA_LIBS=   -minshared   -L${NETCDF}/lib/hpux64 -lnetcdf
   NETCDF   = /home/clpack/netcdf-3.5.0
   FPORTABILITY= -I${NETCDF}/include

 Alternate Source used for Peak:
     361.wrf_m: module_big_step_utilities_em.F90
       Improve data locality via loop interchange.
       Available as SPEC HPC2002 Source: env2002-src_hp-20040303.tar.gz

Kernel Paramters (/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 -ITAPI  -f appfile

appfile:
    -h  rx17  -np 2 -e MPI_FLAGS=y -e MPI_WORKDIR=$cwd  $command
          ...
    -h  rx54  -np 2 -e MPI_FLAGS=y -e MPI_WORKDIR=$cwd  $command

 LSF used to initiate batch job submissions.
 Appfile is generated from within the LSF run.


 Netcdf source obtained from
    http://www.unidata.ucar.edu/packages/netcdf/
 Netcdf built for HPUX 64 bit mode with:
    #!/bin/csh
    setenv CC '/opt/ansic/bin/cc +DD64'
    setenv CPPFLAGS "-D_HPUX_SOURCE -D_FILE_OFFSET_BITS=64 -Dextname"
    setenv FC '/opt/fortran90/bin/f90 +DD64'
    setenv FFLAGS -w
    setenv FLIBS -lU77
    setenv CXX '/opt/aCC/bin/aCC +DD64'
    ./configure
```