Hewlett-Packard Company
HP Integrity rx2660
(1.6GHz/18MB Dual-Core Intel Itanium 2)

SPECfp®_rate2006 = 48.1  
SPECfp_rate_base2006 = 46.4

CPU2006 license: 03  
Test date: Jan-2007  
Test sponsor: Hewlett-Packard Company  
Hardware Availability: Feb-2007

Tested by: Hewlett-Packard Company  
Software Availability: Feb-2007

410.bwaves 4  41.5  
416.gamess 4  36.4  
433.milc 4  24.3  
434.zeusmp 4  23.7  
435.gromacs 4  55.5  
436.cactusADM 4  62.6  
437.leslie3d 4  29.6  
444.namd 4  77.7  
447.dealII 4  34.7  
450.soplex 4  30.3  
453.povray 4  43.7  
454.calculix 4  55.8  
459.GemsFDTD 4  56.7  
465.tonto 4  22.4  
470.lbm 4  39.9  
481.wrf 4  41.5  
482.sphinx3 4  74.7

SPECfp_rate_base2006 = 46.4

Hardware
CPU Name: Dual-Core Intel Itanium 2 9040  
CPU Characteristics: 1.6GHz/18MB, 533MHz FSB  
CPU MHz: 1600  
FPU: Integrated  
CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip  
CPU(s) orderable: 1-2 chips  
Primary Cache: 16 KB I + 16 KB D on chip per core  
Secondary Cache: 1 MB I + 256 KB D on chip per core

Software
Operating System: HPUX11i-TCOE B.11.23.0609  
Compiler: HP C/aC++ Developer's Bundle C.11.23.12  
Auto Parallel: No  
File System: vxfs  
System State: Multi-user  
Base Pointers: 32-bit  
Peak Pointers: 32-bit  
Other Software: None

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Hewlett-Packard Company
(1.6GHz/18MB Dual-Core Intel Itanium 2)

CPU2006 license: 03
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company
L3 Cache: 9 MB I+D on chip per core
Memory: 8 GB (4x2GB DIMMs)
Disk Subsystem: 73GB 10K RPM SAS

Results Table

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</table>

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

Operating System Notes

The system had the September 2006 HP-UX 11i v2 Technical Computing Operating Environment (TCOE) and compilers installed, along with the following patches:

- PHSS_34858: linker + fdp cumulative patch
- PHSS_34853: Math Library Cumulative Patch
- PHSS_34854: Integrity Unwind Library
- PHSS_34855: HP C Compiler (A.06.12)
- PHSS_34856: aC++ Compiler (A.06.12)
- PHSS_34857: u2comp/be/plugin library patch
- PHSS_34395: FORTRAN I/O Library [libIO77]
- PHSS_34397: FORTRAN Intrinsics [libF90.B.11.23.17]
- PHSS_34399: Fortran Product Patch, v3.1 to v3.1.1
- PHKL_34020: Perfmon enhancements and Itanium Dual-Core

Continued on next page
Operating System Notes (Continued)

The following kernel tunables were set, in addition to the defaults set by the Technical Computing OE:

dbc_max_pct=20
dbc_min_pct=20
maxdsiz=3221225472
maxssiz=401604608

Base Compiler Invocation

C benchmarks:
/opt/ansic/bin/cc -Ae

C++ benchmarks:
/opt/aCC/bin/aCC -Aa

Fortran benchmarks:
/opt/fortran90/bin/f90

Benchmarks using both Fortran and C:
/opt/ansic/bin/cc -Ae /opt/fortran90/bin/f90

Base Portability Flags

453 povray: -DSPEC_CPU_NEED_INVHYP
454 calculix: -DSPEC_CPU_NOZMODIFIER
481 wrf: -DNOUNDERSCORE +noppu

Base Optimization Flags

C benchmarks:
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M -Wl,-N

C++ benchmarks:
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M -Wl,-N

Fortran benchmarks:
+Ofaster -Wl,-a,archive_shared -Wl,+pd,64M -Wl,+pi,64M -Wl,-N

Benchmarks using both Fortran and C:
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M -Wl,-N
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HP Integrity rx2660
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SPEC CFP2006 Result

SPECfp_rate2006 = 48.1
SPECfp_rate_base2006 = 46.4

CPU2006 license: 03
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Jan-2007
Hardware Availability: Feb-2007
Software Availability: Feb-2007

Peak Compiler Invocation

C benchmarks:
   /opt/ansic/bin/cc -Ae

C++ benchmarks:
   /opt/aCC/bin/aCC -Aa

Fortran benchmarks:
   /opt/fortran90/bin/f90

Benchmarks using both Fortran and C:
   /opt/ansic/bin/cc -Ae /opt/fortran90/bin/f90

Peak Portability Flags

453.povray: -DSPEC_CPU_NEED_INVHYP
454.calculix: -DSPEC_CPU_NOZMODIFIER
481.wrf: -DNOUNDERSCORE +noppu

Peak Optimization Flags

C benchmarks:
   433.milc: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster
              +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
              -Wl,+pi,64M +Onoparmsoverlap -Wl,-N
   470.lbm: basepeak = yes
   482.sphinx3: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster
                +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
                -Wl,+pi,64M +Onoparmsoverlap

C++ benchmarks:
   444.namd: basepeak = yes
   447.dealII: basepeak = yes
   450.soplex: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster
                +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
                -Wl,+pi,64M +Onoparmsoverlap -Wl,-N
   453.povray: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster
                +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
                -Wl,+pi,64M

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HP Integrity rx2660
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SPECfp_rate2006 = 48.1
SPECfp_rate_base2006 = 46.4

Peak Optimization Flags (Continued)

Fortran benchmarks:

410.bwaves: basepeak = yes
416.games: +Ofaster -Wl,-a,archive_shared -Wl,+pd,64M -Wl,+p1,64M
  +Odaprefetch=direct -Wl,-N
434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes
459.GemsFDTD: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster
  -Wl,-a,archive_shared -Wl,+pd,64M -Wl,+p1,64M
  +Odaprefetch=direct -Wl,-N
465.tonto: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster
  -Wl,-a,archive_shared -Wl,+pd,64M -Wl,+p1,64M
  +Odaprefetch=direct

Benchmarks using both Fortran and C:

435.gromacs: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster
  +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
  -Wl,+p1,64M +Onoparmsoverlap
436.cactusADM: basepeak = yes
454.calculix: basepeak = yes
481.wrf: basepeak = yes

The flags file that was used to format this result can be browsed at

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.07.xml

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.0.