Hewlett-Packard Company
HP Integrity rx2620 (1.6GHz/18MB Dual-Core Intel Itanium 2)

SPECfp\textsuperscript{®}\textsubscript{rate2006} = 39.6
SPECfp\textsubscript{rate_base2006} = 38.2

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

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

Hardware
CPU Name: Dual-Core Intel Itanium 2 9040
CPU Characteristics: 1.6GHz/18MB, 400MHz 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
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SPEC CFP2006 Result

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Test date: Sep-2006
Hardware Availability: Sep-2006
Software Availability: Sep-2006

L3 Cache: 9 MB I+D on chip per core
Other Cache: None
Memory: 24 GB (12x2GB DIMMs)
Disk Subsystem: 36GB 15K RPM SCSI
Other Hardware: None

Results Table

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<th>Ratio</th>
<th>Seconds</th>
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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

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Test date: Sep-2006
Hardware Availability: Sep-2006
Software Availability: Sep-2006

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(-hp_cc) +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
  -Wl,+pi,64M +Ofaster(-hp_f90) -Wl,-N
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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) +Ofast
 +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) +Ofast
 +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) +Ofast
 +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) +Ofast
 +otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M -Wl,+pi,64M
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Peak Optimization Flags (Continued)

Fortran benchmarks:

410.bwaves: basepeak = yes

416.games: +Ofaster -Wl,-a,archive_shared -Wl,+pd,64M -Wl,+p1,64M
+Odataprefetch=direct -Wl,-N

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: +Oprofile=collect:all(pass1) +Oprofile=use(pass2) +Ofaster
-Wl,-a,archive_shared -Wl,+pd,64M -Wl,+p1,64M
+Odataprefetch=direct -Wl,-N

465.tonto: +Oprofile=collect:all(pass1) +Oprofile=use(pass2) +Ofaster
-Wl,-a,archive_shared -Wl,+pd,64M -Wl,+p1,64M
+Odataprefetch=direct

Benchmarks using both Fortran and C:

435.gromacs: +Oprofile=collect:all(pass1) +Oprofile=use(pass2)
+Ofaster(-hp_cc) +Otype_safety=ansi -Wl,-a,archive_shared
-Wl,+pd,64M -Wl,+p1,64M +Onoparmsoverlap +Ofaster(-hp_f90)

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
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.06.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.06.xml