**Hewlett-Packard Company**

HP Integrity rx8640 (1.6GHz/24MB Dual-Core Intel Itanium 2)

<table>
<thead>
<tr>
<th>Spec Benchmark</th>
<th>SPECfp_rate2006 = 186</th>
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<tbody>
<tr>
<td>SPECfp_rate_base2006 = 179</td>
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**CPU2006 license:** 03

**Test sponsor:** Hewlett-Packard Company

**Tested by:** Hewlett-Packard Company

**Test date:** Sep-2006

**Hardware Availability:** Sep-2006

**Software Availability:** Sep-2006

<table>
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<tr>
<th>Benchmark</th>
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<tr>
<td>410.bwaves</td>
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</tr>
<tr>
<td>482.sphinx3</td>
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</tbody>
</table>

**Hardware**

- **CPU Name:** Dual-Core Intel Itanium 2 9050
- **CPU Characteristics:** 1.6GHz/24MB, 533MHz FSB
- **CPU MHz:** 1600
- **FPU:** Integrated
- **CPU(s) enabled:** 16 cores, 8 chips, 2 cores/chip
- **CPU(s) orderable:** 1-16 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

*Continued on next page*
Hewlett-Packard Company

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SPEC CFP2006 Result

SPECfp_rate2006 = 186
SPECfp_rate_base2006 = 179

CPU2006 license: 03
Test sponsor: Hewlett-Packard Company
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L3 Cache: 12 MB I+D on chip per core
Other Cache: None
Memory: 64 GB (32x2GB DIMMs)
Disk Subsystem: 73GB 15K RPM SCSI
Other Hardware: None

Results Table

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<thead>
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</tbody>
</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_34859  FORTRAN I/O Library [libIO77]
- PHSS_34397  FORTRAN Intrinsics [libF90 B.11.23.17]
- PHSS_34399  Portran Product Patch, v3.1 to v3.1.1
- PHKL_34020  Perfmon enhancements and Itanium Dual-Core

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SPECfp_rate_base2006 = 179

CPU2006 license: 03
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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

Platform Notes

The system was configured as a single partition with 2 cells and 4 processors (8 cores) per cell. Memory was configured as 50% local and 50% interleaved.

The following config file entry was used to bind processes to cells using the HP-UX "mpsched" utility:
submit = let "MYNUM=$SPECCOPYNUM" ; let "LDOM=$MYNUM/8" ; mpsched -l \$LDOM $command

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

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**SPEC CFP2006 Result**

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### Base Optimization Flags (Continued)

**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

### 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

-DSPEC_CPU_NEED_INVHYP
-DSPEC_CPU_NOZMODIFIER
-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

Continued on next page
Peak Optimization Flags (Continued)

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

Fortran benchmarks:

410.bwaves: basepeak = yes

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

465.tonto: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster
-Wl,-a,archive_shared -Wl,+pd,64M -Wl,+pi,64M +Odataprefetch=direct

Benchmarks using both Fortran and C:

435.gromacs: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2)
+Ofaster(-hp_cc) +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M -Wl,+pi,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
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You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.06.xml

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For other inquiries, please contact webmaster@spec.org.

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