Hewlett-Packard Company

HP Integrity rx2660 (1.66GHz/18MB Dual-Core Intel Itanium)

SPECfp®2006 = 20.4
SPECfp_base2006 = 19.9

Hardware

CPU Name: Dual-Core Intel Itanium 9140M
CPU Characteristics: 1.66GHz/18MB, 667MHz FSB
CPU MHz: 1666
FPU: Integrated
CPU(s) enabled: 2 cores, 1 chip, 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-MCOE B.11.31 (LR)
Compiler: HP C/aC++ Developer's Bundle C.11.31.03
HP Fortran90 Compiler B.11.31.03
Auto Parallel: No
File System: vxfs
System State: Multi-user
Base Pointers: 32-bit
Peak Pointers: 32-bit
Other Software: MicroQuill Smartheap 8.1

Test date: Sep-2007
Hardware Availability: Nov-2007
Software Availability: Sep-2007
Hewlett-Packard Company
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CPU2006 license: 03
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

L3 Cache: 9 MB I+D on chip per core
Other Cache: None
Memory: 16 GB (8x2GB DIMMs)
Disk Subsystem: 73GB 10K RPM SAS
Other Hardware: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>743</td>
<td>26.2</td>
</tr>
</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 2007 HP-UX 11i v3 Mission Critical Operating Environment (MCOE) and compilers installed, along with the following patches:

- PHSS_36349 linker + fdp cumulative patch
- PHSS_36351 Math Library Cumulative Patch
- PHSS_36352 Integrity Unwind Library
- PHSS_36350 aC++ Runtime (A.06.15)
- PHSS_36354 assembler patch

The following kernel tunables were set, in addition to the defaults set by the Mission Critical OE:

maxdsiz=3221225472
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SPECfp2006 = 20.4
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Operating System Notes (Continued)

maxssiz=401604608
maxrsssiz=41943040

Platform Notes

The "cpuconfig" EFI command was used prior to booting
to deconfigure processors.

Although two cores were enabled during testing,
the SPEC CPU2006 benchmarks used only one core.

The setboot command was used to disable hyperthreading.

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
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
### Hewlett-Packard Company

**HP Integrity rx2660 (1.66GHz/18MB Dual-Core Intel Itanium)**

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**CPU2006 license:** 03  
**Test date:** Sep-2007  
**Test sponsor:** Hewlett-Packard Company  
**Tested by:** Hewlett-Packard Company

#### Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:
- +Ofaster  
- +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M  
- -Wl,+pi,64M -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

- 453.povray: -DSPEC_CPU_NEED_INVHYP
- 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

Continued on next page
## Hewlett-Packard Company

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**Hardware Availability:** Nov-2007  
**Software Availability:** Sep-2007

### Peak Optimization Flags (Continued)

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

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,+pi,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 [http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.07.html](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.07.html)

You can also download the XML flags source by saving the following link:  
### SPEC CFP2006 Result

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- **Test date:** Sep-2007
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- **Software Availability:** Sep-2007

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

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