### SPEC® CFP2006 Result

**Hewlett-Packard Company**

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

<table>
<thead>
<tr>
<th>SPECfp&lt;sup&gt;®&lt;/sup&gt;2006</th>
<th>SPECfp&lt;sub&gt;base&lt;/sub&gt;2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.8</td>
<td>15.2</td>
</tr>
</tbody>
</table>

- **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

#### Hardware

- **CPU Name:** Dual-Core Intel Itanium 2 9040
- **CPU Characteristics:** 1.6GHz/18MB, 400MHz FSB
- **CPU MHz:** 1600
- **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-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

**HP Integrity rx2620** (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  
**Other Cache:** None  
**Memory:** 24 GB (12x2GB DIMMs)  
**Disk Subsystem:** 36GB 15K RPM SCSI  
**Other Hardware:** None

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>459</td>
<td>29.6</td>
<td>459</td>
<td>29.6</td>
<td>459</td>
<td>29.6</td>
<td>459</td>
<td>29.6</td>
<td>459</td>
<td>29.6</td>
</tr>
<tr>
<td>416.gamess</td>
<td>2237</td>
<td>8.75</td>
<td>2236</td>
<td>8.76</td>
<td>2236</td>
<td>8.76</td>
<td>2133</td>
<td>9.18</td>
<td>2135</td>
<td>9.17</td>
</tr>
<tr>
<td>433.milc</td>
<td>684</td>
<td>13.4</td>
<td>684</td>
<td>13.4</td>
<td>683</td>
<td>13.4</td>
<td>628</td>
<td>14.6</td>
<td>629</td>
<td>14.6</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>581</td>
<td>15.7</td>
<td>581</td>
<td>15.7</td>
<td>581</td>
<td>15.7</td>
<td>581</td>
<td>15.7</td>
<td>581</td>
<td>15.7</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>515</td>
<td>13.9</td>
<td>515</td>
<td>13.9</td>
<td>515</td>
<td>13.9</td>
<td>454</td>
<td>15.7</td>
<td>454</td>
<td>15.7</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>391</td>
<td>30.6</td>
<td>391</td>
<td>30.6</td>
<td>391</td>
<td>30.6</td>
<td>391</td>
<td>30.6</td>
<td>391</td>
<td>30.6</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>600</td>
<td>15.7</td>
<td>600</td>
<td>15.7</td>
<td>600</td>
<td>15.7</td>
<td>600</td>
<td>15.7</td>
<td>600</td>
<td>15.7</td>
</tr>
<tr>
<td>444.namd</td>
<td>304</td>
<td>26.4</td>
<td>304</td>
<td>26.4</td>
<td>304</td>
<td>26.4</td>
<td>304</td>
<td>26.4</td>
<td>304</td>
<td>26.4</td>
</tr>
<tr>
<td>447.dealII</td>
<td>561</td>
<td>20.4</td>
<td>561</td>
<td>20.4</td>
<td>561</td>
<td>20.4</td>
<td>561</td>
<td>20.4</td>
<td>561</td>
<td>20.4</td>
</tr>
<tr>
<td>450.soplex</td>
<td>991</td>
<td>8.42</td>
<td>991</td>
<td>8.41</td>
<td>992</td>
<td>8.41</td>
<td>858</td>
<td>9.72</td>
<td>859</td>
<td>9.71</td>
</tr>
<tr>
<td>453.povray</td>
<td>592</td>
<td>8.99</td>
<td>592</td>
<td>8.98</td>
<td>592</td>
<td>8.99</td>
<td>485</td>
<td>11.0</td>
<td>485</td>
<td>11.0</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>989</td>
<td>10.7</td>
<td>990</td>
<td>10.7</td>
<td>990</td>
<td>10.7</td>
<td>922</td>
<td>11.5</td>
<td>923</td>
<td>11.5</td>
</tr>
<tr>
<td>465.tonto</td>
<td>1027</td>
<td>9.59</td>
<td>1027</td>
<td>9.58</td>
<td>1027</td>
<td>9.58</td>
<td>982</td>
<td>10.0</td>
<td>983</td>
<td>10.0</td>
</tr>
<tr>
<td>470.lbm</td>
<td>683</td>
<td>20.1</td>
<td>683</td>
<td>20.1</td>
<td>683</td>
<td>20.1</td>
<td>683</td>
<td>20.1</td>
<td>682</td>
<td>20.1</td>
</tr>
<tr>
<td>481.wrf</td>
<td>771</td>
<td>14.5</td>
<td>771</td>
<td>14.5</td>
<td>771</td>
<td>14.5</td>
<td>771</td>
<td>14.5</td>
<td>771</td>
<td>14.5</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>1036</td>
<td>18.8</td>
<td>1036</td>
<td>18.8</td>
<td>1036</td>
<td>18.8</td>
<td>993</td>
<td>19.6</td>
<td>996</td>
<td>19.6</td>
</tr>
</tbody>
</table>

**SPECfp2006 = 15.8**  
**SPECfp_base2006 = 15.2**

### 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

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.
Hewlett-Packard Company
HP Integrity rx2620 (1.6GHz/18MB Dual-Core Intel Itanium 2)

SPECfp2006 = 15.8
SPECfp_base2006 = 15.2

<table>
<thead>
<tr>
<th>CPU2006 license: 03</th>
<th>Test date:</th>
<th>Sep-2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
<td>Hewlett-Packard Company</td>
<td>Hardware Availability: Sep-2006</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Hewlett-Packard Company</td>
<td>Software Availability: Sep-2006</td>
</tr>
</tbody>
</table>

Operating System Notes (Continued)

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

- \( \text{dbc\_max\_pct}=20 \)
- \( \text{dbc\_min\_pct}=20 \)
- \( \text{maxdsiz}=3221225472 \)
- \( \text{maxssiz}=401604608 \)

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.

Base Compiler Invocation

C benchmarks:

```bash
/opt/ansic/bin/cc -Ae
```

C++ benchmarks:

```bash
/opt/aCC/bin/aCC -Aa
```

Fortran benchmarks:

```bash
/opt/fortran90/bin/f90
```

Benchmarks using both Fortran and C:

```bash
/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: \(-DNOUNDERSCORE \text{+noppu} \)

Base Optimization Flags

C benchmarks:

```bash
+Ofaster +Otype\_safety=ansi -Wl,-a,archive\_shared -Wl,+pd,64M -Wl,+pi,64M -Wl,-N
```

C++ benchmarks:

```bash
+Ofaster +Otype\_safety=ansi -Wl,-a,archive\_shared -Wl,+pd,64M -Wl,+pi,64M -Wl,-N
```

Continued on next page
SPEC CFP2006 Result

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

SPECfp2006 = 15.8
SPECfp_base2006 = 15.2

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

Base Optimization Flags (Continued)

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

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

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](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.06.html)
### SPEC CFP2006 Result

**Hewlett-Packard Company**

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

<table>
<thead>
<tr>
<th>Spec Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp2006</td>
<td>15.8</td>
</tr>
<tr>
<td>SPECfp_base2006</td>
<td>15.2</td>
</tr>
</tbody>
</table>

#### Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2006 license</td>
<td>03</td>
</tr>
<tr>
<td>Test sponsor</td>
<td>Hewlett-Packard Company</td>
</tr>
<tr>
<td>Tested by</td>
<td>Hewlett-Packard Company</td>
</tr>
<tr>
<td>Test date</td>
<td>Sep-2006</td>
</tr>
<tr>
<td>Hardware Availability</td>
<td>Sep-2006</td>
</tr>
<tr>
<td>Software Availability</td>
<td>Sep-2006</td>
</tr>
</tbody>
</table>

You can also download the XML flags source by saving the following link:

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

---

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.

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

Tested with SPEC CPU2006 v1.0.


Originally published on 3 October 2006.