Hewlett-Packard Company

HP Integrity rx3600 (1.6GHz/18MB Dual-Core Intel Itanium 2)  

\[ \text{SPECfp}^\text{2006} = 17.7 \]
\[ \text{SPECfp}_\text{base}^{2006} = 16.9 \]

**Hardware**

<table>
<thead>
<tr>
<th>Program</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>9.14</td>
</tr>
<tr>
<td>416.gamess</td>
<td>8.73</td>
</tr>
<tr>
<td>433.milc</td>
<td>17.0</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>17.3</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>15.7</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>13.8</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>20.6</td>
</tr>
<tr>
<td>444.namd</td>
<td>26.4</td>
</tr>
<tr>
<td>447.dealII</td>
<td>20.7</td>
</tr>
<tr>
<td>450.soplex</td>
<td>10.1</td>
</tr>
<tr>
<td>453.povray</td>
<td>10.9</td>
</tr>
<tr>
<td>454.calculix</td>
<td>14.3</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>16.7</td>
</tr>
<tr>
<td>465.tonto</td>
<td>10.0</td>
</tr>
<tr>
<td>470.lbm</td>
<td>9.62</td>
</tr>
<tr>
<td>481.wrf</td>
<td>15.7</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>19.5</td>
</tr>
</tbody>
</table>

**Software**

<table>
<thead>
<tr>
<th>Program</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>9.14</td>
</tr>
<tr>
<td>416.gamess</td>
<td>8.73</td>
</tr>
<tr>
<td>433.milc</td>
<td>17.0</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>17.3</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>15.7</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>13.8</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>20.6</td>
</tr>
<tr>
<td>444.namd</td>
<td>26.4</td>
</tr>
<tr>
<td>447.dealII</td>
<td>20.7</td>
</tr>
<tr>
<td>450.soplex</td>
<td>10.1</td>
</tr>
<tr>
<td>453.povray</td>
<td>10.9</td>
</tr>
<tr>
<td>454.calculix</td>
<td>14.3</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>16.7</td>
</tr>
<tr>
<td>465.tonto</td>
<td>10.0</td>
</tr>
<tr>
<td>470.lbm</td>
<td>9.62</td>
</tr>
<tr>
<td>481.wrf</td>
<td>15.7</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>19.5</td>
</tr>
</tbody>
</table>

Component Details

<table>
<thead>
<tr>
<th>Program</th>
<th>Result</th>
</tr>
</thead>
</table>

**Hardware**

- **CPU Name:** Dual-Core Intel Itanium 2 9040
- **CPU Characteristics:** 1.6GHz/18MB, 533MHz 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
Hewlett-Packard Company
HP Integrity rx3600 (1.6GHz/18MB Dual-Core Intel Itanium 2)

**SPEC CFP2006 Result**

**SPECfp2006** = 17.7  
**SPECfp_base2006** = 16.9

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

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

**L3 Cache:** 9 MB I+D on chip per core  
**Other Cache:** None  
**Memory:** 16 GB (8x2GB DIMMs, AD124A 8-DIMM memory carrier)  
**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>
<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>352</td>
<td>38.6</td>
<td>351</td>
<td>38.7</td>
<td>351</td>
<td>38.7</td>
<td>352</td>
<td>38.6</td>
<td>351</td>
<td>38.7</td>
<td>351</td>
<td>38.7</td>
</tr>
<tr>
<td>416.gamess</td>
<td>2243</td>
<td>8.73</td>
<td>2244</td>
<td>8.73</td>
<td>2243</td>
<td>8.73</td>
<td>2143</td>
<td>9.14</td>
<td>2142</td>
<td>9.14</td>
<td>2143</td>
<td>9.14</td>
</tr>
<tr>
<td>433.milc</td>
<td>539</td>
<td>17.0</td>
<td>539</td>
<td>17.0</td>
<td>538</td>
<td>17.0</td>
<td>487</td>
<td>18.9</td>
<td>487</td>
<td>18.9</td>
<td>487</td>
<td>18.9</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>525</td>
<td>17.3</td>
<td>525</td>
<td>17.3</td>
<td>525</td>
<td>17.3</td>
<td>525</td>
<td>17.3</td>
<td>525</td>
<td>17.3</td>
<td>525</td>
<td>17.3</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>516</td>
<td>13.8</td>
<td>516</td>
<td>13.8</td>
<td>516</td>
<td>13.8</td>
<td>455</td>
<td>15.7</td>
<td>455</td>
<td>15.7</td>
<td>455</td>
<td>15.7</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>365</td>
<td>32.8</td>
<td>365</td>
<td>32.8</td>
<td>365</td>
<td>32.8</td>
<td>365</td>
<td>32.8</td>
<td>365</td>
<td>32.8</td>
<td>365</td>
<td>32.8</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>455</td>
<td>20.6</td>
<td>455</td>
<td>20.6</td>
<td>455</td>
<td>20.6</td>
<td>455</td>
<td>20.6</td>
<td>455</td>
<td>20.6</td>
<td>455</td>
<td>20.6</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>455</td>
<td>20.6</td>
<td>455</td>
<td>20.6</td>
<td>455</td>
<td>20.6</td>
</tr>
<tr>
<td>447.dealII</td>
<td>552</td>
<td>20.7</td>
<td>551</td>
<td>20.7</td>
<td>551</td>
<td>20.7</td>
<td>552</td>
<td>20.7</td>
<td>551</td>
<td>20.7</td>
<td>551</td>
<td>20.7</td>
</tr>
<tr>
<td>450.soplex</td>
<td>949</td>
<td>8.78</td>
<td>949</td>
<td>8.78</td>
<td>950</td>
<td>8.78</td>
<td>823</td>
<td>10.1</td>
<td>823</td>
<td>10.1</td>
<td>823</td>
<td>10.1</td>
</tr>
<tr>
<td>453.povray</td>
<td>593</td>
<td>8.97</td>
<td>593</td>
<td>8.96</td>
<td>593</td>
<td>8.97</td>
<td>486</td>
<td>10.9</td>
<td>486</td>
<td>10.9</td>
<td>486</td>
<td>10.9</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>695</td>
<td>15.3</td>
<td>695</td>
<td>15.3</td>
<td>696</td>
<td>15.3</td>
<td>636</td>
<td>16.7</td>
<td>636</td>
<td>16.7</td>
<td>637</td>
<td>16.7</td>
</tr>
<tr>
<td>470.fbm</td>
<td>439</td>
<td>31.3</td>
<td>439</td>
<td>31.3</td>
<td>439</td>
<td>31.3</td>
<td>439</td>
<td>31.3</td>
<td>439</td>
<td>31.3</td>
<td>439</td>
<td>31.3</td>
</tr>
<tr>
<td>481.wrf</td>
<td>713</td>
<td>15.7</td>
<td>713</td>
<td>15.7</td>
<td>713</td>
<td>15.7</td>
<td>713</td>
<td>15.7</td>
<td>713</td>
<td>15.7</td>
<td>713</td>
<td>15.7</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>1036</td>
<td>18.8</td>
<td>1038</td>
<td>18.8</td>
<td>1037</td>
<td>18.8</td>
<td>1007</td>
<td>19.5</td>
<td>1000</td>
<td>19.5</td>
<td>1001</td>
<td>19.5</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 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
SPEC CFP2006 Result

Hewlett-Packard Company

HP Integrity rx3600 (1.6GHz/18MB Dual-Core Intel Itanium 2)

|SPECfp2006 = | 17.7 |
|SPECfp_base2006 = | 16.9 |

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

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 "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:
/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

Continued on next page
Hewlett-Packard Company

HP Integrity rx3600 (1.6GHz/18MB Dual-Core Intel Itanium 2)

SPEC CFP2006 Result

SPECfp2006 = 17.7
SPECfp_base2006 = 16.9

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 +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
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
Hewlett-Packard Company
HP Integrity rx3600 (1.6GHz/18MB Dual-Core Intel Itanium 2)

SPECfp2006 = 17.7
SPECfp_base2006 = 16.9

CPU2006 license: 03
Test date: Sep-2006
Test sponsor: Hewlett-Packard Company
Hardware Availability: Nov-2006
Tested by: Hewlett-Packard Company
Software Availability: Sep-2006

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
+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.20090715.08.html
### SPEC CFP2006 Result

**Hewlett-Packard Company**

HP Integrity rx3600 (1.6GHz/18MB Dual-Core Intel Itanium 2)

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>17.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>16.9</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 03  
**Test sponsor:** Hewlett-Packard Company  
**Tested by:** Hewlett-Packard Company  
**Test date:** Sep-2006  
**Hardware Availability:** Nov-2006  
**Software Availability:** Sep-2006

You can also download the XML flags source by saving the following link:  
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.08.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 17 October 2006.