



# SPEC® CFP2006 Result

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## Hewlett-Packard Company

SPECfp®2006 = 15.9

HP Integrity rx3600  
(1.4GHz/12MB Dual-Core Intel Itanium 2)

SPECfp\_base2006 = 15.2

CPU2006 license: 03

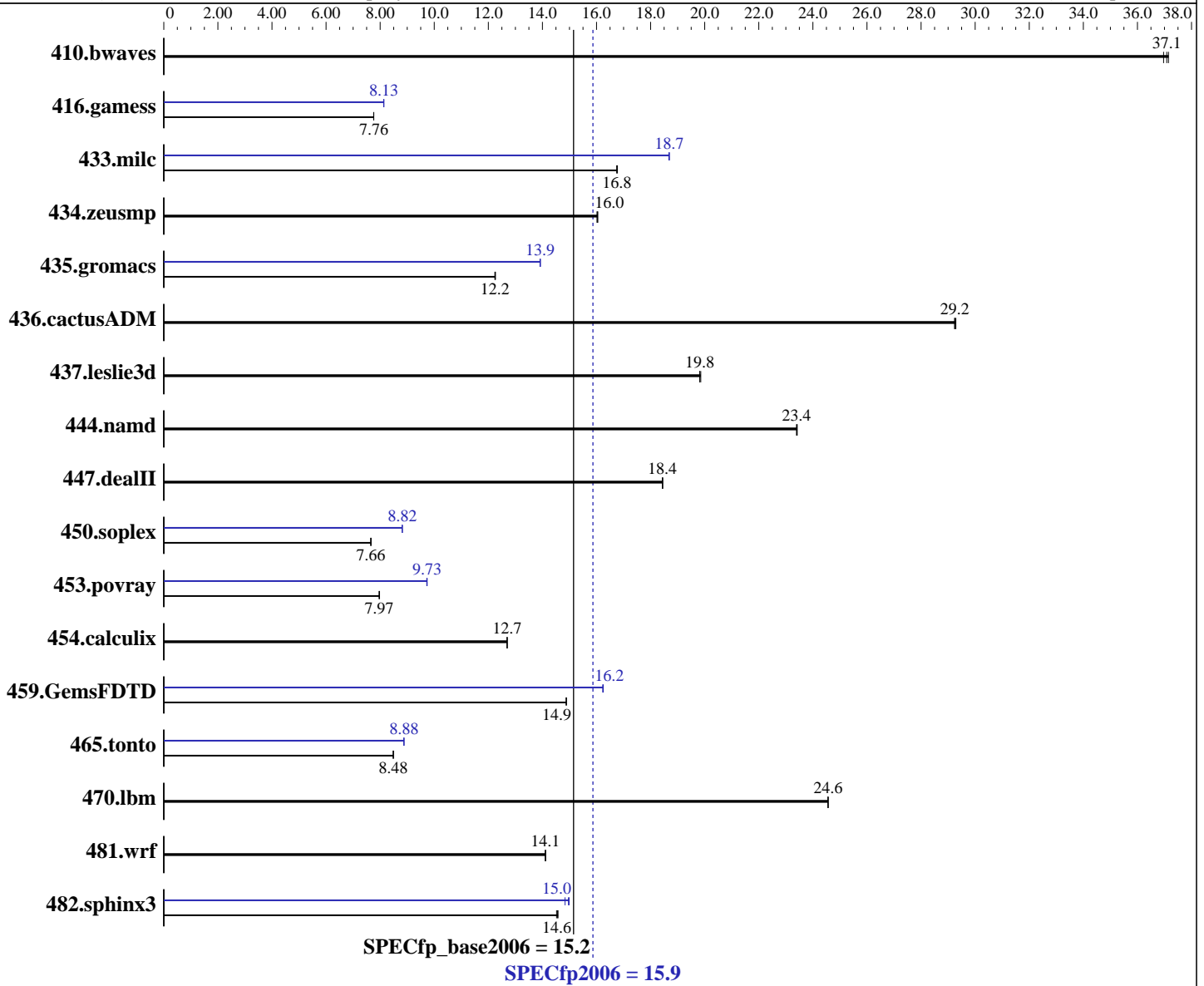
Test date: Jan-2007

Test sponsor: Hewlett-Packard Company

Hardware Availability: Sep-2006

Tested by: Hewlett-Packard Company

Software Availability: Sep-2006



### Hardware

CPU Name: Dual-Core Intel Itanium 2 9020  
 CPU Characteristics: 1.4GHz/12MB, 533MHz FSB  
 CPU MHz: 1400  
 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  
 HP Fortran90 Compiler B.11.23.32  
 Auto Parallel: No  
 File System: vxfs  
 System State: Multi-user  
 Base Pointers: 32-bit  
 Peak Pointers: 32-bit  
 Other Software: None

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L3 Cache: 6 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

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	368	37.0	366	37.1	<b>366</b>	<b>37.1</b>	368	37.0	366	37.1	<b>366</b>	<b>37.1</b>
416.gamess	<b>2522</b>	<b>7.76</b>	2523	7.76	2522	7.76	<b>2407</b>	<b>8.13</b>	2406	8.14	2409	8.13
433.milc	547	16.8	548	16.7	<b>548</b>	<b>16.8</b>	492	18.7	<b>491</b>	<b>18.7</b>	491	18.7
434.zeusmp	567	16.0	<b>568</b>	<b>16.0</b>	568	16.0	567	16.0	<b>568</b>	<b>16.0</b>	568	16.0
435.gromacs	582	12.3	<b>583</b>	<b>12.2</b>	583	12.2	513	13.9	513	13.9	<b>513</b>	<b>13.9</b>
436.cactusADM	408	29.3	<b>409</b>	<b>29.2</b>	409	29.2	408	29.3	<b>409</b>	<b>29.2</b>	409	29.2
437.leslie3d	473	19.9	474	19.8	<b>474</b>	<b>19.8</b>	473	19.9	474	19.8	<b>474</b>	<b>19.8</b>
444.namd	342	23.4	343	23.4	<b>343</b>	<b>23.4</b>	342	23.4	343	23.4	<b>343</b>	<b>23.4</b>
447.dealII	620	18.4	<b>620</b>	<b>18.4</b>	621	18.4	620	18.4	<b>620</b>	<b>18.4</b>	621	18.4
450.soplex	1089	7.66	<b>1089</b>	<b>7.66</b>	1090	7.65	946	8.82	<b>946</b>	<b>8.82</b>	947	8.81
453.povray	668	7.97	667	7.97	<b>668</b>	<b>7.97</b>	546	9.74	<b>547</b>	<b>9.73</b>	547	9.72
454.calculix	650	12.7	650	12.7	<b>650</b>	<b>12.7</b>	650	12.7	650	12.7	<b>650</b>	<b>12.7</b>
459.GemsFDTD	<b>713</b>	<b>14.9</b>	713	14.9	713	14.9	653	16.3	<b>653</b>	<b>16.2</b>	654	16.2
465.tonto	1160	8.48	1159	8.49	<b>1160</b>	<b>8.48</b>	<b>1108</b>	<b>8.88</b>	1108	8.88	1109	8.88
470.lbm	<b>559</b>	<b>24.6</b>	560	24.6	559	24.6	<b>559</b>	<b>24.6</b>	560	24.6	559	24.6
481.wrf	791	14.1	792	14.1	<b>792</b>	<b>14.1</b>	791	14.1	792	14.1	<b>792</b>	<b>14.1</b>
482.sphinx3	1337	14.6	<b>1339</b>	<b>14.6</b>	1342	14.5	<b>1303</b>	<b>15.0</b>	1300	15.0	1314	14.8

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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## 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
```

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## 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

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## Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: basepeak = yes

447.dealIII: 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.20090715.07.html](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.07.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.20090715.07.xml](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.07.xml)

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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