



# SPEC® CFP2006 Result

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## Hewlett-Packard Company

HP Integrity rx4640 (1.6GHz/24MB Dual-Core Intel Itanium 2)

SPECfp®2006 = 16.8

SPECfp\_base2006 = 16.0

CPU2006 license: 03

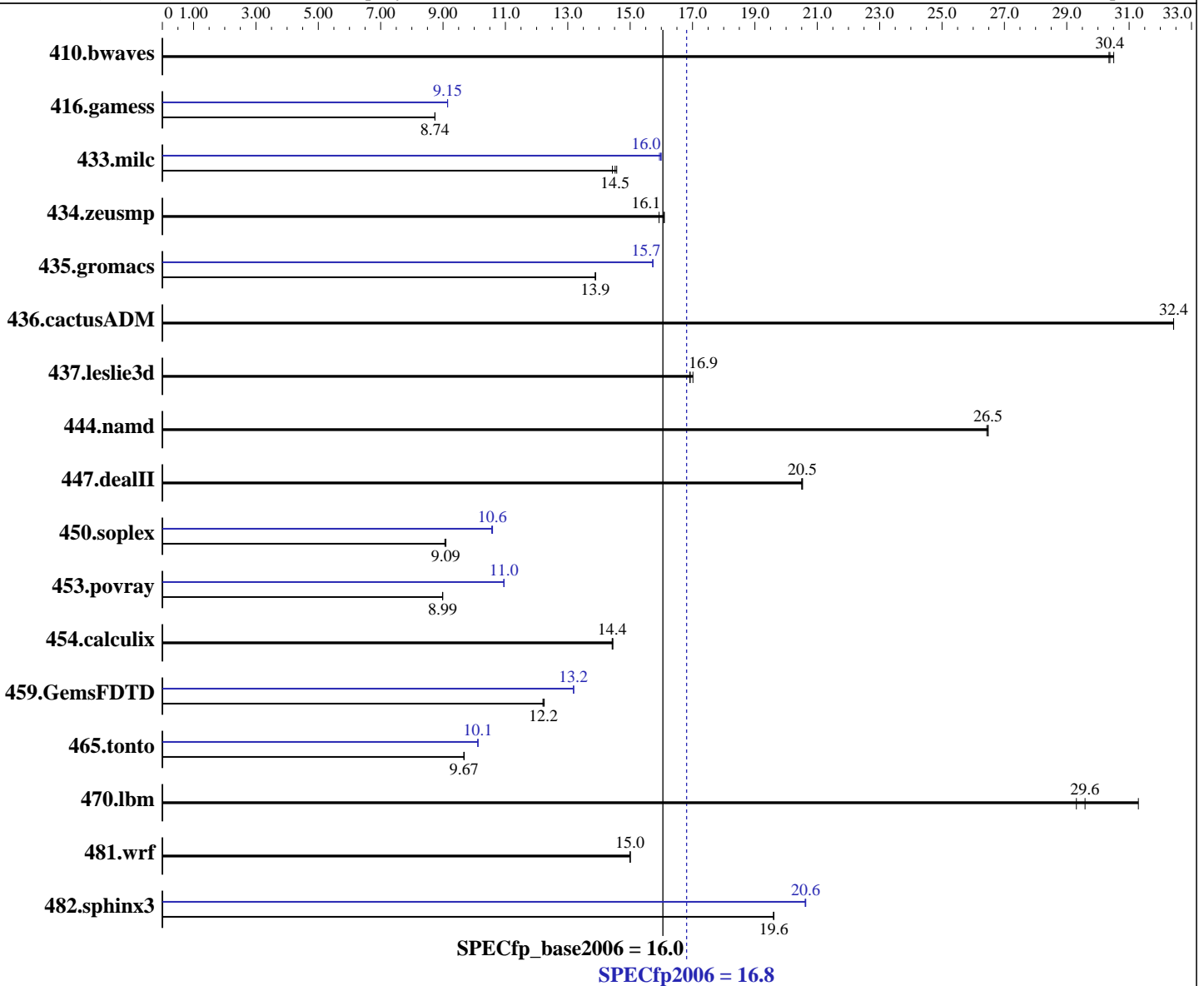
Test sponsor: Hewlett-Packard Company

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 9050  
 CPU Characteristics: 1.6GHz/24MB, 400MHz FSB  
 CPU MHz: 1600  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip  
 CPU(s) orderable: 1-4 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: 12 MB I+D on chip per core  
Other Cache: None  
Memory: 32 GB (16x2GB DIMMs)  
Disk Subsystem: 36GB 15K RPM SCSI  
Other Hardware: None

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	448	30.4	445	30.5	<b>447</b>	<b>30.4</b>	448	30.4	445	30.5	<b>447</b>	<b>30.4</b>
416.gamess	<b>2240</b>	<b>8.74</b>	2241	8.74	2239	8.74	2141	9.15	<b>2141</b>	<b>9.15</b>	2141	9.15
433.milc	636	14.4	<b>632</b>	<b>14.5</b>	630	14.6	<b>574</b>	<b>16.0</b>	576	15.9	574	16.0
434.zeusmp	565	16.1	<b>566</b>	<b>16.1</b>	571	15.9	565	16.1	<b>566</b>	<b>16.1</b>	571	15.9
435.gromacs	<b>514</b>	<b>13.9</b>	514	13.9	514	13.9	<b>454</b>	<b>15.7</b>	454	15.7	454	15.7
436.cactusADM	<b>369</b>	<b>32.4</b>	369	32.4	369	32.4	<b>369</b>	<b>32.4</b>	369	32.4	369	32.4
437.leslie3d	552	17.0	<b>555</b>	<b>16.9</b>	556	16.9	552	17.0	<b>555</b>	<b>16.9</b>	556	16.9
444.namd	303	26.4	<b>303</b>	<b>26.5</b>	303	26.5	303	26.4	<b>303</b>	<b>26.5</b>	303	26.5
447.dealII	558	20.5	557	20.5	<b>558</b>	<b>20.5</b>	558	20.5	557	20.5	<b>558</b>	<b>20.5</b>
450.soplex	<b>918</b>	<b>9.09</b>	917	9.09	921	9.06	<b>788</b>	<b>10.6</b>	790	10.6	788	10.6
453.povray	592	8.98	592	8.99	<b>592</b>	<b>8.99</b>	486	10.9	<b>486</b>	<b>11.0</b>	485	11.0
454.calculix	<b>572</b>	<b>14.4</b>	571	14.4	572	14.4	<b>572</b>	<b>14.4</b>	571	14.4	572	14.4
459.GemsFDTD	866	12.2	<b>868</b>	<b>12.2</b>	869	12.2	804	13.2	805	13.2	<b>805</b>	<b>13.2</b>
465.tonto	1018	9.67	1016	9.68	<b>1017</b>	<b>9.67</b>	<b>973</b>	<b>10.1</b>	973	10.1	972	10.1
470.lbm	439	31.3	<b>464</b>	<b>29.6</b>	469	29.3	439	31.3	<b>464</b>	<b>29.6</b>	469	29.3
481.wrf	<b>745</b>	<b>15.0</b>	744	15.0	745	15.0	<b>745</b>	<b>15.0</b>	744	15.0	745	15.0
482.sphinx3	<b>994</b>	<b>19.6</b>	994	19.6	995	19.6	946	20.6	945	20.6	<b>945</b>	<b>20.6</b>

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(-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

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## 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)



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

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

Tested with SPEC CPU2006 v1.0.  
Report generated on Tue Jul 22 10:06:06 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 3 October 2006.