



# SPEC<sup>®</sup> CFP2006 Result

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## Hewlett-Packard Company

SPECfp<sup>®</sup>\_rate2006 = 43.1

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

SPECfp\_rate\_base2006 = 41.7

CPU2006 license: 03

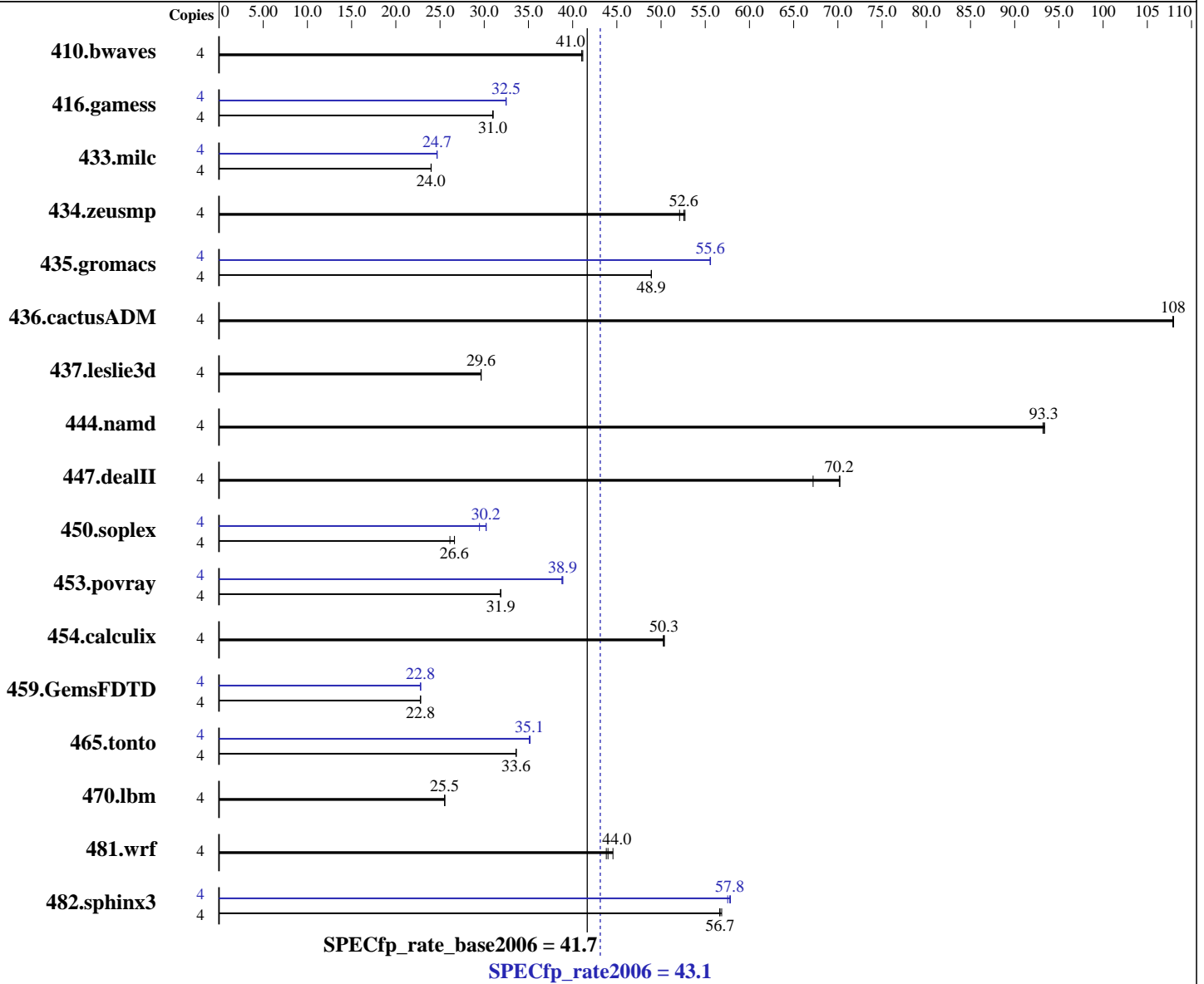
Test date: Jan-2007

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: 4 cores, 2 chips, 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						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	1321	41.1	1325	41.0	<b>1324</b>	<b>41.0</b>	4	1321	41.1	1325	41.0	<b>1324</b>	<b>41.0</b>
416.gamess	4	2530	31.0	<b>2528</b>	<b>31.0</b>	2526	31.0	4	<b>2412</b>	<b>32.5</b>	2412	32.5	2412	32.5
433.milc	4	1531	24.0	<b>1531</b>	<b>24.0</b>	1530	24.0	4	1489	24.7	<b>1489</b>	<b>24.7</b>	1489	24.7
434.zeusmp	4	691	52.7	699	52.1	<b>692</b>	<b>52.6</b>	4	691	52.7	699	52.1	<b>692</b>	<b>52.6</b>
435.gromacs	4	<b>584</b>	<b>48.9</b>	584	48.9	584	48.9	4	<b>514</b>	<b>55.6</b>	514	55.6	514	55.6
436.cactusADM	4	443	108	443	108	<b>443</b>	<b>108</b>	4	443	108	443	108	<b>443</b>	<b>108</b>
437.leslie3d	4	1269	29.6	1268	29.7	<b>1268</b>	<b>29.6</b>	4	1269	29.6	1268	29.7	<b>1268</b>	<b>29.6</b>
444.namd	4	<b>344</b>	<b>93.3</b>	344	93.4	344	93.2	4	<b>344</b>	<b>93.3</b>	344	93.4	344	93.2
447.dealII	4	652	70.2	<b>652</b>	<b>70.2</b>	681	67.2	4	652	70.2	<b>652</b>	<b>70.2</b>	681	67.2
450.soplex	4	1277	26.1	<b>1253</b>	<b>26.6</b>	1252	26.6	4	1132	29.5	<b>1105</b>	<b>30.2</b>	1103	30.2
453.povray	4	668	31.8	668	31.9	<b>668</b>	<b>31.9</b>	4	549	38.8	547	38.9	<b>547</b>	<b>38.9</b>
454.calculix	4	657	50.3	655	50.4	<b>656</b>	<b>50.3</b>	4	657	50.3	655	50.4	<b>656</b>	<b>50.3</b>
459.GemsFDTD	4	1861	22.8	1863	22.8	<b>1862</b>	<b>22.8</b>	4	1862	22.8	<b>1862</b>	<b>22.8</b>	1861	22.8
465.tonto	4	<b>1171</b>	<b>33.6</b>	1171	33.6	1171	33.6	4	1118	35.2	<b>1121</b>	<b>35.1</b>	1121	35.1
470.lbm	4	<b>2153</b>	<b>25.5</b>	2153	25.5	2153	25.5	4	<b>2153</b>	<b>25.5</b>	2153	25.5	2153	25.5
481.wrf	4	1020	43.8	1003	44.6	<b>1015</b>	<b>44.0</b>	4	1020	43.8	1003	44.6	<b>1015</b>	<b>44.0</b>
482.sphinx3	4	1377	56.6	1371	56.9	<b>1376</b>	<b>56.7</b>	4	1348	57.9	<b>1349</b>	<b>57.8</b>	1355	57.5

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
```

## 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
```

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
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## 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`

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`

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## Peak Optimization Flags (Continued)

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)

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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