



# SPEC® CFP2006 Result

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## Hewlett-Packard Company

SPECfp®\_rate2006 = 90.8

HP Integrity rx7640 (1.6GHz/18MB Dual-Core Intel Itanium 2)

SPECfp\_rate\_base2006 = 87.4

CPU2006 license: 03

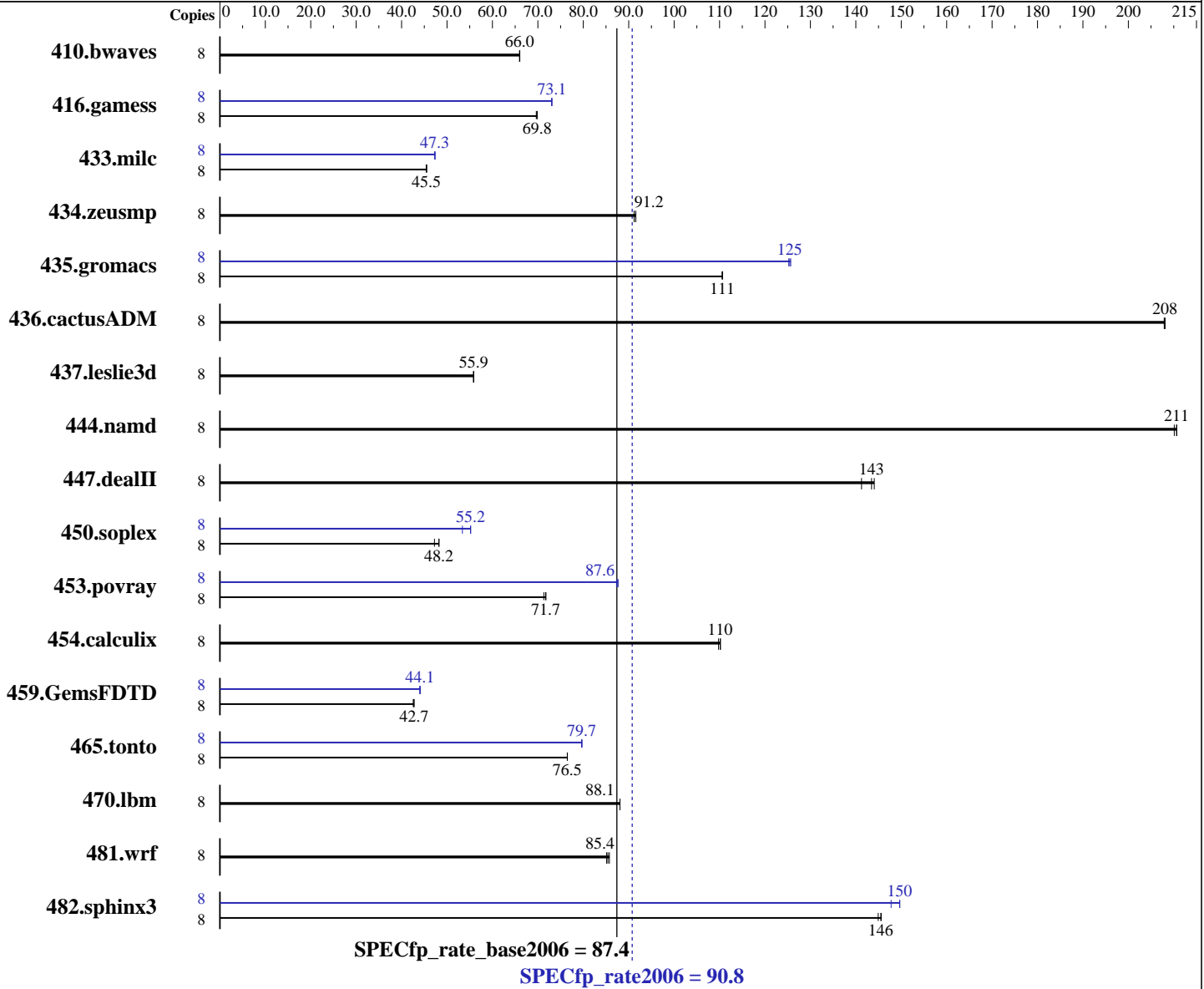
Test date: Sep-2006

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 9040  
 CPU Characteristics: 1.6GHz/18MB, 533MHz FSB  
 CPU MHz: 1600  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 4 chips, 2 cores/chip  
 CPU(s) orderable: 1-8 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: 9 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						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	<b>1648</b>	<b>66.0</b>	1647	66.0	1648	66.0	8	<b>1648</b>	<b>66.0</b>	1647	66.0	1648	66.0
416.gamess	8	2249	69.7	2243	69.8	<b>2244</b>	<b>69.8</b>	8	2145	73.0	2143	73.1	<b>2144</b>	<b>73.1</b>
433.milc	8	1617	45.4	<b>1615</b>	<b>45.5</b>	1613	45.5	8	<b>1553</b>	<b>47.3</b>	1550	47.4	1553	47.3
434.zeusmp	8	798	91.2	795	91.6	<b>798</b>	<b>91.2</b>	8	798	91.2	795	91.6	<b>798</b>	<b>91.2</b>
435.gromacs	8	517	111	<b>516</b>	<b>111</b>	516	111	8	456	125	<b>455</b>	<b>125</b>	455	126
436.cactusADM	8	460	208	<b>460</b>	<b>208</b>	459	208	8	460	208	<b>460</b>	<b>208</b>	459	208
437.leslie3d	8	1347	55.8	<b>1346</b>	<b>55.9</b>	1346	55.9	8	1347	55.8	<b>1346</b>	<b>55.9</b>	1346	55.9
444.namd	8	305	210	<b>305</b>	<b>211</b>	305	211	8	305	210	<b>305</b>	<b>211</b>	305	211
447.dealII	8	<b>638</b>	<b>143</b>	648	141	635	144	8	<b>638</b>	<b>143</b>	648	141	635	144
450.soplex	8	1412	47.2	<b>1384</b>	<b>48.2</b>	1383	48.2	8	1250	53.4	1208	55.2	<b>1209</b>	<b>55.2</b>
453.povray	8	597	71.3	<b>593</b>	<b>71.7</b>	593	71.8	8	487	87.3	<b>486</b>	<b>87.6</b>	486	87.6
454.calculix	8	601	110	<b>599</b>	<b>110</b>	599	110	8	601	110	<b>599</b>	<b>110</b>	599	110
459.GemsFDTD	8	<b>1986</b>	<b>42.7</b>	1986	42.7	1994	42.6	8	1928	44.0	1925	44.1	<b>1927</b>	<b>44.1</b>
465.tonto	8	<b>1029</b>	<b>76.5</b>	1029	76.5	1029	76.5	8	987	79.7	<b>988</b>	<b>79.7</b>	988	79.6
470.lbm	8	1248	88.1	<b>1248</b>	<b>88.1</b>	1248	88.1	8	1248	88.1	<b>1248</b>	<b>88.1</b>	1248	88.1
481.wrf	8	1050	85.1	1042	85.8	<b>1046</b>	<b>85.4</b>	8	1050	85.1	1042	85.8	<b>1046</b>	<b>85.4</b>
482.sphinx3	8	1076	145	1071	146	<b>1072</b>	<b>146</b>	8	1055	148	1042	150	<b>1042</b>	<b>150</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 system was configured as a single partition with 1 cell and 4 processors (8 cores) per cell.

The following config file entry was used to bind processes to cells using the HP-UX "mpsched" utility:

```
submit = let "MYNUM=$SPECCOPYNUM" ; let "LDOM=$MYNUM/8" ; mpsched -l \ $LDOM $command
```

## 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
```

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## Base Optimization Flags (Continued)

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(-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.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(-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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