SPEC® CFP2006 Result

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Hewlett-Packard Company

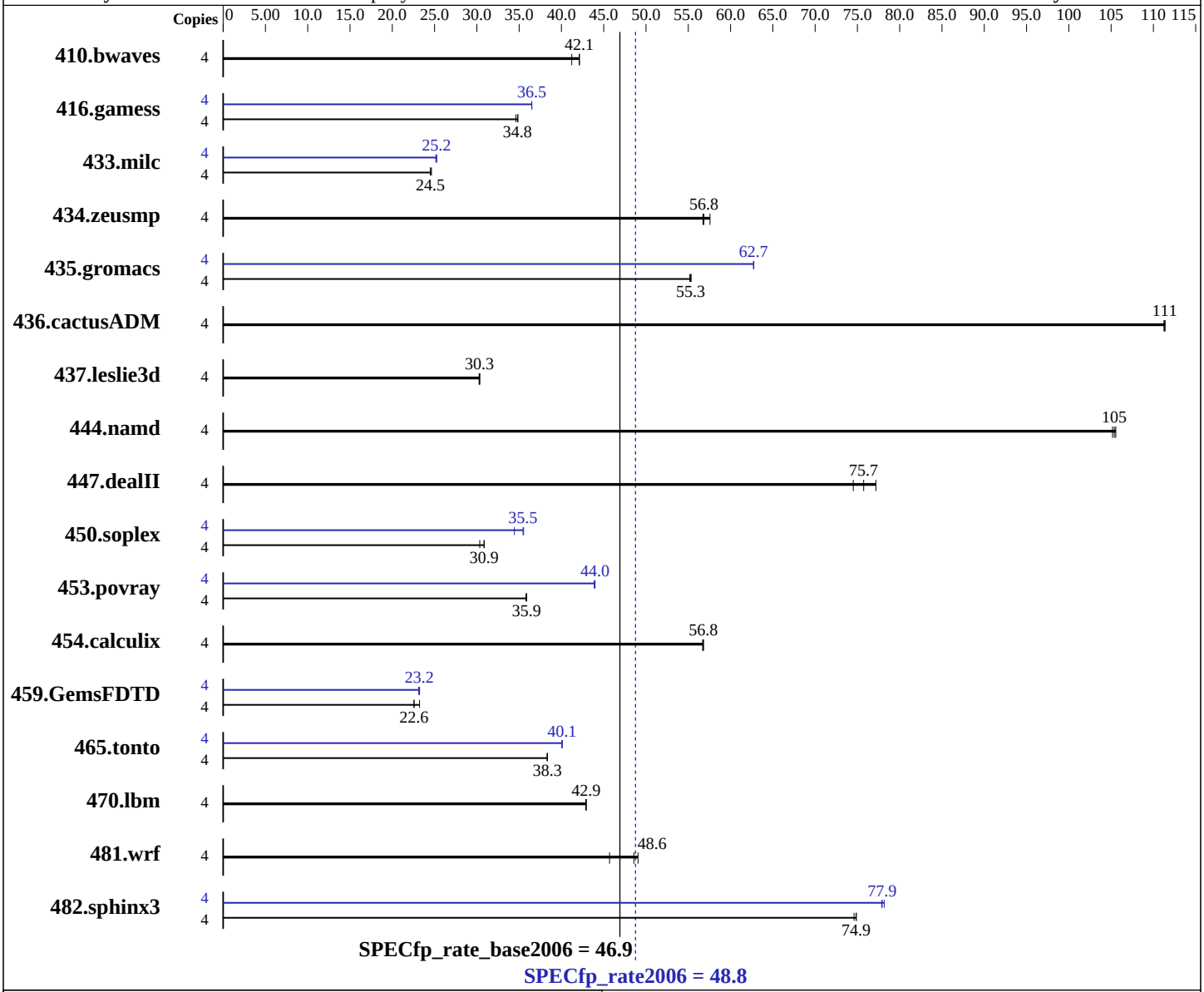
HP Integrity BL860c
(1.6GHz/18MB Dual-Core Intel Itanium 2)

SPECfp®_rate2006 = 48.8

SPECfp_rate_base2006 = 46.9

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

Test date: Jan-2007
Hardware Availability: Feb-2007
Software Availability: Feb-2007



Hardware

CPU Name:	Dual-Core Intel Itanium 2 9040
CPU Characteristics:	1.6GHz/18MB, 533MHz FSB
CPU MHz:	1600
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

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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: 12 GB (12x1GB DIMMs)
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	**1291**	**42.1**	1290	42.1	1319	41.2	4	**1291**	**42.1**	1290	42.1	1319	41.2
416.gamess	4	**2250**	**34.8**	2246	34.9	2264	34.6	4	2145	36.5	**2146**	**36.5**	2146	36.5
433.milc	4	**1498**	**24.5**	1498	24.5	1491	24.6	4	**1455**	**25.2**	1460	25.2	1454	25.2
434.zeusmp	4	642	56.7	**640**	**56.8**	632	57.6	4	642	56.7	**640**	**56.8**	632	57.6
435.gromacs	4	518	55.2	**517**	**55.3**	516	55.3	4	455	62.7	**455**	**62.7**	455	62.8
436.cactusADM	4	430	111	429	111	**429**	**111**	4	430	111	429	111	**429**	**111**
437.leslie3d	4	1239	30.4	**1241**	**30.3**	1242	30.3	4	1239	30.4	**1241**	**30.3**	1242	30.3
444.namd	4	**304**	**105**	305	105	304	106	4	**304**	**105**	305	105	304	106
447.dealII	4	**604**	**75.7**	614	74.5	593	77.2	4	**604**	**75.7**	614	74.5	593	77.2
450.soplex	4	1099	30.3	1081	30.9	**1081**	**30.9**	4	969	34.4	939	35.5	**941**	**35.5**
453.povray	4	594	35.8	593	35.9	**593**	**35.9**	4	485	43.9	484	44.0	**484**	**44.0**
454.calculix	4	581	56.8	582	56.7	**581**	**56.8**	4	581	56.8	582	56.7	**581**	**56.8**
459.GemsFDTD	4	1827	23.2	**1880**	**22.6**	1881	22.6	4	1827	23.2	1836	23.1	**1829**	**23.2**
465.tonto	4	1027	38.3	1027	38.3	**1027**	**38.3**	4	982	40.1	**982**	**40.1**	983	40.0
470.lbm	4	1280	42.9	**1281**	**42.9**	1281	42.9	4	1280	42.9	**1281**	**42.9**	1281	42.9
481.wrf	4	978	45.7	911	49.1	**920**	**48.6**	4	978	45.7	911	49.1	**920**	**48.6**
482.sphinx3	4	1045	74.6	**1041**	**74.9**	1041	74.9	4	**1000**	**77.9**	1001	77.9	997	78.2

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

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
-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

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

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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

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.07.xml

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For other inquiries, please contact webmaster@spec.org.

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