SPEC® CFP2006 Result

Hewlett-Packard Company

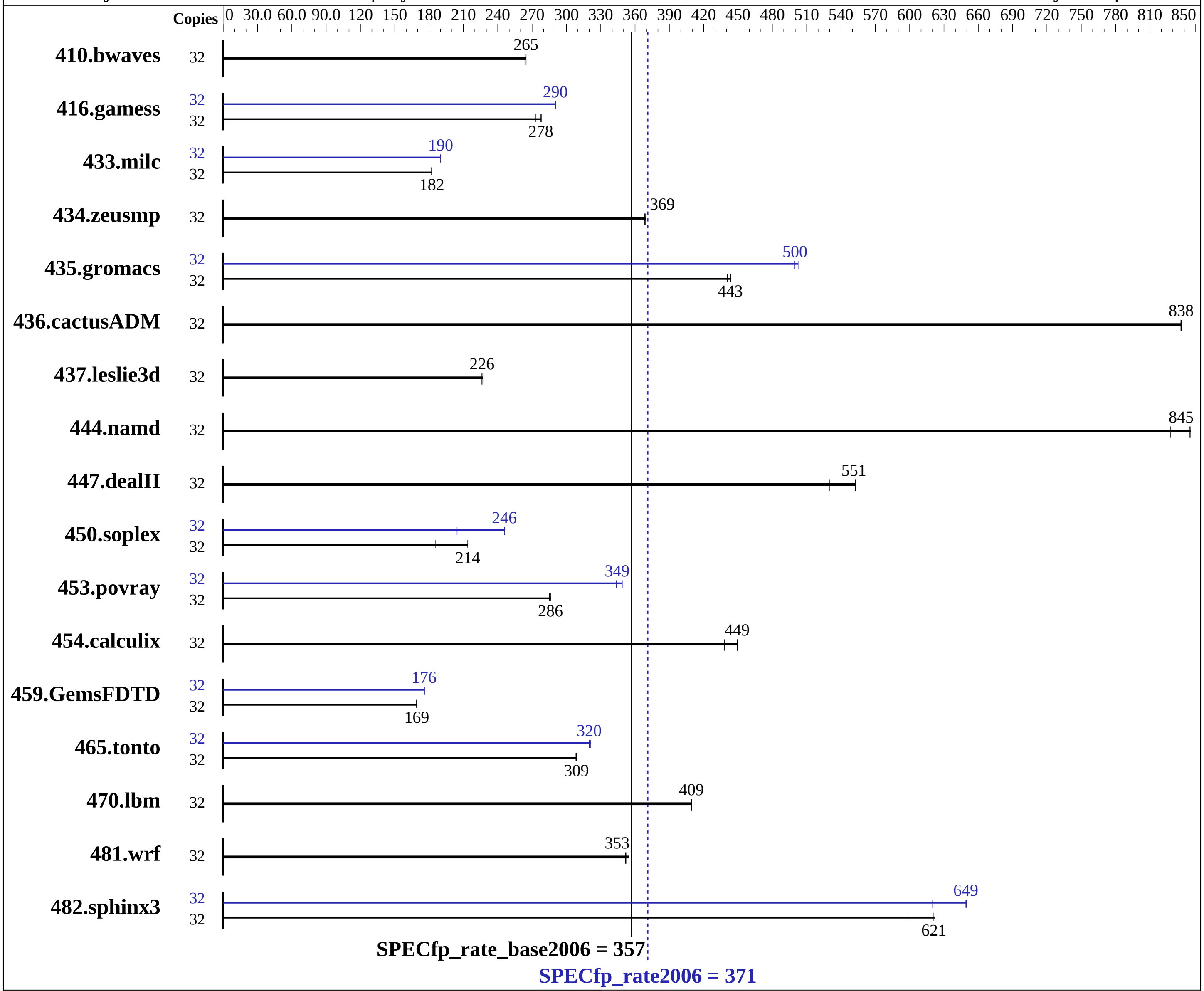
HP Integrity rx8640 (1.6GHz/24MB Dual-Core Intel Itanium 2)

SPECfp®_rate2006 = 371

SPECfp_rate_base2006 = 357

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, 533MHz FSB
CPU MHz:	1600
FPU:	Integrated
CPU(s) enabled:	32 cores, 16 chips, 2 cores/chip
CPU(s) orderable:	1-16 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: 12 MB I+D on chip per core
Other Cache: None
Memory: 128 GB (64x2GB DIMMs)
Disk Subsystem: 73GB 15K RPM SCSI
Other Hardware: None

Results Table

	Base							Peak						
Benchmark	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	32	1649	264	**1643**	**265**	1642	265	32	1649	264	**1643**	**265**	1642	265
416.gamess	32	2292	273	2253	278	**2257**	**278**	32	**2158**	**290**	2160	290	2156	291
433.milc	32	1613	182	**1610**	**182**	1609	183	32	1544	190	**1544**	**190**	1547	190
434.zeusmp	32	**790**	**369**	789	369	791	368	32	**790**	**369**	789	369	791	368
435.gromacs	32	519	441	515	444	**515**	**443**	32	**457**	**500**	458	499	455	503
436.cactusADM	32	**457**	**838**	456	838	457	836	32	**457**	**838**	456	838	457	836
437.leslie3d	32	**1329**	**226**	1330	226	1325	227	32	**1329**	**226**	1330	226	1325	227
444.namd	32	310	828	**304**	**845**	303	846	32	310	828	**304**	**845**	303	846
447.dealII	32	**664**	**551**	690	530	663	553	32	**664**	**551**	690	530	663	553
450.soplex	32	1436	186	**1248**	**214**	1248	214	32	1305	204	1085	246	**1086**	**246**
453.povray	32	597	285	594	287	**595**	**286**	32	495	344	488	349	**488**	**349**
454.calculix	32	603	438	**588**	**449**	587	449	32	603	438	**588**	**449**	587	449
459.GemsFDTD	32	2003	169	**2006**	**169**	2009	169	32	**1933**	**176**	1934	176	1929	176
465.tonto	32	1021	308	**1020**	**309**	1019	309	32	980	321	**984**	**320**	984	320
470.lbm	32	1075	409	**1074**	**409**	1073	410	32	1075	409	**1074**	**409**	1073	410
481.wrf	32	**1014**	**353**	1017	352	1007	355	32	**1014**	**353**	1017	352	1007	355
482.sphinx3	32	1039	600	**1004**	**621**	1002	622	32	1007	620	960	650	**961**	**649**

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 4 cells and
4 processors (8 cores) per cell.  Memory was configured as 50% local
and 50% interleaved.

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.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`

You can also download the XML flags source by saving the following link:

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

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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