SPEC® CFP2006 Result
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Hewlett-Packard Company

HP Integrity rx2620 (1.6GHz/18MB Dual-Core Intel Itanium 2)

$SPECfp^{®}\_rate2006 = 39.6$

$SPECfp\_rate\_base2006 = 38.2$

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

Benchmark	Copies	Result
410.bwaves	4	29.1
416.gamess	4 / 4	36.5 / 34.7
433.milc	4 / 4	17.1 / 16.9
434.zeusmp	4	44.7
435.gromacs	4 / 4	62.8 / 55.4
436.cactusADM	4	64.3
437.leslie3d	4	19.6
444.namd	4	105
447.dealII	4	74.1
450.soplex	4 / 4	29.7 / 26.5
453.povray	4 / 4	43.8 / 35.9
454.calculix	4	56.4
459.GemsFDTD	4 / 4	14.3 / 14.2
465.tonto	4 / 4	39.9 / 38.2
470.lbm	4	24.4
481.wrf	4	36.6
482.sphinx3	4 / 4	76.9 / 74.5

SPECfp_rate_base2006 = 38.2

SPECfp_rate2006 = 39.6

Hardware

CPU Name:	Dual-Core Intel Itanium 2 9040
CPU Characteristics:	1.6GHz/18MB, 400MHz 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

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

Continued on next page

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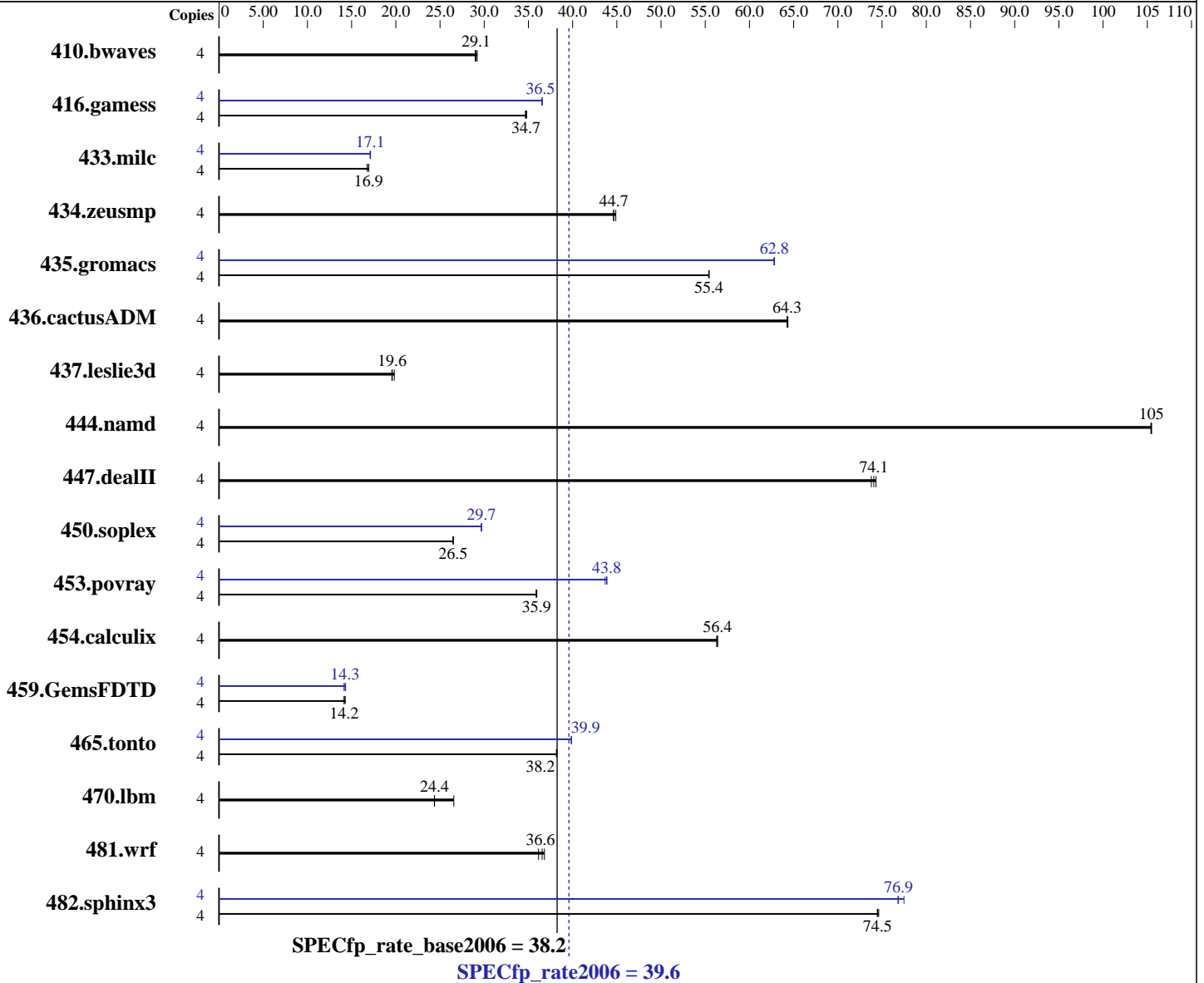|	
CPU2006 license: 03	**Test date:** Sep-2006
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L3 Cache:	9 MB I+D on chip per core
Other Cache:	None
Memory:	24 GB (12x2GB DIMMs)
Disk Subsystem:	36GB 15K RPM SCSI
Other Hardware:	None

Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	**1870**	**29.1**	1876	29.0	1861	29.2	4	**1870**	**29.1**	1876	29.0	1861	29.2
416.gamess	4	2250	34.8	2260	34.7	**2255**	**34.7**	4	2144	36.5	**2143**	**36.5**	2142	36.6
433.milc	4	**2172**	**16.9**	2191	16.8	2167	16.9	4	**2144**	**17.1**	2150	17.1	2142	17.1
434.zeusmp	4	811	44.9	**815**	**44.7**	816	44.6	4	811	44.9	**815**	**44.7**	816	44.6
435.gromacs	4	**515**	**55.4**	515	55.4	516	55.4	4	455	62.8	**455**	**62.8**	454	62.8
436.cactusADM	4	**744**	**64.3**	743	64.4	744	64.3	4	**744**	**64.3**	743	64.4	744	64.3
437.leslie3d	4	1923	19.6	1896	19.8	**1918**	**19.6**	4	1923	19.6	1896	19.8	**1918**	**19.6**
444.namd	4	304	105	**304**	**105**	304	105	4	304	105	**304**	**105**	304	105
447.dealII	4	620	73.8	616	74.3	**618**	**74.1**	4	620	73.8	616	74.3	**618**	**74.1**
450.soplex	4	1261	26.5	**1259**	**26.5**	1259	26.5	4	**1124**	**29.7**	1125	29.7	1123	29.7
453.povray	4	593	35.9	592	35.9	**592**	**35.9**	4	487	43.7	485	43.9	**485**	**43.8**
454.calculix	4	586	56.3	**585**	**56.4**	585	56.4	4	586	56.3	**585**	**56.4**	585	56.4
459.GemsFDTD	4	2998	14.2	2971	14.3	**2997**	**14.2**	4	**2978**	**14.3**	2962	14.3	3002	14.1
465.tonto	4	1031	38.2	1030	38.2	**1031**	**38.2**	4	**988**	**39.9**	988	39.8	987	39.9
470.lbm	4	2255	24.4	2069	26.6	**2254**	**24.4**	4	2255	24.4	2069	26.6	**2254**	**24.4**
481.wrf	4	**1222**	**36.6**	1214	36.8	1236	36.1	4	**1222**	**36.6**	1214	36.8	1236	36.1
482.sphinx3	4	**1046**	**74.5**	1045	74.6	1047	74.5	4	**1014**	**76.9**	1015	76.8	1006	77.5

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(-hp_cc) +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M +Ofaster(-hp_f90) -Wl,-N
```

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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.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(-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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