SPEC® CFP2006 Result
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Hewlett-Packard Company

ProLiant DL360 G5
(3.16 GHz, Intel Xeon processor X5460)

$SPECfp^{®}_rate2006 = $ 78.5

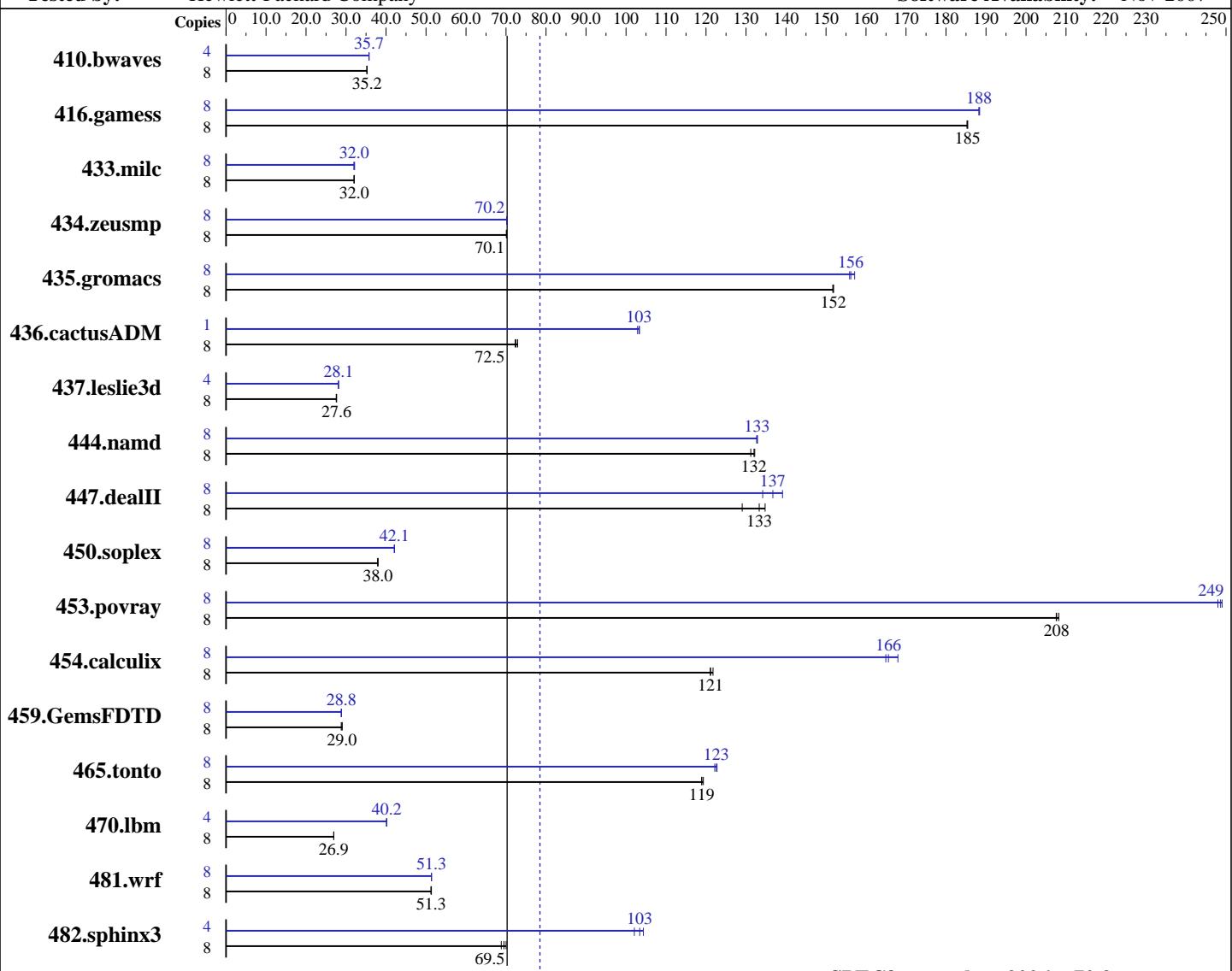$SPECfp_rate_base2006 = $ 70.3

CPU2006 license: 3

Test sponsor: Hewlett-Packard Company

Tested by: Hewlett-Packard Company

Test date: Oct-2007

Hardware Availability: Nov-2007

Software Availability: Nov-2007

Graph data — Copies / results:

- **410.bwaves**: 4 → 35.7; 8 → 35.2
- **416.gamess**: 8 → 188; 8 → 185
- **433.milc**: 8 → 32.0; 8 → 32.0
- **434.zeusmp**: 8 → 70.2; 8 → 70.1
- **435.gromacs**: 8 → 156; 8 → 152
- **436.cactusADM**: 1 → 103; 8 → 72.5
- **437.leslie3d**: 4 → 28.1; 8 → 27.6
- **444.namd**: 8 → 133; 8 → 132
- **447.dealII**: 8 → 137; 8 → 133
- **450.soplex**: 8 → 42.1; 8 → 38.0
- **453.povray**: 8 → 249; 8 → 208
- **454.calculix**: 8 → 166; 8 → 121
- **459.GemsFDTD**: 8 → 28.8; 8 → 29.0
- **465.tonto**: 8 → 123; 8 → 119
- **470.lbm**: 4 → 40.2; 8 → 26.9
- **481.wrf**: 8 → 51.3; 8 → 51.3
- **482.sphinx3**: 4 → 103; 8 → 69.5

SPECfp_rate_base2006 = 70.3

SPECfp_rate2006 = 78.5

Hardware

CPU Name:	Intel Xeon X5460
CPU Characteristics:	3.16 GHz, 2x6 MB L2 shared, 1333 MHz system bus
CPU MHz:	3166
FPU:	Integrated
CPU(s) enabled:	8 cores, 2 chips, 4 cores/chip
CPU(s) orderable:	1 or 2 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	12 MB I+D on chip per chip, 6 MB shared / 2 cores

Continued on next page

Software

Operating System:	SuSE Linux Enterprise Server 10 (x86_64) SP1 kernel 2.6.16.46-0.12-smp
Compiler:	Intel C++ and Fortran Compiler for Linux32 and Linux64 version 10.1 Build 20070725
Auto Parallel:	Yes
File System:	ext2
System State:	Multi-user run level 3
Base Pointers:	64-bit

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L3 Cache:	None
Other Cache:	None
Memory:	16 GB (8x2 GB PC2-5300F CL5)
Disk Subsystem:	1x72 GB 15 K SAS
Other Hardware:	None
Peak Pointers:	32/64-bit
Other Software:	binutils-2.17.50

Results Table

	Base						Peak						
Benchmark	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	3084	35.3	**3085**	**35.2**	3088	35.2	4	1520	35.8	**1521**	**35.7**	1521	35.7
416.gamess	8	845	185	**845**	**185**	846	185	8	831	188	832	188	**832**	**188**
433.milc	8	2291	32.1	**2292**	**32.0**	2296	32.0	8	2297	32.0	**2292**	**32.0**	2285	32.1
434.zeusmp	8	1038	70.1	**1038**	**70.1**	1039	70.1	8	**1038**	**70.2**	1038	70.2	1037	70.2
435.gromacs	8	**376**	**152**	376	152	377	152	8	363	157	**366**	**156**	366	156
436.cactusADM	8	1311	72.9	**1318**	**72.5**	1322	72.3	1	116	103	**116**	**103**	116	103
437.leslie3d	8	2730	27.5	**2722**	**27.6**	2721	27.6	4	**1338**	**28.1**	1336	28.1	1339	28.1
444.namd	8	489	131	**486**	**132**	485	132	8	**483**	**133**	484	133	483	133
447.dealII	8	**687**	**133**	709	129	679	135	8	682	134	658	139	**669**	**137**
450.soplex	8	1760	37.9	1757	38.0	**1757**	**38.0**	8	**1585**	**42.1**	1584	42.1	1586	42.1
453.povray	8	**205**	**208**	204	208	205	208	8	172	248	**171**	**249**	171	249
454.calculix	8	542	122	**545**	**121**	545	121	8	393	168	**399**	**166**	400	165
459.GemsFDTD	8	2924	29.0	**2927**	**29.0**	2947	28.8	8	**2943**	**28.8**	2947	28.8	2942	28.9
465.tonto	8	660	119	662	119	**662**	**119**	8	**642**	**123**	641	123	644	122
470.lbm	8	4081	26.9	4080	26.9	**4080**	**26.9**	4	1368	40.2	1370	40.1	**1369**	**40.2**
481.wrf	8	1745	51.2	**1741**	**51.3**	1740	51.3	8	1739	51.4	1741	51.3	**1740**	**51.3**
482.sphinx3	8	2266	68.8	**2244**	**69.5**	2227	70.0	4	764	102	747	104	**754**	**103**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
'/usr/bin/taskset' used to bind processes to CPUs
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to physical,0
KMP_STACKSIZE set to 200M
```

Platform Notes

```
BIOS configuration:
  Power Regulator set to Static High Performance Mode
  Adjacent Sector Prefetch Disabled
  Hardware Prefetcher Disabled
```

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Base Compiler Invocation

C benchmarks:
    icc

C++ benchmarks:
    icpc

Fortran benchmarks:
    ifort

Benchmarks using both Fortran and C:
    icc ifort

Base Portability Flags

          410.bwaves: -DSPEC_CPU_LP64
          416.gamess: -DSPEC_CPU_LP64
            433.milc: -DSPEC_CPU_LP64
          434.zeusmp: -DSPEC_CPU_LP64
         435.gromacs: -DSPEC_CPU_LP64 -nofor_main
        436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
         437.leslie3d: -DSPEC_CPU_LP64
            444.namd: -DSPEC_CPU_LP64
           447.dealII: -DSPEC_CPU_LP64
           450.soplex: -DSPEC_CPU_LP64
          453.povray: -DSPEC_CPU_LP64
         454.calculix: -DSPEC_CPU_LP64 -nofor_main
         459.GemsFDTD: -DSPEC_CPU_LP64
           465.tonto: -DSPEC_CPU_LP64
            470.lbm: -DSPEC_CPU_LP64
             481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
          482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
    -fast

C++ benchmarks:
    -fast

Fortran benchmarks:
    -fast

Benchmarks using both Fortran and C:
    -fast

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Peak Compiler Invocation

C benchmarks (except as noted below):
```
/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/bin/icc
-L/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/lib
-I/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/include
```

    433.milc: `icc`

C++ benchmarks (except as noted below):
```
icpc
```

    450.soplex: `/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/bin/icpc`
```
-L/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/lib
-I/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/include
```

Fortran benchmarks (except as noted below):
```
ifort
```

    437.leslie3d: `/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/bin/ifort`
```
-L/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/lib
-I/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/include
```

Benchmarks using both Fortran and C:
```
icc ifort
```

Peak Portability Flags

    410.bwaves: `-DSPEC_CPU_LP64`
    416.gamess: `-DSPEC_CPU_LP64`
    433.milc: `-DSPEC_CPU_LP64`
    434.zeusmp: `-DSPEC_CPU_LP64`
    435.gromacs: `-DSPEC_CPU_LP64 -nofor_main`
    436.cactusADM: `-DSPEC_CPU_LP64 -nofor_main`
    444.namd: `-DSPEC_CPU_LP64`
    447.dealII: `-DSPEC_CPU_LP64`
    453.povray: `-DSPEC_CPU_LP64`
    454.calculix: `-DSPEC_CPU_LP64 -nofor_main`
    459.GemsFDTD: `-DSPEC_CPU_LP64`
    465.tonto: `-DSPEC_CPU_LP64`
    481.wrf: `-DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX`

Peak Optimization Flags

C benchmarks:

    433.milc: `-prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias`
        `-auto-ilp32`

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Peak Optimization Flags (Continued)

470.lbm: `-prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2`
`-scalar-rep- -prefetch -opt-malloc-options=3`

482.sphinx3: `-fast -unroll2`

C++ benchmarks:

444.namd: `-prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias`
`-auto-ilp32`

447.dealII: `-prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2`
`-ansi-alias -scalar-rep-`

450.soplex: `-prof-gen(pass 1) -prof-use(pass 2) -fast`
`-opt-malloc-options=3`

453.povray: `-prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4`
`-ansi-alias`

Fortran benchmarks:

410.bwaves: `-fast -prefetch`

416.gamess: `-prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0`
`-ansi-alias -scalar-rep-`

434.zeusmp: `-prof-gen(pass 1) -prof-use(pass 2) -fast`

437.leslie3d: `-prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch`
`-opt-malloc-options=3`

459.GemsFDTD: `-prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0`
`-prefetch`

465.tonto: `-prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -auto`

Benchmarks using both Fortran and C:

435.gromacs: `-prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch`
`-auto-ilp32`

436.cactusADM: `-prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2`
`-prefetch -parallel -auto-ilp32`

454.calculix: `-fast -unroll-aggressive -auto-ilp32`

481.wrf: `-fast -auto-ilp32`

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The flags file that was used to format this result can be browsed at

http://www.spec.org/cpu2006/flags/HP-Intel-ic10.1-linux-fp-flags.20090714.01.html

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

http://www.spec.org/cpu2006/flags/HP-Intel-ic10.1-linux-fp-flags.20090714.01.xml

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

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