SPEC® CFP2006 Result

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Hewlett-Packard Company

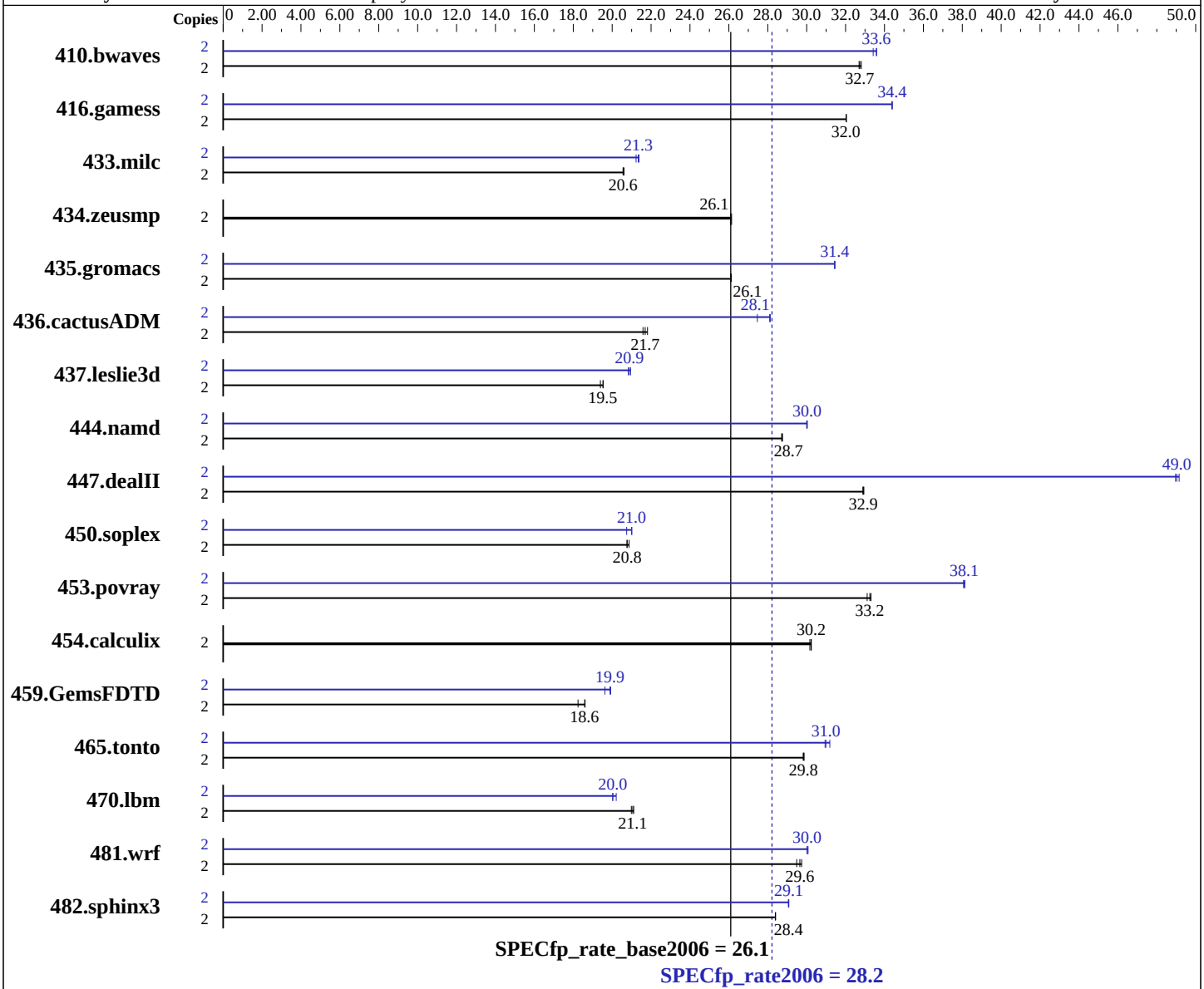
ProLiant DL185 G5
(3.0 GHz AMD Opteron 2222)

SPECfp®_rate2006 = 28.2

SPECfp_rate_base2006 = 26.1

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Dec-2007
Hardware Availability: Jan-2008
Software Availability: Nov-2007



Hardware

CPU Name:	AMD Opteron 2222
CPU Characteristics:	
CPU MHz:	3000
FPU:	Integrated
CPU(s) enabled:	2 cores, 1 chip, 2 cores/chip
CPU(s) orderable:	1,2 chips
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core

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Software

Operating System:	SUSE Linux Enterprise Server 10 (x86_64) SP1 Kernel 2.6.16.46-0.12-smp
Compiler:	The Portland Group (PGI) PGI pgf90 7.1-1 Fortran Compiler PGI pgcc 7.1-1 C Compiler PGI pgCC 7.1-1 C++ Compiler QLogic PathScale Compiler Suite, Release 3.0
Auto Parallel:	No

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L3 Cache:	None	File System:	ext2
Other Cache:	None	System State:	Multi-user run level 3
Memory:	16 GB (4x4 GB PC2-5300P CL5)	Base Pointers:	64-bit
Disk Subsystem:	1x146 GB 10 K SAS	Peak Pointers:	32/64-bit
Other Hardware:	None	Other Software:	None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	2	831	32.7	828	32.8	**830**	**32.7**	2	**809**	**33.6**	809	33.6	813	33.4
416.gamess	2	**1223**	**32.0**	1222	32.0	1223	32.0	2	1139	34.4	**1139**	**34.4**	1138	34.4
433.milc	2	**893**	**20.6**	893	20.6	891	20.6	2	865	21.2	**860**	**21.3**	859	21.4
434.zeusmp	2	**697**	**26.1**	696	26.1	698	26.1	2	**697**	**26.1**	696	26.1	698	26.1
435.gromacs	2	547	26.1	547	26.1	**547**	**26.1**	2	**454**	**31.4**	454	31.4	454	31.4
436.cactusADM	2	1107	21.6	1095	21.8	**1102**	**21.7**	2	870	27.5	**851**	**28.1**	850	28.1
437.leslie3d	2	962	19.5	**963**	**19.5**	969	19.4	2	**900**	**20.9**	898	20.9	903	20.8
444.namd	2	558	28.8	**558**	**28.7**	559	28.7	2	534	30.0	535	30.0	**534**	**30.0**
447.dealII	2	695	32.9	**695**	**32.9**	696	32.9	2	466	49.2	**467**	**49.0**	467	49.0
450.soplex	2	799	20.9	803	20.8	**803**	**20.8**	2	**794**	**21.0**	794	21.0	804	20.7
453.povray	2	321	33.1	**320**	**33.2**	319	33.3	2	279	38.1	**279**	**38.1**	280	38.1
454.calculix	2	**546**	**30.2**	547	30.2	546	30.2	2	**546**	**30.2**	547	30.2	546	30.2
459.GemsFDTD	2	1163	18.2	**1142**	**18.6**	1140	18.6	2	**1067**	**19.9**	1081	19.6	1065	19.9
465.tonto	2	660	29.8	**660**	**29.8**	659	29.9	2	631	31.2	**635**	**31.0**	636	30.9
470.lbm	2	**1305**	**21.1**	1302	21.1	1309	21.0	2	**1372**	**20.0**	1372	20.0	1360	20.2
481.wrf	2	751	29.7	758	29.5	**753**	**29.6**	2	744	30.0	743	30.1	**744**	**30.0**
482.sphinx3	2	1373	28.4	1373	28.4	**1373**	**28.4**	2	1341	29.1	**1341**	**29.1**	1340	29.1

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

Operating System Notes

```
Environment stack size set to 'unlimited'
ulimit -l set to 1048576
'numactl' was used to bind copies to the cores
Set vm/nr_hugepages=1024 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

Base Compiler Invocation

C benchmarks:

```
pgcc
```

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Base Compiler Invocation (Continued)

C++ benchmarks:
pgcpp

Fortran benchmarks:
pgf95

Benchmarks using both Fortran and C:
pgcc pgf95

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 -Mnomain
436.cactusADM: -DSPEC_CPU_LP64 -Mnomain
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 -Mnomain
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 -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
-tp k8-64 -Bstatic_pgi

C++ benchmarks:
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
--zc_eh -tp k8-64 -Bstatic_pgi

Fortran benchmarks:
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
-tp k8-64 -Bstatic_pgi

Benchmarks using both Fortran and C:
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
-tp k8-64 -Bstatic_pgi

Base Other Flags

C benchmarks:
`-w`

C++ benchmarks:
`-w`

Fortran benchmarks:
`-w`

Benchmarks using both Fortran and C:
`-w`

Peak Compiler Invocation

C benchmarks (except as noted below):
`pathcc`

433.milc: `pgcc`

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

444.namd: `pgcpp`

Fortran benchmarks (except as noted below):
`pgf95`

416.gamess: `pathf95`

437.leslie3d: `pathf95`

459.GemsFDTD: `pathf95`

Benchmarks using both Fortran and C (except as noted below):
`pgcc pgf95`

436.cactusADM: `pathcc pathf95`

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 -Mnomain`

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Peak Portability Flags (Continued)

436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -Mnomain
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

Peak Optimization Flags

C benchmarks:

433.milc: -Mpfi(pass 1) -Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Mipa=noarg(pass 2) -Mpfo(pass 2) -fast -O4 -Mdse
-Mfprelaxed -Msmartalloc=huge:448 -tp k8-64 -Bstatic_pgi

470.lbm: -Ofast

482.sphinx3: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O3
-OPT:Ofast -WOPT:aggstr=0 -m32

C++ benchmarks:

444.namd: -fast -O4 -Mfprelaxed -Msmartalloc=huge:448 --zc_eh
-tp k8-64 -Mnodepchk -Mprefetch -Msafe_lastval
-Msafeptr=static -Mstride0 -Munroll=n:4 -Mvect=noidiom
-Mvect=prefetch -Bstatic_pgi

447.dealII: -Ofast -static -INLINE:aggressive=on -OPT:malloc_alg=1
-m32 -fno-exceptions

450.soplex: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -m32 -O3
-OPT:IEEE_arith=3 -CG:load_exe=0 -CG:movnti=1
-LNO:minvariant=off -LNO:prefetch=1 -fno-exceptions

453.povray: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
-fno-fast-math

Fortran benchmarks:

410.bwaves: -fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc
-tp k8-64 -Bstatic_pgi

416.gamess: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O2
-OPT:Ofast -OPT:ro=3 -OPT:unroll_size=256

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Peak Optimization Flags (Continued)

434.zeusmp: `basepeak = yes`

437.leslie3d: `-Ofast -OPT:malloc_alg=1`

459.GemsFDTD: `-Ofast -LNO:fission=2 -LNO:prefetch=0`

465.tonto: `-fast -O4 -Mfprelaxed -Msmartalloc=huge:448 -Mipa=fast -Mipa=inline -Mvect=noaltcode -tp k8-64 -Bstatic_pgi`

Benchmarks using both Fortran and C:

435.gromacs: `-fast -O4 -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:448 -tp k8-64 -Mfpapprox=rsqrt -Bstatic_pgi`

436.cactusADM: `-O3 -LNO:prefetch=3 -LNO:prefetch_ahead=5 -LNO:ou_prod_max=10 -LNO:full_unroll=5 -ipa`

454.calculix: `basepeak = yes`

481.wrf: `-fast -Mfprelaxed -Msmartalloc=huge:448 -Mvect=noaltcode -tp k8-64 -Bstatic_pgi`

Peak Other Flags

C benchmarks:

433.milc: `-w`

C++ benchmarks:

444.namd: `-w`

Fortran benchmarks:

410.bwaves: `-w`

434.zeusmp: `-w`

465.tonto: `-w`

Benchmarks using both Fortran and C (except as noted below):
`-w`

436.cactusADM: `No flags used`

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/hp-pgi710_ps30_flags.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/hp-pgi710_ps30_flags.xml

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Tested with SPEC CPU2006 v1.0.
Report generated on Tue Jul 22 15:14:41 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 14 January 2008.