SPEC® CFP2006 Result

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Hewlett-Packard Company

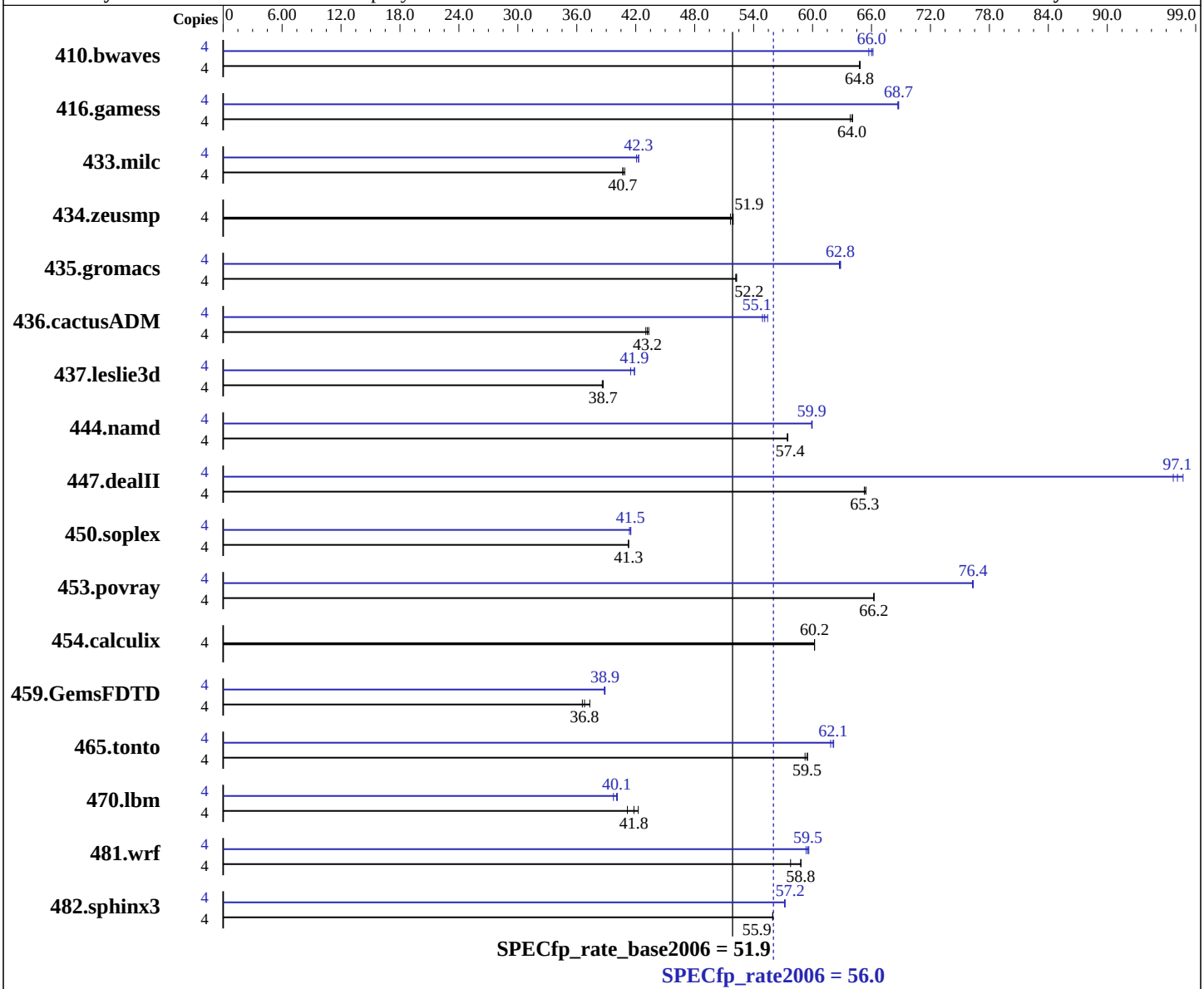
ProLiant DL185 G5
(3.0 GHz AMD Opteron 2222)

SPECfp®_rate2006 = 56.0

SPECfp_rate_base2006 = 51.9

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:	4 cores, 2 chips, 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
Other Cache: None
Memory: 32 GB (8x4 GB PC2-5300P CL5)
Disk Subsystem: 1x146 GB 10 K SAS
Other Hardware: None

File System: ext2
System State: Multi-user run level 3
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	839	64.8	838	64.9	**839**	**64.8**	4	**824**	**66.0**	822	66.2	827	65.7
416.gamess	4	1222	64.1	**1223**	**64.0**	1227	63.8	4	**1139**	**68.7**	1139	68.8	1140	68.7
433.milc	4	902	40.7	**902**	**40.7**	898	40.9	4	873	42.1	**868**	**42.3**	868	42.3
434.zeusmp	4	**702**	**51.9**	701	51.9	705	51.6	4	**702**	**51.9**	701	51.9	705	51.6
435.gromacs	4	546	52.3	**547**	**52.2**	547	52.2	4	455	62.7	**455**	**62.8**	454	62.9
436.cactusADM	4	**1107**	**43.2**	1111	43.0	1103	43.3	4	**867**	**55.1**	862	55.4	871	54.9
437.leslie3d	4	974	38.6	972	38.7	**972**	**38.7**	4	898	41.9	906	41.5	**898**	**41.9**
444.namd	4	559	57.4	558	57.5	**558**	**57.4**	4	**535**	**59.9**	535	59.9	535	60.0
447.dealII	4	701	65.3	**701**	**65.3**	699	65.4	4	468	97.7	473	96.7	**471**	**97.1**
450.soplex	4	**808**	**41.3**	808	41.3	809	41.3	4	**804**	**41.5**	807	41.4	804	41.5
453.povray	4	321	66.2	**321**	**66.2**	321	66.3	4	**279**	**76.4**	279	76.3	279	76.4
454.calculix	4	**548**	**60.2**	548	60.2	548	60.2	4	**548**	**60.2**	548	60.2	548	60.2
459.GemsFDTD	4	**1154**	**36.8**	1161	36.6	1137	37.3	4	**1092**	**38.9**	1094	38.8	1092	38.9
465.tonto	4	**662**	**59.5**	662	59.5	664	59.2	4	**634**	**62.1**	636	61.8	633	62.2
470.lbm	4	1300	42.3	**1314**	**41.8**	1336	41.2	4	1383	39.7	**1372**	**40.1**	1369	40.1
481.wrf	4	**760**	**58.8**	759	58.8	774	57.8	4	753	59.3	**751**	**59.5**	749	59.6
482.sphinx3	4	1393	56.0	1394	55.9	**1393**	**55.9**	4	**1363**	**57.2**	1364	57.1	1363	57.2

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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