SPEC® CFP2006 Result
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Hewlett-Packard Company

$SPECfp^{®}2006 =$ 16.6

ProLiant BL465c (AMD Opteron 2220)

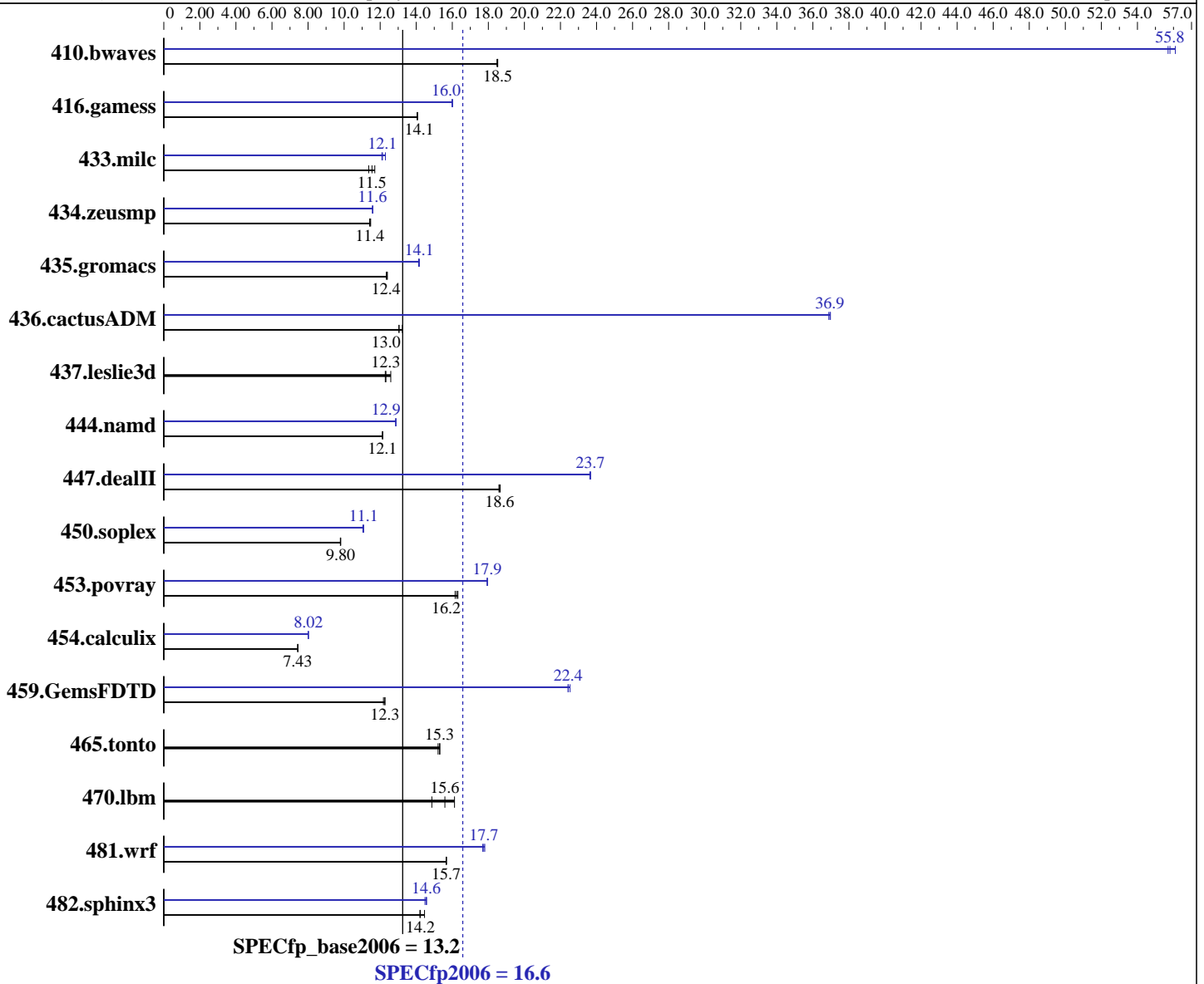$SPECfp\_base2006 =$ 13.2

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

Test date: Jul-2007
Hardware Availability: Jan-2007
Software Availability: Apr-2007

410.bwaves	55.8	
	18.5	
416.gamess	16.0	
	14.1	
433.milc	12.1	
	11.5	
434.zeusmp	11.6	
	11.4	
435.gromacs	14.1	
	12.4	
436.cactusADM	36.9	
	13.0	
437.leslie3d	12.3	
444.namd	12.9	
	12.1	
447.dealII	23.7	
	18.6	
450.soplex	11.1	
	9.80	
453.povray	17.9	
	16.2	
454.calculix	8.02	
	7.43	
459.GemsFDTD	22.4	
	12.3	
465.tonto	15.3	
470.lbm	15.6	
481.wrf	17.7	
	15.7	
482.sphinx3	14.6	
	14.2	

SPECfp_base2006 = 13.2
SPECfp2006 = 16.6

Hardware

CPU Name: AMD Opteron 2220
CPU Characteristics: 2.8 GHz, 1 MB L2 cache
CPU MHz: 2800
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

Continued on next page

Software

Operating System: SuSE Linux Enterprise Server 10 (x86_64) kernel 2.6.16.21-0.8-smp
Compiler: QLogic PathScale Compiler Suite, Release 3.0
Auto Parallel: Yes
File System: ext2
System State: Multi-user, run level 3
Base Pointers: 64-bit
Peak Pointers: 32/64-bit

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L3 Cache:	None
Other Cache:	None
Memory:	16 GB (4x4 GB, PC2-5300P CL5)
Disk Subsystem:	2x72 GB 10 K SAS
Other Hardware:	None

Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	734	18.5	**734**	**18.5**	736	18.5	**244**	**55.8**	242	56.1	244	55.7
416.gamess	1393	14.1	1392	14.1	**1393**	**14.1**	**1224**	**16.0**	1223	16.0	1225	16.0
433.milc	808	11.4	**795**	**11.5**	784	11.7	759	12.1	**757**	**12.1**	747	12.3
434.zeusmp	797	11.4	793	11.5	**796**	**11.4**	785	11.6	**786**	**11.6**	786	11.6
435.gromacs	579	12.3	**576**	**12.4**	576	12.4	505	14.1	504	14.2	**505**	**14.1**
436.cactusADM	**916**	**13.0**	903	13.2	916	13.0	323	37.0	324	36.9	**323**	**36.9**
437.leslie3d	747	12.6	**763**	**12.3**	765	12.3	747	12.6	**763**	**12.3**	765	12.3
444.namd	**661**	**12.1**	661	12.1	661	12.1	624	12.9	**623**	**12.9**	623	12.9
447.dealII	**614**	**18.6**	615	18.6	613	18.7	483	23.7	**483**	**23.7**	484	23.6
450.soplex	850	9.81	852	9.79	**851**	**9.80**	753	11.1	756	11.0	**753**	**11.1**
453.povray	329	16.2	326	16.3	**328**	**16.2**	297	17.9	**297**	**17.9**	296	17.9
454.calculix	1110	7.43	1110	7.43	**1110**	**7.43**	1029	8.02	**1029**	**8.02**	1029	8.02
459.GemsFDTD	**865**	**12.3**	871	12.2	865	12.3	**473**	**22.4**	473	22.4	471	22.5
465.tonto	647	15.2	643	15.3	**643**	**15.3**	647	15.2	643	15.3	**643**	**15.3**
470.lbm	852	16.1	**881**	**15.6**	924	14.9	852	16.1	**881**	**15.6**	924	14.9
481.wrf	**713**	**15.7**	713	15.7	713	15.7	627	17.8	**629**	**17.7**	631	17.7
482.sphinx3	**1369**	**14.2**	1372	14.2	1348	14.5	1346	14.5	1337	14.6	**1339**	**14.6**

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

General Notes

    Node interleaving is disabled
    ulimit -s unlimited set

Base Compiler Invocation

C benchmarks:
       pathcc

C++ benchmarks:
       pathCC

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Base Compiler Invocation (Continued)

Fortran benchmarks:
    pathf95

Benchmarks using both Fortran and C:
    pathcc pathf95

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
      436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
        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
      459.GemsFDTD: -DSPEC_CPU_LP64
          465.tonto: -DSPEC_CPU_LP64
          470.lbm: -DSPEC_CPU_LP64
           481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX -fno-second-underscore
        482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
    -Ofast

C++ benchmarks:
    -Ofast

Fortran benchmarks:
    -Ofast -OPT:malloc_alg=1

Benchmarks using both Fortran and C:
    -Ofast -OPT:malloc_alg=1

Peak Compiler Invocation

C benchmarks:
    pathcc

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Peak Compiler Invocation (Continued)

C++ benchmarks:
    pathCC

Fortran benchmarks:
    pathf95

Benchmarks using both Fortran and C:
    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
     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
      459.GemsFDTD: -DSPEC_CPU_LP64
          465.tonto: -DSPEC_CPU_LP64
           470.lbm: -DSPEC_CPU_LP64
           481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX -fno-second-underscore
        482.sphinx3: -DSPEC_CPU_LP64

Peak Optimization Flags

C benchmarks:

        433.milc: -Ofast -CG:cflow=off -LNO:prefetch=1 -OPT:malloc_alg=1

         470.lbm: basepeak = yes

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

C++ benchmarks:

        444.namd: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
                  -fno-exceptions

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

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Peak Optimization Flags (Continued)

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: `-Ofast -apo`

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

434.zeusmp: `-Ofast -CG:local_fwd_sched=on -LNO:blocking=off`
`-LNO:interchange=off -LNO:fu=10 -LNO:full_unroll_outer=on`

437.leslie3d: `basepeak = yes`

459.GemsFDTD: `Same as 410.bwaves`

465.tonto: `basepeak = yes`

Benchmarks using both Fortran and C:

435.gromacs: `-O3 -OPT:rsqrt=2 -OPT:ro=3`

436.cactusADM: `-Ofast -apo`

454.calculix: `-Ofast -LNO:simd=0 -WOPT:mem_opnds=on`

481.wrf: `Same as 436.cactusADM`

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.15.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.15.xml

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

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