



SPEC® CFP2006 Result

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Hewlett-Packard Company

SPECfp®2006 = 24.1

ProLiant BL465c G6
(2.6 GHz AMD Opteron 2435)

SPECfp_base2006 = 22.1

CPU2006 license: 3

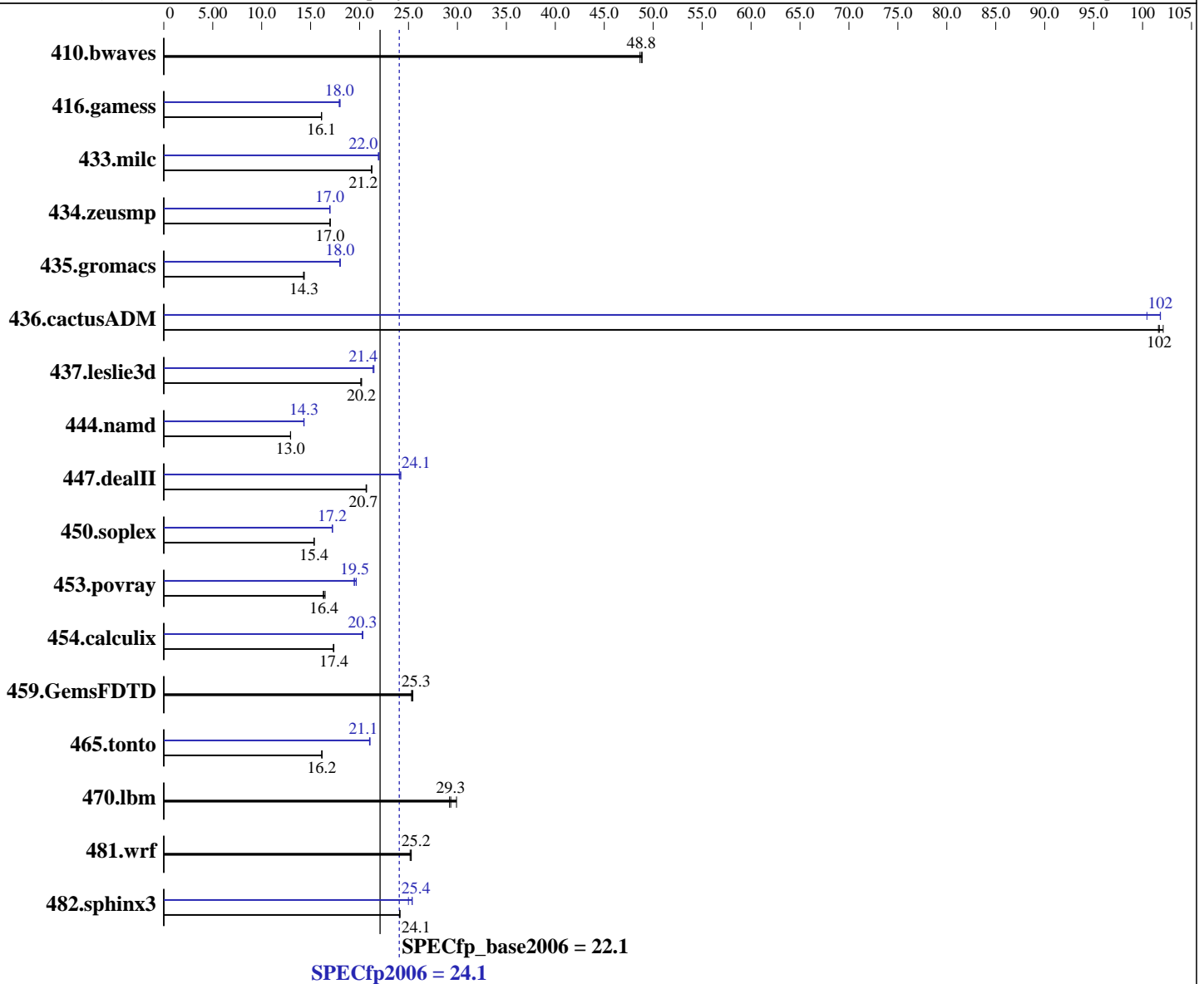
Test date: May-2009

Test sponsor: Hewlett-Packard Company

Hardware Availability: Jun-2009

Tested by: Hewlett-Packard Company

Software Availability: Apr-2009



Hardware

CPU Name: AMD Opteron 2435
 CPU Characteristics:
 CPU MHz: 2600
 FPU: Integrated
 CPU(s) enabled: 6 cores, 1 chip, 6 cores/chip
 CPU(s) orderable: 1,2 chips
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 512 KB I+D on chip per core

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Software

Operating System: Red Hat Enterprise Linux Server release 5.3, Kernel 2.6.18-128.el5
 Compiler: PGI Server Complete Version 8.0
 PathScale Compiler Suite Version 3.2
 Auto Parallel: Yes
 File System: ext3
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 32/64-bit

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L3 Cache: 6 MB I+D on chip per chip
Other Cache: None
Memory: 16 GB (4x4 GB, PC2-6400P CL5)
Disk Subsystem: 1x 146 GB 10 K SAS
Other Hardware: None

Other Software: binutils 2.18
32-bit and 64-bit libhugetlbfs libraries

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	278	48.9	<u>279</u>	<u>48.8</u>	279	48.7	278	48.9	<u>279</u>	<u>48.8</u>	279	48.7
416.gamess	1216	16.1	<u>1215</u>	<u>16.1</u>	1215	16.1	<u>1090</u>	<u>18.0</u>	1087	18.0	1092	17.9
433.milc	<u>432</u>	<u>21.2</u>	432	21.3	432	21.2	<u>418</u>	<u>22.0</u>	417	22.0	419	21.9
434.zeusmp	<u>535</u>	<u>17.0</u>	535	17.0	536	17.0	<u>536</u>	<u>17.0</u>	536	17.0	537	17.0
435.gromacs	<u>498</u>	<u>14.3</u>	498	14.3	500	14.3	<u>396</u>	<u>18.0</u>	397	18.0	396	18.0
436.cactusADM	117	102	118	102	<u>117</u>	<u>102</u>	117	102	<u>117</u>	<u>102</u>	119	100
437.leslie3d	465	20.2	<u>465</u>	<u>20.2</u>	467	20.1	438	21.5	<u>439</u>	<u>21.4</u>	439	21.4
444.namd	<u>619</u>	<u>13.0</u>	620	12.9	619	13.0	560	14.3	<u>560</u>	<u>14.3</u>	561	14.3
447.dealII	<u>553</u>	<u>20.7</u>	553	20.7	552	20.7	472	24.2	474	24.1	<u>474</u>	<u>24.1</u>
450.soplex	543	15.4	<u>543</u>	<u>15.4</u>	543	15.4	<u>484</u>	<u>17.2</u>	485	17.2	484	17.2
453.povray	327	16.3	323	16.5	<u>325</u>	<u>16.4</u>	274	19.4	<u>273</u>	<u>19.5</u>	271	19.7
454.calculix	475	17.4	<u>475</u>	<u>17.4</u>	477	17.3	406	20.3	<u>406</u>	<u>20.3</u>	407	20.3
459.GemsFDTD	<u>419</u>	<u>25.3</u>	419	25.3	417	25.4	<u>419</u>	<u>25.3</u>	419	25.3	417	25.4
465.tonto	<u>609</u>	<u>16.2</u>	609	16.2	610	16.1	467	21.1	468	21.0	<u>467</u>	<u>21.1</u>
470.lbm	<u>469</u>	<u>29.3</u>	471	29.2	459	29.9	<u>469</u>	<u>29.3</u>	471	29.2	459	29.9
481.wrf	<u>443</u>	<u>25.2</u>	444	25.2	442	25.3	<u>443</u>	<u>25.2</u>	444	25.2	442	25.3
482.sphinx3	807	24.1	809	24.1	<u>809</u>	<u>24.1</u>	780	25.0	768	25.4	<u>768</u>	<u>25.4</u>

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

Submit Notes

The config file option 'submit' was used.
numactl was used to bind copies to the cores

Operating System Notes

'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2097152' was used to set environment locked pages in memory limit
The libhugetlbfs libraries were installed using the installation rpms that came with the distribution.
PGI_HUGE_PAGES set to 450.
Total number of huge pages available is 2700.
NCPUS set to number of cores



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Platform Notes

BIOS configuration:
Power Regulator set to Static High Performance Mode

General Notes

Environment variables set by runspec before the start of the run:
HUGETLB_MORECORE = "yes"
NCPUS = "6"

Base Compiler Invocation

C benchmarks:

pgcc

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



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Base Optimization Flags

C benchmarks:

-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mconcur
-Mfprelaxed -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

C++ benchmarks:

-Mvect=cachesize:6291456 -fastsse -Mconcur -Msmartalloc=huge
-Mfprelaxed --zc_eh -Mipa=fast -Mipa=inline -tp barcelona-64
-Bstatic_pgi

Fortran benchmarks:

-Mvect=cachesize:6291456 -fastsse -Mconcur -Mfprelaxed
-Msmartalloc=huge -Mipa=fast -Mipa=inline -tp barcelona-64
-Bstatic_pgi

Benchmarks using both Fortran and C:

-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mconcur
-Mfprelaxed -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

Base Other Flags

C benchmarks:

-Mipa=jobs:4

C++ benchmarks:

-Mipa=jobs:4

Fortran benchmarks:

-Mipa=jobs:4

Benchmarks using both Fortran and C:

-Mipa=jobs:4

Peak Compiler Invocation

C benchmarks:

pgcc

C++ benchmarks (except as noted below):

pathCC

444.namd: pgcpp

Fortran benchmarks (except as noted below):

pgf95

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Peak Compiler Invocation (Continued)

416.gamess: pathf95

465.tonto: pathf95

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

pgcc pgf95

435.gromacs: 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 -Mnomain
 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
 482.sphinx3: -DSPEC_CPU_LP64

Peak Optimization Flags

C benchmarks:

433.milc: -fastsse -Msmartalloc=huge -Msafeptr -Mconcur -Mfprelaxed
-Mipa=inline -Mipa=arg -Mipa=const -Mipa=ptr -Mipa=shape
-tp barcelona-64

470.lbm: basepeak = yes

482.sphinx3: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)
-Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Mvect=cachesize:6291456 -fastsse -Mfprelaxed -Msmartalloc
-tp barcelona-64 -Bstatic_pgi

C++ benchmarks:

444.namd: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)
-Mipa=inline(pass 2) -Mvect=cachesize:6291456 -fastsse
-Munroll=n:4 -Munroll=m:8 -Msmartalloc=huge -Mnodepch

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Peak Optimization Flags (Continued)

444.namd (continued):

-Mfprelaxed --zc_eh -tp barcelona-64 -Bstatic_pgi

447.dealIII: -march=barcelona -Ofast -INLINE:aggressive=on -LNO:opt=0

-OPT:alias=disjoint -fno-exceptions -m32

450.soplex: -march=barcelona -fb_create fbdata(pass 1)

-fb_opt fbdata(pass 2) -L/usr/lib -lhugetlbfs(pass 2) -O3

-INLINE:aggressive=on -OPT:IEEE_arith=3

-OPT:IEEE_NaN_Inf=off -OPT:fold_unsigned_relops=on

-OPT:malloc_alg=1 -CG:load_exe=0 -fno-exceptions -m32

453.povray: -march=barcelona -fb_create fbdata(pass 1)

-fb_opt fbdata(pass 2) -Ofast -INLINE:aggressive=on

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -march=barcelona -fb_create fbdata(pass 1)

-fb_opt fbdata(pass 2)

-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT(pass 2)

-L/usr/lib64 -lhugetlbfs(pass 2) -O2 -OPT:Ofast -OPT:ro=3

-OPT:unroll_size=256

434.zeusmp: -Mvect=cachesize:6291456 -fastsse -Mfprelaxed -Mconcur

-Mprefetch=distance:8 -Mprefetch=t0 -Msmartalloc=huge

-Msmartalloc=hugebss -Mipa=fast -Mipa=inline

-tp barcelona-64 -Bstatic_pgi

437.leslie3d: -Mphi=indirect(pass 1) -Mpfo=indirect(pass 2)

-Mconcur=noaltcode(pass 2) -Mipa=fast(pass 2)

-Mipa=inline(pass 2) -Mvect=cachesize:6291456 -fastsse

-Mvect=fuse -Msmartalloc=huge -Mprefetch=distance:8

-Mprefetch=t0 -Mfprelaxed -tp barcelona-64 -Bstatic_pgi

459.GemsFDTD: basepeak = yes

465.tonto: -march=barcelona -Ofast -OPT:alias=no_f90_pointer_alias

-LNO:blocking=off -CG:load_exe=1 -IPA:plimit=525

-OPT:malloc_alg=1

-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT

-L/usr/lib64 -lhugetlbfs

Benchmarks using both Fortran and C:

435.gromacs: -march=barcelona -Ofast -OPT:rsqrt=2 -OPT:malloc_alg=1

-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT

-L/usr/lib64 -lhugetlbfs

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Peak Optimization Flags (Continued)

436.cactusADM: -Mvect=cachesize:6291456 -fastsse -Mconcur
-Msmartalloc=huge -Mfprelaxed -Mipa=fast -Mipa=inline
-tp barcelona-64 -Bstatic_pgi

454.calculix: -Mphi=indirect(pass 1) -Mpfo=indirect(pass 2)
-Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge
-Mprefetch=t0 -Mpre -Mfprelaxed -tp barcelona-64
-Bstatic_pgi

481.wrf: basepeak = yes

Peak Other Flags

C benchmarks:

-Mipa=jobs:4(pass 2)

C++ benchmarks:

444.namd: -Mipa=jobs:4(pass 2)

Fortran benchmarks (except as noted below):

-Mipa=jobs:4

416.gamess: No flags used

465.tonto: No flags used

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

-Mipa=jobs:4

435.gromacs: No flags used

The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2006/flags/pgi80_linux_flags.html

<http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.00.html>

http://www.spec.org/cpu2006/flags/CPU2006_flags.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2006/flags/pgi80_linux_flags.xml

<http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.00.xml>

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