



SPEC® CFP2006 Result

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Hewlett-Packard Company

SPECfp®2006 = 20.3

ProLiant DL585 G5
(2.7 GHz AMD Opteron 8384)

SPECfp_base2006 = 18.3

CPU2006 license: 3

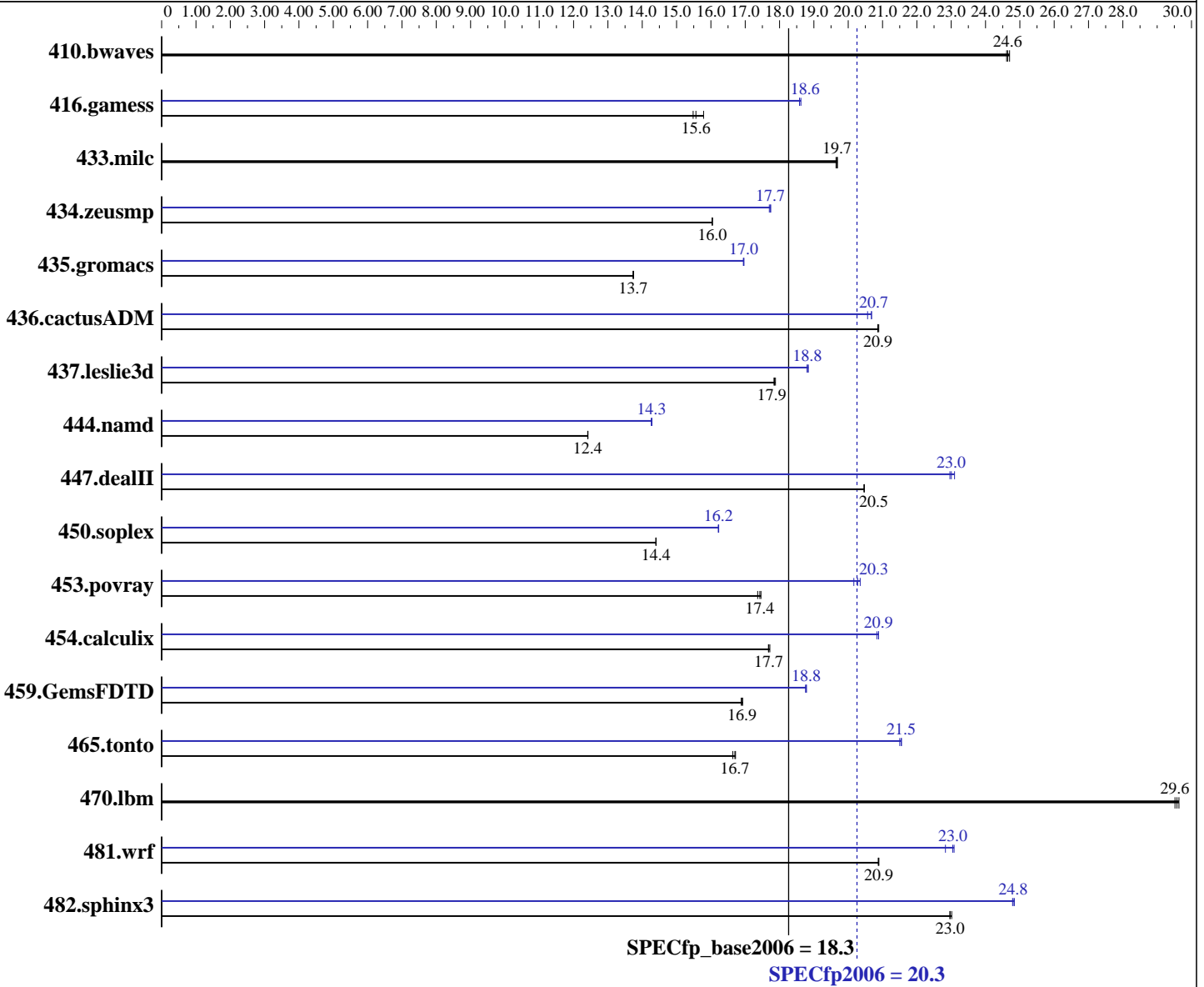
Test date: Oct-2008

Test sponsor: Hewlett-Packard Company

Hardware Availability: Nov-2008

Tested by: Hewlett-Packard Company

Software Availability: Jun-2008



Hardware

CPU Name: AMD Opteron 8384
 CPU Characteristics:
 CPU MHz: 2700
 FPU: Integrated
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip
 CPU(s) orderable: 2,4 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 5.2
 Advanced Platform, Kernel 2.6.18-92.el5
 Compiler: PGI Server Complete Version 7.2
 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: 32 GB (8x4 GB, PC2-6400P CL5)
Disk Subsystem: 1x146 GB 15 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	<u>551</u>	<u>24.6</u>	550	24.7	552	24.6	<u>551</u>	<u>24.6</u>	550	24.7	552	24.6
416.gamess	1240	15.8	1265	15.5	<u>1258</u>	<u>15.6</u>	1054	18.6	1051	18.6	<u>1054</u>	<u>18.6</u>
433.milc	466	19.7	<u>467</u>	<u>19.7</u>	467	19.6	466	19.7	<u>467</u>	<u>19.7</u>	467	19.6
434.zeusmp	<u>567</u>	<u>16.0</u>	567	16.0	568	16.0	514	17.7	513	17.7	<u>513</u>	<u>17.7</u>
435.gromacs	519	13.7	520	13.7	<u>520</u>	<u>13.7</u>	421	17.0	421	16.9	<u>421</u>	<u>17.0</u>
436.cactusADM	572	20.9	<u>573</u>	<u>20.9</u>	573	20.9	578	20.7	581	20.6	<u>578</u>	<u>20.7</u>
437.leslie3d	<u>526</u>	<u>17.9</u>	527	17.8	526	17.9	499	18.8	<u>500</u>	<u>18.8</u>	500	18.8
444.namd	<u>646</u>	<u>12.4</u>	646	12.4	646	12.4	<u>562</u>	<u>14.3</u>	562	14.3	562	14.3
447.dealII	<u>559</u>	<u>20.5</u>	559	20.5	559	20.5	<u>497</u>	<u>23.0</u>	495	23.1	498	23.0
450.soplex	579	14.4	<u>579</u>	<u>14.4</u>	579	14.4	514	16.2	<u>514</u>	<u>16.2</u>	514	16.2
453.povray	305	17.5	306	17.4	<u>305</u>	<u>17.4</u>	264	20.2	261	20.3	<u>262</u>	<u>20.3</u>
454.calculix	466	17.7	467	17.7	<u>466</u>	<u>17.7</u>	395	20.9	<u>395</u>	<u>20.9</u>	396	20.8
459.GemsFDTD	<u>627</u>	<u>16.9</u>	628	16.9	627	16.9	<u>565</u>	<u>18.8</u>	566	18.8	565	18.8
465.tonto	589	16.7	591	16.6	<u>589</u>	<u>16.7</u>	<u>457</u>	<u>21.5</u>	458	21.5	457	21.6
470.lbm	465	29.5	<u>465</u>	<u>29.6</u>	464	29.6	465	29.5	<u>465</u>	<u>29.6</u>	464	29.6
481.wrf	535	20.9	<u>535</u>	<u>20.9</u>	535	20.9	489	22.8	<u>485</u>	<u>23.0</u>	484	23.1
482.sphinx3	847	23.0	849	23.0	<u>849</u>	<u>23.0</u>	786	24.8	<u>786</u>	<u>24.8</u>	785	24.8

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

Environment stack size set to 'unlimited'
Max locked memory set to 2097152
The libhugetlbfs libraries were installed using the installation rpms that came with the distribution.
PGI_HUGE_PAGES set to 896.
Total number of huge pages available is 7168.
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"

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.deallI: -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 -Mfprelaxed
-Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

C++ benchmarks:

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

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -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):

pathf95

410.bwaves: pgf95

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Peak Compiler Invocation (Continued)

434.zeusmp: pgf95

437.leslie3d: pgf95

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

pgcc pgf95

435.gromacs: pathcc pathf95

481.wrf: 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_LINUX -fno-second-underscore

482.sphinx3: -DSPEC_CPU_LP64

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: -Mphi=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: -Mphi(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 -Mnodepchk

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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

-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)

-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: -march=barcelona -Ofast -LNO:fission=2 -LNO:simd=2

-LNO:prefetch_ahead=1 -CG:load_exe=0 -CG:prefer_lru_reg=off

-OPT:malloc_alg=1

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

-L/usr/lib64 -lhugetlbfs

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:

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Peak Optimization Flags (Continued)

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

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

454.calculix: -Mpfi=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: -march=barcelona -Ofast -LNO:blocking=off
-LNO:prefetch_ahead=10 -LANG:copyinout=off
-IPA:callee_limit=5000 -GRA:prioritize_by_density=on
-OPT:malloc_alg=1 -m3dnow
-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT
-L/usr/lib64 -lhugetlbfs

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(pass 2)

416.gamess: No flags used

459.GemsFDTD: No flags used

465.tonto: No flags used

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

-Mipa=jobs:4(pass 2)

435.gromacs: No flags used

481.wrf: No flags used



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

http://www.spec.org/cpu2006/flags/CPU2006_flags.20090710.html

http://www.spec.org/cpu2006/flags/pgi72_linux_flags.html

<http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.html>

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

http://www.spec.org/cpu2006/flags/CPU2006_flags.20090710.xml

http://www.spec.org/cpu2006/flags/pgi72_linux_flags.xml

<http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.xml>

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Tested with SPEC CPU2006 v1.1.
Report generated on Tue Jul 22 22:01:59 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 26 November 2008.