



SPEC[®] CFP2006 Result

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Hewlett-Packard Company

SPECfp[®]_rate2006 = 316

ProLiant DL585 G7
(2.3 GHz AMD Opteron 6176 SE)

SPECfp_rate_base2006 = 290

CPU2006 license: 3

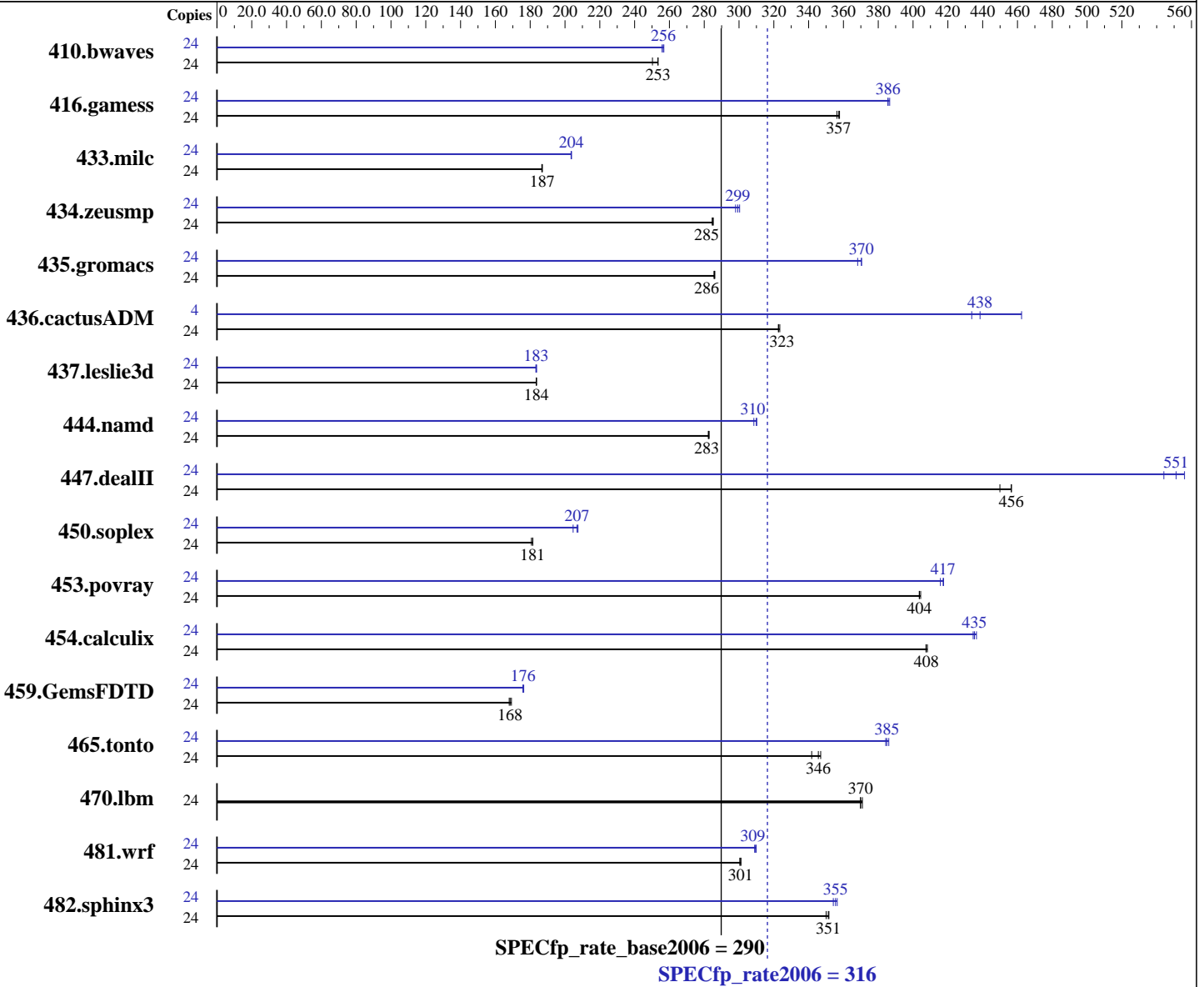
Test date: Apr-2010

Test sponsor: Hewlett-Packard Company

Hardware Availability: Jun-2010

Tested by: Hewlett-Packard Company

Software Availability: Mar-2010



Hardware

CPU Name: AMD Opteron 6176 SE
 CPU Characteristics:
 CPU MHz: 2300
 FPU: Integrated
 CPU(s) enabled: 24 cores, 2 chips, 12 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

Continued on next page

Software

Operating System: Red Hat Enterprise Linux Server release 5.4, Advanced Platform with patch RHSA-2009:1670, Kernel 2.6.18-164.9.1.el5
 Compiler: x86 Open64 4.2.3 Compiler Suite
 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: 12 MB I+D on chip per chip, 6 MB shared / 6 cores
Other Cache: None
Memory: 64 GB (16x4 GB PC3-10600R, CL9)
Disk Subsystem: 4 x 72 GB 15 K SAS
Other Hardware: None

Other Software: binutils 2.18

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	24	1303	250	<u>1287</u>	<u>253</u>	1287	253	24	1275	256	<u>1272</u>	<u>256</u>	1270	257
416.gamess	24	1314	358	<u>1315</u>	<u>357</u>	1319	356	24	1219	386	<u>1219</u>	<u>386</u>	1216	387
433.milc	24	1178	187	1180	187	<u>1179</u>	<u>187</u>	24	<u>1082</u>	<u>204</u>	1083	203	1081	204
434.zeusmp	24	766	285	768	285	<u>766</u>	<u>285</u>	24	733	298	727	300	<u>730</u>	<u>299</u>
435.gromacs	24	599	286	600	286	<u>599</u>	<u>286</u>	24	<u>463</u>	<u>370</u>	465	368	463	370
436.cactusADM	24	887	323	<u>889</u>	<u>323</u>	889	323	4	<u>109</u>	<u>438</u>	110	434	103	462
437.leslie3d	24	1228	184	<u>1229</u>	<u>184</u>	1230	183	24	<u>1230</u>	<u>183</u>	1228	184	1231	183
444.namd	24	682	282	<u>681</u>	<u>283</u>	681	283	24	<u>621</u>	<u>310</u>	624	309	621	310
447.dealII	24	610	450	601	456	<u>601</u>	<u>456</u>	24	505	544	494	556	<u>498</u>	<u>551</u>
450.soplex	24	1108	181	<u>1104</u>	<u>181</u>	1103	182	24	<u>967</u>	<u>207</u>	978	205	965	207
453.povray	24	316	404	316	404	<u>316</u>	<u>404</u>	24	307	416	<u>306</u>	<u>417</u>	306	418
454.calculix	24	485	408	486	407	<u>486</u>	<u>408</u>	24	454	436	<u>455</u>	<u>435</u>	456	435
459.GemsFDTD	24	1505	169	1516	168	<u>1511</u>	<u>168</u>	24	<u>1447</u>	<u>176</u>	1448	176	1444	176
465.tonto	24	<u>683</u>	<u>346</u>	691	342	681	347	24	<u>613</u>	<u>385</u>	612	386	615	384
470.lbm	24	889	371	892	370	<u>892</u>	<u>370</u>	24	889	371	892	370	<u>892</u>	<u>370</u>
481.wrf	24	892	300	890	301	<u>891</u>	<u>301</u>	24	865	310	868	309	<u>866</u>	<u>309</u>
482.sphinx3	24	<u>1332</u>	<u>351</u>	1336	350	1330	352	24	1312	356	<u>1316</u>	<u>355</u>	1321	354

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.
See the configuration file for details.

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

Set vm/nr_hugepages=10800 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages



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Platform Notes

BIOS Configuration:
HP Power Profile set to Maximum Performance
Thermal Configuration set to Increased Cooling

General Notes

Environment variables set by runspec before the start of the run:
HUGETLB_LIMIT = "450"
LD_LIBRARY_PATH = "/cpu2006/amd1002mc-rate-revA-libs/64:/cpu2006/amd1002mc-rate-revA-libs/32"
OMP_NUM_THREADS = "6"

The x86 Open64 Compiler Suite is only available from (and supported by) AMD at
<http://developer.amd.com/cpu/open64>

Base Compiler Invocation

C benchmarks:
openc

C++ benchmarks:
openCC

Fortran benchmarks:
openf95

Benchmarks using both Fortran and C:
openc openf95

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.lelie3d: -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 -DSPEC_CPU_CASE_FLAG
-fno-second-underscore

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Base Portability Flags (Continued)

482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:

-march=barcelona -mso -Ofast -OPT:malloc_alg=1 -HP:bdt=2m

C++ benchmarks:

-march=barcelona -mso -Ofast -static -INLINE:aggressive=on
-OPT:malloc_alg=1 -HP:bdt=2m

Fortran benchmarks:

-march=barcelona -mso -Ofast -HP

Benchmarks using both Fortran and C:

-march=barcelona -mso -Ofast -OPT:malloc_alg=1 -HP:bdt=2m -HP

Peak Compiler Invocation

C benchmarks:

openc

C++ benchmarks:

openCC

Fortran benchmarks:

openf95

Benchmarks using both Fortran and C:

openc openf95

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

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Peak Portability Flags (Continued)

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

Peak Optimization Flags

C benchmarks:

433.milc: -march=barcelona -mso -Ofast -CG:movnti=1
 -CG:local_sched_alg=1 -CG:locs_shallow_depth=1
 -HP:bdt=2m:heap=2m -LNO:prefetch=3

470.lbm: basepeak = yes

482.sphinx3: -march=barcelona -mso -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -Ofast -OPT:malloc_alg=2
 -CG:sse_cse_regs=0 -CG:locs_shallow_depth=1 -CG:cmp_peep=on
 -CG:local_sched_alg=1 -INLINE:aggressive=on

C++ benchmarks:

444.namd: -march=barcelona -mso -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -Ofast -LNO:ignore_feedback=off
 -CG:local_sched_alg=2 -CG:load_exe=0 -CG:compute_to=on
 -OPT:unroll_size=256 -fno-exceptions -HP:bdt=2m:heap=2m

447.dealII: -march=barcelona -mso -Ofast -static -INLINE:aggressive=on
 -LNO:opt=0 -fno-emit-exceptions -m32
 -OPT:unroll_times_max=8 -OPT:unroll_size=256
 -OPT:unroll_level=2 -HP:bdt=2m:heap=2m -GRA:unspill=on
 -CG:cmp_peep=on -TENV:frame_pointer=off

450.soplex: -march=barcelona -mso -fb_create fbdata(pass 1)
 -fb_opt fbdata(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 -HP:bdt=2m

453.povray: -march=barcelona -mso -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -Ofast -INLINE:aggressive=on

Fortran benchmarks:

410.bwaves: -march=barcelona -mso -O3 -OPT:Ofast -OPT:treeheight=on
 -LNO:blocking=off -LNO:prefetch_ahead=5
 -LNO:ignore_feedback=off -WOPT:aggstr=0 -HP:bdt=2m:heap=2m

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Peak Optimization Flags (Continued)

410.bwaves (continued):

-CG:cmp_peep=on

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

-fb_opt fbdata(pass 2) -O3 -LNO:fu=6 -LNO:blocking=0

-LNO:prefetch=0 -OPT:Ofast -OPT:ro=3 -OPT:unroll_size=256

-HP:bdt=2m:heap=2m

434.zeusmp: -march=barcelona -mso -Ofast -LNO:blocking=off

-LNO:interchange=off -OPT:treeheight=on -OPT:unroll_size=256

-CG:cmp_peep=on -GRA:prioritize_by_density=on -HP

437.leslie3d: -march=barcelona -mso -Ofast -HP:bdt=2m:heap=2m

459.GemsFDTD: -march=barcelona -mso -Ofast -LNO:fission=2

-LNO:prefetch_ahead=1 -CG:load_exe=0 -CG:local_sched_alg=1

-HP

465.tonto: -march=barcelona -mso -Ofast

-OPT:alias=no_f90_pointer_alias -LNO:blocking=off

-CG:load_exe=1 -IPA:plimit=525 -HP

Benchmarks using both Fortran and C:

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

-HP:bdt=2m:heap=2m

436.cactusADM: -march=barcelona -mso -fb_create fbdata(pass 1)

-fb_opt fbdata(pass 2) -Ofast -apo -LNO:prefetch_ahead=1

-HP:bdt=2m:heap=2m -LANG:heap_allocation_threshold=100

454.calculix: -march=barcelona -mso -Ofast -CG:load_exe=0

-CG:ptr_load_use=0 -CG:local_sched_alg=2 -CG:compute_to=on

-LNO:prefetch_ahead=30 -WOPT:unroll=2

-GRA:optimize_boundary=on -HP:bdt=2m:heap=2m

481.wrf: -march=barcelona -mso -Ofast -LNO:blocking=off

-LNO:prefetch_ahead=10 -LANG:copyinout=off

-IPA:callee_limit=5000 -GRA:prioritize_by_density=on -m3dnow

-HP

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

<http://www.spec.org/cpu2006/flags/x86-open64-4.2.3-flags-revA.html>

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

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

<http://www.spec.org/cpu2006/flags/x86-open64-4.2.3-flags-revA.xml>

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Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 08:25:30 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 22 June 2010.