



SPEC® CFP2006 Result

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Hewlett-Packard Company

SPECfp®_rate2006 = 313

ProLiant SL165z G7
(2.2 GHz AMD Opteron 6174)

SPECfp_rate_base2006 = 286

CPU2006 license: 3

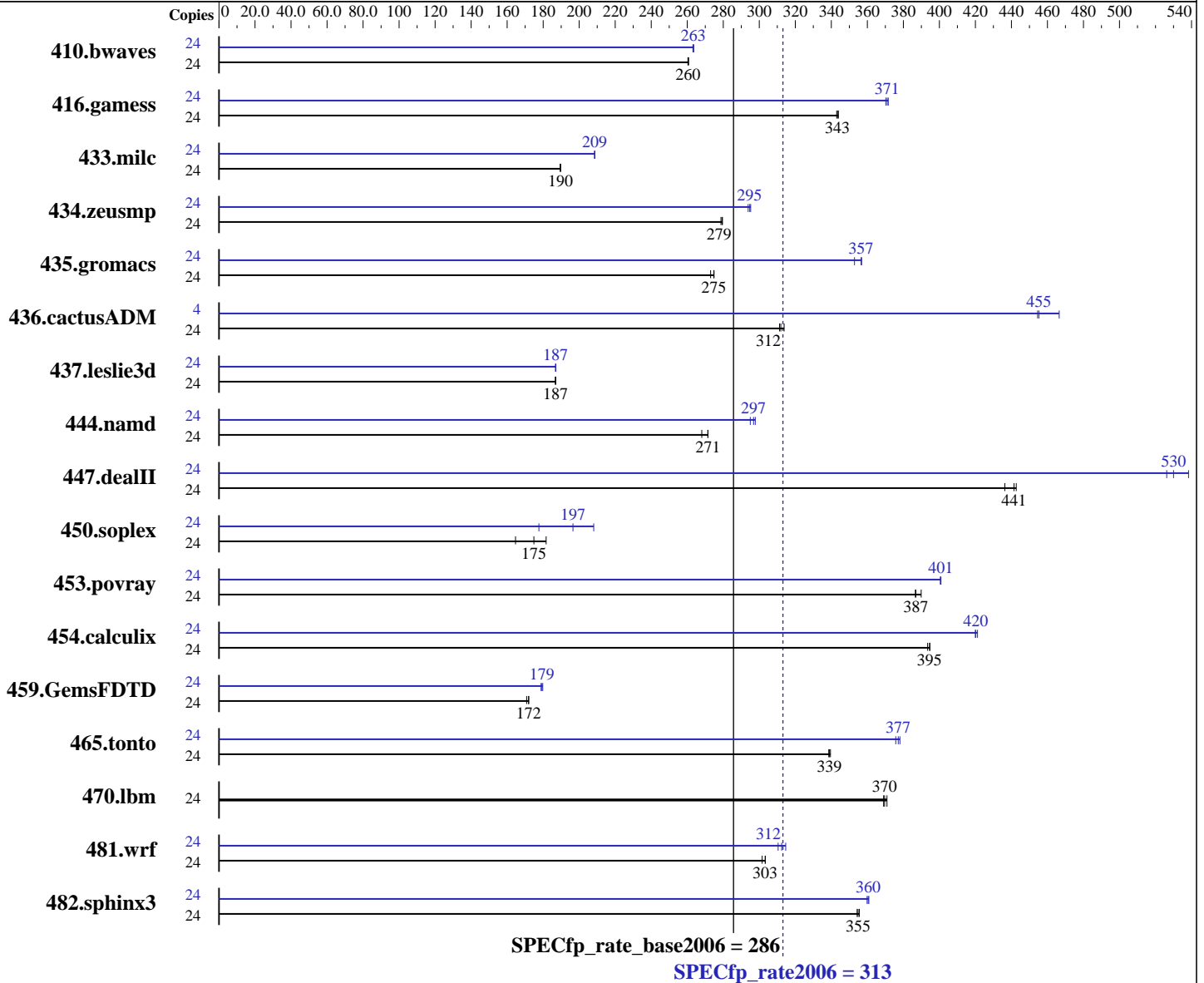
Test date: Mar-2010

Test sponsor: Hewlett-Packard Company

Hardware Availability: Mar-2010

Tested by: Hewlett-Packard Company

Software Availability: Mar-2010



Hardware

CPU Name: AMD Opteron 6174
 CPU Characteristics:
 CPU MHz: 2200
 FPU: Integrated
 CPU(s) enabled: 24 cores, 2 chips, 12 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

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: 1x146 GB 10 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	<u>1252</u>	<u>260</u>	1253	260	1251	261	24	1239	263	<u>1238</u>	<u>263</u>	1237	264
416.gamess	24	1366	344	1370	343	<u>1368</u>	<u>343</u>	24	<u>1267</u>	<u>371</u>	1265	372	1269	370
433.milc	24	<u>1162</u>	<u>190</u>	1163	190	1162	190	24	1056	209	<u>1056</u>	<u>209</u>	1057	209
434.zeusmp	24	781	280	<u>782</u>	<u>279</u>	784	279	24	743	294	740	295	<u>741</u>	<u>295</u>
435.gromacs	24	628	273	623	275	<u>624</u>	<u>275</u>	24	486	353	480	357	<u>481</u>	<u>357</u>
436.cactusADM	24	914	314	921	311	<u>919</u>	<u>312</u>	4	105	455	<u>105</u>	<u>455</u>	102	467
437.leslie3d	24	<u>1207</u>	<u>187</u>	1207	187	1208	187	24	1206	187	<u>1207</u>	<u>187</u>	1207	187
444.namd	24	718	268	<u>709</u>	<u>271</u>	709	271	24	652	295	646	298	<u>648</u>	<u>297</u>
447.dealII	24	620	443	629	436	<u>622</u>	<u>441</u>	24	522	526	510	538	<u>518</u>	<u>530</u>
450.soplex	24	1216	165	<u>1145</u>	<u>175</u>	1102	182	24	1127	178	<u>1018</u>	<u>197</u>	962	208
453.povray	24	<u>330</u>	<u>387</u>	330	387	327	390	24	319	400	<u>319</u>	<u>401</u>	319	401
454.calculix	24	<u>502</u>	<u>395</u>	503	393	502	395	24	472	420	470	421	<u>471</u>	<u>420</u>
459.GemsFDTD	24	1491	171	<u>1481</u>	<u>172</u>	1480	172	24	1416	180	<u>1420</u>	<u>179</u>	1424	179
465.tonto	24	697	339	696	340	<u>697</u>	<u>339</u>	24	625	378	<u>626</u>	<u>377</u>	628	376
470.lbm	24	889	371	<u>892</u>	<u>370</u>	894	369	24	889	371	<u>892</u>	<u>370</u>	894	369
481.wrf	24	884	303	889	302	<u>884</u>	<u>303</u>	24	852	315	<u>858</u>	<u>312</u>	863	310
482.sphinx3	24	1315	356	1320	354	<u>1318</u>	<u>355</u>	24	1300	360	1296	361	<u>1298</u>	<u>360</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.
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 Power efficiency mode set to Performance

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/hp-amd-linux-flags.20100330.html>

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

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

<http://www.spec.org/cpu2006/flags/hp-amd-linux-flags.20100330.xml>

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



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For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 05:09:16 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 30 March 2010.