



SPEC® CFP2006 Result

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Hewlett-Packard Company

SPECfp®_rate2006 = 320

ProLiant DL585 G7
(2.3 GHz AMD Opteron 6176)

SPECfp_rate_base2006 = 294

CPU2006 license: 3

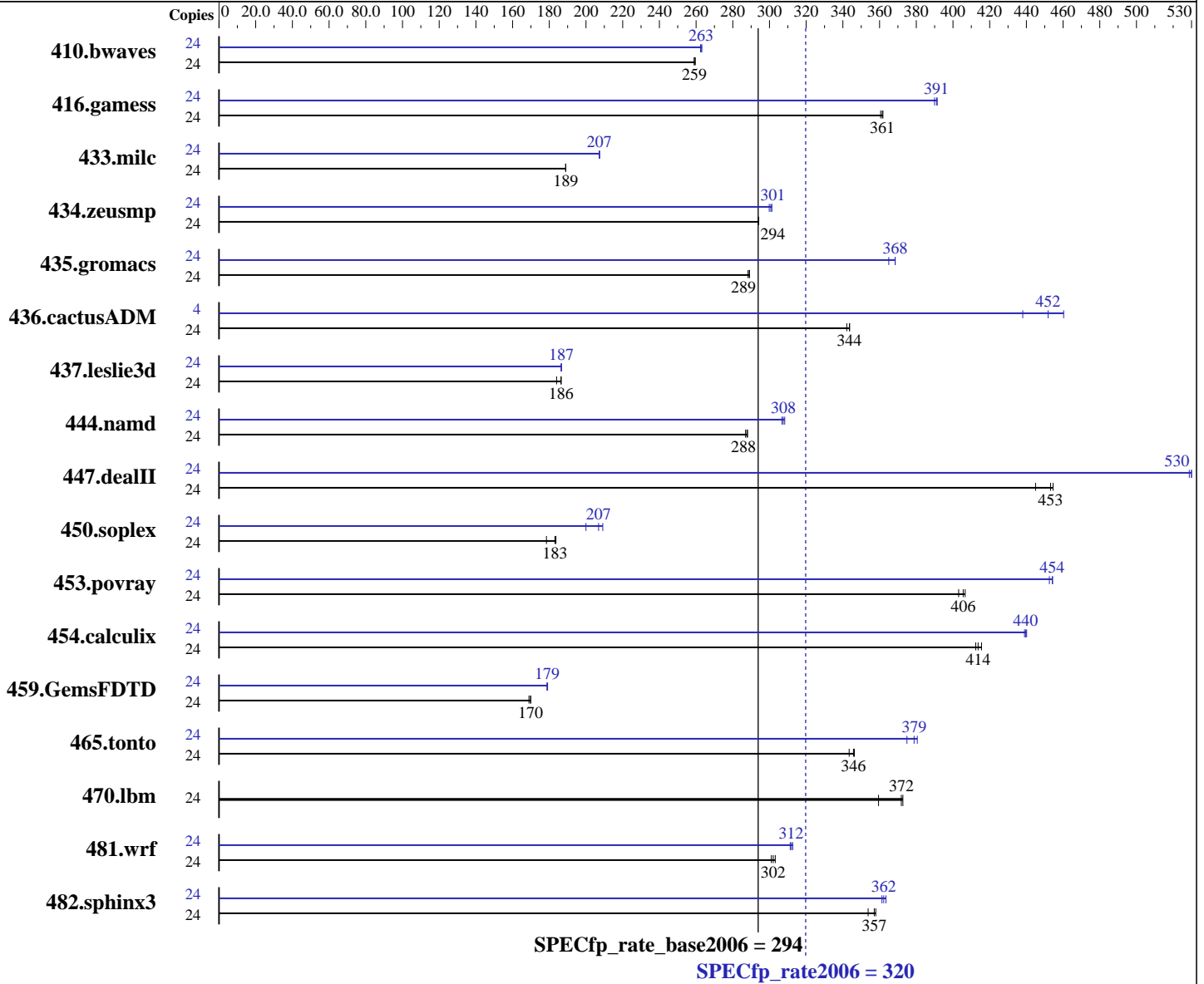
Test date: Apr-2011

Test sponsor: Hewlett-Packard Company

Hardware Availability: Feb-2011

Tested by: Hewlett-Packard Company

Software Availability: Aug-2010



Hardware

CPU Name: AMD Opteron 6176
 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

Software

Operating System: SUSE Linux Enterprise Server 11 (x86_64) SP1, Kernel 2.6.32.12-0.7-default
 Compiler: x86 Open64 4.2.4 Compiler Suite (from AMD)
 Auto Parallel: Yes
 File System: ext3
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 32/64-bit
 Other Software: None

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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 (16 x 4 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem: 2 x 146 GB 10 K SAS
Other Hardware: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	24	<u>1259</u>	<u>259</u>	1259	259	1256	260	24	1243	262	<u>1241</u>	<u>263</u>	1239	263
416.gamess	24	1299	362	<u>1300</u>	<u>361</u>	1303	361	24	1205	390	<u>1202</u>	<u>391</u>	1201	391
433.milc	24	1166	189	1166	189	<u>1166</u>	<u>189</u>	24	1063	207	<u>1063</u>	<u>207</u>	1062	207
434.zeusmp	24	742	294	743	294	<u>743</u>	<u>294</u>	24	<u>726</u>	<u>301</u>	728	300	725	301
435.gromacs	24	594	288	<u>593</u>	<u>289</u>	593	289	24	<u>465</u>	<u>368</u>	469	365	465	369
436.cactusADM	24	835	344	838	342	<u>835</u>	<u>344</u>	4	104	460	109	438	<u>106</u>	<u>452</u>
437.leslie3d	24	1210	186	<u>1210</u>	<u>186</u>	1226	184	24	<u>1209</u>	<u>187</u>	1209	187	1210	186
444.namd	24	671	287	<u>669</u>	<u>288</u>	668	288	24	<u>626</u>	<u>308</u>	627	307	624	308
447.dealII	24	617	445	604	455	<u>606</u>	<u>453</u>	24	519	529	518	530	<u>518</u>	<u>530</u>
450.soplex	24	1122	178	<u>1093</u>	<u>183</u>	1090	184	24	1001	200	<u>968</u>	<u>207</u>	957	209
453.povray	24	317	403	314	407	<u>315</u>	<u>406</u>	24	282	453	<u>281</u>	<u>454</u>	281	454
454.calculix	24	476	416	480	412	<u>479</u>	<u>414</u>	24	450	440	451	439	<u>450</u>	<u>440</u>
459.GemsFDTD	24	1508	169	<u>1500</u>	<u>170</u>	1499	170	24	1422	179	<u>1424</u>	<u>179</u>	1424	179
465.tonto	24	<u>683</u>	<u>346</u>	682	346	688	343	24	630	375	<u>623</u>	<u>379</u>	621	381
470.lbm	24	885	373	917	359	<u>887</u>	<u>372</u>	24	885	373	917	359	<u>887</u>	<u>372</u>
481.wrf	24	891	301	<u>888</u>	<u>302</u>	884	303	24	861	311	857	313	<u>859</u>	<u>312</u>
482.sphinx3	24	1322	354	1307	358	<u>1310</u>	<u>357</u>	24	1295	361	1287	363	<u>1291</u>	<u>362</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-libs-revC/64:/cpu2006/amd1002mc-rate-libs-revC/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:
 opencc

C++ benchmarks:
 openCC

Fortran benchmarks:
 openf95

Benchmarks using both Fortran and C:
 opencc 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-open64-424-flags-rate-revC.20100901.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-open64-424-flags-rate-revC.20100901.xml>



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Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 20:18:42 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 24 May 2011.