



SPEC® CFP2006 Result

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Hewlett-Packard Company

SPECfp®_rate2006 = 313

ProLiant DL165 G7
(2.2 GHz AMD Opteron 6174)

SPECfp_rate_base2006 = 286

CPU2006 license: 3

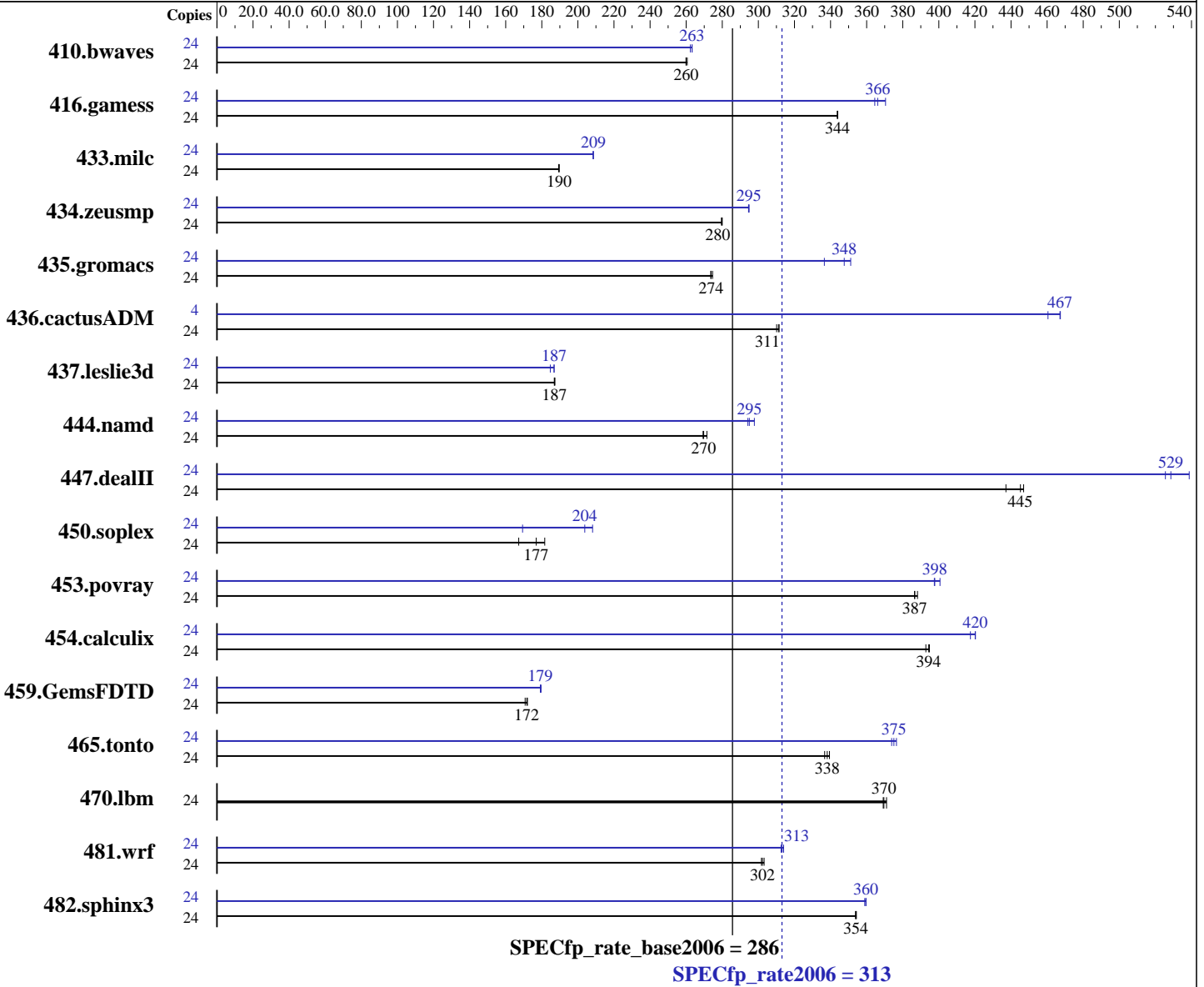
Test date: Mar-2010

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

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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: 1 x 160 GB 7.2 K SATA
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>1255</u>	<u>260</u>	1252	261	1255	260	24	1243	262	1239	263	<u>1239</u>	<u>263</u>
416.gamess	24	1367	344	1366	344	<u>1366</u>	<u>344</u>	24	1289	364	<u>1284</u>	<u>366</u>	1268	370
433.milc	24	1164	189	1162	190	<u>1162</u>	<u>190</u>	24	1056	209	1057	208	<u>1057</u>	<u>209</u>
434.zeusmp	24	<u>781</u>	<u>280</u>	780	280	781	280	24	741	295	<u>741</u>	<u>295</u>	741	295
435.gromacs	24	626	274	<u>626</u>	<u>274</u>	624	275	24	488	351	509	337	<u>493</u>	<u>348</u>
436.cactusADM	24	<u>922</u>	<u>311</u>	925	310	921	312	4	102	467	104	460	<u>102</u>	<u>467</u>
437.leslie3d	24	1207	187	<u>1207</u>	<u>187</u>	1205	187	24	1208	187	<u>1208</u>	<u>187</u>	1221	185
444.namd	24	<u>714</u>	<u>270</u>	715	269	709	271	24	<u>652</u>	<u>295</u>	654	294	646	298
447.dealII	24	628	437	<u>617</u>	<u>445</u>	614	447	24	510	539	<u>519</u>	<u>529</u>	522	526
450.soplex	24	1197	167	<u>1131</u>	<u>177</u>	1102	182	24	1182	169	<u>982</u>	<u>204</u>	962	208
453.povray	24	329	388	330	387	<u>330</u>	<u>387</u>	24	319	401	<u>321</u>	<u>398</u>	321	398
454.calculix	24	502	395	504	393	<u>502</u>	<u>394</u>	24	474	417	<u>471</u>	<u>420</u>	471	420
459.GemsFDTD	24	1491	171	<u>1483</u>	<u>172</u>	1480	172	24	1418	180	<u>1420</u>	<u>179</u>	1421	179
465.tonto	24	<u>698</u>	<u>338</u>	696	339	701	337	24	<u>630</u>	<u>375</u>	632	374	627	377
470.lbm	24	889	371	<u>892</u>	<u>370</u>	893	369	24	889	371	<u>892</u>	<u>370</u>	893	369
481.wrf	24	889	302	884	303	<u>887</u>	<u>302</u>	24	858	313	<u>856</u>	<u>313</u>	854	314
482.sphinx3	24	1320	354	<u>1321</u>	<u>354</u>	1322	354	24	1303	359	<u>1301</u>	<u>360</u>	1301	360

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:
Power Efficiency Mode set to Performance
Memory Clock Speed set to 1333MHz
C1E Support Disabled
PowerNow Disabled

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.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
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64

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Base Portability Flags (Continued)

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

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:
opencc

C++ benchmarks:
openCC

Fortran benchmarks:
openf95

Benchmarks using both Fortran and C:
opencc 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

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Peak Portability Flags (Continued)

```

444.namd: -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
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

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Peak Optimization Flags (Continued)

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
-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>



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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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