



SPEC[®] CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp[®]_rate2006 = 139

PowerEdge R515 (AMD Opteron 4164 EE, 1.80 GHz)

SPECfp_rate_base2006 = 128

CPU2006 license: 55

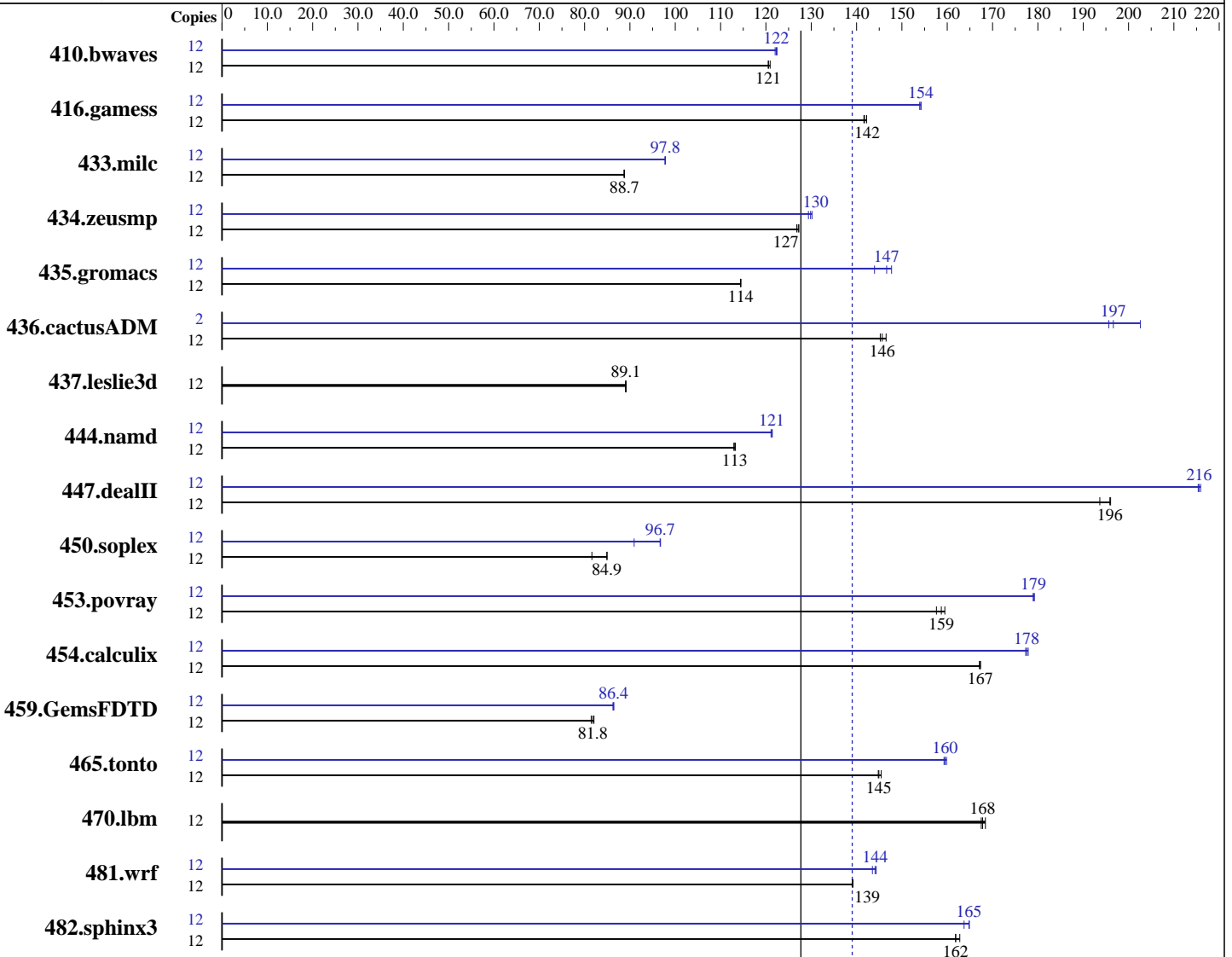
Test date: Jul-2010

Test sponsor: Dell Inc.

Hardware Availability: Jul-2010

Tested by: Dell Inc.

Software Availability: Jul-2010



SPECfp_rate_base2006 = 128

SPECfp_rate2006 = 139

Hardware

CPU Name: AMD Opteron 4164 EE
 CPU Characteristics:
 CPU MHz: 1800
 FPU: Integrated
 CPU(s) enabled: 12 cores, 2 chips, 6 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

Software

Operating System: SUSE Linux Enterprise Server 11 (x86_64)
 Kernel 2.6.27.19-5-default
 Compiler: x86 Open64 4.2.4 Compiler Suite (from AMD)
 Auto Parallel: Yes
 File System: ext3
 System State: Run level 3 (Full multiuser with network)
 Base Pointers: 64-bit
 Peak Pointers: 32/64-bit
 Other Software: None

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 139

PowerEdge R515 (AMD Opteron 4164 EE, 1.80 GHz)

SPECfp_rate_base2006 = 128

CPU2006 license: 55

Test date: Jul-2010

Test sponsor: Dell Inc.

Hardware Availability: Jul-2010

Tested by: Dell Inc.

Software Availability: Jul-2010

L3 Cache: 6 MB I+D on chip per chip
 Other Cache: None
 Memory: 32 GB (8 x 4 GB 2Rx4 PC3-10600R-9, ECC)
 Disk Subsystem: 1 x 146 GB 10000 RPM 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	12	1353	121	1349	121	<u>1353</u>	<u>121</u>	12	1336	122	<u>1334</u>	<u>122</u>	1332	122
416.gamess	12	1659	142	1652	142	<u>1657</u>	<u>142</u>	12	1527	154	1524	154	<u>1524</u>	<u>154</u>
433.milc	12	1241	88.8	<u>1241</u>	<u>88.7</u>	1242	88.7	12	<u>1127</u>	<u>97.8</u>	1126	97.8	1127	97.7
434.zeusmp	12	861	127	858	127	<u>859</u>	<u>127</u>	12	839	130	844	129	<u>841</u>	<u>130</u>
435.gromacs	12	748	114	<u>749</u>	<u>114</u>	749	114	12	<u>584</u>	<u>147</u>	595	144	580	148
436.cactusADM	12	<u>985</u>	<u>146</u>	979	147	987	145	2	122	196	118	203	<u>122</u>	<u>197</u>
437.leslie3d	12	1265	89.1	<u>1267</u>	<u>89.1</u>	1267	89.0	12	1265	89.1	<u>1267</u>	<u>89.1</u>	1267	89.0
444.namd	12	852	113	850	113	<u>851</u>	<u>113</u>	12	<u>794</u>	<u>121</u>	795	121	793	121
447.dealII	12	<u>701</u>	<u>196</u>	709	194	700	196	12	<u>637</u>	<u>216</u>	637	215	636	216
450.soplex	12	1226	81.6	1178	85.0	<u>1179</u>	<u>84.9</u>	12	1101	90.9	1034	96.8	<u>1035</u>	<u>96.7</u>
453.povray	12	405	158	400	159	<u>402</u>	<u>159</u>	12	357	179	<u>357</u>	<u>179</u>	356	179
454.calculix	12	592	167	592	167	<u>592</u>	<u>167</u>	12	<u>558</u>	<u>178</u>	558	177	557	178
459.GemsFDTD	12	1563	81.4	1551	82.1	<u>1557</u>	<u>81.8</u>	12	<u>1474</u>	<u>86.4</u>	1473	86.4	1476	86.2
465.tonto	12	816	145	812	145	<u>815</u>	<u>145</u>	12	741	159	739	160	<u>740</u>	<u>160</u>
470.lbm	12	979	168	<u>983</u>	<u>168</u>	984	168	12	979	168	<u>983</u>	<u>168</u>	984	168
481.wrf	12	964	139	963	139	<u>963</u>	<u>139</u>	12	934	143	929	144	<u>930</u>	<u>144</u>
482.sphinx3	12	1445	162	1437	163	<u>1445</u>	<u>162</u>	12	1429	164	<u>1419</u>	<u>165</u>	1418	165

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=5400 in /etc/sysctl.conf
 mount -t hugetlbfs nodev /mnt/hugepages



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 139

PowerEdge R515 (AMD Opteron 4164 EE, 1.80 GHz)

SPECfp_rate_base2006 = 128

CPU2006 license: 55

Test date: Jul-2010

Test sponsor: Dell Inc.

Hardware Availability: Jul-2010

Tested by: Dell Inc.

Software Availability: Jul-2010

General Notes

Environment variables set by runspec before the start of the run:

HUGETLB_LIMIT = "450"

LD_LIBRARY_PATH = "/root/cpu2006-1.1/amd1002-rate-libs-revC/64:/root/cpu2006-1.1/amd1002-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>

Binaries were compiled on SLES10 SP2 with binutils 2.18

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.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
 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



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 139

PowerEdge R515 (AMD Opteron 4164 EE, 1.80 GHz)

SPECfp_rate_base2006 = 128

CPU2006 license: 55

Test date: Jul-2010

Test sponsor: Dell Inc.

Hardware Availability: Jul-2010

Tested by: Dell Inc.

Software Availability: Jul-2010

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
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



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 139

PowerEdge R515 (AMD Opteron 4164 EE, 1.80 GHz)

SPECfp_rate_base2006 = 128

CPU2006 license: 55

Test date: Jul-2010

Test sponsor: Dell Inc.

Hardware Availability: Jul-2010

Tested by: Dell Inc.

Software Availability: Jul-2010

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.deallI: -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
-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

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 139

PowerEdge R515 (AMD Opteron 4164 EE, 1.80 GHz)

SPECfp_rate_base2006 = 128

CPU2006 license: 55

Test date: Jul-2010

Test sponsor: Dell Inc.

Hardware Availability: Jul-2010

Tested by: Dell Inc.

Software Availability: Jul-2010

Peak Optimization Flags (Continued)

437.leslie3d: basepeak = yes

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-open64-424-flags-rate-revC.20100901.html>
<http://www.spec.org/cpu2006/flags/amd-platform-rate-revC.html>

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

<http://www.spec.org/cpu2006/flags/x86-open64-424-flags-rate-revC.20100901.xml>
<http://www.spec.org/cpu2006/flags/amd-platform-rate-revC.xml>

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 14:47:58 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 12 October 2010.