



SPEC® CFP2006 Result

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Dell Inc.

SPECfp®_rate2006 = 202

PowerEdge M910 (Intel Xeon L7545, 1.87 GHz)

SPECfp_rate_base2006 = 195

CPU2006 license: 55

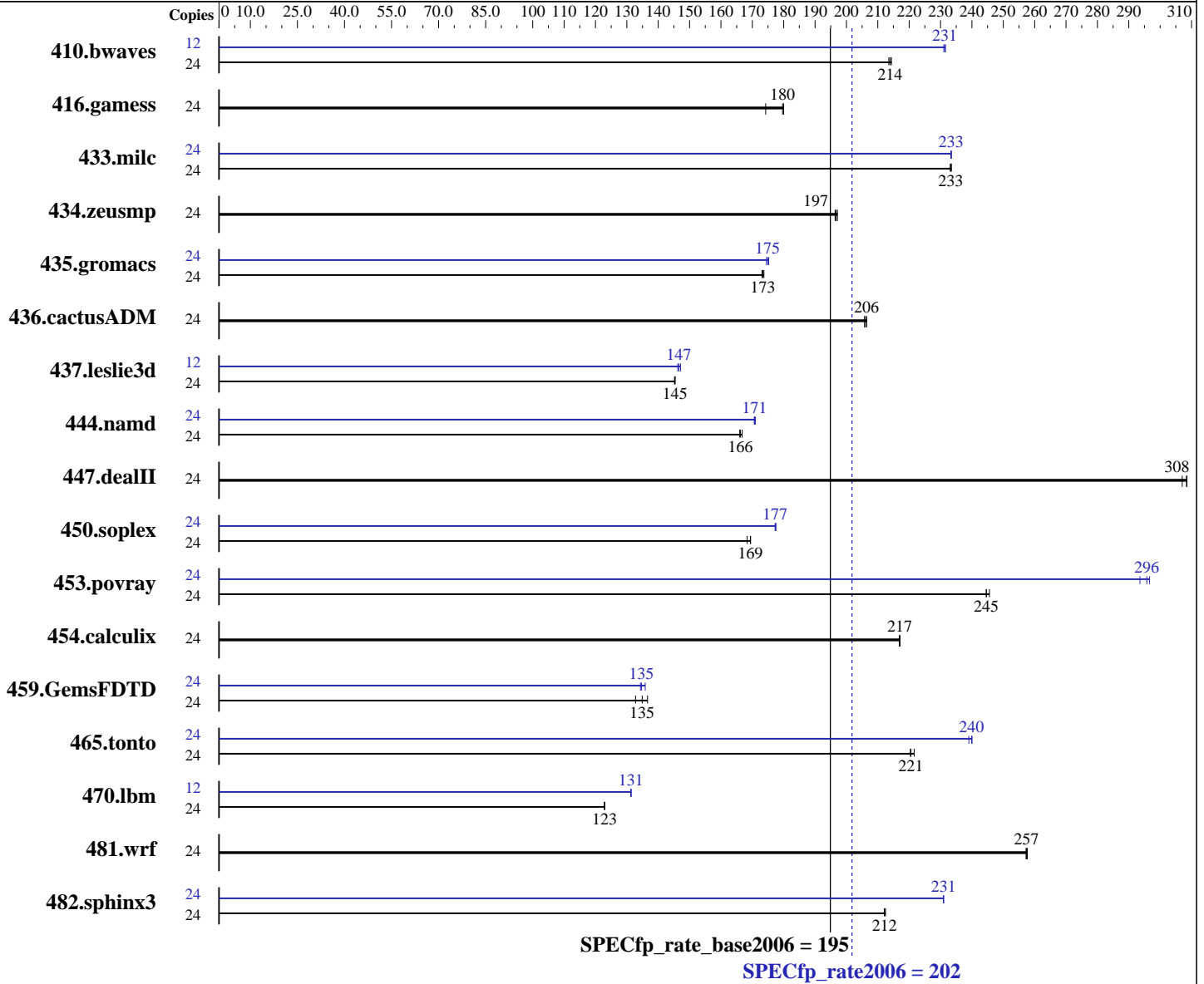
Test date: May-2010

Test sponsor: Dell Inc.

Hardware Availability: Mar-2010

Tested by: Dell Inc.

Software Availability: Dec-2009



Hardware

CPU Name: Intel Xeon L7545
 CPU Characteristics: Intel Turbo Boost Technology up to 2.53 GHz
 CPU MHz: 1867
 FPU: Integrated
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core
 CPU(s) orderable: 2,4 chips
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 256 KB I+D on chip per core

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Software

Operating System: SUSE Linux Enterprise Server 11 (x86_64), Kernel 2.6.27.19-5-smp
 Compiler: Intel C++ and Fortran Professional Compiler for IA32 and Intel 64, Version 11.1 Build 20091130 Package ID: l_cproc_p_11.1.064, l_cprof_p_11.1.064
 Auto Parallel: No
 File System: ext3
 System State: Run level 3 (multi-user)

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L3 Cache: 18 MB I+D on chip per chip
 Other Cache: None
 Memory: 128 GB (32 x 4 GB DDR3-1066 QR RDIMM, CL7, ECC, downclocked to 978 MHz)
 Disk Subsystem: 1 x 146 GB 15000 RPM SAS
 Other Hardware: None

Base Pointers: 64-bit
 Peak Pointers: 32/64-bit
 Other Software: None

Results Table

| Benchmark | Base | | | | | | | | Peak | | | | | | | |
|---------------|--------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--|--|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | | |
| 410.bwaves | 24 | 1522 | 214 | <u>1525</u> | <u>214</u> | 1528 | 214 | 12 | 704 | 232 | 706 | 231 | <u>705</u> | <u>231</u> | | |
| 416.gamess | 24 | 2611 | 180 | <u>2616</u> | <u>180</u> | 2696 | 174 | 24 | 2611 | 180 | <u>2616</u> | <u>180</u> | 2696 | 174 | | |
| 433.milc | 24 | 944 | 233 | <u>944</u> | <u>233</u> | 945 | 233 | 24 | 944 | 233 | 944 | 233 | <u>944</u> | <u>233</u> | | |
| 434.zeusmp | 24 | 1112 | 196 | <u>1111</u> | <u>197</u> | 1108 | 197 | 24 | 1112 | 196 | <u>1111</u> | <u>197</u> | 1108 | 197 | | |
| 435.gromacs | 24 | 990 | 173 | <u>988</u> | <u>173</u> | 987 | 174 | 24 | <u>980</u> | <u>175</u> | 978 | 175 | 982 | 175 | | |
| 436.cactusADM | 24 | <u>1392</u> | <u>206</u> | 1389 | 206 | 1394 | 206 | 24 | <u>1392</u> | <u>206</u> | 1389 | 206 | 1394 | 206 | | |
| 437.leslie3d | 24 | <u>1552</u> | <u>145</u> | 1552 | 145 | 1554 | 145 | 12 | 771 | 146 | 767 | 147 | <u>769</u> | <u>147</u> | | |
| 444.namd | 24 | 1154 | 167 | <u>1158</u> | <u>166</u> | 1160 | 166 | 24 | 1126 | 171 | <u>1127</u> | <u>171</u> | 1128 | 171 | | |
| 447.dealII | 24 | 890 | 309 | 894 | 307 | <u>890</u> | <u>308</u> | 24 | 890 | 309 | 894 | 307 | <u>890</u> | <u>308</u> | | |
| 450.soplex | 24 | 1181 | 169 | 1189 | 168 | <u>1181</u> | <u>169</u> | 24 | 1127 | 178 | <u>1129</u> | <u>177</u> | 1129 | 177 | | |
| 453.povray | 24 | <u>522</u> | <u>245</u> | 520 | 246 | 522 | 245 | 24 | 430 | 297 | 435 | 294 | <u>432</u> | <u>296</u> | | |
| 454.calculix | 24 | <u>913</u> | <u>217</u> | 913 | 217 | 912 | 217 | 24 | <u>913</u> | <u>217</u> | 913 | 217 | 912 | 217 | | |
| 459.GemsFDTD | 24 | 1864 | 137 | <u>1888</u> | <u>135</u> | 1918 | 133 | 24 | 1895 | 134 | 1874 | 136 | <u>1891</u> | <u>135</u> | | |
| 465.tonto | 24 | 1072 | 220 | <u>1071</u> | <u>221</u> | 1066 | 222 | 24 | <u>984</u> | <u>240</u> | 988 | 239 | 984 | 240 | | |
| 470.lbm | 24 | <u>2682</u> | <u>123</u> | 2682 | 123 | 2684 | 123 | 12 | 1255 | 131 | <u>1256</u> | <u>131</u> | 1256 | 131 | | |
| 481.wrf | 24 | 1042 | 257 | 1040 | 258 | <u>1042</u> | <u>257</u> | 24 | 1042 | 257 | 1040 | 258 | <u>1042</u> | <u>257</u> | | |
| 482.sphinx3 | 24 | <u>2205</u> | <u>212</u> | 2206 | 212 | 2202 | 212 | 24 | 2026 | 231 | <u>2026</u> | <u>231</u> | 2025 | 231 | | |

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

Operating System Notes

'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run

Platform Notes

vm.zone_reclaim_mode = 1 in /etc/sysctl.conf file
BIOS Settings:
Power Management = Maximum Performance (Default = Active Power Controller)



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General Notes

Binaries were compiled on SLES 10 with Binutils 2.18.50.0.7.20080502

Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

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 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
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 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static

Fortran benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static

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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

`-xSSE4.2 -ipo -O3 -no-prec-div -static`

Peak Compiler Invocation

C benchmarks (except as noted below):

`icc -m64`

`482.sphinx3:icc -m32`

C++ benchmarks (except as noted below):

`icpc -m64`

`450.soplex:icpc -m32`

Fortran benchmarks:

`ifort -m64`

Benchmarks using both Fortran and C:

`icc -m64 ifort -m64`

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 -nofor_main`
 436.cactusADM: `-DSPEC_CPU_LP64 -nofor_main`
 437.leslie3d: `-DSPEC_CPU_LP64`
 444.namd: `-DSPEC_CPU_LP64`
 447.deallI: `-DSPEC_CPU_LP64`
 453.povray: `-DSPEC_CPU_LP64`
 454.calculix: `-DSPEC_CPU_LP64 -nofor_main`
 459.GemsFDTD: `-DSPEC_CPU_LP64`
 465.tonto: `-DSPEC_CPU_LP64`
 470.lbm: `-DSPEC_CPU_LP64`
 481.wrf: `-DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX`

Peak Optimization Flags

C benchmarks:

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Peak Optimization Flags (Continued)

433.milc: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
-fno-alias -opt-prefetch

470.lbm: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
-opt-malloc-options=3 -ansi-alias -auto-ilp32

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2

C++ benchmarks:

444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
-fno-alias -auto-ilp32

447.dealII: basepeak = yes

450.soplex: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
-opt-malloc-options=3

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
-unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch

416.gamess: basepeak = yes

434.zeusmp: basepeak = yes

437.leslie3d: -xSSE4.2 -ipo -O3 -no-prec-div -static

459.GemsFDTD: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
-unroll2 -Ob0

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
-unroll4 -auto -inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
-opt-prefetch -auto-ilp32

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Peak Optimization Flags (Continued)

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100330.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100330.xml>

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