



SPEC[®] CFP2006 Result

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SGI

SGI Altix ICE 8200EX (Intel Xeon X5570, 2.93 GHz)

SPECfp[®]_rate2006 = 372

SPECfp_rate_base2006 = 361

CPU2006 license: 4

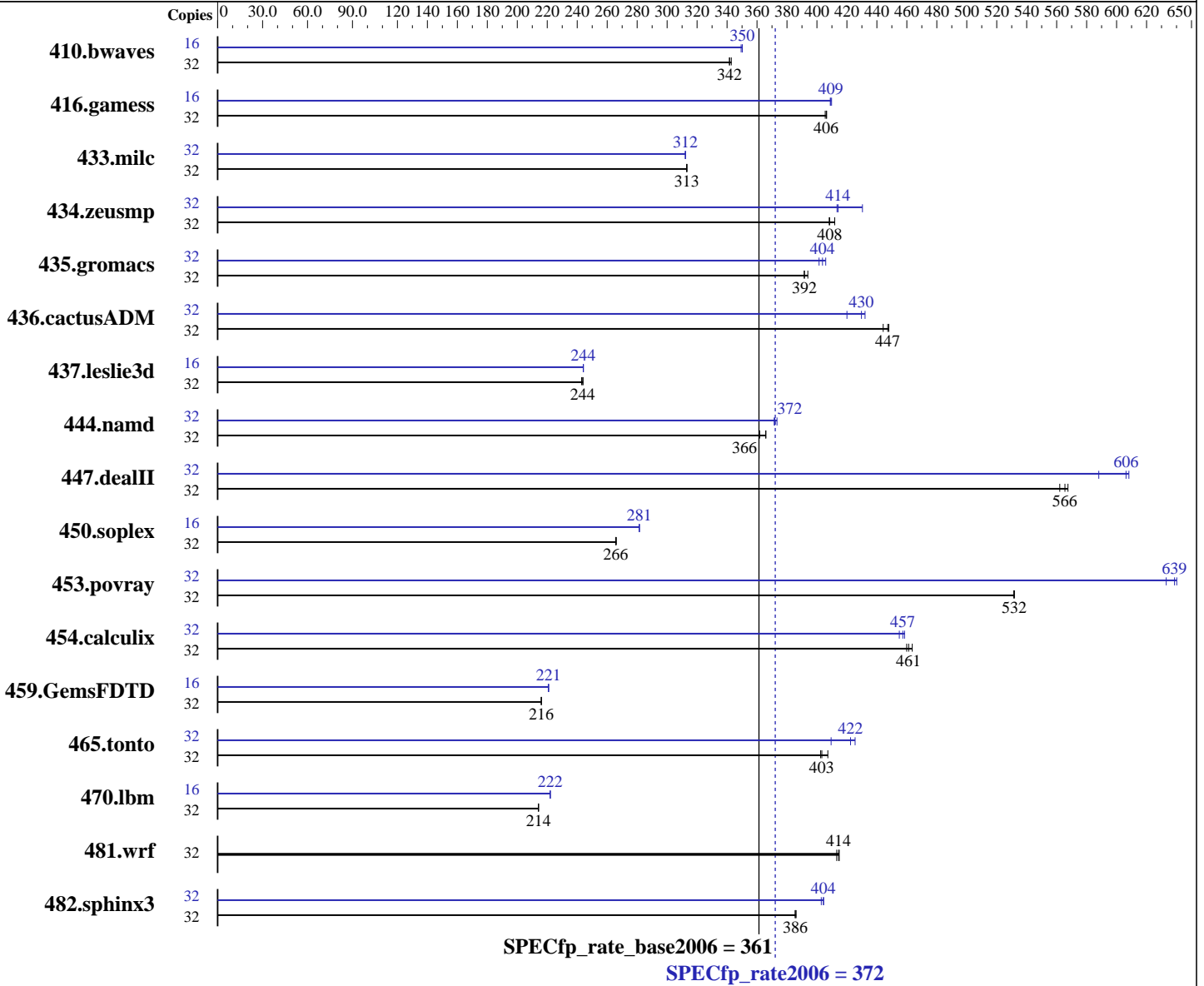
Test sponsor: SGI

Tested by: SGI

Test date: May-2009

Hardware Availability: Mar-2009

Software Availability: Feb-2009



Hardware

CPU Name: Intel Xeon X5570
 CPU Characteristics: Quad Core, 2.93 GHz
 Intel Turbo Boost Technology up to 3.33 GHz
 CPU MHz: 2933
 FPU: Integrated
 CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip, 2 threads/core
 CPU(s) orderable: 1,2 chips per blade, 2-16384 blades
 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 10 (x86_64) SP2
 with patch Linux kernel 20080917,
 Kernel 2.6.16.60-0.30-smp
 Compiler: Intel C++ and Fortran Compiler 11.0 for Linux
 Build 20090131 Package ID: l_cproc_p_11.0.080,
 l_cprof_p_11.0.080
 Auto Parallel: No
 File System: lustre v1.6.7 over DDR Infiniband
 System State: Multi-user, run level 3

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L3 Cache: 8 MB I+D on chip per chip
Other Cache: None
Memory: 96 GB (2 x 12*4GB DDR3-1066 CL7 RDIMMs)
Disk Subsystem: 13 TB Lustre Parallel Filesystem
1 Metadata Server and 6 Object Storage Servers
96 x 136 GB SAS (Seagate Cheetah 15000 rpm)
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: SGI ProPack 6 for Linux Service Pack 2
Binutils 2.18.50.0.7.20080502

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	32	1268	343	1273	342	<u>1273</u>	<u>342</u>	16	622	349	621	350	<u>621</u>	<u>350</u>
416.gamess	32	1541	406	<u>1542</u>	<u>406</u>	1545	406	16	765	410	766	409	<u>766</u>	<u>409</u>
433.milc	32	939	313	<u>938</u>	<u>313</u>	938	313	32	941	312	941	312	<u>941</u>	<u>312</u>
434.zeusmp	32	713	408	707	412	<u>713</u>	<u>408</u>	32	<u>703</u>	<u>414</u>	677	430	704	413
435.gromacs	32	584	391	<u>583</u>	<u>392</u>	580	394	32	<u>566</u>	<u>404</u>	569	401	563	406
436.cactusADM	32	854	448	<u>855</u>	<u>447</u>	861	444	32	885	432	<u>890</u>	<u>430</u>	910	420
437.leslie3d	32	1233	244	1238	243	<u>1234</u>	<u>244</u>	16	616	244	616	244	<u>616</u>	<u>244</u>
444.namd	32	709	362	701	366	<u>702</u>	<u>366</u>	32	<u>690</u>	<u>372</u>	687	373	691	371
447.dealII	32	651	562	645	568	<u>647</u>	<u>566</u>	32	602	608	622	588	<u>604</u>	<u>606</u>
450.soplex	32	1003	266	<u>1004</u>	<u>266</u>	1005	266	16	474	281	474	282	<u>474</u>	<u>281</u>
453.povray	32	320	532	320	531	<u>320</u>	<u>532</u>	32	269	633	<u>267</u>	<u>639</u>	266	640
454.calculix	32	569	464	<u>572</u>	<u>461</u>	574	460	32	<u>577</u>	<u>457</u>	576	458	580	455
459.GemsFDTD	32	1572	216	1571	216	<u>1572</u>	<u>216</u>	16	768	221	769	221	<u>769</u>	<u>221</u>
465.tonto	32	773	407	782	402	<u>781</u>	<u>403</u>	32	769	409	740	425	<u>745</u>	<u>422</u>
470.lbm	32	<u>2053</u>	<u>214</u>	2053	214	2053	214	16	990	222	991	222	<u>991</u>	<u>222</u>
481.wrf	32	862	415	<u>862</u>	<u>414</u>	865	413	32	862	415	<u>862</u>	<u>414</u>	865	413
482.sphinx3	32	1615	386	<u>1618</u>	<u>386</u>	1618	385	32	1542	404	<u>1543</u>	<u>404</u>	1548	403

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.
A submit.pl script was used to distribute benchmark copies across the 2 blades and to pin processes to cores using dplace. Each blade runs a separate instance of the operating system.

General Notes

Adjacent cache line prefetch enabled
System has 2 blades with 2 chips/blade.



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Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
icc ifort

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

Benchmarks using both Fortran and C:
-xSSE4.2 -ipo -O3 -no-prec-div -static



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Peak Compiler Invocation

C benchmarks (except as noted below):

icc

482.sphinx3: icc -m32

C++ benchmarks (except as noted below):

icpc

450.soplex: icpc -m32

Fortran benchmarks (except as noted below):

ifort

437.leslie3d: ifort -m32

Benchmarks using both Fortran and C:

icc ifort

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
 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:

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

470.lbm: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch
 -auto-ilp32

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Peak Optimization Flags (Continued)

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: -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 -ansi-alias -scalar-rep-

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: -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 -ansi-alias -scalar-rep-

434.zeusmp: -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)

437.leslie3d: -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 -opt-prefetch

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 -opt-prefetch

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

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: -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 -opt-prefetch -auto-ilp32

454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

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-ic11.0-fp-linux64-revA.20090710.14.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090710.14.xml>

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