SPEC® CFP2006 Result

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SGI

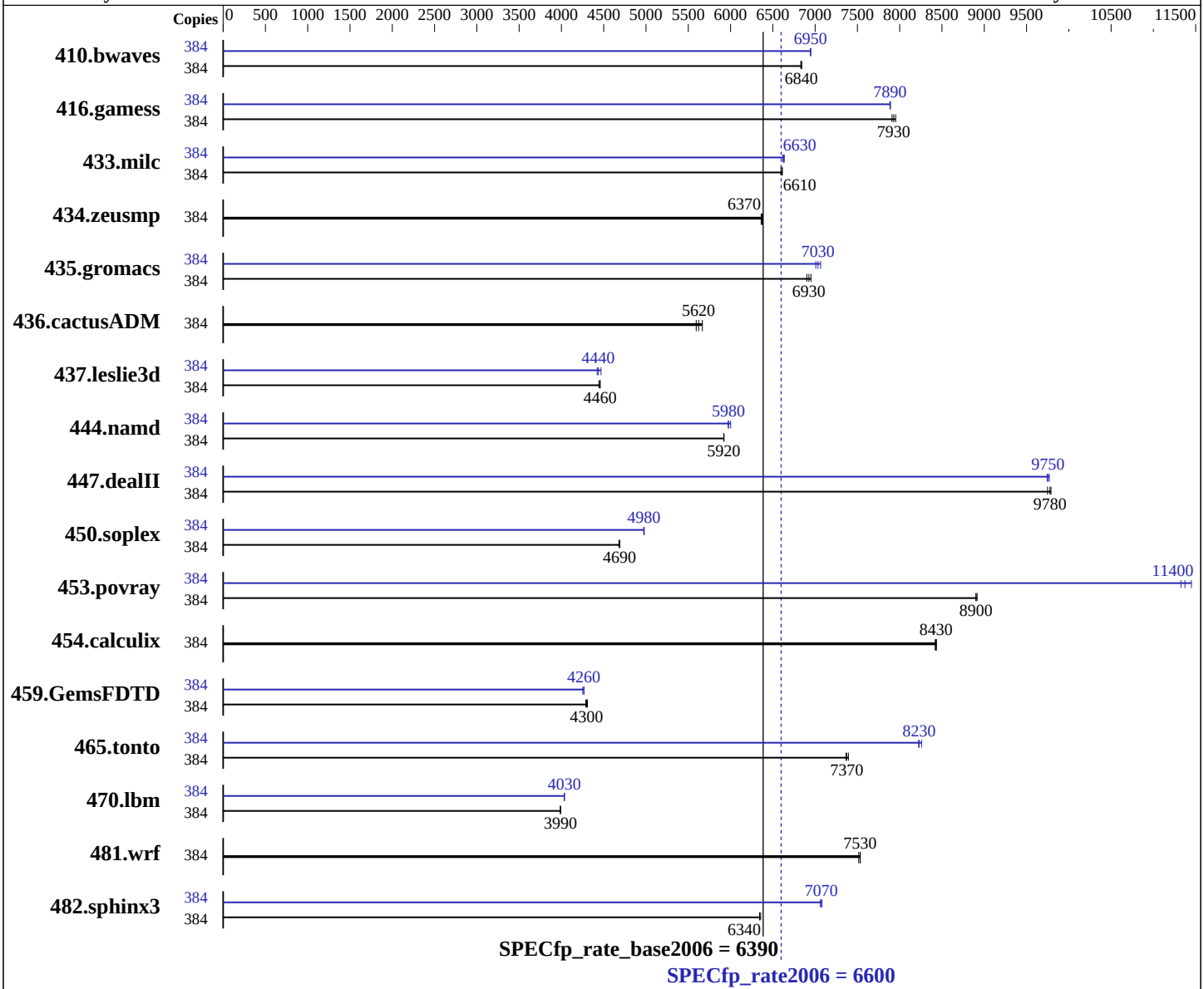
SGI Altix UV 1000 (Intel Xeon X7542, 2.66 GHz)

SPECfp®_rate2006 = 6600

SPECfp_rate_base2006 = 6390

CPU2006 license: 4
Test sponsor: SGI
Tested by: SGI

Test date: Aug-2010
Hardware Availability: Jun-2010
Software Availability: Jun-2010



Hardware

CPU Name:	Intel Xeon X7542
CPU Characteristics:	Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz:	2667
FPU:	Integrated
CPU(s) enabled:	384 cores, 64 chips, 6 cores/chip
CPU(s) orderable:	2-256 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) SP1, Kernel 2.6.32.12-0.7.1.1381.0.PTF-default
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:	tmpfs
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: 2 TB (512 x 4GB dual-rank DDR3-1066 CL7 RDIMMs)
Disk Subsystem: None
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	384	**763**	**6840**	764	6830	763	6840	384	751	6950	751	6950	**751**	**6950**
416.gamess	384	951	7910	**948**	**7930**	945	7950	384	953	7890	953	7890	**953**	**7890**
433.milc	384	**533**	**6610**	533	6610	535	6590	384	**532**	**6630**	531	6640	533	6620
434.zeusmp	384	548	6380	549	6360	**548**	**6370**	384	548	6380	549	6360	**548**	**6370**
435.gromacs	384	397	6900	394	6950	**396**	**6930**	384	388	7060	**390**	**7030**	391	7010
436.cactusADM	384	**816**	**5620**	810	5670	820	5590	384	**816**	**5620**	810	5670	820	5590
437.leslie3d	384	**810**	**4460**	812	4440	810	4460	384	808	4470	816	4420	**814**	**4440**
444.namd	384	520	5920	**520**	**5920**	520	5920	384	513	6000	**515**	**5980**	516	5970
447.dealII	384	451	9750	449	9790	**449**	**9780**	384	451	9740	**450**	**9750**	450	9770
450.soplex	384	**683**	**4690**	684	4680	683	4690	384	644	4970	**644**	**4980**	643	4980
453.povray	384	**229**	**8900**	229	8920	229	8900	384	**180**	**11400**	178	11400	180	11300
454.calculix	384	376	8430	**376**	**8430**	376	8420	384	376	8430	**376**	**8430**	376	8420
459.GemsFDTD	384	950	4290	**948**	**4300**	946	4310	384	**955**	**4260**	955	4270	958	4250
465.tonto	384	511	7390	**512**	**7370**	513	7360	384	459	8220	**459**	**8230**	458	8260
470.lbm	384	1322	3990	1323	3990	**1323**	**3990**	384	1308	4030	**1308**	**4030**	1307	4040
481.wrf	384	571	7520	**569**	**7530**	569	7530	384	571	7520	**569**	**7530**	569	7530
482.sphinx3	384	**1180**	**6340**	1180	6340	1177	6360	384	1057	7080	**1058**	**7070**	1060	7060

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

```
Tmpfs filesystem set up with:
  mkdir -p /mnt/shm
  mount -t tmpfs -o size=2048g,rw,mpol=interleave tmpfs /mnt/shm/
  The mpol=interleave option sets the NUMA memory allocation
  policy for all files to allocate from each node in turn.
```

Platform Notes

OS on 300 GB SAS disk

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

Continued on next page

Base Optimization Flags (Continued)

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`

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.dealII: `-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 -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: -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: 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

Continued on next page

Peak Optimization Flags (Continued)

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`

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.20100316.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.20100316.xml`

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