SPEC® CFP2006 Result

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HITACHI

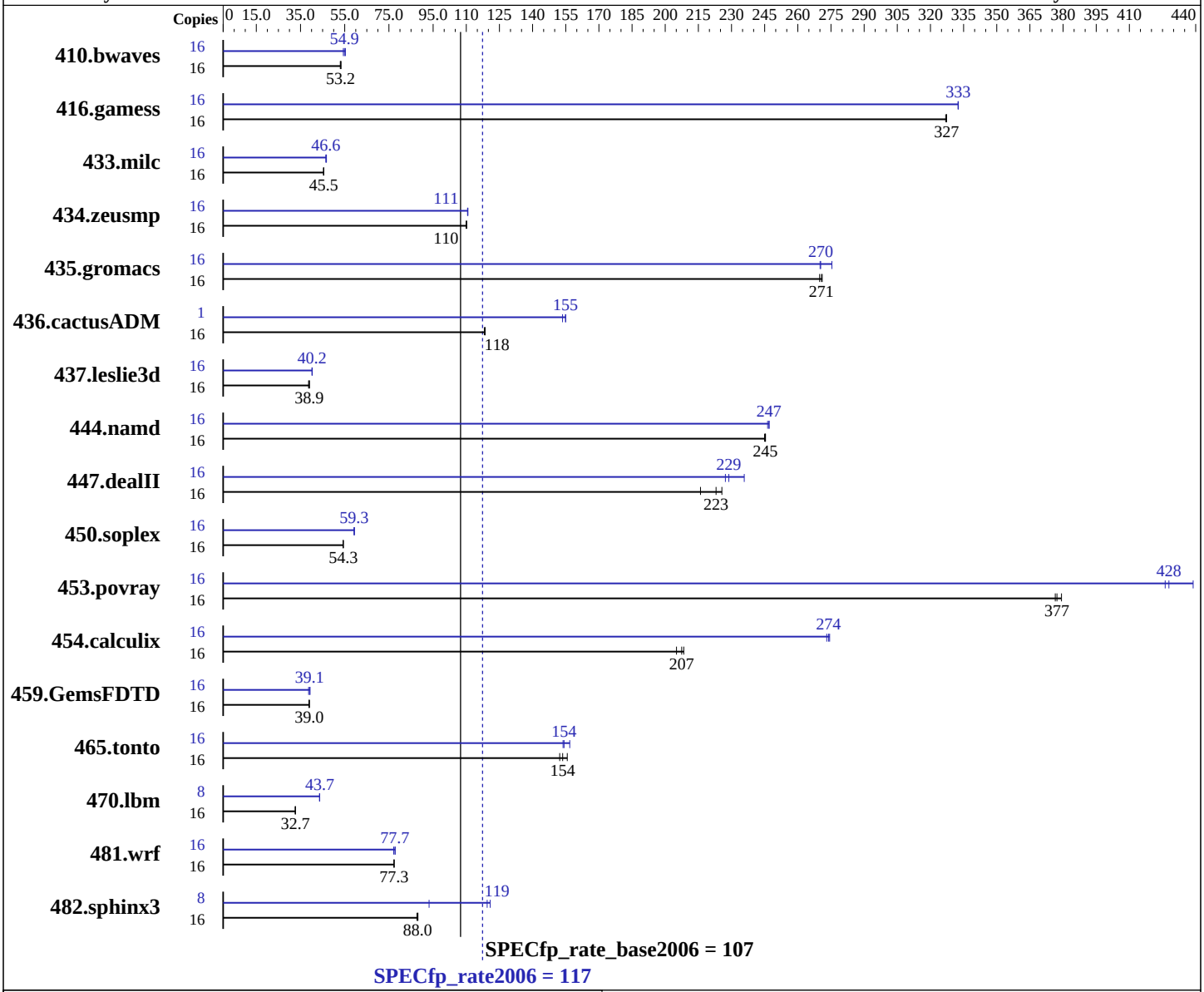
HA8000 RS440 (Intel Xeon X7350)

SPECfp®_rate2006 = 117

SPECfp_rate_base2006 = 107

CPU2006 license: 872
Test sponsor: HITACHI
Tested by: HITACHI

Test date: Aug-2008
Hardware Availability: Nov-2007
Software Availability: Nov-2007



Hardware

CPU Name:	Intel Xeon X7350
CPU Characteristics:	1066MHz system bus
CPU MHz:	2933
FPU:	Integrated
CPU(s) enabled:	16 cores, 4 chips, 4 cores/chip
CPU(s) orderable:	1, 2, 3, 4 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	8 MB I+D on chip per chip, 4 MB shared / 2 cores

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Software

Operating System:	Red Hat Enterprise Linux Server release 5.1 (Tikanga) Kernel 2.6.18-53.el5 on an x86_64
Compiler:	Intel C++ Compiler 10.1 for Linux Build 20070913 Package ID: l_cc_p_10.1.008 Intel Fortran Compiler 10.1 for Linux Build 20070913 Package ID: l_fc_p_10.1.008
Auto Parallel:	Yes
File System:	ext3

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L3 Cache: None
Other Cache: None
Memory: 64 GB(16 x 4 GB PC2-5300F CAS 5-5-5)
Disk Subsystem: 2 x 73 GB 10000 rpm SAS
Other Hardware: None

System State: Multi-user run level 3
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	16	4103	53.0	**4087**	**53.2**	4079	53.3	16	3999	54.4	3931	55.3	**3963**	**54.9**
416.gamess	16	958	327	**957**	**327**	957	327	16	942	333	**942**	**333**	942	332
433.milc	16	3228	45.5	**3231**	**45.5**	3232	45.4	16	3160	46.5	**3155**	**46.6**	3143	46.7
434.zeusmp	16	1321	110	1325	110	**1322**	**110**	16	1317	111	**1316**	**111**	1315	111
435.gromacs	16	421	271	**422**	**271**	423	270	16	415	275	423	270	**423**	**270**
436.cactusADM	16	1618	118	1613	119	**1614**	**118**	1	77.1	155	77.8	154	**77.2**	**155**
437.leslie3d	16	3851	39.1	3892	38.6	**3865**	**38.9**	16	3742	40.2	**3738**	**40.2**	3729	40.3
444.namd	16	523	245	**523**	**245**	524	245	16	519	247	**520**	**247**	521	246
447.dealII	16	811	226	**821**	**223**	848	216	16	**800**	**229**	776	236	806	227
450.soplex	16	2459	54.3	**2455**	**54.3**	2455	54.4	16	2253	59.2	2248	59.4	**2249**	**59.3**
453.povray	16	**226**	**377**	224	379	226	376	16	200	426	194	439	**199**	**428**
454.calculix	16	633	208	644	205	**636**	**207**	16	**482**	**274**	483	273	481	274
459.GemsFDTD	16	4374	38.8	**4355**	**39.0**	4351	39.0	16	4390	38.7	**4344**	**39.1**	4317	39.3
465.tonto	16	1034	152	1011	156	**1025**	**154**	16	1004	157	**1021**	**154**	1024	154
470.lbm	16	6731	32.7	6730	32.7	**6731**	**32.7**	8	2523	43.6	**2516**	**43.7**	2516	43.7
481.wrf	16	2312	77.3	2311	77.3	**2311**	**77.3**	16	2316	77.2	**2299**	**77.7**	2296	77.8
482.sphinx3	16	3557	87.7	**3543**	**88.0**	3538	88.1	8	**1305**	**119**	1291	121	1674	93.2

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.
```

Operating System Notes

```
'/bin/taskset' used to bind processes to CPUs
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to physical,0
```

Platform Notes

```
BIOS Settings:
Hardware Prefetcher = Disabled
Adjacent Cache Line Prefetch = Disabled
```

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:
-fast

C++ benchmarks:
-fast

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Base Optimization Flags (Continued)

Fortran benchmarks:
-fast

Benchmarks using both Fortran and C:
-fast

Peak Compiler Invocation

C benchmarks (except as noted below):
/opt/intel/cc/10.1.008/bin/icc -L/opt/intel/cc/10.1.008/lib
-I/opt/intel/cc/10.1.008/include

433.milc: icc

C++ benchmarks (except as noted below):
icpc

450.soplex: /opt/intel/cc/10.1.008/bin/icpc -L/opt/intel/cc/10.1.008/lib
-I/opt/intel/cc/10.1.008/include

Fortran benchmarks (except as noted below):
ifort

437.leslie3d: /opt/intel/fc/10.1.008/bin/ifort -L/opt/intel/fc/10.1.008/lib
-I/opt/intel/fc/10.1.008/include

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
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
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

433.milc: -prof_gen(pass 1) -prof_use(pass 2) -fast -fno-alias -auto-ilp32

470.lbm: -prof_gen(pass 1) -prof_use(pass 2) -fast -unroll2 -scalar-rep- -prefetch -opt-malloc-options=3

482.sphinx3: -fast -unroll2

C++ benchmarks:

444.namd: -prof_gen(pass 1) -prof_use(pass 2) -fast -fno-alias -auto-ilp32

447.dealII: -prof_gen(pass 1) -prof_use(pass 2) -fast -unroll2 -ansi-alias -scalar-rep-

450.soplex: -prof_gen(pass 1) -prof_use(pass 2) -fast -opt-malloc-options=3

453.povray: -prof_gen(pass 1) -prof_use(pass 2) -fast -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -fast -prefetch

416.gamess: -prof_gen(pass 1) -prof_use(pass 2) -fast -unroll2 -Ob0 -ansi-alias -scalar-rep-

434.zeusmp: -prof_gen(pass 1) -prof_use(pass 2) -fast

437.leslie3d: -prof_gen(pass 1) -prof_use(pass 2) -fast -prefetch -opt-malloc-options=3

459.GemsFDTD: -prof_gen(pass 1) -prof_use(pass 2) -fast -unroll2 -Ob0 -prefetch

465.tonto: -prof_gen(pass 1) -prof_use(pass 2) -fast -unroll4 -auto

Benchmarks using both Fortran and C:

435.gromacs: -prof_gen(pass 1) -prof_use(pass 2) -fast -prefetch -auto-ilp32

436.cactusADM: -prof_gen(pass 1) -prof_use(pass 2) -fast -unroll2 -prefetch -parallel -auto-ilp32

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Peak Optimization Flags (Continued)

454.calculix: `-fast -unroll-aggressive -auto-ilp32`

481.wrf: `-fast -auto-ilp32`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Intel-ic10.1-FP-intel64-linux-flags.20090714.02.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Intel-ic10.1-FP-intel64-linux-flags.20090714.02.xml`

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