SPEC® CFP2006 Result
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HITACHI

HA8000 RS440 (Intel Xeon X7350)

$SPECfp®\_rate2006 =$ 117

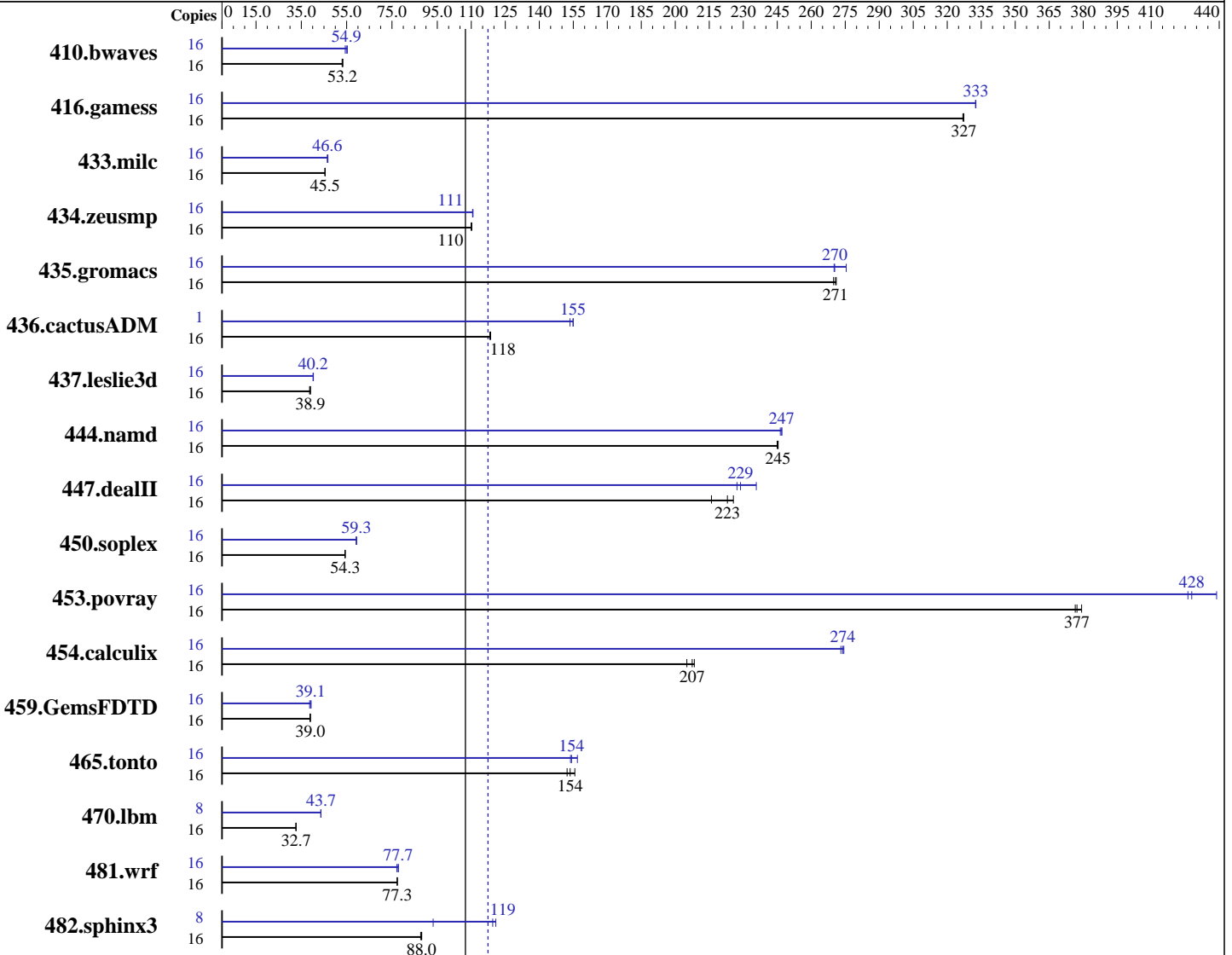$SPECfp\_rate\_base2006 =$ 107

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

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

Copies scale: 0 15.0 35.0 55.0 75.0 95.0 110 125 140 155 170 185 200 215 230 245 260 275 290 305 320 335 350 365 380 395 410 440

Benchmark	Copies	Peak	Base
410.bwaves	16 / 16	54.9	53.2
416.gamess	16 / 16	333	327
433.milc	16 / 16	46.6	45.5
434.zeusmp	16 / 16	111	110
435.gromacs	16 / 16	270	271
436.cactusADM	1 / 16	155	118
437.leslie3d	16 / 16	40.2	38.9
444.namd	16 / 16	247	245
447.dealII	16 / 16	229	223
450.soplex	16 / 16	59.3	54.3
453.povray	16 / 16	428	377
454.calculix	16 / 16	274	207
459.GemsFDTD	16 / 16	39.1	39.0
465.tonto	16 / 16	154	154
470.lbm	8 / 16	43.7	32.7
481.wrf	16 / 16	77.7	77.3
482.sphinx3	8 / 16	119	88.0

SPECfp_rate_base2006 = 107

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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	System State:	Multi-user run level 3
Other Cache:	None	Base Pointers:	64-bit
Memory:	64 GB(16 x 4 GB PC2-5300F CAS 5-5-5)	Peak Pointers:	32/64-bit
Disk Subsystem:	2 x 73 GB 10000 rpm SAS	Other Software:	None
Other Hardware:	None		

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak 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

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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`

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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`

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

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