SPEC® CFP2006 Result
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IBM Corporation

IBM BladeCenter HS22 (Intel Xeon X5690)

$SPECfp®\_rate2006 = \quad 269$

$SPECfp\_rate\_base2006 = \quad 262$

CPU2006 license: 11　　　　　　　　　　　　　　　　　　　　　　　　**Test date:** Jan-2011
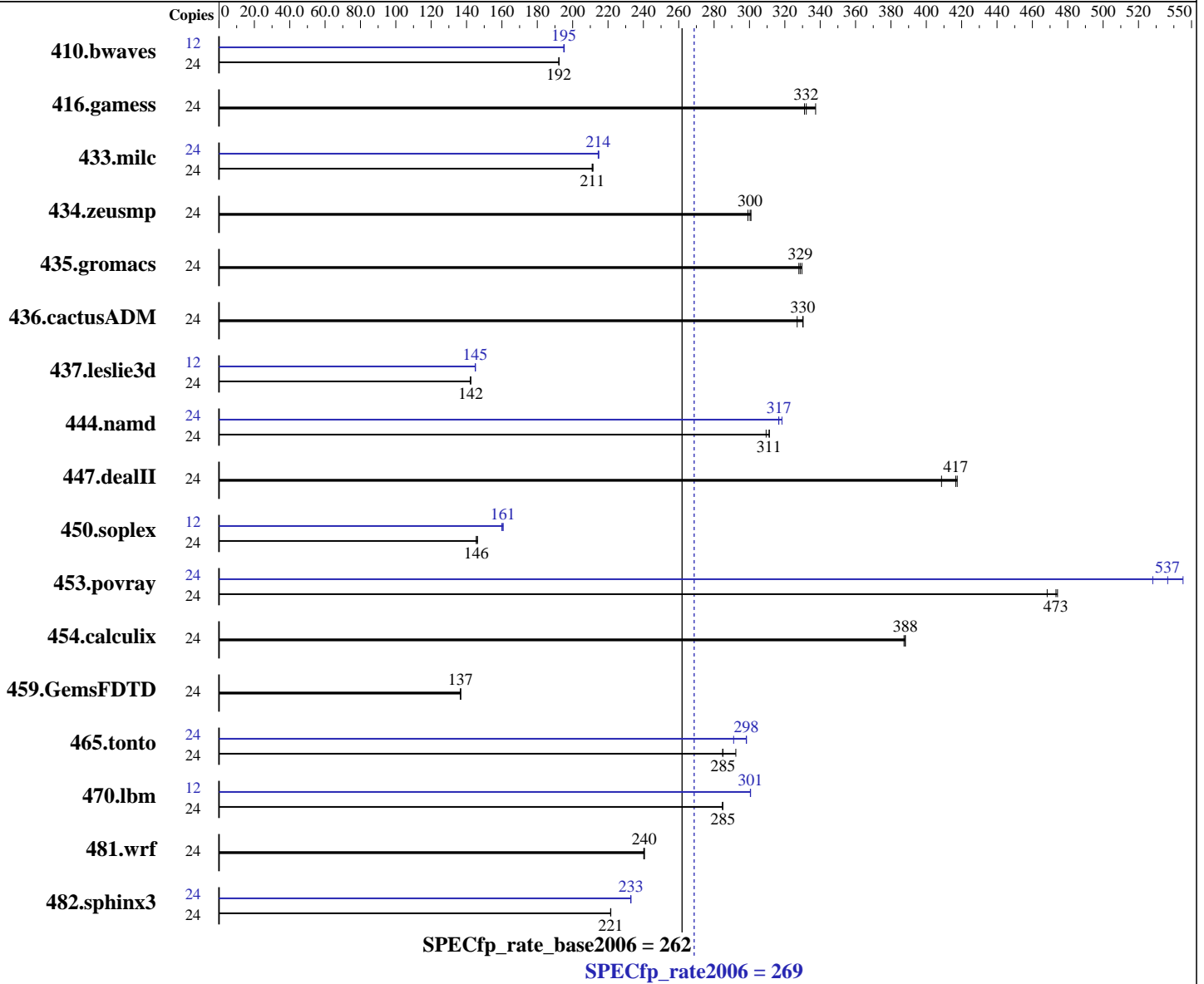**Test sponsor:** IBM Corporation　　　　　　　　　　　　　　　**Hardware Availability:** Feb-2011
Tested by: IBM Corporation　　　　　　　　　　　　　　　　**Software Availability:** Jan-2011

	Copies	
410.bwaves	12	195
	24	192
416.gamess	24	332
433.milc	24	214
	24	211
434.zeusmp	24	300
435.gromacs	24	329
436.cactusADM	24	330
437.leslie3d	12	145
	24	142
444.namd	24	317
	24	311
447.dealII	24	417
450.soplex	12	161
	24	146
453.povray	24	537
	24	473
454.calculix	24	388
459.GemsFDTD	24	137
465.tonto	24	298
	24	285
470.lbm	12	301
	24	285
481.wrf	24	240
482.sphinx3	24	233
	24	221

SPECfp_rate_base2006 = 262

SPECfp_rate2006 = 269

Hardware

CPU Name:	Intel Xeon X5690
CPU Characteristics:	Intel Turbo Boost Technology up to 3.73 GHz
CPU MHz:	3467
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 cores/chip, 2 threads/core
CPU(s) orderable:	1,2 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core

Continued on next page

Software

Operating System:	SuSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.12-0.7-default
Compiler:	Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64 Version 12.0.1.116 Build 20101116
Auto Parallel:	No
File System:	ext3
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit

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L3 Cache:	12 MB I+D on chip per chip
Other Cache:	None
Memory:	48 GB (12 x 4 GB 2Rx8 PC3-10600R-9, ECC)
Disk Subsystem:	1 x 73 GB SAS, 10000 RPM
Other Hardware:	None
Peak Pointers:	32/64-bit
Other Software:	Binaries compiled on RHEL5.5 with binutils-2.17.50.0.6-14.el5

Results Table

Benchmark		Base							Peak					
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	24	1696	192	1697	192	**1697**	**192**	12	835	195	836	195	**836**	**195**
416.gamess	24	**1415**	**332**	1419	331	1393	337	24	**1415**	**332**	1419	331	1393	337
433.milc	24	1044	211	**1043**	**211**	1042	212	24	**1027**	**214**	1026	215	1027	214
434.zeusmp	24	730	299	**727**	**300**	726	301	24	730	299	**727**	**300**	726	301
435.gromacs	24	**521**	**329**	520	330	523	328	24	**521**	**329**	520	330	523	328
436.cactusADM	24	877	327	**869**	**330**	868	330	24	877	327	**869**	**330**	868	330
437.leslie3d	24	1585	142	**1585**	**142**	1587	142	12	**778**	**145**	778	145	778	145
444.namd	24	618	311	**619**	**311**	622	309	24	**608**	**317**	608	317	605	318
447.dealII	24	672	409	**659**	**417**	658	418	24	672	409	**659**	**417**	658	418
450.soplex	24	1369	146	1375	146	**1375**	**146**	12	626	160	**623**	**161**	623	161
453.povray	24	**270**	**473**	273	468	269	474	24	242	528	**238**	**537**	234	545
454.calculix	24	511	387	**510**	**388**	510	388	24	511	387	**510**	**388**	510	388
459.GemsFDTD	24	**1864**	**137**	1865	137	1863	137	24	**1864**	**137**	1865	137	1863	137
465.tonto	24	**828**	**285**	808	292	829	285	24	792	298	811	291	**792**	**298**
470.lbm	24	1157	285	1158	285	**1157**	**285**	12	549	300	548	301	**549**	**301**
481.wrf	24	1114	241	**1115**	**240**	1116	240	24	1114	241	**1115**	**240**	1116	240
482.sphinx3	24	2112	221	2111	222	**2112**	**221**	24	**2008**	**233**	2009	233	2008	233

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
   'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
   echo 10800 > /proc/sys/vm/nr_hugepages
   export HUGETLB_MORECORE=yes
   export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

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Platform Notes

```
Load Default BIOS Settings and then change the following
Turbo Mode enabled
Turbo Boost set to Traditional
Power C-states enabled
Demand Scrub disabled
```

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 -ansi-alias
```

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$SPECfp\_rate\_base2006 =$ 262

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Hardware Availability: Feb-2011
Software Availability: Jan-2011

Base Optimization Flags (Continued)

C++ benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -ansi-alias
```

Fortran benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static
```

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

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
```

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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) -prof-use(pass 2) -static -auto-ilp32

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

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

C++ benchmarks:

>   444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
>   -no-prec-div(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) -prof-use(pass 2) -opt-malloc-options=3
>   -B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

>   453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
>   -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias
>   -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Fortran benchmarks:

>   410.bwaves: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
>   -no-prec-div(pass 2) -prof-use(pass 2) -static

>   416.gamess: basepeak = yes

>   434.zeusmp: basepeak = yes

>   437.leslie3d: -xSSE4.2 -ipo -O3 -no-prec-div
>   -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

>   459.GemsFDTD: basepeak = yes

>   465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
>   -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto
>   -inline-calloc -opt-malloc-options=3
>   -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Benchmarks using both Fortran and C:

>   435.gromacs: basepeak = yes

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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-ic12.0-linux64-revA.20110303.01.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revA.20110303.01.xml

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

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