SPEC® CFP2006 Result

Bull SAS

BL265+ (Intel Xeon X5670, 2.93 GHz)

$SPECfp^®2006 =$ 58.3

$SPECfp\_base2006 =$ 55.8

CPU2006 license: 20	**Test date:** Jan-2011
Test sponsor: Bull SAS	**Hardware Availability:** May-2010
Tested by: Bull SAS	**Software Availability:** Apr-2011

Results by benchmark (scale 0 to 290):

- **410.bwaves** — 180 / 174
- **416.gamess** — 27.7 / 23.5
- **433.milc** — 53.9 / 52.7
- **434.zeusmp** — 113
- **435.gromacs** — 23.4 / 21.9
- **436.cactusADM** — 280
- **437.leslie3d** — 110
- **444.namd** — 19.8 / 19.5
- **447.dealII** — 40.5
- **450.soplex** — 33.2
- **453.povray** — 39.0 / 30.3
- **454.calculix** — 33.4 / 29.8
- **459.GemsFDTD** — 89.3 / 73.1
- **465.tonto** — 33.4 / 25.0
- **470.lbm** — 162 / 262
- **481.wrf** — 49.1
- **482.sphinx3** — 58.4 / 53.1

SPECfp_base2006 = 55.8

SPECfp2006 = 58.3

Hardware

CPU Name:	Intel Xeon X5670
CPU Characteristics:	Intel Turbo Boost Technology up to 3.33 GHz
CPU MHz:	2933
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 (x86_64) SP1, 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 Update 3
Auto Parallel:	Yes
File System:	ext3
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit

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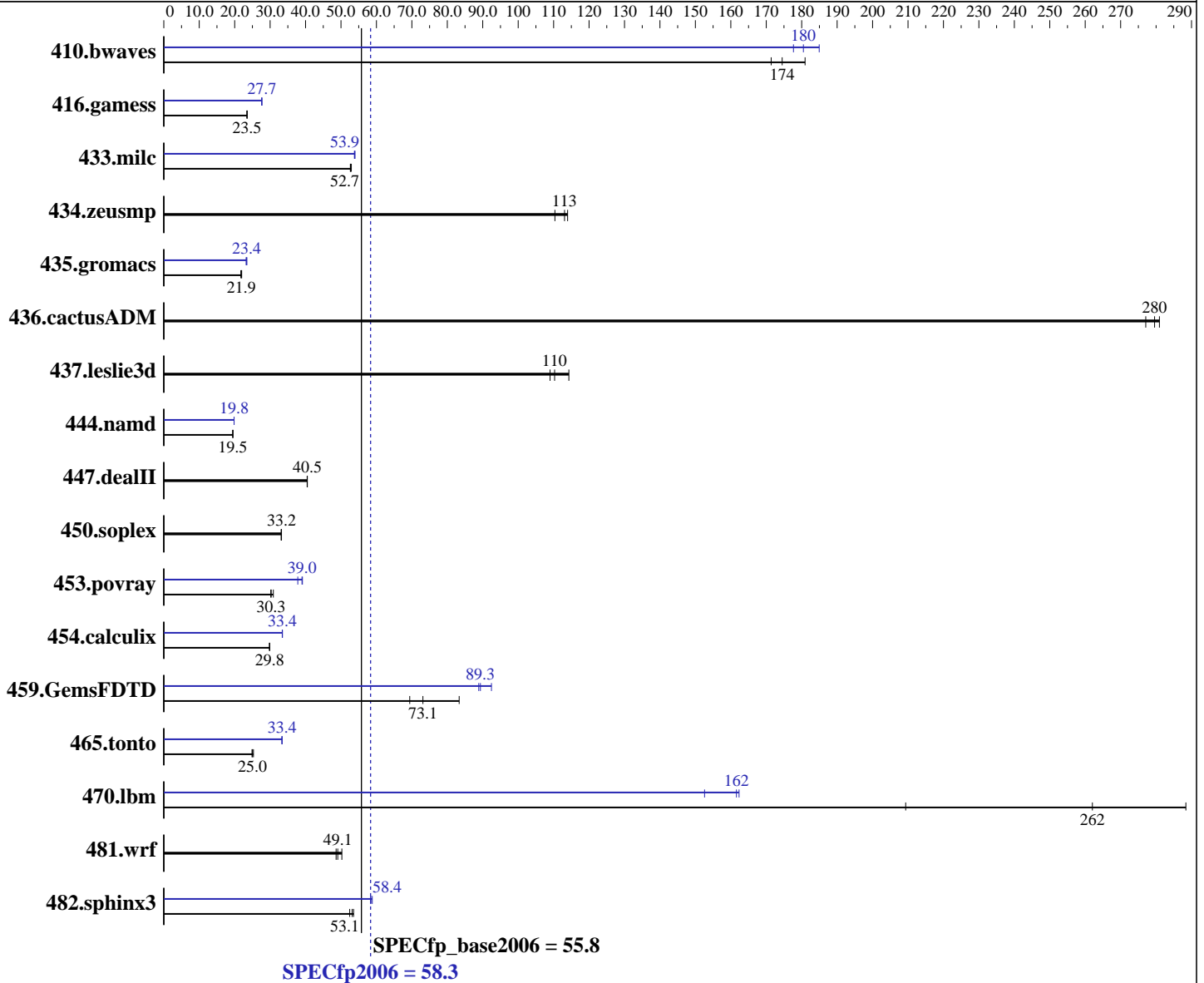
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L3 Cache:	12 MB I+D on chip per chip
Other Cache:	None
Memory:	48 GB (12 x 4 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem:	1 x 73 GB SAS, 10000 RPM
Other Hardware:	None

Peak Pointers:	32/64-bit
Other Software:	None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**77.9**	**174**	75.1	181	79.3	171	73.5	185	76.5	178	**75.3**	**180**
416.gamess	831	23.6	835	23.5	**835**	**23.5**	**708**	**27.7**	708	27.6	708	27.7
433.milc	**174**	**52.7**	174	52.6	173	52.9	170	54.0	171	53.8	**170**	**53.9**
434.zeusmp	82.5	110	79.9	114	**80.5**	**113**	82.5	110	79.9	114	**80.5**	**113**
435.gromacs	325	22.0	328	21.7	**326**	**21.9**	305	23.4	307	23.2	**305**	**23.4**
436.cactusADM	42.5	281	43.1	277	**42.7**	**280**	42.5	281	43.1	277	**42.7**	**280**
437.leslie3d	**85.2**	**110**	86.2	109	82.2	114	**85.2**	**110**	86.2	109	82.2	114
444.namd	**412**	**19.5**	412	19.5	412	19.5	**404**	**19.8**	404	19.8	404	19.8
447.dealII	**283**	**40.5**	283	40.4	282	40.5	**283**	**40.5**	283	40.4	282	40.5
450.soplex	251	33.2	**251**	**33.2**	252	33.1	251	33.2	**251**	**33.2**	252	33.1
453.povray	**176**	**30.3**	176	30.2	172	30.9	136	39.1	141	37.8	**136**	**39.0**
454.calculix	276	29.9	277	29.8	**276**	**29.8**	**247**	**33.4**	247	33.4	246	33.5
459.GemsFDTD	153	69.4	**145**	**73.1**	127	83.3	119	88.9	115	92.5	**119**	**89.3**
465.tonto	**393**	**25.0**	395	24.9	389	25.3	**295**	**33.4**	295	33.3	295	33.4
470.lbm	**52.4**	**262**	65.6	209	47.6	288	**85.0**	**162**	90.0	153	84.6	162
481.wrf	222	50.2	230	48.6	**228**	**49.1**	222	50.2	230	48.6	**228**	**49.1**
482.sphinx3	372	52.5	**367**	**53.1**	364	53.6	**334**	**58.4**	331	58.8	334	58.4

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
Hugepages was enabled with the following:
  'nodev  /mnt/hugepages  hugetlbfs  defaults  0 0' added to /etc/fstab
   echo 900 > /proc/sys/vm/nr_hugepages
   export HUGETLB_MORECORE=yes
   export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

Platform Notes

```
Turbo Mode enabled in BIOS
Turbo Boost set to Traditional in BIOS
Power C-states enabled in BIOS
Demand Scrub disabled in BIOS
```

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General Notes

```
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to granularity=fine,scatter
KMP_STACKSIZE set to 200M
```

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 -parallel -opt-prefetch
    -ansi-alias
```

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

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Base Optimization Flags (Continued)

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

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

Peak Compiler Invocation

C benchmarks:
```
icc    -m64
```

C++ benchmarks:
```
icpc   -m64
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc    -m64 ifort -m64
```

Peak Portability Flags

```
Same as Base Portability Flags
```

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
              -ansi-alias

    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) -parallel
             -ansi-alias -static -auto-ilp32

  482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias
               -parallel
```

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
```

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Peak Optimization Flags (Continued)

```
     447.dealII: basepeak = yes

     450.soplex: basepeak = yes

     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 -ipo -O3 -no-prec-div -opt-prefetch -parallel
                 -static

     416.gamess: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                 -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
                 -inline-level=0 -scalar-rep- -static

     434.zeusmp: basepeak = yes

     437.leslie3d: basepeak = yes

   459.GemsFDTD: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                 -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
                 -inline-level=0 -opt-prefetch -parallel
                 -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

      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) -inline-calloc
                 -opt-malloc-options=3 -auto -unroll4
                 -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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

   436.cactusADM: basepeak = yes

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

        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-icc12.0-linux64-revA.html

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

http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revA.xml

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