SPEC® CFP2006 Result
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Bull SAS

NovaScale R460 F2 (Intel Xeon X5672, 3.20 GHz)

$SPECfp^®\_rate2006 =$ 228

$SPECfp\_rate\_base2006 =$ 220

CPU2006 license: 20　　　　　　　　　　　　　　　　　　　　　　　**Test date:** Feb-2011
Test sponsor: Bull SAS　　　　　　　　　　　　　　　　　　　**Hardware Availability:** Feb-2011
Tested by: Dell Inc.　　　　　　　　　　　　　　　　　　　　**Software Availability:** Jan-2010

Copies

Benchmark	Copies	Result
410.bwaves	8	199
	16	193
416.gamess	8	228
	16	220
433.milc	16	216
	16	211
434.zeusmp	16	254
435.gromacs	16	210
	16	210
436.cactusADM	16	251
437.leslie3d	8	146
	16	142
444.namd	16	202
	16	198
447.dealII	16	354
450.soplex	8	166
	16	157
453.povray	16	366
	16	300
454.calculix	16	259
459.GemsFDTD	16	134
465.tonto	16	255
	16	254
470.lbm	8	298
	16	256
481.wrf	16	241
482.sphinx3	16	230
	16	220

SPECfp_rate_base2006 = 220

SPECfp_rate2006 = 228

Hardware		Software	
Hardware		**Software**	
CPU Name:	Intel Xeon X5672	Operating System:	SUSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.12-0.7-default
CPU Characteristics:	Intel Turbo Boost Technology up to 3.60 GHz	Compiler:	Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64 Version 12.0.1.116 Build 20101116
CPU MHz:	3200		
FPU:	Integrated		
CPU(s) enabled:	8 cores, 2 chips, 4 cores/chip, 2 threads/core	Auto Parallel:	No
CPU(s) orderable:	1,2 chips	File System:	ext3
Primary Cache:	32 KB I + 32 KB D on chip per core	System State:	Run level 3 (multi-user)
Secondary Cache:	256 KB I+D on chip per core	Base Pointers:	64-bit

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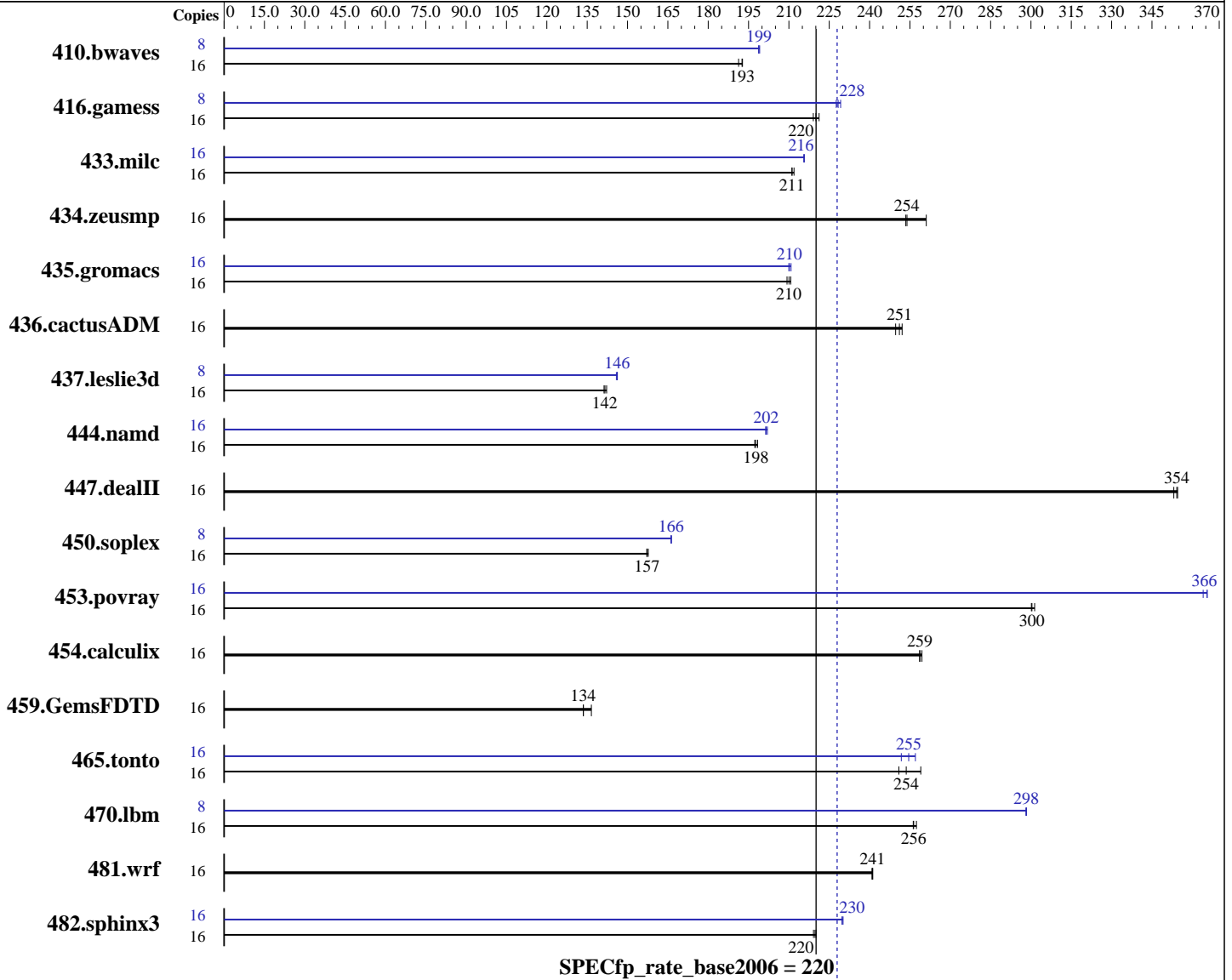$SPECfp_rate_base2006 = $ 220

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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:	146 GB 10000 RPM SAS
Other Hardware:	None

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	1137	191	1128	193	**1129**	**193**	8	546	199	**547**	**199**	547	199
416.gamess	16	1416	221	**1424**	**220**	1430	219	8	683	229	**686**	**228**	688	228
433.milc	16	693	212	**696**	**211**	696	211	16	**681**	**216**	681	216	681	216
434.zeusmp	16	558	261	**573**	**254**	574	253	16	558	261	**573**	**254**	574	253
435.gromacs	16	**544**	**210**	542	211	546	209	16	542	211	**544**	**210**	544	210
436.cactusADM	16	766	250	**762**	**251**	758	252	16	766	250	**762**	**251**	758	252
437.leslie3d	16	1057	142	1065	141	**1062**	**142**	8	**514**	**146**	514	146	516	146
444.namd	16	**649**	**198**	650	197	647	198	16	**637**	**202**	637	201	635	202
447.dealII	16	518	353	516	355	**517**	**354**	16	518	353	516	355	**517**	**354**
450.soplex	16	**849**	**157**	849	157	846	158	8	402	166	401	166	**401**	**166**
453.povray	16	282	301	**283**	**300**	284	300	16	233	366	234	364	**233**	**366**
454.calculix	16	509	259	510	259	**510**	**259**	16	509	259	510	259	**510**	**259**
459.GemsFDTD	16	1243	137	1271	134	**1271**	**134**	16	1243	137	1271	134	**1271**	**134**
465.tonto	16	628	251	**621**	**254**	608	259	16	625	252	**619**	**255**	613	257
470.lbm	16	854	257	**857**	**256**	858	256	8	**369**	**298**	368	298	369	298
481.wrf	16	**741**	**241**	741	241	742	241	16	**741**	**241**	741	241	742	241
482.sphinx3	16	1417	220	1423	219	**1419**	**220**	16	1355	230	**1357**	**230**	1357	230

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 7200 > /proc/sys/vm/nr_hugepages
     export HUGETLB_MORECORE=yes
     export LD_PRELOAD=/usr/lib64/libhugetlbfs.so

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Platform Notes

```
BIOS Settings:
Power Management = Maximum Performance (Default =  Active Power Controller)
Data Reuse = Disabled (Default = Enabled)
```

General Notes

```
The Dell PowerEdge R710 and
the Bull NovaScale R460 F2 models are electronically equivalent.
The results have been measured on a Dell PowerEdge R710 model.
Binaries were compiled on RHEL5.5
```

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
```

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Base Optimization Flags

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

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
```

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Peak Portability Flags (Continued)

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

  459.GemsFDTD: basepeak = yes

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Peak Optimization Flags (Continued)

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: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -opt-prefetch
-static -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.html
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110308.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.xml
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110308.xml

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

Tested with SPEC CPU2006 v1.1.
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