SPEC® CFP2006 Result
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Bull SAS

NovaScale T840 F2 (Intel Xeon X5687, 3.60 GHz)

$SPECfp^{®}2006 =$ 64.0

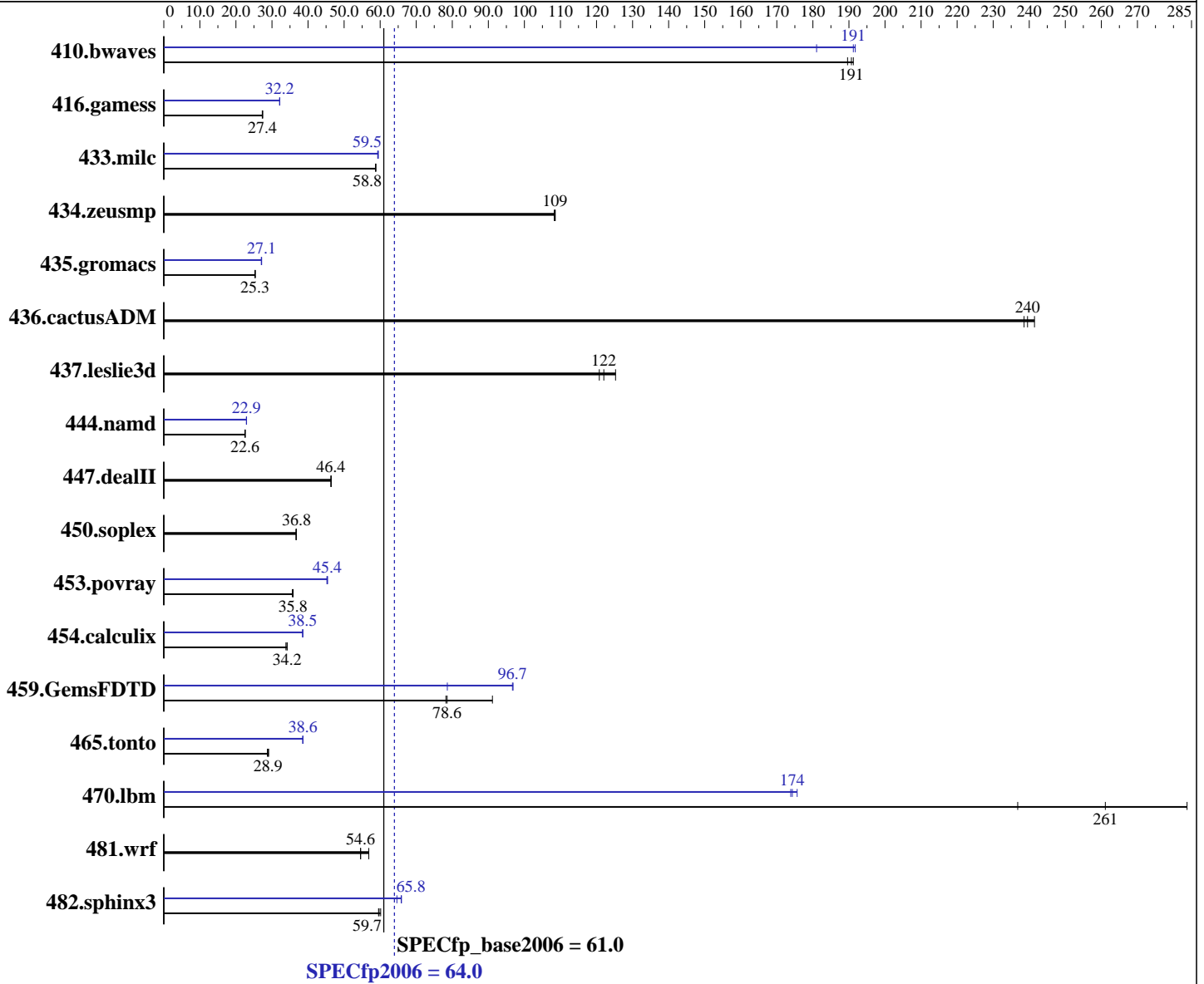$SPECfp\_base2006 =$ 61.0

CPU2006 license: 20
Test sponsor: Bull SAS
Tested by: Dell Inc.

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

Benchmark	Peak	Base
410.bwaves	191	191
416.gamess	32.2	27.4
433.milc	59.5	58.8
434.zeusmp		109
435.gromacs	27.1	25.3
436.cactusADM		240
437.leslie3d		122
444.namd	22.9	22.6
447.dealII		46.4
450.soplex		36.8
453.povray	45.4	35.8
454.calculix	38.5	34.2
459.GemsFDTD	96.7	78.6
465.tonto	38.6	28.9
470.lbm	174	261
481.wrf		54.6
482.sphinx3	65.8	59.7

SPECfp_base2006 = 61.0
SPECfp2006 = 64.0

Hardware

CPU Name: Intel Xeon X5687
CPU Characteristics: Intel Turbo Boost Technology up to 3.86 GHz
CPU MHz: 3600
FPU: Integrated
CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip
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

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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 Update 3
Auto Parallel: Yes
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 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem:	1 x 146 GB 15000 RPM SAS
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					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	71.7	190	**71.3**	**191**	71.1	191	75.1	181	**71.1**	**191**	70.9	192
416.gamess	717	27.3	**715**	**27.4**	714	27.4	**609**	**32.2**	609	32.2	610	32.1
433.milc	156	58.8	**156**	**58.8**	156	58.7	**154**	**59.5**	154	59.5	155	59.3
434.zeusmp	83.9	109	**83.9**	**109**	84.1	108	83.9	109	**83.9**	**109**	84.1	108
435.gromacs	282	25.4	**282**	**25.3**	282	25.3	263	27.1	264	27.0	**263**	**27.1**
436.cactusADM	49.5	241	**49.9**	**240**	50.1	239	49.5	241	**49.9**	**240**	50.1	239
437.leslie3d	77.8	121	75.0	125	**77.0**	**122**	77.8	121	75.0	125	**77.0**	**122**
444.namd	356	22.5	**356**	**22.6**	356	22.6	**350**	**22.9**	350	22.9	349	23.0
447.dealII	**247**	**46.4**	247	46.4	247	46.4	**247**	**46.4**	247	46.4	247	46.4
450.soplex	227	36.8	228	36.6	**227**	**36.8**	227	36.8	228	36.6	**227**	**36.8**
453.povray	**149**	**35.8**	149	35.6	148	35.9	118	45.2	**117**	**45.4**	117	45.4
454.calculix	241	34.2	**241**	**34.2**	244	33.9	214	38.5	**214**	**38.5**	214	38.5
459.GemsFDTD	136	78.2	**135**	**78.6**	116	91.1	135	78.6	**110**	**96.7**	110	96.9
465.tonto	338	29.1	**340**	**28.9**	343	28.7	255	38.6	**255**	**38.6**	255	38.5
470.lbm	48.4	284	58.0	237	**52.6**	**261**	78.2	176	**78.8**	**174**	79.0	174
481.wrf	**205**	**54.6**	205	54.6	196	56.9	**205**	**54.6**	205	54.6	196	56.9
482.sphinx3	324	60.1	**326**	**59.7**	327	59.6	301	64.6	296	65.9	**296**	**65.8**

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
'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

Platform Notes

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

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General Notes

```
OMP_NUM_THREADS set to number of cores
The Dell PowerEdge T610 and
the Bull NovaScale T840 F2 models are electronically equivalent.
The results have been measured on a Dell PowerEdge T610 model.
```

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
```

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Test sponsor: Bull SAS

Tested by: Dell Inc.

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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 -opt-prefetch -ansi-alias
```

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`

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Peak Optimization Flags (Continued)

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: 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
```

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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.

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