SPEC® CFP2006 Result
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Bull SAS

NovaScale R470 F3 (Intel Xeon E5-4610, 2.40 GHz)

$SPECfp®2006 =$ 68.5

$SPECfp\_base2006 =$ 64.5

CPU2006 license: 20	**Test date:** Mar-2012
Test sponsor: Bull SAS	**Hardware Availability:** May-2012
Tested by: Dell Inc.	**Software Availability:** Feb-2012

410.bwaves 505 / 501
416.gamess 29.9 / 23.5
433.milc 52.6 / 51.8
434.zeusmp 104
435.gromacs 16.8
436.cactusADM 334
437.leslie3d 102
444.namd 20.1 / 19.8
447.dealII 43.9
450.soplex 34.6
453.povray 43.8 / 37.0
454.calculix 35.5 / 30.8
459.GemsFDTD 139 / 118
465.tonto 36.8 / 29.1
470.lbm 666
481.wrf 36.7
482.sphinx3 57.1 / 56.1

SPECfp_base2006 = 64.5

SPECfp2006 = 68.5

Hardware

CPU Name:	Intel Xeon E5-4610
CPU Characteristics:	Intel Turbo Boost Technology up to 2.90 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	24 cores, 4 chips, 6 cores/chip, 2 threads/core
CPU(s) orderable:	2,4 chip
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 SP2 (x86_64) 3.0.13-0.27-default
Compiler:	C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux; Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux
Auto Parallel:	Yes
File System:	ext3
System State:	Run level 3 (multi-user)

Continued on next page

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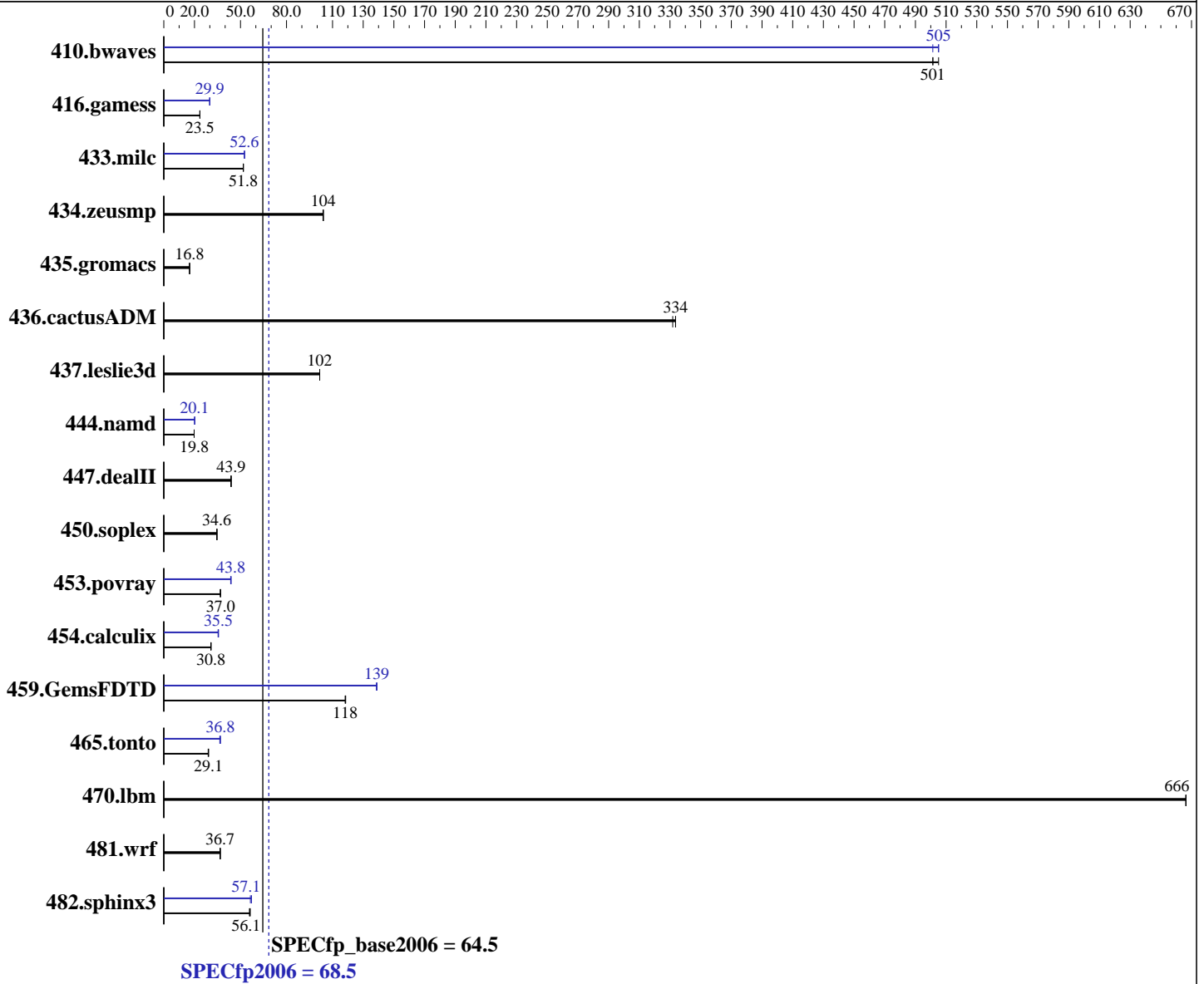|	
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L3 Cache:	15 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	256 GB (32 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1333 MHz)	Other Software:	None
Disk Subsystem:	4 x 300 GB 10000 RPM SAS, RAID 0		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	27.1	501	26.9	505	**27.1**	**501**	26.9	505	27.1	501	**26.9**	**505**
416.gamess	833	23.5	831	23.6	**832**	**23.5**	653	30.0	655	29.9	**654**	**29.9**
433.milc	177	51.8	177	51.9	**177**	**51.8**	175	52.6	**175**	**52.6**	175	52.6
434.zeusmp	87.7	104	**87.5**	**104**	87.5	104	87.7	104	**87.5**	**104**	87.5	104
435.gromacs	423	16.9	426	16.8	**425**	**16.8**	423	16.9	426	16.8	**425**	**16.8**
436.cactusADM	35.8	334	**35.8**	**334**	36.0	332	35.8	334	**35.8**	**334**	36.0	332
437.leslie3d	**92.5**	**102**	92.5	102	92.5	102	**92.5**	**102**	92.5	102	92.5	102
444.namd	**405**	**19.8**	405	19.8	405	19.8	**399**	**20.1**	399	20.1	399	20.1
447.dealII	**260**	**43.9**	260	44.0	262	43.7	**260**	**43.9**	260	44.0	262	43.7
450.soplex	240	34.7	**241**	**34.6**	241	34.5	240	34.7	**241**	**34.6**	241	34.5
453.povray	143	37.1	145	36.8	**144**	**37.0**	121	43.9	**121**	**43.8**	122	43.6
454.calculix	268	30.8	269	30.6	**268**	**30.8**	231	35.7	**232**	**35.5**	233	35.4
459.GemsFDTD	89.7	118	89.5	119	**89.7**	**118**	76.4	139	**76.4**	**139**	76.6	139
465.tonto	338	29.1	**338**	**29.1**	340	28.9	270	36.5	**267**	**36.8**	266	37.0
470.lbm	20.6	666	20.6	666	**20.6**	**666**	20.6	666	20.6	666	**20.6**	**666**
481.wrf	302	37.0	305	36.6	**305**	**36.7**	302	37.0	305	36.6	**305**	**36.7**
482.sphinx3	346	56.4	**348**	**56.1**	349	55.8	341	57.2	**342**	**57.1**	345	56.4

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

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
```

Platform Notes

```
System Profile set to Custom
CPU Power Management set to Maximum Performance
Memory Frequency set to Maximum Performance
Turbo Boost set to Enabled
C States/C1E set to Enabled
Sysinfo program /root/CPU2006-1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on icon4p Thu Mar 15 20:17:04 2012
```

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Hardware Availability: May-2012
Software Availability: Feb-2012

Platform Notes (Continued)

```
This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
  http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-4610 0 @ 2.40GHz
      4 "physical id"s (chips)
      48 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
      cpu cores : 6
      siblings  : 12
      physical 0: cores 0 1 2 3 4 5
      physical 1: cores 0 1 2 3 4 5
      physical 2: cores 0 1 2 3 4 5
      physical 3: cores 0 1 2 3 4 5
   cache size : 15360 KB

From /proc/meminfo
   MemTotal:       264501512 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 11 (x86_64)

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 11 (x86_64)
      VERSION = 11
      PATCHLEVEL = 2

uname -a:
   Linux icon4p 3.0.13-0.27-default #1 SMP Wed Feb 15 13:33:49 UTC 2012
   (d73692b) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Mar 15 13:14 last=S

SPEC is set to: /root/CPU2006-1.2
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda2       ext3  1.1T  123G  917G  12% /

Additional information from dmidecode:

(End of data from sysinfo program)
```

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General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/root/CPU2006-1.2/libs/32:/root/CPU2006-1.2/libs/64"
OMP_NUM_THREADS = "24"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RHEL5.5
 Transparent Huge Pages disabled with:
 echo never  > /sys/kernel/mm/transparent_hugepage/enabled
 Filesystem page cache cleared with:
 echo 1>         /proc/sys/vm/drop_caches
 The Dell PowerEdge R820 and
 the Bull NovaScale R470 F3 Models are electronically equivalent.
 The results have been measured on a Dell PowerEdge R820 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
```

Continued on next page

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Base Portability Flags (Continued)

        482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
        -xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
        -ansi-alias

C++ benchmarks:
        -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

Fortran benchmarks:
        -xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:
        -xAVX -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: -xAVX(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

Continued on next page

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Peak Optimization Flags (Continued)

```
     470.lbm: basepeak = yes

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

C++ benchmarks:

```
    444.namd: -xAVX(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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
               -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias
```

Fortran benchmarks:

```
   410.bwaves: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel
               -static

   416.gamess: -xAVX(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: -xAVX(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

    465.tonto: -xAVX(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
```

Benchmarks using both Fortran and C:

```
   435.gromacs: basepeak = yes

 436.cactusADM: basepeak = yes

   454.calculix: -xAVX -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias
```

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Peak Optimization Flags (Continued)

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-ic12.1-official-linux64.20111122.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revA.20120410.00.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revA.20120410.00.xml

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

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