SPEC® CFP2006 Result

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Bull SAS

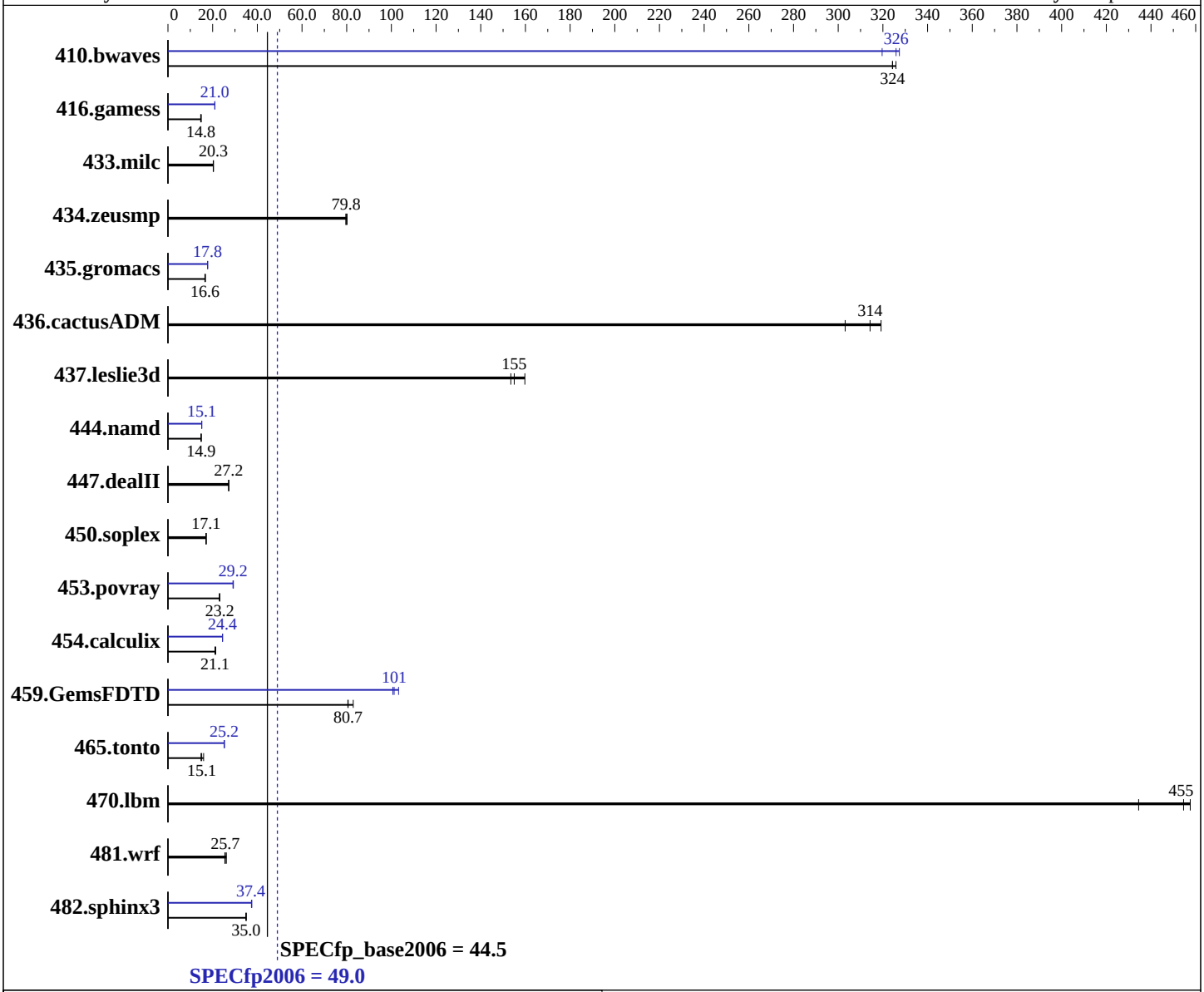
NovaScale R480 F2 (Intel Xeon L7545, 1.87 GHz)

SPECfp®2006 = 49.0

SPECfp_base2006 = 44.5

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

Test date: Apr-2011
Hardware Availability: Jul-2011
Software Availability: Apr-2011



Hardware

CPU Name:	Intel Xeon L7545
CPU Characteristics:	Intel Turbo Boost Technology up to 2.53 GHz
CPU MHz:	1866
FPU:	Integrated
CPU(s) enabled:	24 cores, 4 chips, 6 cores/chip, 2 threads/core
CPU(s) orderable:	2,4 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: 18 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (64 x 8 GB 4Rx8 PC3-8500R-7, ECC, running at 978 MHz)
Disk Subsystem: 1 x 500 GB 7200 RPM SAS 6Gb
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	41.7	326	41.9	324	**41.9**	**324**	42.5	320	**41.7**	**326**	41.5	327
416.gamess	1315	14.9	1336	14.7	**1325**	**14.8**	**932**	**21.0**	935	20.9	931	21.0
433.milc	451	20.4	453	20.3	**452**	**20.3**	451	20.4	453	20.3	**452**	**20.3**
434.zeusmp	113	80.2	**114**	**79.8**	114	79.6	113	80.2	**114**	**79.8**	114	79.6
435.gromacs	**429**	**16.6**	432	16.5	426	16.8	401	17.8	404	17.7	**402**	**17.8**
436.cactusADM	**38.0**	**314**	37.4	319	39.4	303	**38.0**	**314**	37.4	319	39.4	303
437.leslie3d	**60.6**	**155**	61.2	153	58.8	160	**60.6**	**155**	61.2	153	58.8	160
444.namd	540	14.8	**540**	**14.9**	540	14.9	**531**	**15.1**	531	15.1	530	15.1
447.dealII	421	27.2	**421**	**27.2**	421	27.2	421	27.2	**421**	**27.2**	421	27.2
450.soplex	**488**	**17.1**	488	17.1	489	17.0	**488**	**17.1**	488	17.1	489	17.0
453.povray	229	23.2	**230**	**23.2**	231	23.0	182	29.3	**182**	**29.2**	183	29.1
454.calculix	**391**	**21.1**	391	21.1	386	21.4	**338**	**24.4**	338	24.4	337	24.4
459.GemsFDTD	132	80.5	**132**	**80.7**	128	82.9	105	101	103	103	**105**	**101**
465.tonto	616	16.0	**651**	**15.1**	665	14.8	**390**	**25.2**	391	25.1	390	25.3
470.lbm	30.0	458	**30.2**	**455**	31.6	434	30.0	458	**30.2**	**455**	31.6	434
481.wrf	427	26.1	**435**	**25.7**	439	25.5	427	26.1	**435**	**25.7**	439	25.5
482.sphinx3	556	35.0	**557**	**35.0**	559	34.9	522	37.4	**521**	**37.4**	519	37.5

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)
Node Interleaving = Enabled (Default = Disabled)
```

General Notes

```
The Dell PowerEdge R910 and
the Bull NovaScale R480 F2 models are electronically equivalent.
The results have been measured on a Dell PowerEdge R910 model.
 OMP_NUM_THREADS set to number of cores
 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

Base Optimization Flags

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

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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: `basepeak = yes`

470.lbm: `basepeak = yes`

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 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.20110524.00.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.20110524.00.xml

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For other inquiries, please contact webmaster@spec.org.

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