SPEC® CFP2006 Result

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Dell Inc.

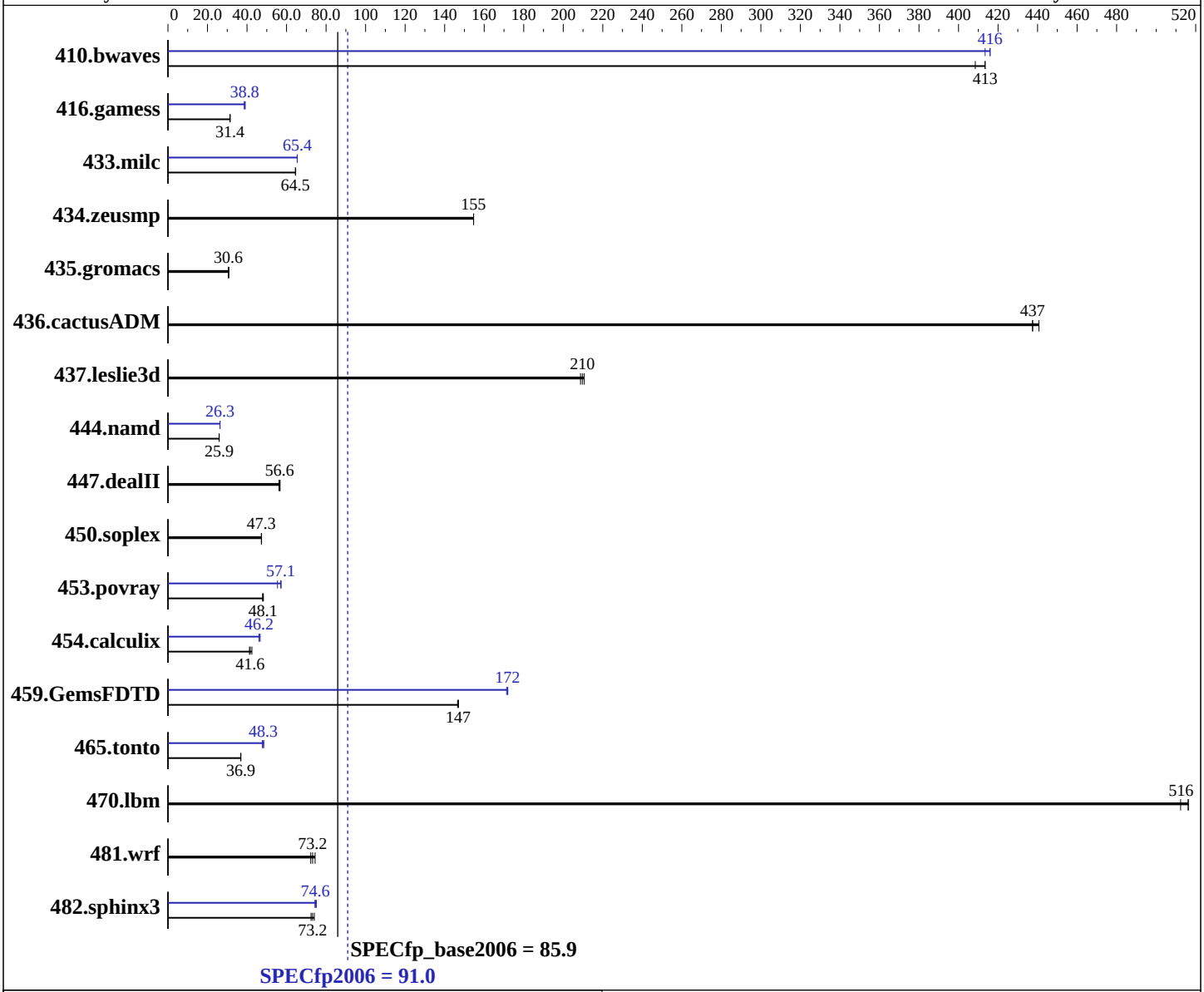
PowerEdge R620 (Intel Xeon E5-2690, 2.90 GHz)

SPECfp®2006 = 91.0

SPECfp_base2006 = 85.9

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Feb-2012
Hardware Availability: Mar-2012
Software Availability: Feb-2012



Hardware

CPU Name:	Intel Xeon E5-2690
CPU Characteristics:	Intel Turbo Boost Technology up to 3.80 GHz
CPU MHz:	2900
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 cores/chip, 2 threads/core
CPU(s) orderable:	1,2 chip
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 (x86_64) 3.0.13-0.9-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)

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L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem: 2 x 146 GB 15000 RPM SAS
Other Hardware: None

Base Pointers: 64-bit
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	33.3	408	32.9	413	**32.9**	**413**	**32.7**	**416**	32.7	416	32.9	413
416.gamess	622	31.5	**624**	**31.4**	625	31.3	507	38.6	**505**	**38.8**	501	39.1
433.milc	**142**	**64.5**	142	64.6	142	64.5	**140**	**65.4**	140	65.5	140	65.4
434.zeusmp	58.8	155	58.8	155	**58.8**	**155**	58.8	155	58.8	155	**58.8**	**155**
435.gromacs	232	30.8	**233**	**30.6**	234	30.5	232	30.8	**233**	**30.6**	234	30.5
436.cactusADM	27.1	441	27.3	437	**27.3**	**437**	27.1	441	27.3	437	**27.3**	**437**
437.leslie3d	44.6	211	45.0	209	**44.8**	**210**	44.6	211	45.0	209	**44.8**	**210**
444.namd	309	25.9	310	25.9	**310**	**25.9**	304	26.3	**305**	**26.3**	305	26.3
447.dealII	202	56.7	204	56.1	**202**	**56.6**	202	56.7	204	56.1	**202**	**56.6**
450.soplex	**176**	**47.3**	176	47.4	176	47.3	**176**	**47.3**	176	47.4	176	47.3
453.povray	110	48.3	**111**	**48.1**	111	47.9	**93.2**	**57.1**	92.9	57.3	96.0	55.4
454.calculix	194	42.5	**198**	**41.6**	200	41.2	177	46.7	179	46.1	**179**	**46.2**
459.GemsFDTD	72.4	147	72.2	147	**72.2**	**147**	61.9	171	61.7	172	**61.7**	**172**
465.tonto	**267**	**36.9**	268	36.8	267	36.9	**204**	**48.3**	203	48.5	206	47.7
470.lbm	**26.6**	**516**	26.6	516	26.8	512	**26.6**	**516**	26.6	516	26.8	512
481.wrf	**153**	**73.2**	155	72.2	150	74.5	**153**	**73.2**	155	72.2	150	74.5
482.sphinx3	269	72.4	263	74.0	**266**	**73.2**	262	74.4	259	75.1	**261**	**74.6**

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 Perfomance in BIOS
Sysinfo program /root/CPU2006-1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on unsvr Mon Feb  6 16:23:44 2012

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
```

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Platform Notes (Continued)

```
      model name : Intel(R) Xeon(R) CPU E5-2690 0 @ 2.90GHz
         2 "physical id"s (chips)
         32 "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 : 8
         siblings  : 16
         physical 0: cores 0 1 2 3 4 5 6 7
         physical 1: cores 0 1 2 3 4 5 6 7
      cache size : 20480 KB

   From /proc/meminfo
      MemTotal:       132089856 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 unsvr 3.0.13-0.9-default #1 SMP Mon Jan 16 17:33:03 UTC 2012 (54ddfaf)
      x86_64 x86_64 x86_64 GNU/Linux

   run-level 3 Feb 6 10:51 last=S

   SPEC is set to: /root/CPU2006-1.2
      Filesystem     Type  Size  Used Avail Use% Mounted on
      /dev/sda1      ext3  265G   66G  185G  27% /

   Additional information from dmidecode:

   (End of data from sysinfo program)
```

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 = "16"

  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
```

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General Notes (Continued)

```
Filesystem page cache cleared with:
echo 1>       /proc/sys/vm/drop_caches
The Dell PowerEdge R620 and
the Bull NovaScale R440 F3 models are electronically equivalent.
The results have been measured on a Dell PowerEdge R620 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:
```
-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias
```

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Base Optimization Flags (Continued)

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`

470.lbm: `basepeak = yes`

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

C++ benchmarks:

Continued on next page

Peak Optimization Flags (Continued)

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

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.20120313.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.20120313.xml

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

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