SPEC® CFP2006 Result
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Fujitsu

CELSIUS R920 (2x Intel Xeon E5-2687W)

$SPECfp^{®}2006 =$ 93.8

$SPECfp\_base2006 =$ 87.6

CPU2006 license:	19	**Test date:**	Mar-2012
Test sponsor:	Fujitsu	**Hardware Availability:**	Mar-2012
Tested by:	Fujitsu	**Software Availability:**	Dec-2011

Results by benchmark:
- 410.bwaves: 319 / 311
- 416.gamess: 39.9 / 34.0
- 433.milc: 70.7 / 70.0
- 434.zeusmp: 161 / 161
- 435.gromacs: 42.4
- 436.cactusADM: 478 / 477
- 437.leslie3d: 224 / 183
- 444.namd: 26.3 / 25.8
- 447.dealII: 62.2 / 61.7
- 450.soplex: 48.0 / 47.9
- 453.povray: 57.1 / 48.5
- 454.calculix: 47.0 / 42.2
- 459.GemsFDTD: 180 / 143
- 465.tonto: 48.4 / 42.0
- 470.lbm: 424 / 397
- 481.wrf: 83.1 / 79.8
- 482.sphinx3: 78.7 / 80.5

SPECfp_base2006 = 87.6
SPECfp2006 = 93.8

Hardware

CPU Name:	Intel Xeon E5-2687W
CPU Characteristics:	Intel Turbo Boost Technology up to 3.80 GHz
CPU MHz:	3100
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 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

Continued on next page

Software

Operating System:	Red Hat Enterprise Linux Server release 6.1, 2.6.32-131.0.15.el6.x86_64
Compiler:	C/C++: Version 12.1.2.273 of Intel C++ Studio XE for Linux; Fortran: Version 12.1.2.273 of Intel Fortran Studio XE for Linux
Auto Parallel:	Yes
File System:	ReiserFS
System State:	Run level 3 (multi - user)

Continued on next page

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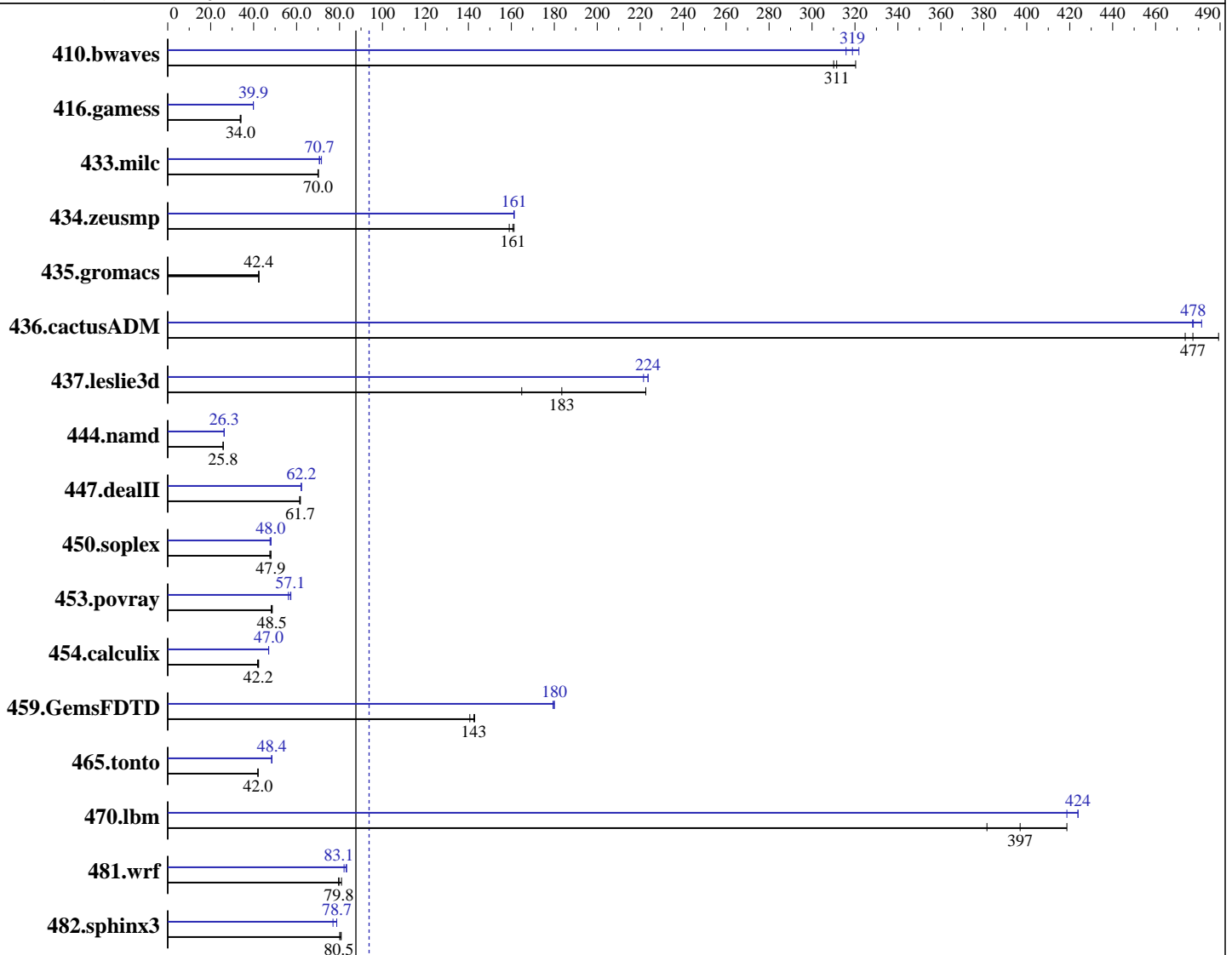|	
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L3 Cache:	20 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)	Other Software:	None
Disk Subsystem:	1 x SATA III, 500 GB, 7200 rpm		
Other Hardware:	None		

Results Table

Benchmark	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
410.bwaves	43.8	310	42.4	320	**43.6**	**311**	42.2	322	43.0	316	**42.6**	**319**
416.gamess	574	34.1	**576**	**34.0**	580	33.7	**491**	**39.9**	491	39.9	491	39.9
433.milc	131	70.2	**131**	**70.0**	131	69.9	128	71.6	130	70.6	**130**	**70.7**
434.zeusmp	56.4	161	**56.6**	**161**	57.2	159	56.4	161	56.4	161	**56.4**	**161**
435.gromacs	**168**	**42.4**	168	42.4	169	42.4	**168**	**42.4**	168	42.4	169	42.4
436.cactusADM	**25.0**	**477**	24.4	489	25.2	474	25.0	477	24.8	481	**25.0**	**478**
437.leslie3d	42.2	223	**51.2**	**183**	57.0	165	42.0	224	**42.0**	**224**	42.4	222
444.namd	**311**	**25.8**	311	25.8	311	25.8	**305**	**26.3**	305	26.3	305	26.3
447.dealII	185	61.7	186	61.4	**185**	**61.7**	**184**	**62.2**	184	62.1	184	62.3
450.soplex	175	47.6	174	48.1	**174**	**47.9**	173	48.1	**174**	**48.0**	175	47.7
453.povray	109	48.7	**110**	**48.5**	110	48.2	92.8	57.3	**93.1**	**57.1**	94.7	56.2
454.calculix	195	42.3	197	41.8	**195**	**42.2**	176	47.0	175	47.0	**176**	**47.0**
459.GemsFDTD	75.4	141	**74.4**	**143**	74.2	143	**58.9**	**180**	58.9	180	59.1	179
465.tonto	**234**	**42.0**	234	42.0	234	42.0	203	48.5	**203**	**48.4**	203	48.4
470.lbm	**34.6**	**397**	36.0	381	32.8	419	**32.4**	**424**	32.4	424	32.8	419
481.wrf	138	80.9	140	79.5	**140**	**79.8**	**134**	**83.1**	136	82.1	134	83.3
482.sphinx3	241	80.8	**242**	**80.5**	243	80.1	248	78.7	253	77.0	**248**	**78.7**

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.
    See the configuration file for details.
    For full details on using numactl, please refer to your Linux documentation, 'man numactl'

Operating System Notes

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

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Platform Notes

```
  BIOS settings:
  Frequency Floor Overright = Enabled
  Hyper-Threading Technology = Disabled
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/work/cpu2006/libs/32:/work/cpu2006/libs/64"
OMP_NUM_THREADS = "16"

  Binaries compiled on a system with
  Red Hat Enterprise Linux Server release 6.1 (Santiago)
  Added glibc-static-2.12-1.25.el6.x86_64.rpm
  to enable static linking
  Transparent Huge Pages enabled with:
  echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```

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
```

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Hardware Availability: Mar-2012
Software Availability: Dec-2011

Base Portability Flags (Continued)

```
  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
```

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
```

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Hardware Availability: Mar-2012
Software Availability: Dec-2011

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

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: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
            -static

450.soplex: -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch
            -ansi-alias

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

437.leslie3d: Same as 434.zeusmp

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

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
```

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Hardware Availability: Mar-2012
Software Availability: Dec-2011

Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

```
435.gromacs: basepeak = yes

436.cactusADM: -xAVX -ipo -O3 -no-prec-div -static -parallel
               -opt-prefetch -ansi-alias

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

    481.wrf: Same as 436.cactusADM
```

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/Fujitsu-Platform.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/Fujitsu-Platform.20120313.xml

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