SPEC® CFP2006 Result

Fujitsu

PRIMERGY RX200 S6, Intel Xeon E5645, 2.40 GHz

$SPECfp^®2006 =$ 51.4

$SPECfp\_base2006 =$ 48.0

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

410.bwaves — 157
416.gamess — 23.3 / 19.3
433.milc — 46.6 / 46.3
434.zeusmp — 95.8
435.gromacs — 19.6 / 18.5
436.cactusADM — 238
437.leslie3d — 95.1
444.namd — 16.7 / 16.4
447.dealII — 34.1
450.soplex — 28.6
453.povray — 32.6 / 26.1
454.calculix — 28.1 / 25.0
459.GemsFDTD — 81.0 / 73.2
465.tonto — 28.0 / 20.2
470.lbm — 246
481.wrf — 41.3
482.sphinx3 — 49.1 / 42.6

SPECfp_base2006 = 48.0
SPECfp2006 = 51.4

Hardware

CPU Name:	Intel Xeon E5645
CPU Characteristics:	Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 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:	SUSE Linux Enterprise Server 11 (x86_64) with SP1, 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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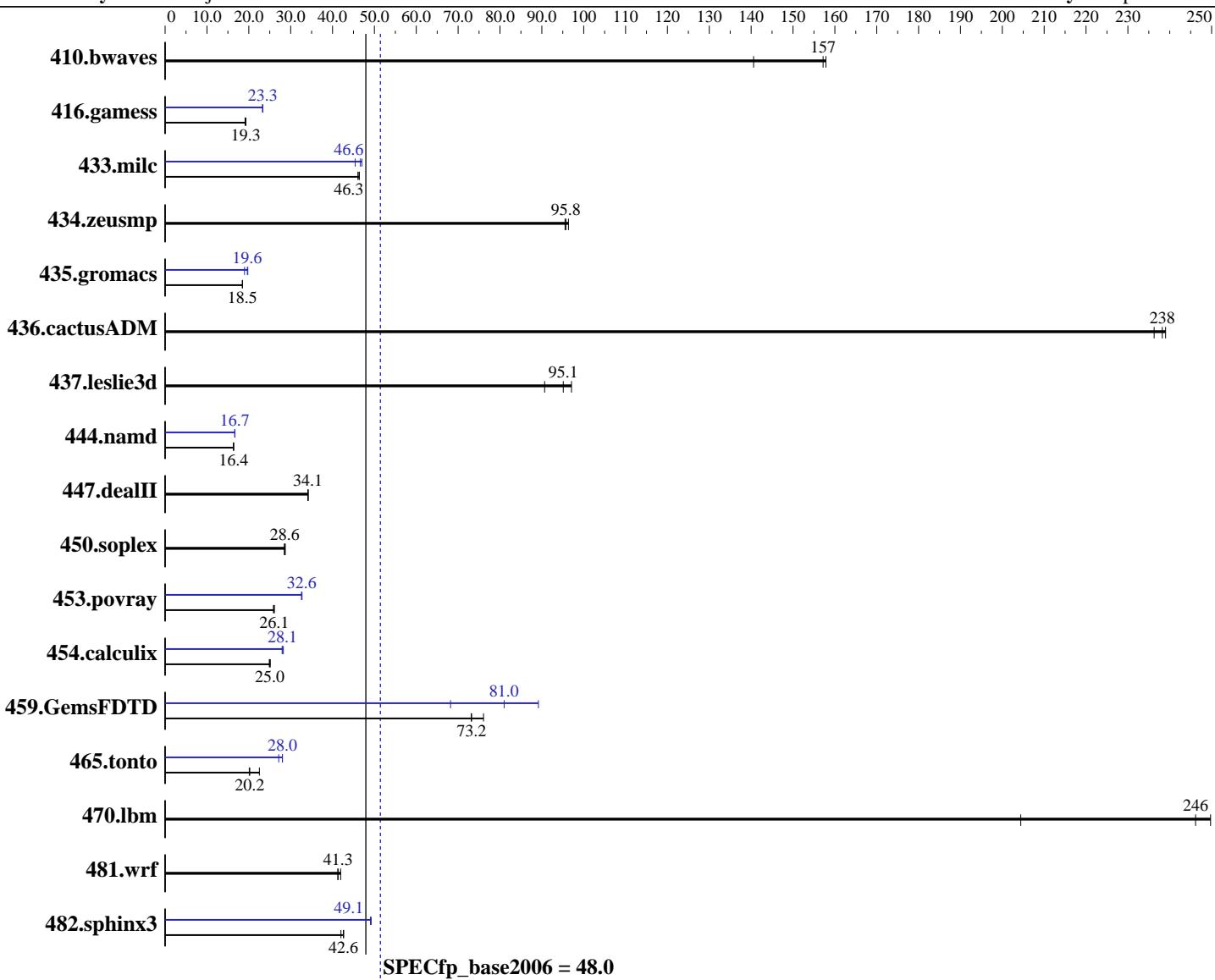| SPECfp2006 =	51.4
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L3 Cache:	12 MB I+D on chip per chip
Other Cache:	None
Memory:	48 GB (12 x 4 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem:	1 x SAS, 300 GB, 10000 RPM
Other Hardware:	--

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	86.1	158	96.7	141	**86.5**	**157**	86.1	158	96.7	141	**86.5**	**157**
416.gamess	1025	19.1	1016	19.3	**1016**	**19.3**	839	23.3	841	23.3	**840**	**23.3**
433.milc	198	46.4	**198**	**46.3**	199	46.1	**197**	**46.6**	195	47.0	202	45.4
434.zeusmp	94.4	96.4	95.2	95.5	**95.0**	**95.8**	94.4	96.4	95.2	95.5	**95.0**	**95.8**
435.gromacs	**387**	**18.5**	387	18.5	386	18.5	361	19.8	376	19.0	**364**	**19.6**
436.cactusADM	**50.2**	**238**	50.0	239	50.6	236	**50.2**	**238**	50.0	239	50.6	236
437.leslie3d	**98.8**	**95.1**	96.8	97.1	104	90.7	**98.8**	**95.1**	96.8	97.1	104	90.7
444.namd	490	16.4	491	16.3	**490**	**16.4**	481	16.7	482	16.7	**481**	**16.7**
447.dealII	335	34.2	335	34.1	**335**	**34.1**	335	34.2	335	34.1	**335**	**34.1**
450.soplex	293	28.5	**292**	**28.6**	291	28.7	293	28.5	**292**	**28.6**	291	28.7
453.povray	**204**	**26.1**	206	25.9	204	26.1	163	32.7	**163**	**32.6**	163	32.6
454.calculix	331	24.9	328	25.1	**330**	**25.0**	292	28.3	295	28.0	**294**	**28.1**
459.GemsFDTD	139	76.1	145	73.1	**145**	**73.2**	156	68.2	**131**	**81.0**	119	89.2
465.tonto	**487**	**20.2**	437	22.5	489	20.1	**351**	**28.0**	351	28.0	362	27.1
470.lbm	67.2	204	**55.8**	**246**	55.0	250	67.2	204	**55.8**	**246**	55.0	250
481.wrf	266	41.9	**270**	**41.3**	271	41.3	266	41.9	**270**	**41.3**	271	41.3
482.sphinx3	457	42.7	**458**	**42.6**	464	42.0	397	49.1	396	49.2	**397**	**49.1**

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
'nodev /mnt/hugepages hugetlbfs defaults 0 0' added to /etc/fstab
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

Platform Notes

```
BIOS configuration:
Data Reuse Optimization = Disable
Intel HT Technology = Disable
```

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General Notes

```
OMP_NUM_THREADS set to number of cores
For information about Fujitsu please visit: http://www.fujitsu.com
Binaries were compiled on RHEL5.5 with binutils-2.17.50.0.6-14.el5
```

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

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

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Base Optimization Flags (Continued)

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: 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: basepeak = yes

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.20110316.html
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revA.20110316.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.20110316.xml
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revA.20110316.xml

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

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