# SPEC® CFP2006 Result

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## Fujitsu

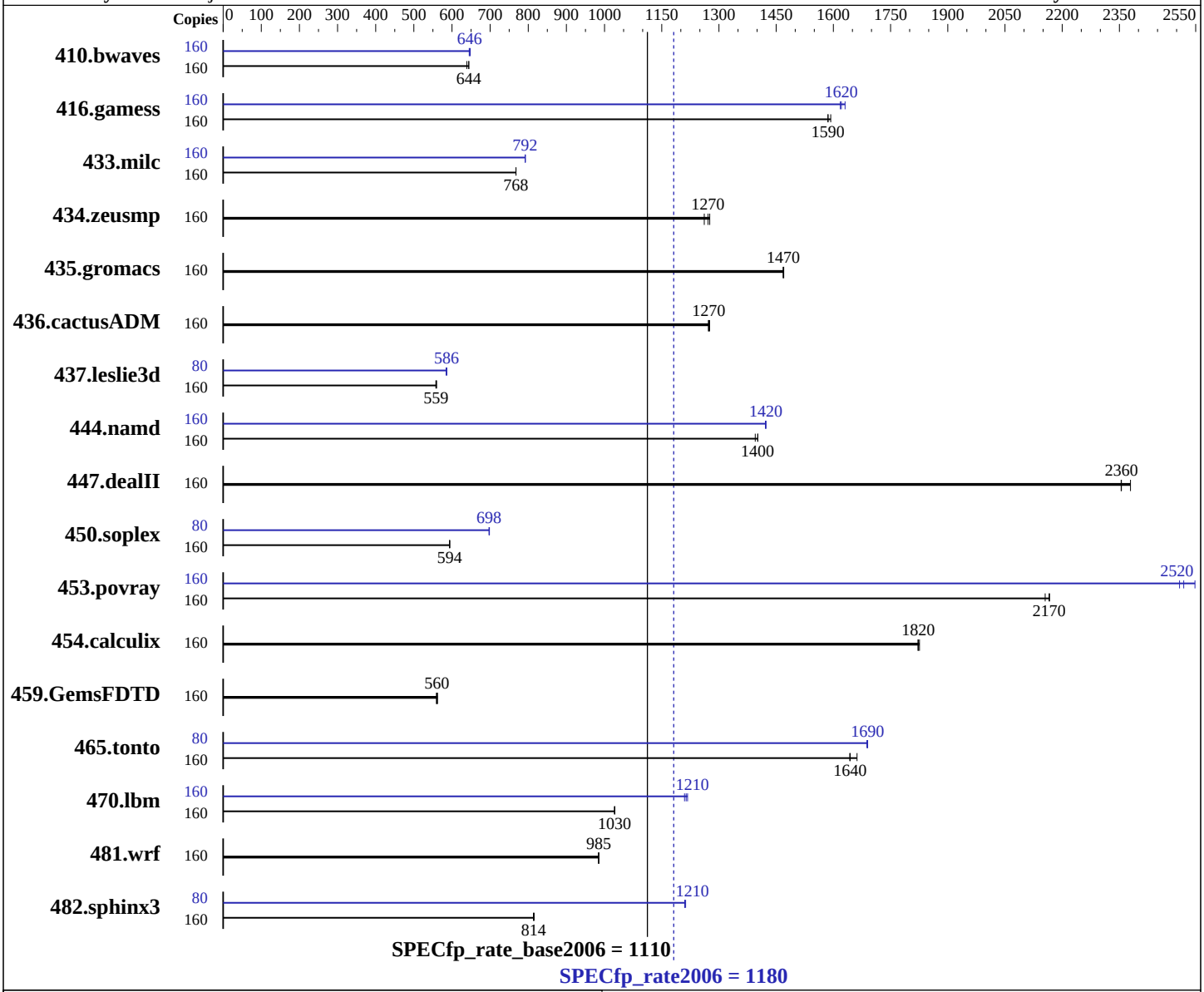
PRIMEQUEST 1800E2, Intel Xeon E7-8870, 2.40 GHz

SPECfp®_rate2006 = 1180

SPECfp_rate_base2006 = 1110

**CPU2006 license:** 19
**Test sponsor:** Fujitsu
**Tested by:** Fujitsu

**Test date:** Apr-2011
**Hardware Availability:** May-2011
**Software Availability:** Nov-2010




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E7-8870 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 2.80 GHz |
| CPU MHz: | 2400 |
| FPU: | Integrated |
| CPU(s) enabled: | 80 cores, 8 chips, 10 cores/chip, 2 threads/core |
| CPU(s) orderable: | 1-8 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 12.0.1.116 Build 20101116 |
| Auto Parallel: | No |
| File System: | ext2 |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 64-bit |

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L3 Cache: 30 MB I+D on chip per chip
Other Cache: None
Memory: 1 TB (128 x 8 GB 2Rx4 PC3-10600R-9, ECC, running at 1066 MHz)
Disk Subsystem: 2 x 147 GB (SAS, 15000RPM, RAID0)
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: Binaries compiled on RHEL5.5 with binutils-2.17.50.0.6-14.el5

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 160 | 3403 | 639 | 3375 | 644 | **3377** | **644** | 160 | 3356 | 648 | **3364** | **646** | 3370 | 645 |
| 416.gamess | 160 | **1975** | **1590** | 1975 | 1590 | 1966 | 1590 | 160 | 1936 | 1620 | 1921 | 1630 | **1933** | **1620** |
| 433.milc | 160 | **1913** | **768** | 1913 | 768 | 1913 | 768 | 160 | 1855 | 792 | **1855** | **792** | 1854 | 792 |
| 434.zeusmp | 160 | 1154 | 1260 | 1141 | 1280 | **1145** | **1270** | 160 | 1154 | 1260 | 1141 | 1280 | **1145** | **1270** |
| 435.gromacs | 160 | 777 | 1470 | **778** | **1470** | 778 | 1470 | 160 | 777 | 1470 | **778** | **1470** | 778 | 1470 |
| 436.cactusADM | 160 | 1503 | 1270 | 1499 | 1280 | **1501** | **1270** | 160 | 1503 | 1270 | 1499 | 1280 | **1501** | **1270** |
| 437.leslie3d | 160 | 2687 | 560 | **2693** | **559** | 2697 | 558 | 80 | 1287 | 584 | 1282 | 586 | **1284** | **586** |
| 444.namd | 160 | 920 | 1400 | **915** | **1400** | 915 | 1400 | 160 | **902** | **1420** | 902 | 1420 | 903 | 1420 |
| 447.dealII | 160 | 777 | 2350 | **777** | **2360** | 769 | 2380 | 160 | 777 | 2350 | **777** | **2360** | 769 | 2380 |
| 450.soplex | 160 | 2246 | 594 | 2249 | 593 | **2246** | **594** | 80 | 957 | 697 | **956** | **698** | 956 | 698 |
| 453.povray | 160 | 393 | 2170 | 395 | 2160 | **393** | **2170** | 160 | **338** | **2520** | 334 | 2550 | 339 | 2510 |
| 454.calculix | 160 | **724** | **1820** | 723 | 1830 | 725 | 1820 | 160 | **724** | **1820** | 723 | 1830 | 725 | 1820 |
| 459.GemsFDTD | 160 | 3020 | 562 | 3036 | 559 | **3029** | **560** | 160 | 3020 | 562 | 3036 | 559 | **3029** | **560** |
| 465.tonto | 160 | 958 | 1640 | **958** | **1640** | 947 | 1660 | 80 | 466 | 1690 | 466 | 1690 | **466** | **1690** |
| 470.lbm | 160 | 2142 | 1030 | 2140 | 1030 | **2142** | **1030** | 160 | 1805 | 1220 | 1817 | 1210 | **1811** | **1210** |
| 481.wrf | 160 | 1815 | 985 | 1816 | 984 | **1815** | **985** | 160 | 1815 | 985 | 1816 | 984 | **1815** | **985** |
| 482.sphinx3 | 160 | **3829** | **814** | 3833 | 814 | 3825 | 815 | 80 | 1286 | 1210 | 1288 | 1210 | **1288** | **1210** |

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
```

## Operating System Notes

```
Large pages were not enabled for this run

The following command was used prior to run
   ulimit -s unlimited
   echo 1 > /proc/sys/vm/zone_reclaim_mode
```

## 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 -ansi-alias
```

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

Fortran benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static
```

Benchmarks using both Fortran and C:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -ansi-alias
```

## Peak Compiler Invocation

C benchmarks (except as noted below):
`icc -m64`

482.sphinx3: `icc -m32`

C++ benchmarks (except as noted below):
`icpc -m64`

450.soplex: `icpc -m32`

Fortran benchmarks:
`ifort -m64`

Benchmarks using both Fortran and C:
`icc -m64 ifort -m64`

## Peak 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`
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`

## 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`

470.lbm: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
`-no-prec-div`(pass 2) `-prof-use`(pass 2) `-opt-malloc-options=3`
`-ansi-alias -opt-prefetch -static -auto-ilp32`

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## Peak Optimization Flags (Continued)

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2

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

447.dealII: basepeak = yes

450.soplex: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3 -B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

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(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -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: -xSSE4.2 -ipo -O3 -no-prec-div -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

459.GemsFDTD: basepeak = yes

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) -unroll4 -auto -inline-calloc -opt-malloc-options=3 -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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/RX900S2_Platform.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/RX900S2_Platform.xml


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