# SPEC® CFP2006 Result
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## Fujitsu

PRIMERGY CX2570 M1, Intel Xeon E5-2697 v3, 2.6 GHz

$SPECfp^{®}\_rate2006 = \quad 868$

$SPECfp\_rate\_base2006 = \quad 844$

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

**Test date:** Nov-2014
**Hardware Availability:** Sep-2014
**Software Availability:** Sep-2014

| Benchmark | Copies | Result |
|---|---|---|
| 410.bwaves | 56 | 624 |
| 416.gamess | 56 / 56 | 1070 / 1030 |
| 433.milc | 56 / 56 | 589 / 588 |
| 434.zeusmp | 56 | 979 |
| 435.gromacs | 56 / 56 | 1210 / 1180 |
| 436.cactusADM | 56 | 1120 |
| 437.leslie3d | 28 / 56 | 460 / 442 |
| 444.namd | 56 / 56 | 897 / 890 |
| 447.dealII | 56 | 1560 |
| 450.soplex | 28 / 56 | 537 / 451 |
| 453.povray | 56 / 56 | 1580 / 1400 |
| 454.calculix | 56 | 1540 |
| 459.GemsFDTD | 56 | 424 |
| 465.tonto | 56 / 56 | 1010 / 954 |
| 470.lbm | 56 | 844 |
| 481.wrf | 56 / 56 | 735 / 732 |
| 482.sphinx3 | 56 | 780 |

**SPECfp_rate_base2006 = 844**
**SPECfp_rate2006 = 868**

## Hardware

CPU Name: Intel Xeon E5-2697 v3
CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz
CPU MHz: 2600
FPU: Integrated
CPU(s) enabled: 28 cores, 2 chips, 14 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
**Continued on next page**

## Software

Operating System: Red Hat Enterprise Linux Server release 7.0 (Maipo)
Kernel 3.10.0-123.8.1.el7.x86_64
Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux;
Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux
Auto Parallel: No
File System: xfs
**Continued on next page**

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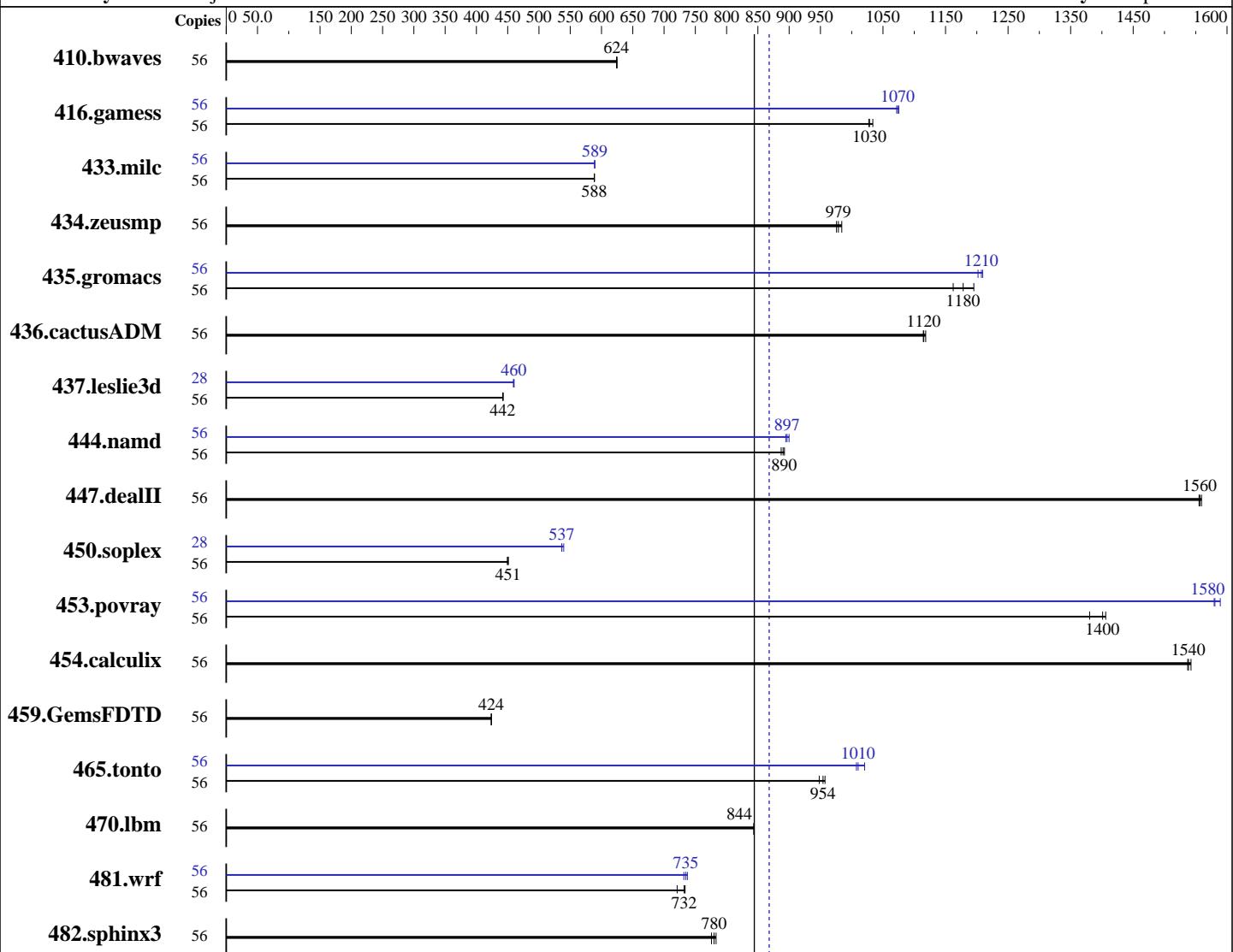
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| | |
|---|---|
| L3 Cache: | 35 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R) |
| Disk Subsystem: | 1 x SATA, 500 GB, 7200 RPM |
| Other Hardware: | None |

| | |
|---|---|
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 32/64-bit |
| Peak Pointers: | 32/64-bit |
| Other Software: | None |

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 56 | 1218 | 625 | 1220 | 624 | **1219** | **624** | 56 | 1218 | 625 | 1220 | 624 | **1219** | **624** |
| 416.gamess | 56 | 1061 | 1030 | 1067 | 1030 | **1066** | **1030** | 56 | **1021** | **1070** | 1020 | 1080 | 1023 | 1070 |
| 433.milc | 56 | 874 | 588 | **874** | **588** | 873 | 589 | 56 | **873** | **589** | 873 | 589 | 872 | 589 |
| 434.zeusmp | 56 | 522 | 976 | 518 | 984 | **521** | **979** | 56 | 522 | 976 | 518 | 984 | **521** | **979** |
| 435.gromacs | 56 | 344 | 1160 | 335 | 1200 | **339** | **1180** | 56 | 333 | 1200 | **331** | **1210** | 331 | 1210 |
| 436.cactusADM | 56 | 600 | 1110 | 598 | 1120 | **600** | **1120** | 56 | 600 | 1110 | 598 | 1120 | **600** | **1120** |
| 437.leslie3d | 56 | **1191** | **442** | 1189 | 443 | 1191 | 442 | 28 | 572 | 460 | 573 | 459 | **572** | **460** |
| 444.namd | 56 | 503 | 892 | **504** | **890** | 506 | 887 | 56 | 499 | 900 | 502 | 895 | **501** | **897** |
| 447.dealII | 56 | 412 | 1560 | 411 | 1560 | **412** | **1560** | 56 | 412 | 1560 | 411 | 1560 | **412** | **1560** |
| 450.soplex | 56 | **1037** | **451** | 1036 | 451 | 1039 | 449 | 28 | **435** | **537** | 433 | 540 | 435 | 536 |
| 453.povray | 56 | 212 | 1410 | 216 | 1380 | **213** | **1400** | 56 | 189 | 1580 | **188** | **1580** | 187 | 1590 |
| 454.calculix | 56 | **300** | **1540** | 300 | 1540 | 301 | 1540 | 56 | **300** | **1540** | 300 | 1540 | 301 | 1540 |
| 459.GemsFDTD | 56 | 1402 | 424 | 1401 | 424 | **1402** | **424** | 56 | 1402 | 424 | 1401 | 424 | **1402** | **424** |
| 465.tonto | 56 | 581 | 948 | 576 | 957 | **578** | **954** | 56 | 547 | 1010 | 540 | 1020 | **545** | **1010** |
| 470.lbm | 56 | **912** | **844** | 912 | 844 | 912 | 844 | 56 | **912** | **844** | 912 | 844 | 912 | 844 |
| 481.wrf | 56 | 853 | 734 | 868 | 721 | **855** | **732** | 56 | 848 | 737 | **851** | **735** | 855 | 732 |
| 482.sphinx3 | 56 | 1394 | 783 | 1407 | 776 | **1399** | **780** | 56 | 1394 | 783 | 1407 | 776 | **1399** | **780** |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

## Operating System Notes

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

## Platform Notes

BIOS configuration:  
Energy Performance = Performance  
Utilization Profile = Unbalanced

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PRIMERGY CX2570 M1, Intel Xeon E5-2697 v3, 2.6 GHz

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**Test date:** Nov-2014
**Hardware Availability:** Sep-2014
**Software Availability:** Sep-2014

## Platform Notes (Continued)

```
   QPI snoop mode: Cluster on Die
      COD Enable = Enabled, Early Snoop = Disabled
   CPU C1E Support = Disabled
```

## General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/SPECcpu2006/libs/32:/home/SPECcpu2006/libs/64:/home/SPECcpu2006/sh"

 Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
 memory using RedHat EL 7.0
 Filesystem page cache cleared with:
 echo 1>         /proc/sys/vm/drop_caches
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>

 This result was measured on the PRIMERGY CX2550 M1. The PRIMERGY CX2550 M1
 and the PRIMERGY CX2570 M1 are electronically equivalent.
 For information about Fujitsu please visit: http://www.fujitsu.com
```

## 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
```

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| | | | |
|---|---|---|---|
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| **Test sponsor:** | Fujitsu | **Hardware Availability:** | Sep-2014 |
| **Tested by:** | Fujitsu | **Software Availability:** | Sep-2014 |

# Base Portability Flags (Continued)

```
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:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias
```

C++ benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias
```

Fortran benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias
```

# Peak Compiler Invocation

C benchmarks:
```
icc   -m64
```

C++ benchmarks (except as noted below):
```
icpc  -m64
```
```
450.soplex: icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
```

Fortran benchmarks:
```
ifort -m64
```

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

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## 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
     482.sphinx3: -DSPEC_CPU_LP64
```

## Peak Optimization Flags

C benchmarks:

```
        433.milc: -xCORE-AVX2(pass 2)  -prof-gen(pass 1)  -ipo(pass 2)
                  -O3(pass 2)  -no-prec-div(pass 2)  -prof-use(pass 2)
                  -auto-ilp32

         470.lbm: basepeak = yes

     482.sphinx3: basepeak = yes
```

C++ benchmarks:

```
        444.namd: -xCORE-AVX2(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: -xCORE-AVX2(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

      453.povray: -xCORE-AVX2(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:

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|---|---|
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# Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(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-

434.zeusmp: basepeak = yes

437.leslie3d: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

465.tonto: -xCORE-AVX2(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

Benchmarks using both Fortran and C:

435.gromacs: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
       -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
       -opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32

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The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-HSW-RevA.html

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You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-HSW-RevA.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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