



# SPEC<sup>®</sup> CFP2006 Result

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Fujitsu Limited

SPECfp<sup>®</sup>2006 = 11.9

Fujitsu SPARC Enterprise M8000

SPECfp\_base2006 = 10.6

CPU2006 license: 19

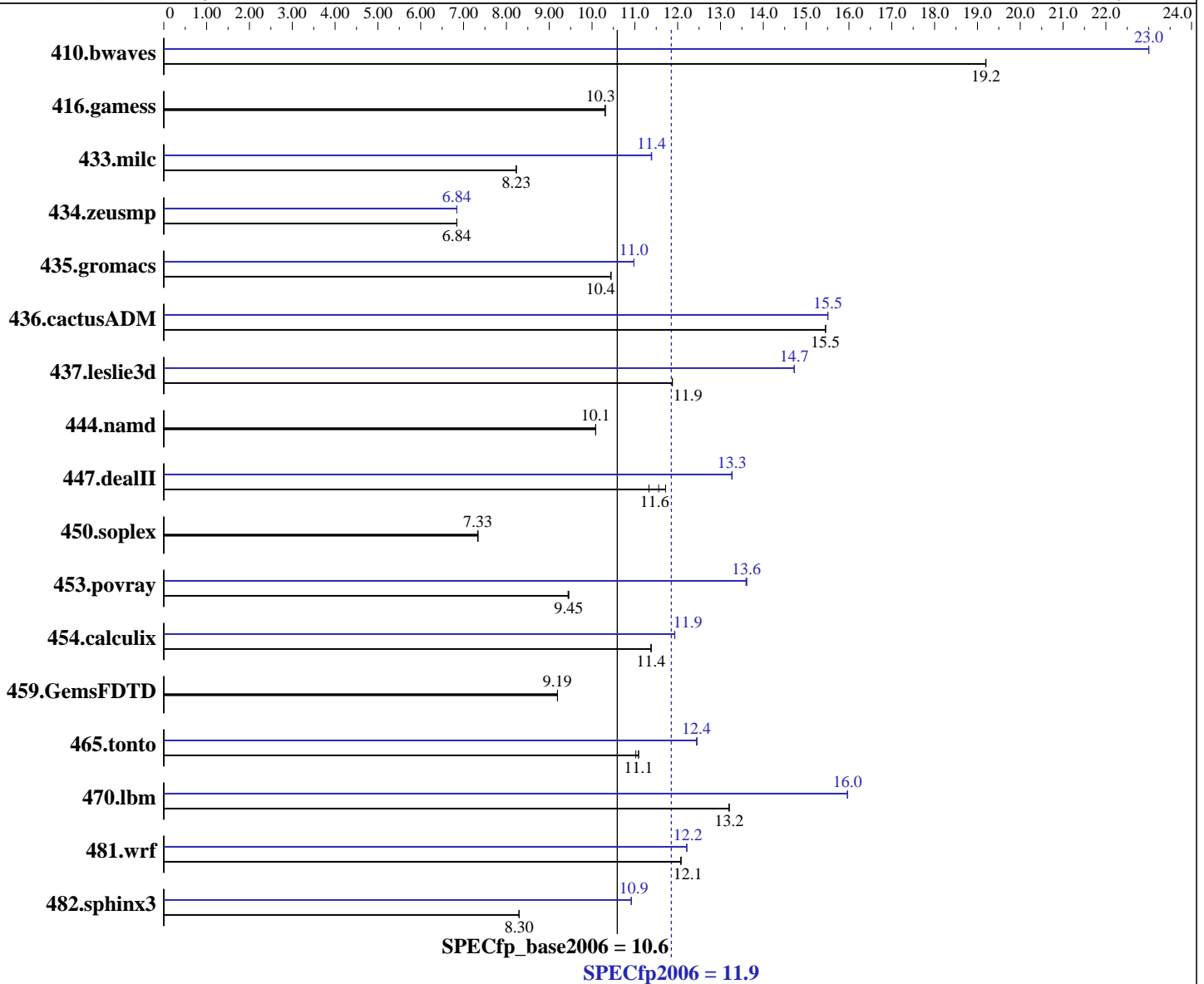
Test date: Mar-2007

Test sponsor: Fujitsu Limited

Hardware Availability: Apr-2007

Tested by: Fujitsu Limited

Software Availability: May-2007



### Hardware

CPU Name: SPARC64 VI  
 CPU Characteristics:  
 CPU MHz: 2280  
 FPU: Integrated  
 CPU(s) enabled: 32 cores, 16 chips, 2 cores/chip, 2 threads/core  
 CPU(s) orderable: 1 to 4 CMUs; each CMU contains 2 or 4 chips  
 Primary Cache: 128 KB I + 128 KB D on chip per core  
 Secondary Cache: 5 MB I+D on chip per chip

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### Software

Operating System: Solaris 10 11/06  
 Compiler: Sun Studio 12 (Early Access)  
 Auto Parallel: No  
 File System: ufs  
 System State: Default  
 Base Pointers: 32-bit  
 Peak Pointers: 32-bit  
 Other Software: None



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L3 Cache: None  
Other Cache: None  
Memory: 64 GB (64 x 1 GB, see notes for details)  
Disk Subsystem: 73 GB 10,000 RPM Fujitsu MAY2073RC SAS  
Other Hardware: None

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	708	19.2	708	19.2	<b>708</b>	<b>19.2</b>	<u>591</u>	<u>23.0</u>	591	23.0	591	23.0
416.gamess	1899	10.3	1900	10.3	<b>1899</b>	<b>10.3</b>	1899	10.3	1900	10.3	<b>1899</b>	<b>10.3</b>
433.milc	1116	8.23	1115	8.23	<b>1115</b>	<b>8.23</b>	806	11.4	<b>806</b>	<b>11.4</b>	806	11.4
434.zeusmp	1330	6.84	<b>1330</b>	<b>6.84</b>	1330	6.84	1330	6.84	1330	6.84	<b>1330</b>	<b>6.84</b>
435.gromacs	684	10.4	684	10.4	<b>684</b>	<b>10.4</b>	<b>650</b>	<b>11.0</b>	650	11.0	650	11.0
436.cactusADM	<b>773</b>	<b>15.5</b>	773	15.5	773	15.5	771	15.5	771	15.5	<b>771</b>	<b>15.5</b>
437.leslie3d	791	11.9	792	11.9	<b>791</b>	<b>11.9</b>	<b>638</b>	<b>14.7</b>	638	14.7	639	14.7
444.namd	<b>795</b>	<b>10.1</b>	795	10.1	795	10.1	<b>795</b>	<b>10.1</b>	795	10.1	795	10.1
447.dealII	<b>990</b>	<b>11.6</b>	1010	11.3	976	11.7	<b>862</b>	<b>13.3</b>	862	13.3	863	13.3
450.soplex	<b>1137</b>	<b>7.33</b>	1137	7.33	1137	7.34	<b>1137</b>	<b>7.33</b>	1137	7.33	1137	7.34
453.povray	563	9.46	<b>563</b>	<b>9.45</b>	564	9.44	391	13.6	<b>391</b>	<b>13.6</b>	391	13.6
454.calculix	<b>725</b>	<b>11.4</b>	725	11.4	725	11.4	<b>691</b>	<b>11.9</b>	692	11.9	691	11.9
459.GemsFDTD	1154	9.19	1154	9.19	<b>1154</b>	<b>9.19</b>	1154	9.19	1154	9.19	<b>1154</b>	<b>9.19</b>
465.tonto	<b>888</b>	<b>11.1</b>	893	11.0	887	11.1	791	12.4	<b>791</b>	<b>12.4</b>	790	12.5
470.lbm	<b>1041</b>	<b>13.2</b>	1041	13.2	1041	13.2	861	16.0	<b>861</b>	<b>16.0</b>	861	16.0
481.wrf	<b>925</b>	<b>12.1</b>	925	12.1	925	12.1	915	12.2	<b>915</b>	<b>12.2</b>	915	12.2
482.sphinx3	<b>2349</b>	<b>8.30</b>	2350	8.29	2349	8.30	1785	10.9	<b>1785</b>	<b>10.9</b>	1785	10.9

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

## Operating System Notes

### Shell Environment:

```
Stack size set to unlimited via "ulimit -s unlimited"
MPSSHEAP=4MB
MPSSSTACK=4MB
MADV=access_lwp
LD_PRELOAD=mpss.so.1:madv.so.1
```

The run was bound to processor #27 using the "psrset" command

```
psrset -c processor id...: creates a set
psrset -e set_id command: runs command on a set
```

### System Tunables:

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## Operating System Notes (Continued)

```
(/etc/system parameters)
maxphys=4194304
  Defines the maximum size of I/O requests, in bytes.
maxpgio=1024
  Defines the maximum number of page I/O requests that can
  be queued by the paging system.
tune_t_fsflushr=1
  Controls how many seconds elapse between runs of the
  page flush daemon, fsflush.
autoup=60
  Causes pages older than the listed number of seconds to
  be written by fsflush.
bufhwm=3000
  Memory byte limit for caching I/O buffers
segmap_percent=1
  Set maximum percent memory for file system cache
```

## Platform Notes

"CMU" = CPU/Memory Unit; each holds 2 or 4 CPU chips.

Memory was 8-way interleaved by filling same capacity DIMMs in every other slot.

This result was measured on a Fujitsu SPARC Enterprise M8000 Server. Note that the Fujitsu SPARC Enterprise M8000 and Sun SPARC Enterprise M8000 are electrically equivalent.

## Base Compiler Invocation

C benchmarks:

/opt/SUNWspr012\_EA070303/bin/cc

C++ benchmarks:

/opt/SUNWspr012\_EA070303/bin/CC

Fortran benchmarks:

/opt/SUNWspr012\_EA070303/bin/f90

Benchmarks using both Fortran and C:

/opt/SUNWspr012\_EA070303/bin/cc /opt/SUNWspr012\_EA070303/bin/f90



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## Base Optimization Flags

C benchmarks:

```
-fast -xipo=2 -xtarget=sparc64vi -xcache=128/64/2:6144/256/12
-xarch=sparcfmaf -fma=fused -Wc,-fma=fused -xprefetch_level=2
```

C++ benchmarks:

```
-library=stlport4 -fast -xipo=2 -xtarget=sparc64vi
-xcache=128/64/2:6144/256/12 -xarch=sparcfmaf -fma=fused
-Qoption cg -fma=fused
```

Fortran benchmarks:

```
-fast -xipo=2 -xtarget=sparc64vi -xcache=128/64/2:6144/256/12
-xarch=sparcfmaf -fma=fused -Qoption cg -fma=fused -xprefetch_level=2
```

Benchmarks using both Fortran and C:

```
-fast(cc) -fast(f90) -xipo=2 -xtarget=sparc64vi
-xcache=128/64/2:6144/256/12 -xarch=sparcfmaf -fma=fused
-Wc,-fma=fused -xprefetch_level=2 -Qoption cg -fma=fused
```

## Peak Compiler Invocation

C benchmarks:

```
/opt/SUNWspr012_EA070303/bin/cc
```

C++ benchmarks:

```
/opt/SUNWspr012_EA070303/bin/CC
```

Fortran benchmarks:

```
/opt/SUNWspr012_EA070303/bin/f90
```

Benchmarks using both Fortran and C:

```
/opt/SUNWspr012_EA070303/bin/cc /opt/SUNWspr012_EA070303/bin/f90
```

## Peak Optimization Flags

C benchmarks:

```
433.milc: -fast -xipo=2 -xtarget=sparc64vi
-xcache=128/64/2:6144/256/12 -xarch=sparcfmaf -fma=fused
-Wc,-fma=fused -xalias_level=strong -xprefetch_level=2
-xprefetch_auto_type=indirect_array_access
```

```
470.lbm: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2
-xtarget=sparc64vi -xcache=128/64/2:6144/256/12
-xarch=v8plusb -xprefetch_level=2 -fma=fused -Wc,-fma=fused
```

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## Peak Optimization Flags (Continued)

```
482.sphinx3: -xprofile=collect:./feedback(pass 1)
             -xprofile=use:./feedback(pass 2) -fast -xipo=2
             -xtarget=sparc64vi -xcache=128/64/2:6144/256/12
             -xarch=sparcfmaf -fma=fused -Wc,-fma=fused
```

C++ benchmarks:

444.namd: basepeak = yes

```
447.dealII: -library=stlport4 -xprofile=collect:./feedback(pass 1)
            -xprofile=use:./feedback(pass 2) -fast -xipo=2
            -xtarget=sparc64vi -xcache=128/64/2:6144/256/12
            -xarch=sparcfmaf -fma=fused -Qoption cg -fma=fused -xdepend
            -xalias_level=compatible -xrestrict
```

450.soplex: basepeak = yes

```
453.povray: -library=stlport4 -xprofile=collect:./feedback(pass 1)
            -xprofile=use:./feedback(pass 2) -fast -xipo=2
            -xtarget=sparc64vi -xcache=128/64/2:6144/256/12
            -xarch=sparcfmaf -fma=fused -Qoption cg -fma=fused -xdepend
            -xalias_level=compatible
```

Fortran benchmarks:

```
410.bwaves: -fast -xipo=2 -xtarget=sparc64vi
            -xcache=128/64/2:6144/256/12 -xarch=v8plusb -xchip=ultra3cu
            -xprefetch_level=2 -xprefetch=latx:3.0 -fma=fused
            -Qoption cg -fma=fused
```

416.gamess: basepeak = yes

```
434.zeusmp: -fast -xipo=2 -xtarget=sparc64vi
            -xcache=128/64/2:6144/256/12 -xarch=sparcfmaf -fma=fused
            -Qoption cg -fma=fused -lmopt
```

```
437.leslie3d: -fast -xipo=2 -xtarget=sparc64vi
              -xcache=128/64/2:6144/256/12 -xarch=sparcfmaf -fma=fused
              -Qoption cg -fma=fused -xprefetch_level=2
              -xprefetch=latx:8.0
```

459.GemsFDTD: basepeak = yes

```
465.tonto: -xprofile=collect:./feedback(pass 1)
            -xprofile=use:./feedback(pass 2) -fast -xipo=2
            -xtarget=sparc64vi -xcache=128/64/2:6144/256/12
            -xarch=v8plusa -fma=fused -Qoption cg -fma=fused -lfast
```

Benchmarks using both Fortran and C:

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## Peak Optimization Flags (Continued)

```
435.gromacs: -xprofile=collect:./feedback(pass 1)
             -xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
             -xipo=2 -xtarget=sparc64vi -xcache=128/64/2:6144/256/12
             -xarch=sparcfmaf -fma=fused -Wc,-fma=fused
             -Qoption cg -fma=fused
```

```
436.cactusADM: -fast(cc) -fast(f90) -xipo=2 -xtarget=sparc64vi
               -xcache=128/64/2:6144/256/12 -xarch=sparcfmaf -fma=fused
               -Wc,-fma=fused -Qoption cg -fma=fused
```

454.calculix: Same as 436.cactusADM

```
481.wrf: -xprofile=collect:./feedback(pass 1)
          -xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
          -xipo=2 -xtarget=sparc64vi -xcache=128/64/2:6144/256/12
          -xarch=sparcfmaf -fma=fused -Wc,-fma=fused
          -Qoption cg -fma=fused -xprefetch_level=2
```

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12.20090714.02.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12.20090714.02.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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