



# SPEC<sup>®</sup> CFP2006 Result

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## Sun Microsystems

SPECfp<sup>®</sup>2006 = 12.4

## Sun SPARC Enterprise M8000

SPECfp\_base2006 = 11.1

CPU2006 license: 6

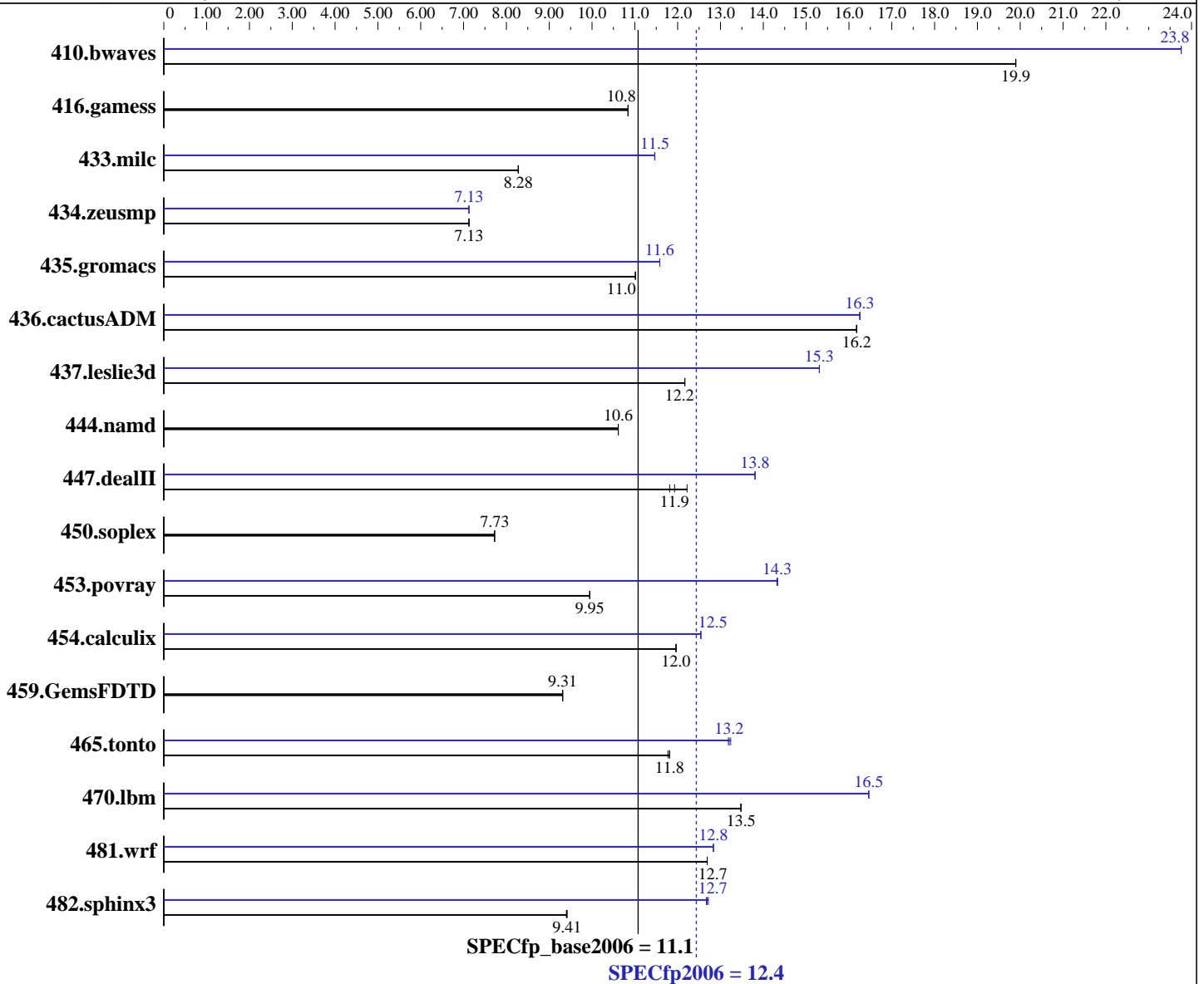
Test date: Mar-2007

Test sponsor: Sun Microsystems

Hardware Availability: Apr-2007

Tested by: Fujitsu Limited

Software Availability: May-2007



### Hardware

CPU Name: SPARC64 VI  
 CPU Characteristics:  
 CPU MHz: 2400  
 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: 6 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	<b>683</b>	<b>19.9</b>	683	19.9	683	19.9	572	23.8	<b>572</b>	<b>23.8</b>	572	23.8
416.gamess	1806	10.8	1806	10.8	<b>1806</b>	<b>10.8</b>	1806	10.8	1806	10.8	<b>1806</b>	<b>10.8</b>
433.milc	1109	8.28	<b>1109</b>	<b>8.28</b>	1108	8.28	<b>801</b>	<b>11.5</b>	801	11.5	800	11.5
434.zeusmp	<b>1277</b>	<b>7.13</b>	1277	7.13	1277	7.13	1277	7.13	<b>1277</b>	<b>7.13</b>	1277	7.13
435.gromacs	648	11.0	<b>648</b>	<b>11.0</b>	648	11.0	<b>616</b>	<b>11.6</b>	616	11.6	616	11.6
436.cactusADM	<b>739</b>	<b>16.2</b>	739	16.2	739	16.2	735	16.3	735	16.3	<b>735</b>	<b>16.3</b>
437.leslie3d	773	12.2	<b>773</b>	<b>12.2</b>	773	12.2	614	15.3	614	15.3	<b>614</b>	<b>15.3</b>
444.namd	756	10.6	<b>756</b>	<b>10.6</b>	756	10.6	756	10.6	<b>756</b>	<b>10.6</b>	756	10.6
447.dealII	<b>959</b>	<b>11.9</b>	936	12.2	969	11.8	<b>828</b>	<b>13.8</b>	828	13.8	829	13.8
450.soplex	1079	7.73	1080	7.72	<b>1080</b>	<b>7.73</b>	1079	7.73	1080	7.72	<b>1080</b>	<b>7.73</b>
453.povray	<b>535</b>	<b>9.95</b>	535	9.95	535	9.95	372	14.3	<b>371</b>	<b>14.3</b>	371	14.3
454.calculix	690	12.0	<b>690</b>	<b>12.0</b>	690	12.0	<b>658</b>	<b>12.5</b>	658	12.5	658	12.5
459.GemsFDTD	<b>1139</b>	<b>9.31</b>	1139	9.31	1139	9.31	<b>1139</b>	<b>9.31</b>	1139	9.31	1139	9.31
465.tonto	833	11.8	<b>833</b>	<b>11.8</b>	836	11.8	743	13.2	<b>745</b>	<b>13.2</b>	746	13.2
470.lbm	1019	13.5	<b>1019</b>	<b>13.5</b>	1020	13.5	835	16.5	<b>835</b>	<b>16.5</b>	835	16.5
481.wrf	<b>880</b>	<b>12.7</b>	880	12.7	880	12.7	<b>870</b>	<b>12.8</b>	870	12.8	870	12.8
482.sphinx3	2070	9.42	2073	9.40	<b>2070</b>	<b>9.41</b>	1533	12.7	1538	12.7	<b>1536</b>	<b>12.7</b>

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

### Operating System Notes

These shell commands request use of local 4MB pages:

```

MSSSHEAP=4MB
MSSSTACK=4MB
MADV=access_lwp
LD_PRELOAD=mpss.so.1:madv.so.1

```

'access\_lwp' means that the next light weight process to touch the specified address range will access it the most heavily.

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

The run was bound to processor #27 using the "psrset" command  
psrset -c processor id...: creates a set

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## Operating System Notes (Continued)

psrset -e set\_id command: runs command on a set

### System Tunables:

(/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 is 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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Tested by: Fujitsu Limited

Test date: Mar-2007

Hardware Availability: Apr-2007

Software Availability: May-2007

## 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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