



SPEC® CFP2006 Result

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Sun Microsystems

SPECfp®2006 = 24.6

Sun SPARC Enterprise M8000

SPECfp_base2006 = 21.7

CPU2006 license: 6

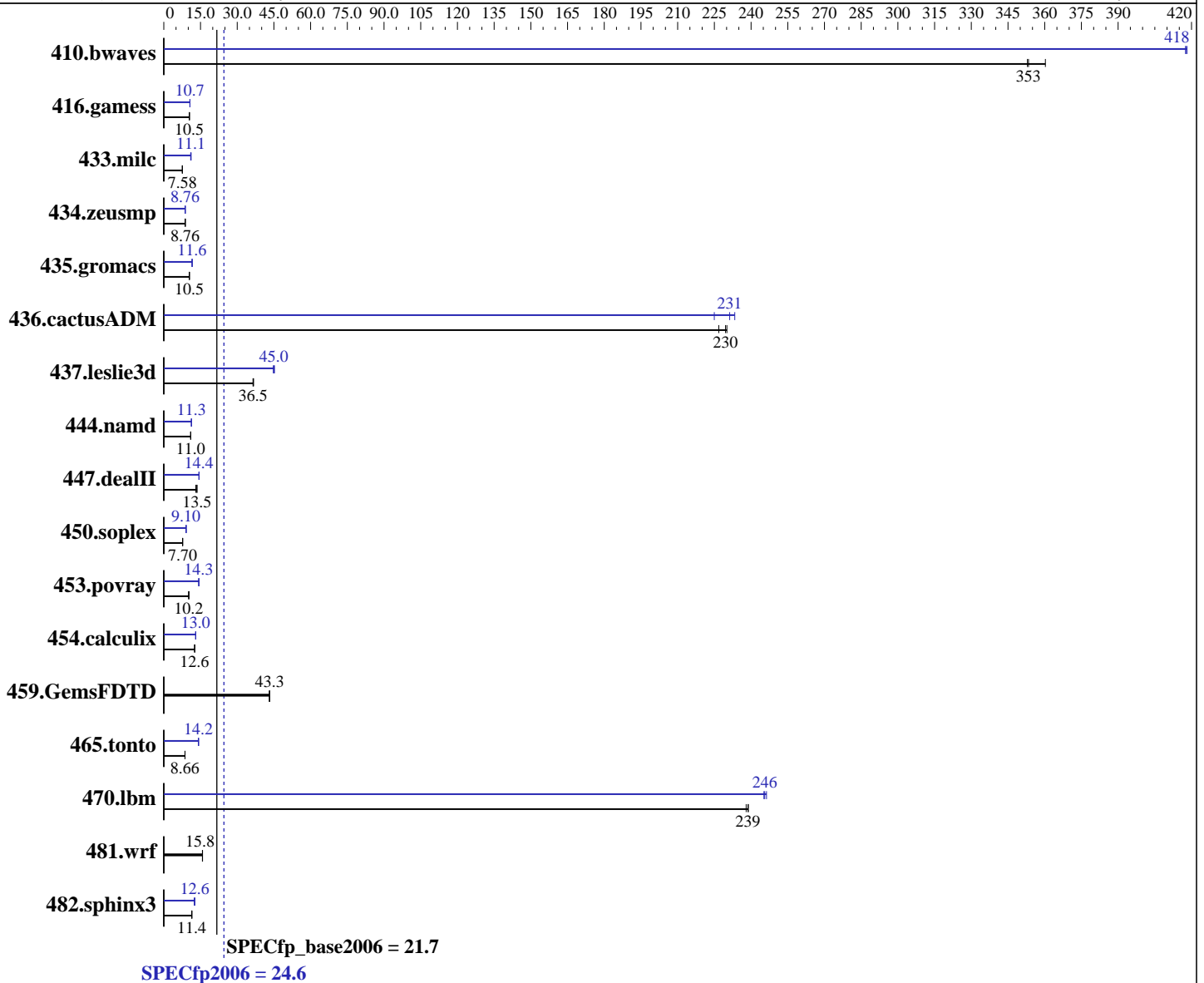
Test sponsor: Sun Microsystems

Tested by: Sun Microsystems

Test date: Feb-2008

Hardware Availability: Apr-2007

Software Availability: May-2008



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 5/08 s10s_u5wos_08
 Compiler: Sun Studio 12, Patch 124867-02
 (see patch info below)
 Auto Parallel: Yes
 File System: ufs
 System State: Default
 Base Pointers: 32-bit
 Peak Pointers: 32-bit

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L3 Cache: None
Other Cache: None
Memory: 256 GB (128 x 2 GB DIMMs)
Disk Subsystem: 408 GB SVM RAID 1+0 on 12 x 73 GB
10,000 RPM Fujitsu MAY2073RC SAS
Other Hardware: None

Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	38.5	353	37.7	360	<u>38.5</u>	<u>353</u>	<u>32.5</u>	<u>418</u>	32.5	418	32.5	418
416.gamess	1874	10.4	<u>1873</u>	<u>10.5</u>	1872	10.5	1833	10.7	1833	10.7	<u>1833</u>	<u>10.7</u>
433.milc	1205	7.62	1215	7.56	<u>1211</u>	<u>7.58</u>	826	11.1	<u>826</u>	<u>11.1</u>	836	11.0
434.zeusmp	<u>1039</u>	<u>8.76</u>	1039	8.76	1039	8.76	<u>1039</u>	<u>8.76</u>	<u>1039</u>	<u>8.76</u>	1040	8.75
435.gromacs	684	10.4	683	10.5	<u>683</u>	<u>10.5</u>	619	11.5	615	11.6	<u>616</u>	<u>11.6</u>
436.cactusADM	52.7	227	51.9	230	<u>52.1</u>	<u>230</u>	53.1	225	51.2	233	<u>51.7</u>	<u>231</u>
437.leslie3d	<u>257</u>	<u>36.5</u>	256	36.7	258	36.5	210	44.8	208	45.2	<u>209</u>	<u>45.0</u>
444.namd	<u>729</u>	<u>11.0</u>	729	11.0	730	11.0	710	11.3	710	11.3	<u>710</u>	<u>11.3</u>
447.dealII	<u>845</u>	<u>13.5</u>	844	13.5	875	13.1	<u>793</u>	<u>14.4</u>	798	14.3	793	14.4
450.soplex	<u>1084</u>	<u>7.70</u>	1083	7.70	1084	7.69	910	9.17	917	9.09	<u>916</u>	<u>9.10</u>
453.povray	523	10.2	519	10.3	<u>521</u>	<u>10.2</u>	370	14.4	<u>372</u>	<u>14.3</u>	373	14.3
454.calculix	653	12.6	<u>654</u>	<u>12.6</u>	654	12.6	634	13.0	<u>633</u>	<u>13.0</u>	632	13.1
459.GemsFDTD	246	43.1	245	43.3	<u>245</u>	<u>43.3</u>	246	43.1	245	43.3	<u>245</u>	<u>43.3</u>
465.tonto	1134	8.68	1138	8.64	<u>1136</u>	<u>8.66</u>	<u>693</u>	<u>14.2</u>	693	14.2	696	14.1
470.lbm	57.7	238	<u>57.5</u>	<u>239</u>	57.5	239	56.0	245	55.8	246	<u>55.9</u>	<u>246</u>
481.wrf	<u>707</u>	<u>15.8</u>	708	15.8	705	15.8	<u>707</u>	<u>15.8</u>	708	15.8	705	15.8
482.sphinx3	1704	11.4	1700	11.5	<u>1703</u>	<u>11.4</u>	1539	12.7	<u>1541</u>	<u>12.6</u>	1565	12.5

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

Compiler Invocation Notes

Sun Studio compiler patches are available at
http://developers.sun.com/sunstudio/downloads/patches/ss12_patches.jsp
The tested configuration included patch 124867-02, 124861-04,
124863-02, and 127000-02

Operating System Notes

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

Program threads were bound to processors with:
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Operating System Notes (Continued)

```
SUNW_MP_PROCBIND="1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37
39 41 43 45 47 49 51 53 55 57 59 61 63"
```

Behavior of parallel threads was set with:

```
SUNW_MP_THR_IDLE=SPIN
```

SPIN specifies that an idle thread should spin while waiting at barrier or waiting for new parallel regions to work on.

The maximum number of threads a program can create was set with:

```
OMP_NUM_THREADS=32
```

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=4
```

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

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

Memory is 8-way interleaved by filling all slots with the same capacity DIMMs.

Base Compiler Invocation

C benchmarks:

```
cc
```

C++ benchmarks:

```
CC
```

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Base Compiler Invocation (Continued)

Fortran benchmarks:
f90

Benchmarks using both Fortran and C:
cc f90

Base Optimization Flags

C benchmarks:
-fast -xipo=2 -fma=fused -xpagesize=4M -xprefetch=latx:2 -xautopar
-xreduction -xprefetch_level=3
-xprefetch_auto_type=indirect_array_access

C++ benchmarks:
-library=stlport4 -fast -xipo=2 -fma=fused -xpagesize=4M
-xprefetch=latx:2 -xautopar -xreduction -xprefetch_level=2
-xalias_level=compatible

Fortran benchmarks:
-fast -xipo=2 -fma=fused -xpagesize=4M -xprefetch=latx:2 -xautopar
-xreduction -xprefetch_level=2

Benchmarks using both Fortran and C:
-fast(cc) -fast(f90) -xipo=2 -fma=fused -xpagesize=4M
-xprefetch=latx:2 -xautopar -xreduction -xprefetch_level=3
-xprefetch_auto_type=indirect_array_access -xprefetch_level=2

Base Other Flags

C benchmarks:
-xjobs=64

C++ benchmarks:
-xjobs=64

Fortran benchmarks:
-xjobs=64

Benchmarks using both Fortran and C:
-xjobs=64



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Peak Compiler Invocation

C benchmarks:

cc

C++ benchmarks:

CC

Fortran benchmarks:

f90

Benchmarks using both Fortran and C:

cc f90

Peak Optimization Flags

C benchmarks:

```
433.milc: -fast -xipo=2 -fma=fused -xpagesize=4M -xprefetch=latx:2
-xalias_level=std -xprefetch_level=3
-xprefetch_auto_type=indirect_array_access
-xalias_level=strong -xprefetch_level=2
```

```
470.lbm: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -fma=fused
-xpagesize=4M -xprefetch=latx:2 -xalias_level=std
-xprefetch_level=3 -xprefetch_auto_type=indirect_array_access
-xarch=v8plusb -xprefetch_level=2 -xautopar -xreduction
```

```
482.sphinx3: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -fma=fused
-xalias_level=std
```

C++ benchmarks:

```
444.namd: -library=stlport4 -fast -xipo=2 -fma=fused -xpagesize=4M
-xprefetch=latx:2 -xalias_level=compatible -xdepend
```

```
447.deallI: -library=stlport4 -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -fma=fused
-xalias_level=compatible -xdepend -xrestrict
-xprefetch=latx:4.5
```

```
450.soplex: -library=stlport4 -fast -xipo=2 -fma=fused -xpagesize=4M
-xprefetch=latx:2 -xdepend -xprefetch_level=2
-xprefetch_auto_type=indirect_array_access
-Qoption cg -Qlp-ol=1 -Qoption cg -Qlp-it=3
-Qoption cg -Qlp-imb=1 -Qoption iropt -Apf:pdl=3
```

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Peak Optimization Flags (Continued)

453.povray: -library=stlport4 -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -fma=fused
-xpagesize=4M -xprefetch=latx:2 -xalias_level=compatible
-xdepend -xrestrict -xprefetch=latx:4.5

Fortran benchmarks:

410.bwaves: -fast -xipo=2 -fma=fused -xpagesize=512K -xprefetch=latx:2
-xprefetch_level=2 -xautopar -xreduction

416.gamess: -fast -xipo=2 -fma=fused -xpagesize=4M -xprefetch=latx:2
-xprefetch_level=2

434.zeusmp: -fast -xipo=2 -fma=fused -xpagesize=4M -xprefetch=latx:2
-xautopar -xreduction

437.leslie3d: -fast -xipo=2 -xautopar -xreduction -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 -fma=fused
-xpagesize=4M -xprefetch=latx:2 -xarch=v8plusa
-xprefetch=latx:12 -lfast

Benchmarks using both Fortran and C:

435.gromacs: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xipo=2 -fma=fused -xalias_level=std

436.cactusADM: -fast(cc) -fast(f90) -xipo=2 -fma=fused -xpagesize=4M
-xprefetch=latx:2 -xalias_level=std -xprefetch_level=3
-xprefetch_auto_type=indirect_array_access -xautopar
-xreduction

454.calculix: -fast(cc) -fast(f90) -xipo=2 -fma=fused -xalias_level=std

481.wrf: basepeak = yes

Peak Other Flags

C benchmarks:

-xjobs=64

C++ benchmarks:

-xjobs=64

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Peak Other Flags (Continued)

Fortran benchmarks:
-xjobs=64

Benchmarks using both Fortran and C:
-xjobs=64

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

<http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12-and-gccfss4.2.html>

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

<http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12-and-gccfss4.2.xml>

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For other inquiries, please contact webmaster@spec.org.

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