



SPEC® CFP2006 Result

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Sun Microsystems

SPECfp®2006 = 23.6

Sun SPARC Enterprise M8000

SPECfp_base2006 = 20.9

CPU2006 license: 6

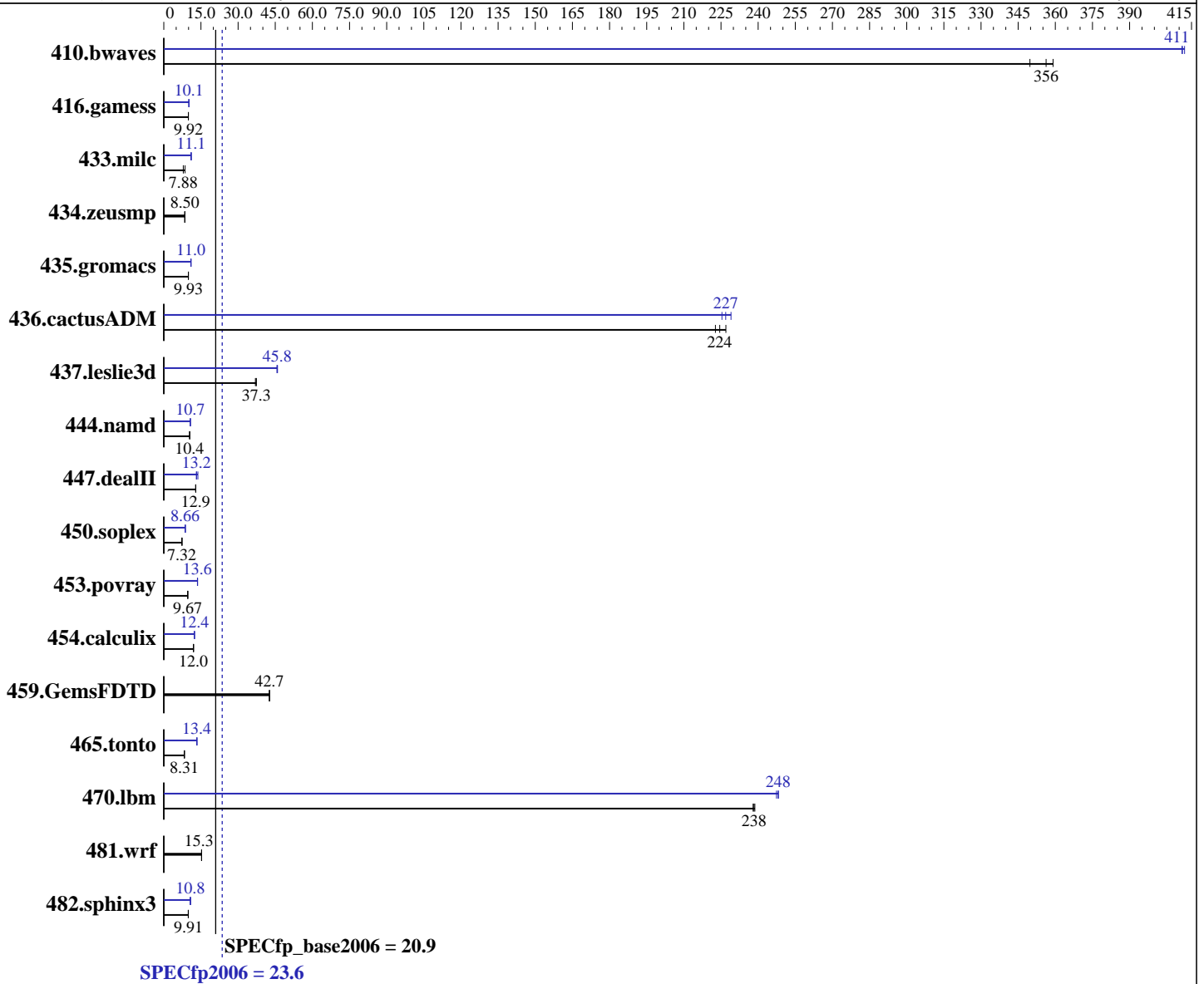
Test date: Mar-2008

Test sponsor: Sun Microsystems

Hardware Availability: Apr-2007

Tested by: Sun Microsystems

Software Availability: May-2008



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 5/08 s10s_u5wos_08
 Compiler: Sun Studio 12, see patch information below
 Auto Parallel: Yes
 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: 256 GB (128 x 2 GB DIMMs)
 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	38.9	350	<u>38.1</u>	<u>356</u>	37.8	359	33.1	411	<u>33.0</u>	<u>411</u>	33.0	412
416.gamess	1974	9.92	1973	9.92	<u>1973</u>	<u>9.92</u>	<u>1932</u>	<u>10.1</u>	1932	10.1	1931	10.1
433.milc	<u>1165</u>	<u>7.88</u>	1166	7.88	1069	8.58	828	11.1	<u>828</u>	<u>11.1</u>	838	11.0
434.zeusmp	<u>1071</u>	<u>8.50</u>	1071	8.50	1070	8.50	<u>1071</u>	<u>8.50</u>	1071	8.50	1070	8.50
435.gromacs	719	9.93	<u>719</u>	<u>9.93</u>	720	9.92	650	11.0	<u>651</u>	<u>11.0</u>	652	11.0
436.cactusADM	52.6	227	53.6	223	<u>53.2</u>	<u>224</u>	<u>52.7</u>	<u>227</u>	53.0	225	52.2	229
437.leslie3d	252	37.3	254	37.0	<u>252</u>	<u>37.3</u>	<u>205</u>	<u>45.8</u>	206	45.7	205	45.9
444.namd	768	10.4	767	10.4	<u>767</u>	<u>10.4</u>	748	10.7	<u>748</u>	<u>10.7</u>	748	10.7
447.dealII	885	12.9	889	12.9	<u>887</u>	<u>12.9</u>	<u>864</u>	<u>13.2</u>	831	13.8	870	13.2
450.soplex	1137	7.34	1139	7.32	<u>1139</u>	<u>7.32</u>	968	8.61	<u>963</u>	<u>8.66</u>	955	8.74
453.povray	551	9.65	549	9.70	<u>550</u>	<u>9.67</u>	392	13.6	389	13.7	<u>391</u>	<u>13.6</u>
454.calculix	689	12.0	<u>688</u>	<u>12.0</u>	687	12.0	669	12.3	<u>666</u>	<u>12.4</u>	665	12.4
459.GemsFDTD	249	42.6	<u>249</u>	<u>42.7</u>	248	42.7	249	42.6	<u>249</u>	<u>42.7</u>	248	42.7
465.tonto	1185	8.30	1183	8.32	<u>1184</u>	<u>8.31</u>	736	13.4	<u>736</u>	<u>13.4</u>	736	13.4
470.lbm	57.6	239	57.7	238	<u>57.7</u>	<u>238</u>	55.4	248	<u>55.4</u>	<u>248</u>	55.5	247
481.wrf	731	15.3	<u>731</u>	<u>15.3</u>	734	15.2	731	15.3	<u>731</u>	<u>15.3</u>	734	15.2
482.sphinx3	<u>1966</u>	<u>9.91</u>	1965	9.92	1977	9.86	1832	10.6	<u>1810</u>	<u>10.8</u>	1802	10.8

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, 127000-02,
 124863-02, 124861-04

Operating System Notes

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

Program threads were bound to processors with:
 SUNW_MP_PROCBIND="1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37
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Operating System Notes (Continued)

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: basepeak = yes

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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