SPEC® CFP2006 Result
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Sun Microsystems
Sun SPARC Enterprise M4000

$SPECfp®2006 =$　13.9

SPECfp_base2006 =　13.3

CPU2006 license: 6
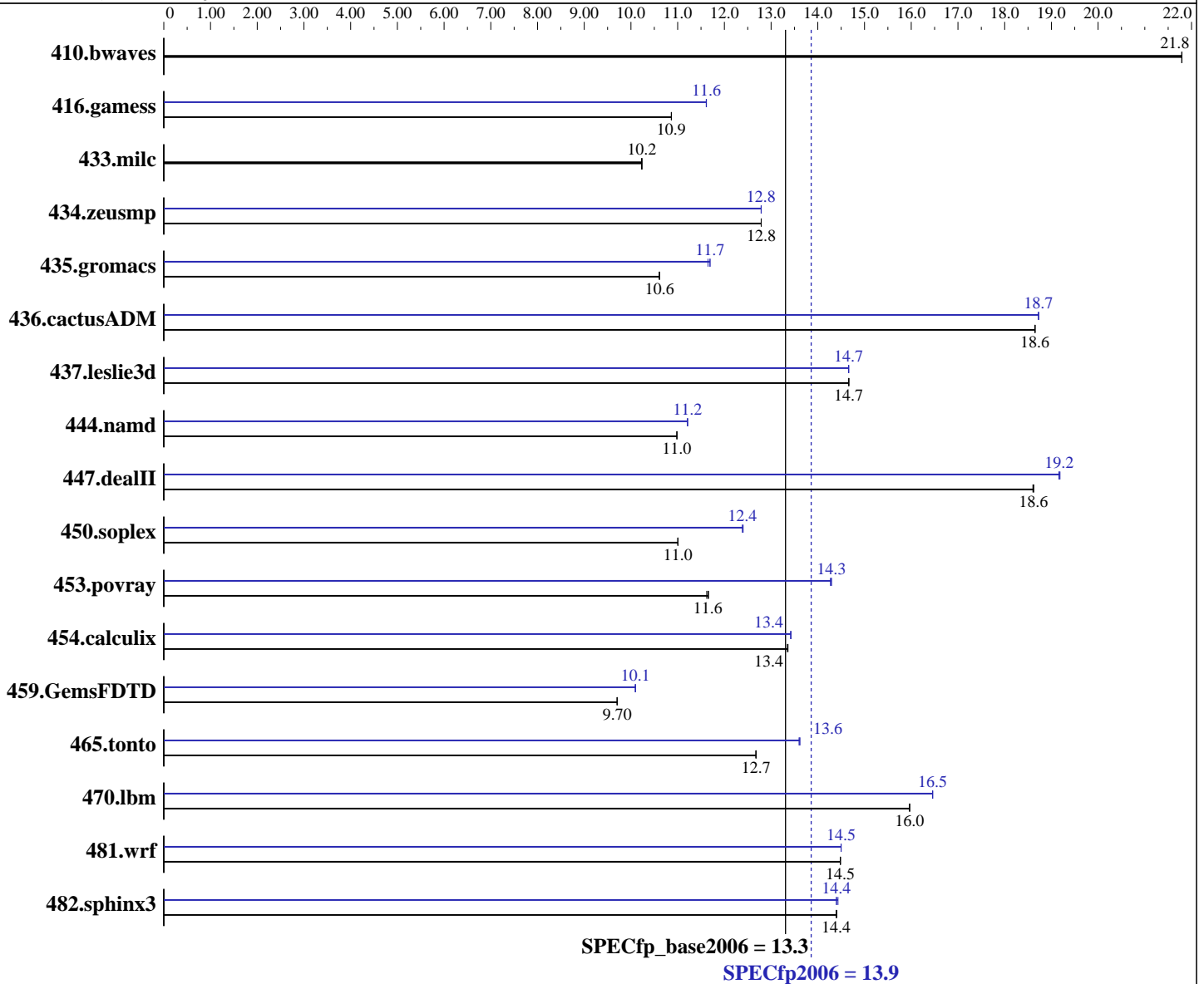**Test sponsor:** Sun Microsystems
Tested by: Fujitsu Limited

Test date: Oct-2009
Hardware Availability: Nov-2009
Software Availability: Jul-2009

Benchmark	Value
410.bwaves	21.8
416.gamess	11.6 / 10.9
433.milc	10.2
434.zeusmp	12.8 / 12.8
435.gromacs	11.7 / 10.6
436.cactusADM	18.7 / 18.6
437.leslie3d	14.7 / 14.7
444.namd	11.2 / 11.0
447.dealII	19.2 / 18.6
450.soplex	12.4 / 11.0
453.povray	14.3 / 11.6
454.calculix	13.4 / 13.4
459.GemsFDTD	10.1 / 9.70
465.tonto	13.6 / 12.7
470.lbm	16.5 / 16.0
481.wrf	14.5 / 14.5
482.sphinx3	14.4 / 14.4

SPECfp_base2006 = 13.3
SPECfp2006 = 13.9

Hardware
CPU Name: SPARC64 VII
CPU Characteristics:
CPU MHz: 2530
FPU: Integrated
CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip, 2 threads/core
CPU(s) orderable: 1 to 2 CPUMs; each CPUM contains 2 CPU chips
Primary Cache: 64 KB I + 64 KB D on chip per core
Secondary Cache: 5632 KB I+D on chip per chip
Continued on next page

Software
Operating System: Solaris 10 5/09 with patches 119963-16, 120753-07, 118683-03
Compiler: Sun Studio 12 Update 1
Auto Parallel: No
File System: ufs
System State: Default
Base Pointers: 32-bit
Peak Pointers: 32-bit
Continued on next page

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L3 Cache:	None
Other Cache:	None
Memory:	64 GB (32 x 2 GB), 8-way interleaved
Disk Subsystem:	1 x Seagate Savvio 10K.2 (146 GB 10,000 RPM SAS)
Other Hardware:	None

Other Software: Apache C++ Standard Library V4.2.1

Results Table

Benchmark	Base Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	624	21.8	**624**	**21.8**	624	21.8	624	21.8	**624**	**21.8**	624	21.8
416.gamess	1802	10.9	1802	10.9	**1802**	**10.9**	**1686**	**11.6**	1686	11.6	1686	11.6
433.milc	897	10.2	898	10.2	**897**	**10.2**	897	10.2	898	10.2	**897**	**10.2**
434.zeusmp	712	12.8	**712**	**12.8**	712	12.8	712	12.8	**712**	**12.8**	712	12.8
435.gromacs	673	10.6	**673**	**10.6**	673	10.6	613	11.7	**611**	**11.7**	611	11.7
436.cactusADM	641	18.7	641	18.6	**641**	**18.6**	638	18.7	**638**	**18.7**	638	18.7
437.leslie3d	641	14.7	**641**	**14.7**	641	14.7	641	14.7	641	14.7	**641**	**14.7**
444.namd	730	11.0	**730**	**11.0**	730	11.0	**715**	**11.2**	715	11.2	715	11.2
447.dealII	614	18.6	**614**	**18.6**	615	18.6	**597**	**19.2**	597	19.2	596	19.2
450.soplex	758	11.0	758	11.0	**758**	**11.0**	672	12.4	673	12.4	**673**	**12.4**
453.povray	458	11.6	456	11.7	**457**	**11.6**	372	14.3	373	14.3	**372**	**14.3**
454.calculix	617	13.4	618	13.3	**618**	**13.4**	615	13.4	615	13.4	**615**	**13.4**
459.GemsFDTD	1093	9.71	1093	9.70	**1093**	**9.70**	**1051**	**10.1**	1051	10.1	1051	10.1
465.tonto	777	12.7	776	12.7	**776**	**12.7**	723	13.6	**723**	**13.6**	724	13.6
470.lbm	**861**	**16.0**	861	16.0	861	16.0	**835**	**16.5**	835	16.5	835	16.5
481.wrf	771	14.5	771	14.5	**771**	**14.5**	770	14.5	**770**	**14.5**	770	14.5
482.sphinx3	1353	14.4	**1354**	**14.4**	1354	14.4	1350	14.4	**1353**	**14.4**	1354	14.4

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/ss12u1_patches.jsp

The Apache C++ Standard Library V4.2.1 was installed from
   http://stdcxx.apache.org/download.html using:
      alias gmake=specmake
      gmake BUILDTYPE=8d CONFIG=sunpro.config
```

Submit Notes

```
The config file option 'submit' was used.  Processes were assigned to
specific processors using 'pbind' commands.  The list of processors to use
was provided in the 'BIND' variable, to generate the pbind commands.
(For details, please see the config file.)
```

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Operating System Notes

```
Shell Environments:

    ulimit -s 131072 was used to limit the space consumed
    by the stack.(making more space available for the heap)

System Tunables:
(/etc/system parameters)

    tune_t_fsflushr=10
        Controls how many seconds elapse between runs of the
        page flush daemon, fsflush.
    autoup=600
        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.

Other System Settings:

    The webconsole service was turned off using svcadm disable webconsole.
```

Platform Notes

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

 This result is measured on a Fujitsu SPARC Enterprise M4000 Server.
 Note that the Fujitsu SPARC Enterprise M4000 and Sun SPARC Enterprise
 M4000 are electrically equivalent.
```

General Notes

```
447.dealII (peak): "apache_stdcxx_4_2_1" src.alt was used.

447.dealII (base): "apache_stdcxx_4_2_1" src.alt was used.
```

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 -fma=fused -xipo=2 -xpagesize=4M -xprefetch_level=2
-xalias_level=std -xprefetch_auto_type=indirect_array_access
-xprefetch=latx:2 -M /usr/lib/ld/map.bssalign -ll2amm
```

C++ benchmarks:
```
-xdepend -fast -fma=fused -xipo=2 -xpagesize=4M -xprefetch_level=2
-xalias_level=compatible -xprefetch_level=3 -library=no%Cstd
-I/export/cpu2006/stdcxx-4.2.1/include
-I/export/cpu2006/stdcxx-4.2.1/build/include -M /usr/lib/ld/map.bssalign
-L/export/cpu2006/stdcxx-4.2.1/build/lib
-R/export/cpu2006/stdcxx-4.2.1/build/lib -lstd8d
```

Fortran benchmarks:
```
-fast -fma=fused -xipo=2 -xpagesize=4M -xprefetch_level=2
-xprefetch=latx:2 -M /usr/lib/ld/map.bssalign -ll2amm
```

Benchmarks using both Fortran and C:
```
-fast(cc) -fast(f90) -fma=fused -xipo=2 -xpagesize=4M
-xprefetch_level=2 -xalias_level=std
-xprefetch_auto_type=indirect_array_access -xprefetch=latx:2
-M /usr/lib/ld/map.bssalign -ll2amm
```

Base Other Flags

C benchmarks:
```
-xjobs=8 -V -#
```

C++ benchmarks:
```
-xjobs=8 -verbose=diags,version
```

Fortran benchmarks:
```
-xjobs=8 -V -v
```

Benchmarks using both Fortran and C:
```
-xjobs=8 -V -# -v
```

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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: basepeak = yes

470.lbm: `-fast -fma=fused -xpagesize=4M -xipo=2 -xarch=generic`
`-xvector -xprefetch_level=3`

482.sphinx3: `-fast -fma=fused -xpagesize=4M -xipo=2 -xprefetch_level=2`
`-xprefetch=latx:2 -xalias_level=std`
`-xprefetch_auto_type=indirect_array_access -ll2amm`

C++ benchmarks:

444.namd: `-xdepend -fast -fma=fused -xpagesize=4M`
`-xalias_level=compatible -library=stlport4 -xipo=2`
`-xprefetch=no%auto`

447.dealII: `-xdepend -xprofile=collect:./feedback(pass 1)`
`-xprofile=use:./feedback(pass 2) -fast -fma=fused`
`-xpagesize=4M -xalias_level=compatible -library=no%Cstd`
`-I/export/cpu2006/stdcxx-4.2.1/include`
`-I/export/cpu2006/stdcxx-4.2.1/build/include -xipo=2`
`-xprefetch_level=2 -L/export/cpu2006/stdcxx-4.2.1/build/lib`
`-R/export/cpu2006/stdcxx-4.2.1/build/lib -lstd8d`

450.soplex: `-xdepend -xprofile=collect:./feedback(pass 1)`
`-xprofile=use:./feedback(pass 2) -fast -xipo=2`
`-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`
`-xalias_level=simple -xrestrict -library=stlport4`

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

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Peak Optimization Flags (Continued)

453.povray (continued):
```
-xipo=2 -xlinkopt=2
```

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: `-xprofile=collect:./feedback(pass 1)`
`-xprofile=use:./feedback(pass 2) -fast -fma=fused`
`-xpagesize=4M -xipo=2 -xprefetch_level=3`

434.zeusmp: `-fast -fma=fused -xpagesize=4M -M /usr/lib/ld/map.bssalign`
`-xipo=2 -xprefetch=latx:2 -ll2amm`

437.leslie3d: `Same as 434.zeusmp`

459.GemsFDTD: `-xprofile=collect:./feedback(pass 1)`
`-xprofile=use:./feedback(pass 2) -fast -fma=fused`
`-xpagesize=4M -xipo=2 -xprefetch=latx:2`

465.tonto: `-xprofile=collect:./feedback(pass 1)`
`-xprofile=use:./feedback(pass 2) -fast -xipo=2 -lfast`

Benchmarks using both Fortran and C:

435.gromacs: `-xprofile=collect:./feedback(pass 1)`
`-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)`
`-fma=fused -xpagesize=4M -xipo=2 -xinline= -xchip=generic`
`-fsimple=0`

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

454.calculix: `-fast(cc) -fast(f90) -fma=fused -xipo=2 -xpagesize=4M`
`-xprefetch_level=2 -xprefetch=latx:0.5 -xalias_level=std`
`-xprefetch_auto_type=indirect_array_access -ll2amm`

481.wrf: `-fast(cc) -fast(f90) -fma=fused -xipo=2 -xpagesize=4M`
`-xprefetch_level=2 -xprefetch=latx:2 -xalias_level=std`
`-xprefetch_auto_type=indirect_array_access`

Peak Other Flags

C benchmarks:
```
-xjobs=8 -V -#
```

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Peak Other Flags (Continued)

C++ benchmarks:
```
-xjobs=8 -verbose=diags,version
```

Fortran benchmarks:
```
-xjobs=8 -V -v
```

Benchmarks using both Fortran and C:
```
-xjobs=8 -V -# -v
```

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12-12u1-and-gccfss4.2.r4.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12-12u1-and-gccfss4.2.r4.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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