## SPEC® CFP2006 Result

### Sun Microsystems
Sun SPARC Enterprise T5120

<table>
<thead>
<tr>
<th>SPECfp®_rate2006</th>
<th>68.5</th>
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</thead>
<tbody>
<tr>
<td>SPECfp_rate_base2006</td>
<td>64.1</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 6

**Test sponsor:** Sun Microsystems

**Tested by:** Sun Microsystems

**Test date:** Jan-2009

**Hardware Availability:** Jul-2009

**Software Availability:** Nov-2008

### Hardware

- **CPU Name:** UltraSPARC T2
- **CPU Characteristics:**
  - **CPU MHz:** 1582
  - **FPU:** Integrated
  - **CPU(s) enabled:** 8 cores, 1 chip, 8 cores/chip, 8 threads/core
  - **CPU(s) orderable:** 1 chips
  - **Primary Cache:** 16 KB 1 + 8 KB D on chip per core
  - **Secondary Cache:** 4 MB I+D on chip per chip

### Software

- **Operating System:** Solaris 10 10/08
- **Compiler:** Sun Studio 12 and gccfss V4.2.1 (see additional detail below)
- **Auto Parallel:** No
- **File System:** ufs
- **System State:** Default
- **Base Pointers:** 32-bit
- **Peak Pointers:** 32-bit

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<table>
<thead>
<tr>
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<th>SPECfp_rate2006</th>
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Sun Microsystems
Sun SPARC Enterprise T5120

SPECfp_rate2006 = 68.5
SPECfp_rate_base2006 = 64.1

Results Table

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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 124867-08, 124861-09, 124863-08, 127000-06

Peak also uses "GCC for SPARC Systems 4.2.1", which combines gcc with the Sun Code Generator for SPARC systems. It is invoked as "gcc", and accepts source code compatible with GCC 4.2.
For more information, including support, see http://cooltools.sunsource.net/gcc/
SPEC CFP2006 Result

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CPU2006 license: 6
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Submit Notes

A processor set was created using
psrset -c 1-63
and the runspec process was placed into the set using
psrset -e 1
The config file option 'submit' was used to select specific processors within the set, along with the pbind command.

Operating System Notes

ulimit -s 131072 was used to allow the stack to grow up to 131072 KB (aka 128 MB). Note that saying "131072" is preferable to "unlimited", because there is a tradeoff between space for the stack vs. space for the heap.

/etc/system parameters
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
tune_t_fsflushr=10
Controls how many seconds elapse between runs of the page flush daemon, fsflush.
tsb_rss_factor=128
Suggests that the the size of the TSB (Translation Storage Buffer) may be increased if it is more than 25% (128/512) full. Doing so may reduce TSB traps, at the cost of additional kernel memory.

The "webconsole" service was turned off using
svcadm disable webconsole

The system had 75 GB of swap space.

Platform Notes

This result was measured on a Sun SPARC Enterprise T5220. All of these are electronically equivalent:
- Sun SPARC Enterprise T5120
- Sun SPARC Enterprise T5220
- Fujitsu SPARC Enterprise T5120
- Fujitsu SPARC Enterprise T5220
A SPARC Enterprise 5120 can hold up to 4 disks, and a 5220 can hold up to 8. This system was tested with 4 disks; therefore, this result applies to both the 5120 and the 5220.
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Hardware Availability: Jul-2009
Software Availability: Nov-2008

Base Compiler Invocation

C benchmarks:
  cc

C++ benchmarks:
  CC

Fortran benchmarks:
  f90

Benchmarks using both Fortran and C:
  cc f90

Base Optimization Flags

C benchmarks:
  -g -fast -xipo=2 -xpagesize=4M -xprefetch_level=2 -xalias_level=std
  -xprefetch_level=3 -xprefetch_auto_type=indirect_array_access
  -M /usr/lib/ld/map.bssalign

C++ benchmarks:
  -g0 -library=stlport4 -fast -xipo=2 -xpagesize=4M -xprefetch_level=2
  -xdepend -xalias_level=compatible -M /usr/lib/ld/map.bssalign

Fortran benchmarks:
  -g -fast -xipo=2 -xpagesize=4M -xprefetch_level=2
  -M /usr/lib/ld/map.bssalign

Benchmarks using both Fortran and C:
  -g -fast(cc) -fast(f90) -xipo=2 -xpagesize=4M -xprefetch_level=2
  -xalias_level=std -xprefetch_level=3
  -xprefetch_auto_type=indirect_array_access -M /usr/lib/ld/map.bssalign

Base Other Flags

C benchmarks:
  -xjobs=32 -V -#

C++ benchmarks:
  -xjobs=32 -verbose=diags,version

Fortran benchmarks:
  -xjobs=32 -V -v

Benchmarks using both Fortran and C:
  -xjobs=32 -V -# -v
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Peak Compiler Invocation

C benchmarks:

cc

C++ benchmarks (except as noted below):

CC

447.dealII: g++

Fortran benchmarks:

f90

Benchmarks using both Fortran and C:

cc f90

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: -g -xprofile=collect::/feedback(pass 1)
-xprofile=use::/feedback(pass 2) -fast -xpagesize=4M
-M /usr/lib/ld/map.bssalign -xprefetch_level=3 -xipo=2
-xrestrict

482.sphinx3: -g -xprofile=collect::/feedback(pass 1)
-xprofile=use::/feedback(pass 2) -fast -xpagesize=4M
-M /usr/lib/ld/map.bssalign -xinline= -xprefetch_level=2
-Wc,-Qlp-ol=1 -xrestrict -xalias_level=strong -fsimple=1
-xlinkopt=2 -lfast

C++ benchmarks:

444.namd: -g0 -library=stlport4 -xprofile=collect::/feedback(pass 1)
-xprofile=use::/feedback(pass 2) -fast -xpagesize=4M
-xdepend -xalias_level=compatible
-M /usr/lib/ld/map.bssalign -xprefetch_level=1 -xlinkopt=2

447.dealII: -xprofile=collect::/feedback(pass 1)
-xprofile=use::/feedback(pass 2) -fast -xpagesize=4M
-xdepend -Wl,-M,/-usr/lib/ld/map.bssalign -xipo=2 -xrestrict
-xalias_level=std

450.soplex: basepeak = yes

453.povray: -g0 -library=stlport4 -xprofile=collect::/feedback(pass 1)
-xprofile=use::/feedback(pass 2) -fast -xpagesize=64K
-xdepend -xalias_level=compatible -xipo=2 -xrestrict
-xlinkopt=2

Continued on next page
Peak Optimization Flags (Continued)

Fortran benchmarks:

410.bwaves: basepeak = yes
416.gamess: -g -xprofile=collect::/feedback(pass 1)
  -xprofile=use::/feedback(pass 2) -fast -xpagesize=4M
  -M /usr/lib/ld/map.bssalign -xlinkopt=2
434.zeusmp: basepeak = yes
437.leslie3d: -g -fast -xpagesize_heap=4M -xpagesize_stack=64K
  -M /usr/lib/ld/map.bssalign -xprefetch_level=3
  -xprefetch=latx:1.6 -qoption cg -Qlp=1 -qoption cg -Qlp-fa=0
  -qoption cg -Qlp-fl=1 -qoption cg -Qlp-av=448
  -qoption cg -Qlp-t=4
459.GemsFDTD: basepeak = yes
465.tonto: -g -fast -xpagesize=4M -M /usr/lib/ld/map.bssalign -xipo=2
  -lfast

Benchmarks using both Fortran and C:

435.gromacs: -g -xprofile=collect::/feedback(pass 1)
  -xprofile=use::/feedback(pass 2) -fast(cc) -fast(f90)
  -xpagesize=4M -M /usr/lib/ld/map.bssalign -xipo=1 -xinline=
  -xarch=generic -xchip=generic -fsimple=0
436.cactusADM: -g -xprofile=collect::/feedback(pass 1)
  -xprofile=use::/feedback(pass 2) -fast(cc) -fast(f90)
  -xpagesize=4M -M /usr/lib/ld/map.bssalign -xipo=2
  -fsimple=1 -xlinkopt=2
454.calculix: basepeak = yes
481.wrf: -g -xprofile=collect::/feedback(pass 1)
  -xprofile=use::/feedback(pass 2) -fast(cc) -fast(f90)
  -xpagesize=4M -M /usr/lib/ld/map.bssalign -xlinkopt=2

Peak Other Flags

C benchmarks:
  -xjobs=32 -V -#

C++ benchmarks (except as noted below):
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Peak Other Flags (Continued)

447.dealII: -v

Fortran benchmarks:
-xjobs=32 -V -v

Benchmarks using both Fortran and C:
-xjobs=32 -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.r3.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.r3.xml

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

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