



SPEC® CINT2006 Result

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Sun Microsystems Sun Fire X4100 M2

SPECint®_rate2006 = 48.7

SPECint_rate_base2006 = 41.8

CPU2006 license: 6

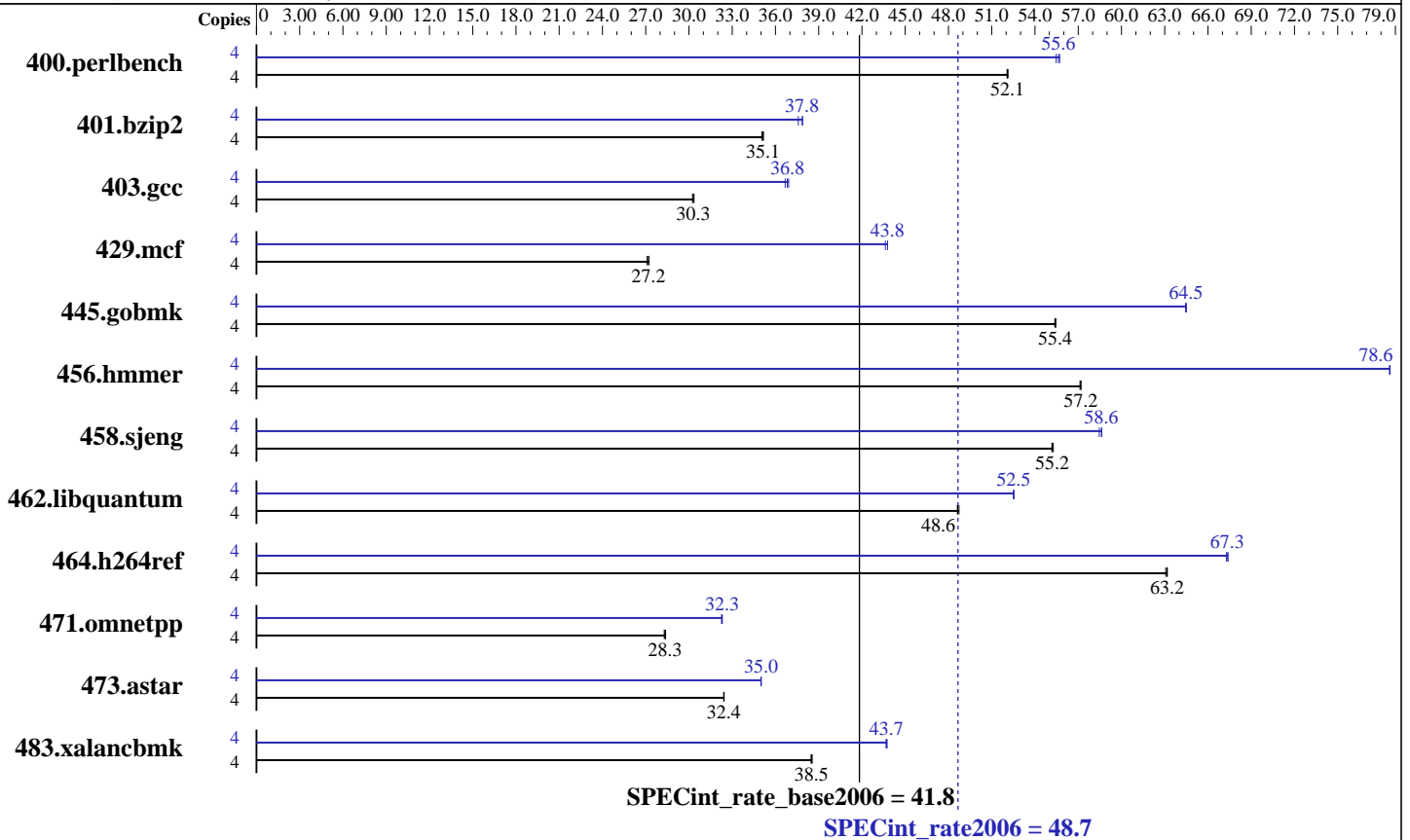
Test sponsor: Sun Microsystems

Tested by: Sun Microsystems

Test date: Nov-2006

Hardware Availability: Oct-2006

Software Availability: Jul-2006



Hardware

CPU Name: AMD Opteron 2220 SE
 CPU Characteristics:
 CPU MHz: 2800
 FPU: Integrated
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip
 CPU(s) orderable: 1,2 chips
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 1 MB I+D on chip per core
 L3 Cache: None
 Other Cache: None
 Memory: 16 GB (8x2GB, DDR2-667 CL5 ECC REG, Dual Rank)
 Disk Subsystem: SAS, 72 GB, 10K RPM
 Other Hardware: None

Software

Operating System: Solaris 10 6/06
 Compiler: Sun Studio 11 with Patches
 Auto Parallel: No
 File System: ufs
 System State: Default
 Base Pointers: 64-bit
 Peak Pointers: 32/64-bit
 Other Software: None



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Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|----------------|--------|-------------|-------------|-------------|-------------|-------------|-------------|--------|------------|-------------|-------------|-------------|------------|-------------|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 400.perlbench | 4 | 750 | 52.1 | 751 | 52.1 | <u>750</u> | <u>52.1</u> | 4 | 701 | 55.7 | 705 | 55.5 | <u>703</u> | <u>55.6</u> |
| 401.bzip2 | 4 | 1098 | 35.2 | 1101 | 35.1 | <u>1099</u> | <u>35.1</u> | 4 | 1027 | 37.6 | <u>1020</u> | <u>37.8</u> | 1019 | 37.9 |
| 403.gcc | 4 | <u>1063</u> | <u>30.3</u> | 1061 | 30.3 | 1065 | 30.2 | 4 | 878 | 36.7 | <u>875</u> | <u>36.8</u> | 872 | 36.9 |
| 429.mcf | 4 | 1340 | 27.2 | <u>1342</u> | <u>27.2</u> | 1346 | 27.1 | 4 | 836 | 43.6 | <u>833</u> | <u>43.8</u> | 833 | 43.8 |
| 445.gobmk | 4 | 757 | 55.4 | 758 | 55.4 | <u>757</u> | <u>55.4</u> | 4 | 651 | 64.4 | 651 | 64.5 | <u>651</u> | <u>64.5</u> |
| 456.hammer | 4 | 653 | 57.1 | 653 | 57.2 | <u>653</u> | <u>57.2</u> | 4 | <u>475</u> | <u>78.6</u> | 475 | 78.6 | 475 | 78.6 |
| 458.sjeng | 4 | <u>877</u> | <u>55.2</u> | 876 | 55.3 | 877 | 55.2 | 4 | 828 | 58.5 | <u>826</u> | <u>58.6</u> | 825 | 58.6 |
| 462.libquantum | 4 | <u>1704</u> | <u>48.6</u> | 1701 | 48.7 | 1705 | 48.6 | 4 | 1578 | 52.5 | <u>1578</u> | <u>52.5</u> | 1578 | 52.5 |
| 464.h264ref | 4 | 1401 | 63.2 | <u>1401</u> | <u>63.2</u> | 1404 | 63.1 | 4 | 1316 | 67.3 | <u>1315</u> | <u>67.3</u> | 1313 | 67.4 |
| 471.omnetpp | 4 | 881 | 28.4 | <u>882</u> | <u>28.3</u> | 884 | 28.3 | 4 | 775 | 32.3 | <u>774</u> | <u>32.3</u> | 774 | 32.3 |
| 473.astar | 4 | 866 | 32.4 | <u>866</u> | <u>32.4</u> | 866 | 32.4 | 4 | <u>802</u> | <u>35.0</u> | 803 | 35.0 | 802 | 35.0 |
| 483.xalancbmk | 4 | 716 | 38.5 | <u>717</u> | <u>38.5</u> | 717 | 38.5 | 4 | 631 | 43.7 | <u>632</u> | <u>43.7</u> | 632 | 43.7 |

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

Operating System Notes

Processes were bound to cores using "submit" and "pbind".

```
ulimit -s 131072 (shell): increases stack
```

The following patches were applied to Sun Studio 11 compiler:

```
120759-07 : x86/x64
121016-03 : x86 C
121020-03 : x86 F90
121018-03 : x86 C++
```

Platform Notes

Default BIOS settings was used.

This result was measured on the Sun Fire X4100 M2. In addition, Sun has submitted the same result for the Sun Fire X4200 M2, which is electronically equivalent to the Sun Fire X4100 M2.



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Base Compiler Invocation

C benchmarks:
cc

C++ benchmarks:
CC

Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_SOLARIS_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64 -DSPEC_CPU_SOLARIS
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_SOLARIS
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_SOLARIS

Base Optimization Flags

C benchmarks:
-fast -xipo=2 -xarch=amd64a

C++ benchmarks:
-fast -xipo=2 -xarch=amd64a -library=stlport4

Base Other Flags

C benchmarks:
-V

C++ benchmarks:
-verbose=version

Peak Compiler Invocation

C benchmarks:
cc

Continued on next page



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Peak Compiler Invocation (Continued)

C++ benchmarks:
CC

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_SOLARIS_X64
403.gcc: -DSPEC_CPU_SOLARIS
462.libquantum: -DSPEC_CPU_SOLARIS
483.xalancbmk: -DSPEC_CPU_SOLARIS

Peak Optimization Flags

C benchmarks:

400.perlbench: -fast -xarch=amd64a -xvector=simd -lbsdmalloc
-Wu,-fsimple=3

401.bzip2: ONESTEP -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=2m
-xipo=2 -xalias_level=strong -xarch=sse2a
-M /usr/lib/ld/map.bssalign -Wu,-fsimple=3

403.gcc: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2
-xbuiltin=%none -xpagesize=2m -lmvec

429.mcf: -fast -xpagesize=2m -xalias_level=std
-M /usr/lib/ld/map.bssalign -lmvec

445.gobmk: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xarch=amd64a
-xrestrict -xalias_level=strong -xdepend -xpagesize=2m
-lmvec

456.hmmer: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xarch=amd64a
-Wd,-iropt-prof

458.sjeng: -fast -xarch=amd64a -xipo=2 -xprefetch=auto
-xprefetch_level=3 -xpagesize=2m -lmvec

462.libquantum: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xarch=amd64a
-xipo=2 -xunroll=8

Continued on next page



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Peak Optimization Flags (Continued)

464.h264ref: -fast -xarch=amd64a -xipo=2 -xvector -xunroll=8
-xalias_level=strong -xrestrict -xpagesize=2m -lmvec

C++ benchmarks:

471.omnetpp: -fast -xipo=2 -xprefetch_level=3 -xpagesize=2m
-xarch=sse2a -Qoption ube -fsimple=3 -library=stlport4

473.astar: -fast -xrestrict -xarch=amd64a -xipo=2 -xprefetch_level=3
-xpagesize=2m -library=stlport4

483.xalancbmk: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2
-xarch=sse2a -xpagesize=2m -library=stlport4

Peak Other Flags

C benchmarks:
-V

C++ benchmarks:
-verbose=version

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

<http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio-Opteron.20090715.01.html>

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

<http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio-Opteron.20090715.01.xml>

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

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