



SPEC[®] CINT2006 Result

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Sun Microsystems

SPECint[®]_rate2006 = 152

Sun SPARC Enterprise M4000

SPECint_rate_base2006 = 136

CPU2006 license: 6

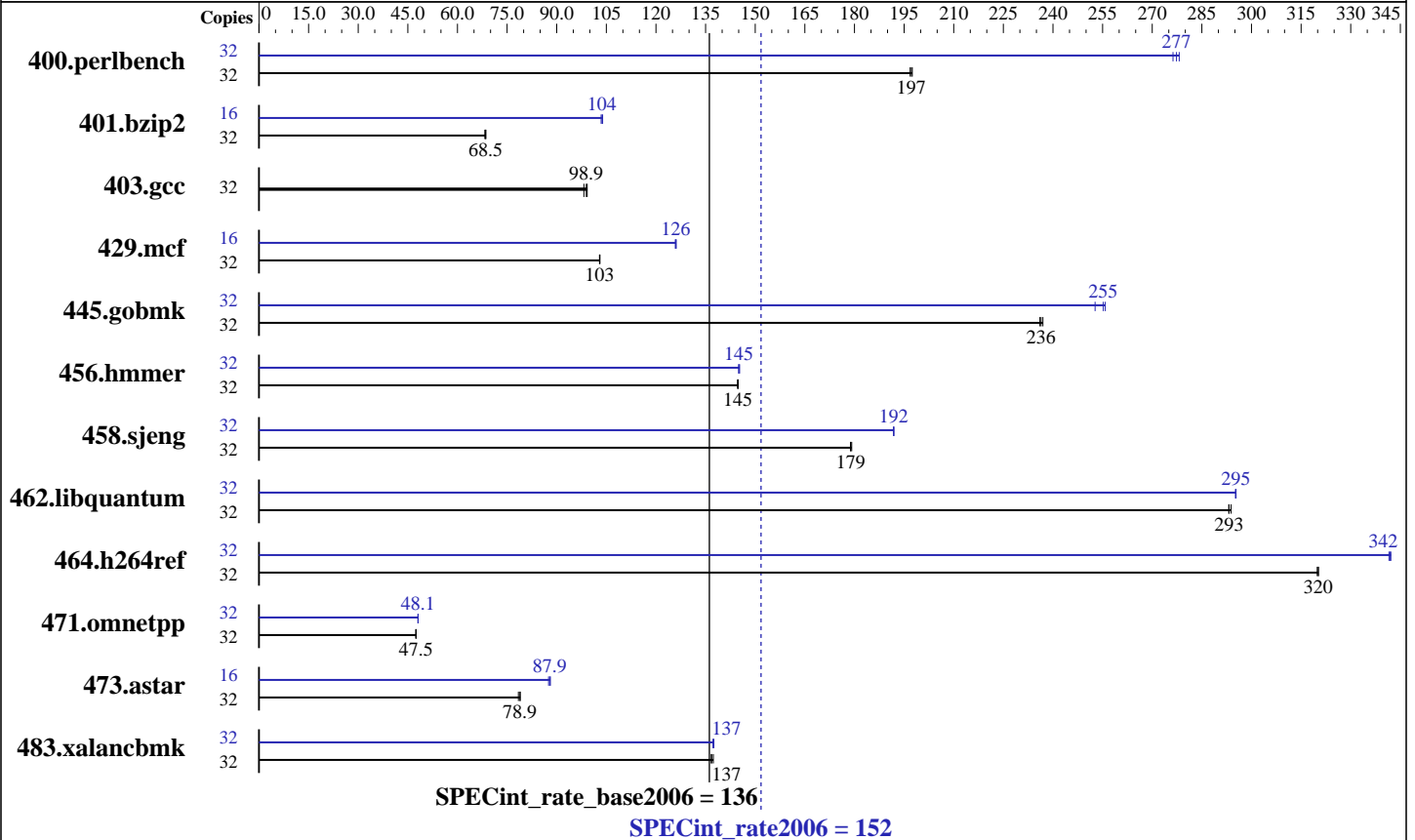
Test date: Sep-2009

Test sponsor: Sun Microsystems

Hardware Availability: Nov-2009

Tested by: Sun Microsystems

Software Availability: Oct-2009



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

Software

Operating System: Solaris 10 10/09 (s10s_u8wos_06)
 Compiler: Sun Studio 12 Update 1 plus patches (see notes)
 Auto Parallel: No
 File System: zfs
 System State: Default
 Base Pointers: 32-bit
 Peak Pointers: 32-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	32	1583	197	1585	197	1588	197	32	1127	277	1132	276	1124	278
401.bzip2	32	4503	68.6	4509	68.5	4523	68.3	16	1489	104	1493	103	1486	104
403.gcc	32	2604	98.9	2596	99.2	2623	98.2	32	2604	98.9	2596	99.2	2623	98.2
429.mcf	32	2833	103	2835	103	2832	103	16	1157	126	1158	126	1160	126
445.gobmk	32	1420	236	1422	236	1417	237	32	1312	256	1328	253	1315	255
456.hammer	32	2062	145	2061	145	2064	145	32	2055	145	2059	145	2058	145
458.sjeng	32	2164	179	2161	179	2166	179	32	2018	192	2019	192	2018	192
462.libquantum	32	2262	293	2261	293	2257	294	32	2246	295	2245	295	2245	295
464.h264ref	32	2212	320	2212	320	2214	320	32	2073	342	2071	342	2070	342
471.omnetpp	32	4212	47.5	4210	47.5	4218	47.4	32	4158	48.1	4160	48.1	4160	48.1
473.astar	32	2845	79.0	2848	78.9	2865	78.4	16	1275	88.1	1283	87.5	1278	87.9
483.xalancbmk	32	1614	137	1608	137	1615	137	32	1608	137	1606	138	1608	137

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

Compiler Invocation Notes

Sun Studio 12 Update 1 was used, plus patch 119963-17

Sun Studio compiler patches are available at

http://developers.sun.com/sunstudio/downloads/patches/ss12u1_patches.jsp

Submit Notes

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

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.

System Tunables (/etc/system parameters):

tune_t_fsflushr=10

Controls how many seconds elapse between runs of the

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Operating System Notes (Continued)

```
page flush daemon, fsflush.  
autoup=600  
Causes pages older than the listed number of seconds to  
be written by fsflush.  
zfs:zfs_arc_max = 0x10000000  
Control the amount of memory used by ZFS for caching
```

Other System Settings:

The webconsole service was turned off using
svcadm disable webconsole

The system had 32 GB of swap space

SPEC CPU2006 used 1 disk, with zfs gzip compression.

Platform Notes

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

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

General Notes

Environment variables set by runspec before the start of the run:

```
OMP_NUM_THREADS = "32"  
SUNW_MP_PROCBIND = "true"  
SUNW_MP_THR_IDLE = "SPIN"
```

(Although these variables were set prior to the run
they did not affect performance, since the benchmarks
were compiled in serial mode.)

Base Compiler Invocation

C benchmarks:

cc

C++ benchmarks:

CC



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Base Portability Flags

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

Base Optimization Flags

C benchmarks:
-fast -fma=fused -xipo=2 -xpagesize=4M -xarch=sparcfmaf
-xalias_level=std -l12amm

C++ benchmarks:
-xdepend -fast -fma=fused -xipo=2 -xpagesize=4M -xarch=sparcfmaf
-xalias_level=compatible -library=stlport4 -lfast

Base Other Flags

C benchmarks:
-xjobs=32 -V -#

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

Peak Compiler Invocation

C benchmarks:
cc

C++ benchmarks:
CC

Peak Portability Flags

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



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Peak Optimization Flags

C benchmarks:

400.perlbench: -xprofile=collect:./feedback(pass 1)
 -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
 -M /usr/lib/ld/map.bssalign -fma=fused -xipo=2
 -xalias_level=std -xrestrict -xprefetch=no%auto -Xc
 -lfast

401.bzip2: -xprofile=collect:./feedback(pass 1)
 -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
 -fma=fused -xalias_level=strong

403.gcc: basepeak = yes

429.mcf: -fast -xpagesize=4M -xipo=2 -xalias_level=std -xrestrict
 -xprefetch=no -lfast

445.gobmk: -xprofile=collect:./feedback(pass 1)
 -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
 -fma=fused -xarch=sparcfmaf -xalias_level=std -xrestrict
 -l12amm

456.hmmer: -xprofile=collect:./feedback(pass 1)
 -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
 -fma=fused -xipo=2

458.sjeng: Same as 456.hmmer

462.libquantum: -fast -xpagesize=4M -xipo=2 -xprefetch=no -fma=fused
 -lbsdmalloc

464.h264ref: -xprofile=collect:./feedback(pass 1)
 -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
 -xipo=2 -xarch=sparcfmaf -xalias_level=std -xprefetch=no
 -l12amm

C++ benchmarks:

471.omnetpp: -xdepend -xprofile=collect:./feedback(pass 1)
 -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
 -xalias_level=compatible -library=stlport4 -fma=fused
 -xipo=2 -xprefetch_level=2 -Qoption cg -Qlp-av=0 -lfast

473.astar: -xdepend -xprofile=collect:./feedback(pass 1)
 -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
 -xalias_level=compatible -library=stlport4
 -M /usr/lib/ld/map.bssalign -fma=fused -xipo=2
 -xprefetch=no%auto -lfast -lbsdmalloc

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Peak Optimization Flags (Continued)

```
483.xalanbmk: -xdepend -xprofile=collect:./feedback(pass 1)
              -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
              -xalias_level=compatible -library=stlport4 -fma=fused
              -xipo=2 -xprefetch=no -lfast
```

Peak Other Flags

C benchmarks:
-xjobs=32 -V -#

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

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>

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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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