



SPEC® CINT2006 Result

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Sun Microsystems

SPECint®_rate2006 = 301

Sun SPARC Enterprise T5440

SPECint_rate_base2006 = 270

CPU2006 license: 6

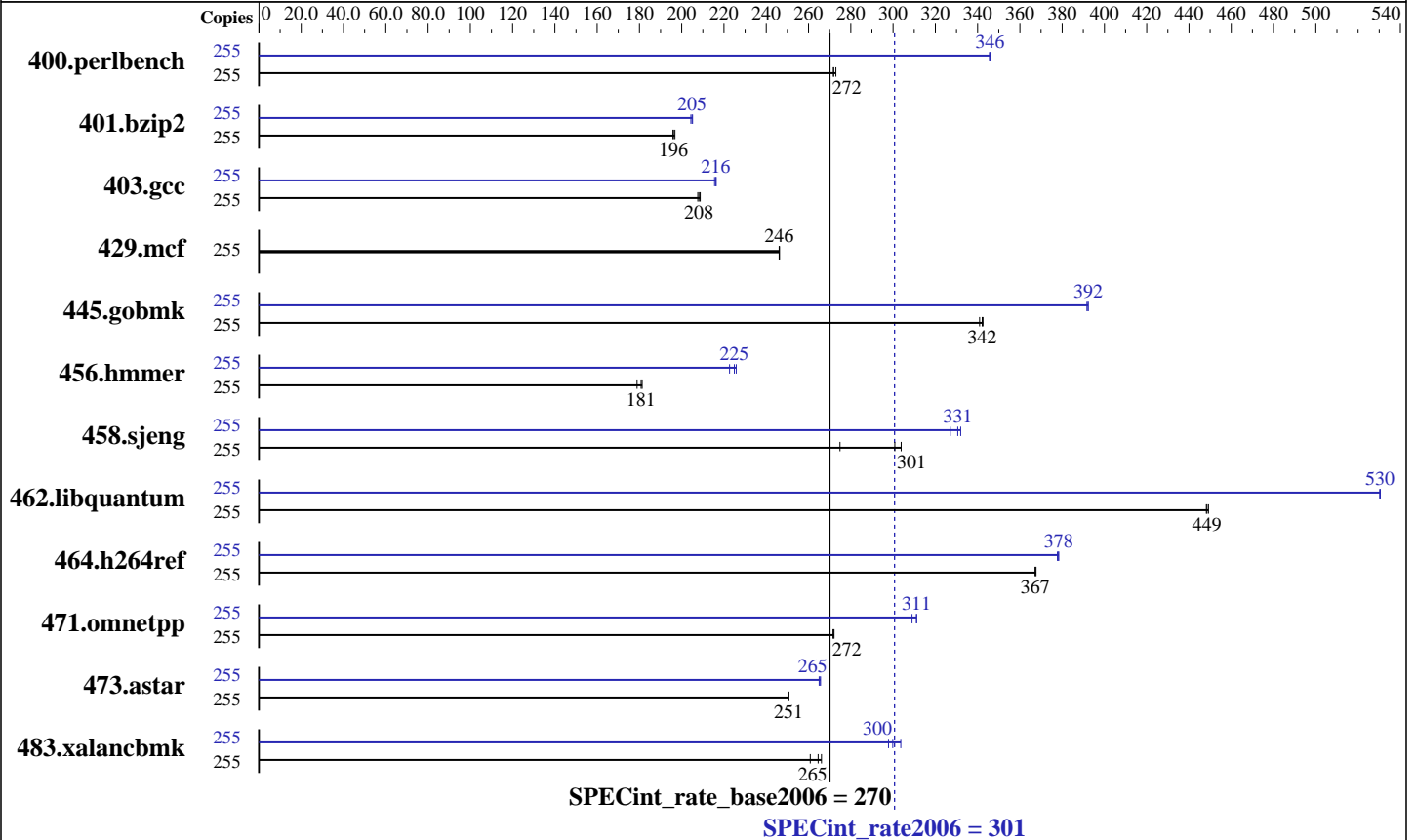
Test date: Jul-2008

Test sponsor: Sun Microsystems

Hardware Availability: Oct-2008

Tested by: Sun Microsystems

Software Availability: Jul-2008



Hardware

CPU Name: UltraSPARC T2 Plus
 CPU Characteristics: 1414
 CPU MHz: Integrated
 FPU: Integrated
 CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip, 8 threads/core
 CPU(s) orderable: 1 to 4 chips
 Primary Cache: 16 KB I + 8 KB D on chip per core
 Secondary Cache: 4 MB I+D on chip per chip
 L3 Cache: None
 Other Cache: None
 Memory: 256 GB (64 x 4 GB)
 Disk Subsystem: 975 GB RAID 5 using Sun StoreEdge 6140 with 12x 300 GB 10K RPM disks
 2 Gbps Fibre Channel
 Other Hardware: None

Software

Operating System: Solaris 10 5/08 + patch 137111-03
 Compiler: Sun Studio 12 and gccfss V4.2.0
 (see additional detail below)
 Auto Parallel: No
 File System: ufs
 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	255	9128	273	9166	272	<u>9165</u>	<u>272</u>	255	7201	346	<u>7202</u>	<u>346</u>	7209	346
401.bzip2	255	12562	196	12504	197	<u>12549</u>	<u>196</u>	255	11995	205	<u>12012</u>	<u>205</u>	12043	204
403.gcc	255	9887	208	9833	209	<u>9862</u>	<u>208</u>	255	9492	216	<u>9495</u>	<u>216</u>	9523	216
429.mcf	255	9445	246	9450	246	<u>9446</u>	<u>246</u>	255	9445	246	9450	246	<u>9446</u>	<u>246</u>
445.gobmk	255	7846	341	7809	343	<u>7818</u>	<u>342</u>	255	<u>6819</u>	<u>392</u>	6829	392	6819	392
456.hammer	255	13301	179	13124	181	<u>13159</u>	<u>181</u>	255	10686	223	<u>10579</u>	<u>225</u>	10537	226
458.sjeng	255	10156	304	11225	275	<u>10257</u>	<u>301</u>	255	<u>9333</u>	<u>331</u>	9434	327	9294	332
462.libquantum	255	11788	448	<u>11780</u>	<u>449</u>	11762	449	255	<u>9961</u>	<u>530</u>	9964	530	9960	530
464.h264ref	255	<u>15363</u>	<u>367</u>	15350	368	15368	367	255	<u>14917</u>	<u>378</u>	14916	378	14939	378
471.omnetpp	255	5858	272	<u>5865</u>	<u>272</u>	5867	272	255	5158	309	5122	311	<u>5124</u>	<u>311</u>
473.astar	255	7143	251	7145	251	<u>7145</u>	<u>251</u>	255	<u>6746</u>	<u>265</u>	6755	265	6738	266
483.xalancbmk	255	<u>6651</u>	<u>265</u>	6611	266	6746	261	255	5794	304	5908	298	<u>5868</u>	<u>300</u>

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, 124861-04, 124863-01, 127000-01

Peak also uses "GCC for SPARC Systems", 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/>

Submit Notes

The config file option 'submit' was used. Processes were bound to cores using "submit" and "pbind".
A processor set was created using
psrset -c 1-255
and the runspec process was placed into the set using
psrset -e 1

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"
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Operating System Notes (Continued)

is preferable to "unlimited", because there is a tradeoff between space for the stack vs. space for the heap.

ulimit -n 1300, set the open file limit

/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 409 GB of swap space.

Platform Notes

This result is measured on a Sun SPARC Enterprise T5440 Server.

Note that the Sun SPARC Enterprise T5440 and Fujitsu SPARC Enterprise T5440 are electrically equivalent.

Base Compiler Invocation

C benchmarks:

cc

C++ benchmarks:

CC

Base Portability Flags

400.perlbench: -DSPEC_CPU_SOLARIS_SPARC

403.gcc: -DSPEC_CPU_SOLARIS

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Base Portability Flags (Continued)

462.libquantum: -DSPEC_CPU_SOLARIS
483.xalancbmk: -DSPEC_CPU_SOLARIS

Base Optimization Flags

C benchmarks:

-g -fast -xipo=2 -xpagesize=4M -xprefetch=no%auto -xalias_level=std
-M /usr/lib/ld/map.bssalign

C++ benchmarks:

-g0 -library=stlport4 -fast -xipo=2 -xpagesize=4M -xprefetch=no%auto
-xdepend -xalias_level=compatible -M /usr/lib/ld/map.bssalign

Base Other Flags

C benchmarks:

-xjobs=32 -V -#

C++ benchmarks:

-xjobs=32 -verbose=diags,version

Peak Compiler Invocation

C benchmarks (except as noted below):

cc

403.gcc: gcc

456.hmmmer: gcc

462.libquantum: gcc

C++ benchmarks (except as noted below):

CC

471.omnetpp: g++

Peak Portability Flags

400.perlbench: -DSPEC_CPU_SOLARIS_SPARC
462.libquantum: -DSPEC_CPU_SOLARIS -DSPEC_CPU_NEED_COMPLEX_I

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Peak Portability Flags (Continued)

483.xalanbmk: -DSPEC_CPU_SOLARIS

Peak Optimization Flags

C benchmarks:

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

401.bzip2: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-M /usr/lib/ld/map.bssalign -xalias_level=strong

403.gcc: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-xprefetch=no%auto -Wl,-M,/usr/lib/ld/map.bssalign -xipo=2
-xalias_level=std

429.mcf: basepeak = yes

445.gobmk: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-xprefetch=no%auto -M /usr/lib/ld/map.bssalign
-xalias_level=std -xrestrict

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

458.sjeng: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-xprefetch=no%auto -M /usr/lib/ld/map.bssalign -xipo=2

462.libquantum: -fast -Wl,-M,/usr/lib/ld/map.bssalign -xipo=2

464.h264ref: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-xprefetch=no%auto -M /usr/lib/ld/map.bssalign -xipo=2
-xalias_level=std

C++ benchmarks:

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

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Peak Optimization Flags (Continued)

```
473.astar: -g0 -library=stlport4 -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize_heap=4M
-xpagesize_stack=64K -xprefetch=no%auto -xdepend
-xalias_level=compatible -M /usr/lib/ld/map.bssalign
-xipo=2 -xarch=v8plusb -lfast -lbsdmalloc
```

```
483.xalancbmk: -g0 -library=stlport4 -fast -xpagesize=4M
-xprefetch=no%auto -xdepend -xalias_level=compatible
-M /usr/lib/ld/map.bssalign -xipo=2 -lfast
```

Peak Other Flags

C benchmarks (except as noted below):

```
-xjobs=32 -V -#
```

```
403.gcc: -v
```

```
456.hmmer: -v
```

```
462.libquantum: -v
```

C++ benchmarks (except as noted below):

```
-xjobs=32 -verbose=diags,version
```

```
471.omnetpp: -v
```

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

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