



# SPEC® CINT2006 Result

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## Sun Microsystems

**SPECint®2006 = 36.8**

Sun Fire X4170 (Intel Xeon X5570 2.93GHz)

**SPECint\_base2006 = 30.0**

CPU2006 license: 6

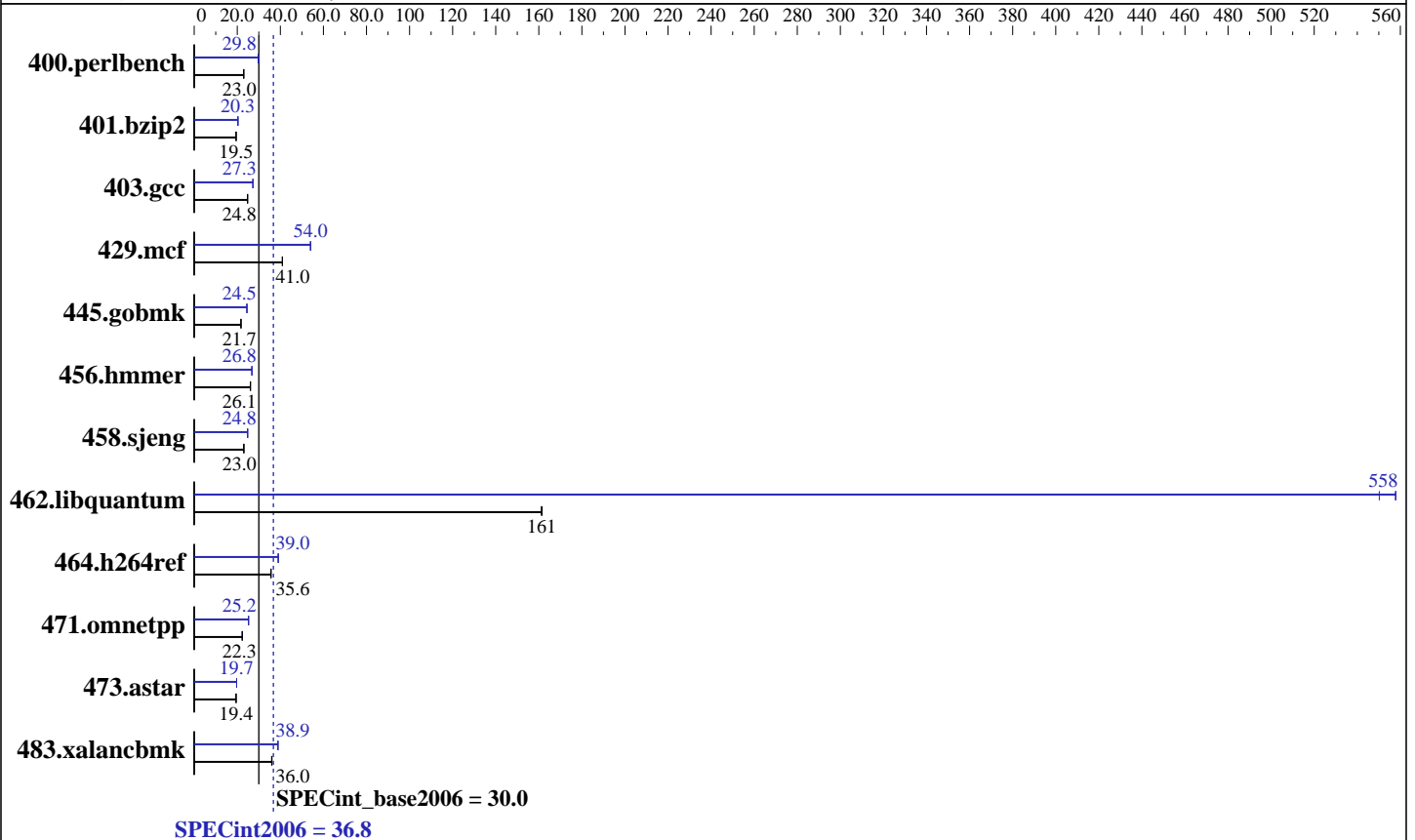
Test date: Apr-2009

Test sponsor: Sun Microsystems

Hardware Availability: Apr-2009

Tested by: Sun Microsystems

Software Availability: Jun-2009



### Hardware

CPU Name: Intel Xeon X5570  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.33 GHz  
 CPU MHz: 2933  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip, 2 threads/core  
 CPU(s) orderable: 1 or 2 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core  
 L3 Cache: 8 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 24 GB (6 x 4 GB DDR3-1333)  
 Disk Subsystem: 1 x 146 GB, SAS, 10 K RPM  
 Other Hardware: None

### Software

Operating System: OpenSolaris 2008.11  
 Compiler: Sun Studio 12 Update 1 (internal build 39.0)  
 Auto Parallel: Yes  
 File System: zfs with gzip compression  
 System State: Default  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: MicroQuill SmartHeap Library 9.01 for x64



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## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	<b><u>425</u></b>	<b><u>23.0</u></b>	425	23.0	425	23.0	328	29.8	<b><u>328</u></b>	<b><u>29.8</u></b>	327	29.8
401.bzip2	496	19.4	<b><u>496</u></b>	<b><u>19.5</u></b>	496	19.5	475	20.3	<b><u>475</u></b>	<b><u>20.3</u></b>	475	20.3
403.gcc	325	24.8	325	24.8	<b><u>325</u></b>	<b><u>24.8</u></b>	295	27.3	<b><u>295</u></b>	<b><u>27.3</u></b>	295	27.3
429.mcf	223	40.9	<b><u>223</u></b>	<b><u>41.0</u></b>	223	41.0	169	54.0	169	54.0	<b><u>169</u></b>	<b><u>54.0</u></b>
445.gobmk	483	21.7	<b><u>483</u></b>	<b><u>21.7</u></b>	482	21.7	<b><u>429</u></b>	<b><u>24.5</u></b>	429	24.4	428	24.5
456.hammer	357	26.1	<b><u>357</u></b>	<b><u>26.1</u></b>	357	26.1	348	26.8	<b><u>348</u></b>	<b><u>26.8</u></b>	348	26.8
458.sjeng	525	23.0	<b><u>525</u></b>	<b><u>23.0</u></b>	525	23.0	<b><u>488</u></b>	<b><u>24.8</u></b>	488	24.8	488	24.8
462.libquantum	128	162	<b><u>128</u></b>	<b><u>161</u></b>	129	161	<b><u>37.2</u></b>	<b><u>558</u></b>	37.1	558	37.7	550
464.h264ref	<b><u>621</u></b>	<b><u>35.6</u></b>	621	35.7	621	35.6	567	39.0	<b><u>567</u></b>	<b><u>39.0</u></b>	567	39.0
471.omnetpp	<b><u>280</u></b>	<b><u>22.3</u></b>	280	22.3	280	22.3	<b><u>248</u></b>	<b><u>25.2</u></b>	248	25.2	248	25.2
473.astar	<b><u>361</u></b>	<b><u>19.4</u></b>	361	19.4	361	19.4	<b><u>356</u></b>	<b><u>19.7</u></b>	356	19.7	356	19.7
483.xalancbmk	<b><u>192</u></b>	<b><u>36.0</u></b>	191	36.1	192	36.0	178	38.9	<b><u>177</u></b>	<b><u>38.9</u></b>	177	38.9

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

## Operating System Notes

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

```
/etc/system parameters
tune_t_fsflushr=10
autoup=900
set lpg_alloc_prefer=1
set zfs:zfs_arc_max = 0x10000000
```

## Platform Notes

Default BIOS settings used except:  
Intel VT-d: Disabled. VT-d, if enabled, supports remapping of I/O DMA transfers for virtualization.

## General Notes

Environment variables set by runspec before the start of the run:  
OMP\_NUM\_THREADS = "8"  
SUNW\_MP\_PROCBIND = "true"  
SUNW\_MP\_THR\_IDLE = "SPIN"



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## Base Compiler Invocation

C benchmarks:

/data1/SUNWspro.b39/SUNWspro/bin/cc

C++ benchmarks:

/data1/SUNWspro.b39/SUNWspro/bin/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.hmmr: -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.xalancmk: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_SOLARIS

## Base Optimization Flags

C benchmarks:

-fast -xipo=2 -m64 -xpagesize=2M -xprefetch -xalias\_level=std

C++ benchmarks:

-fast -xipo=2 -m64 -xpagesize=2M -xvector=simd -xprefetch=no%auto  
-xalias\_level=compatible  
-L/data1/SmartHeap\_9/lib -R/data1/SmartHeap\_9/lib -lsmarheap64  
-library=stlport4

## Base Other Flags

C benchmarks:

-V -# -xjobs=16

C++ benchmarks:

-verbose=diags,version -xjobs=16



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## Peak Compiler Invocation

C benchmarks:

/data1/SUNWspro.b39/SUNWspro/bin/cc

C++ benchmarks:

/data1/SUNWspro.b39/SUNWspro/bin/CC

## Peak Portability Flags

400.perlbench: -DSPEC\_CPU\_SOLARIS\_IA32  
403.gcc: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_SOLARIS  
462.libquantum: -DSPEC\_CPU\_SOLARIS  
483.xalancbmk: -DSPEC\_CPU\_SOLARIS

## Peak Optimization Flags

C benchmarks:

400.perlbench: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xipo=2  
-xpagesize=2M -xvector=simd -xalias\_level=std  
-xprefetch=no%auto -lbsdmalloc -lumem  
401.bzip2: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64  
-xpagesize=2M -xalias\_level=strong -xprefetch=no%auto  
-lumem  
403.gcc: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xipo=2  
-xpagesize=2M -xalias\_level=std -m64 -xprefetch=no%auto  
429.mcf: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xipo=2  
-xalias\_level=strict -xprefetch=no%auto -lbsdmalloc  
445.gobmk: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -m64 -xpagesize=2M  
-xrestrict -xalias\_level=strong -xdepend -xautopar -lmvec  
456.hmmer: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64  
458.sjeng: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64  
-xpagesize=2M -xvector=simd -xrestrict -xalias\_level=std  
-xprefetch=no%auto

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## Peak Optimization Flags (Continued)

462.libquantum: -fast -xipo=2 -m64 -xpagesize=2M -xautopar -xreduction

464.h264ref: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64  
-xpagesize=2M -xalias\_level=strong -xautopar

C++ benchmarks:

471.omnetpp: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xipo=2  
-xpagesize=2M  
-L/data1/SmartHeap\_9/lib -R/data1/SmartHeap\_9/lib -lsmartheap  
-library=stlport4

473.astar: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64  
-xpagesize=2M  
-L/data1/SmartHeap\_9/lib -R/data1/SmartHeap\_9/lib -lsmartheap\_mt64  
-xalias\_level=compatible -library=stlport4 -xautopar

483.xalancbmk: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64  
-xpagesize=2M -xunroll=12  
-L/data1/SmartHeap\_9/lib -R/data1/SmartHeap\_9/lib -lsmartheap64  
-library=stlport4

## Peak Other Flags

C benchmarks:

-V -# -xjobs=16

C++ benchmarks:

-verbose=diags,version -xjobs=16

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

[http://www.spec.org/cpu2006/flags/Sun-OpenSolaris-Studio-x86\\_64.20090710.00.html](http://www.spec.org/cpu2006/flags/Sun-OpenSolaris-Studio-x86_64.20090710.00.html)

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

[http://www.spec.org/cpu2006/flags/Sun-OpenSolaris-Studio-x86\\_64.20090710.00.xml](http://www.spec.org/cpu2006/flags/Sun-OpenSolaris-Studio-x86_64.20090710.00.xml)



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Tested with SPEC CPU2006 v1.1.  
Report generated on Wed Jul 23 01:58:18 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 28 April 2009.