



# SPEC® CINT2006 Result

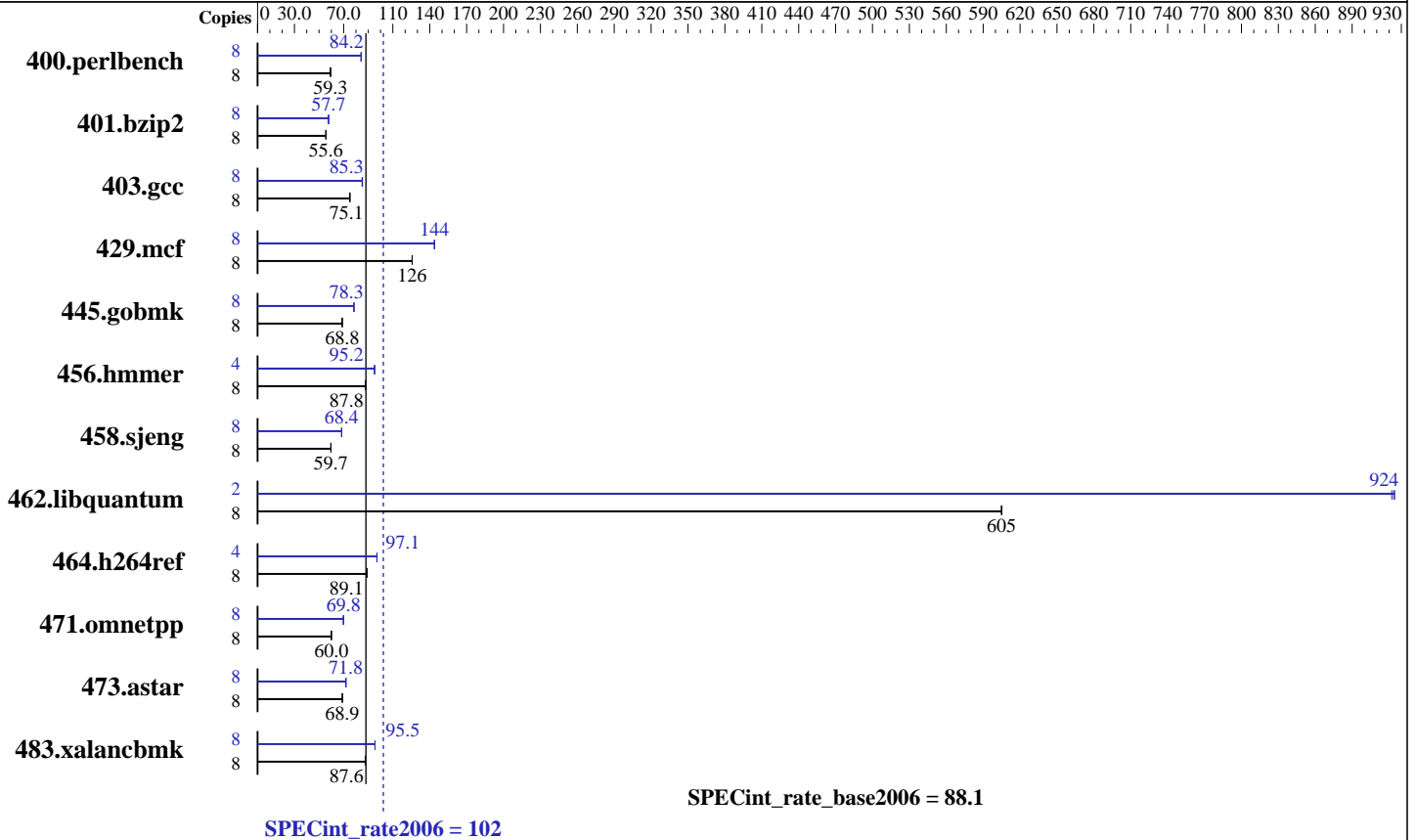
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Fujitsu  
Fujitsu SPARC M12-2S

SPECint®\_rate2006 = 102  
SPECint\_rate\_base2006 = 88.1

CPU2006 license: 19  
Test sponsor: Fujitsu  
Tested by: Fujitsu

Test date: Mar-2017  
Hardware Availability: Apr-2017  
Software Availability: Jul-2017



## Hardware

CPU Name: SPARC64 XII  
 CPU Characteristics: High Speed Mode up to 4.35 GHz  
 CPU MHz: 4250  
 FPU: Integrated  
 CPU(s) enabled: 1 core, 1 chip, 1 core/chip, 8 threads/core  
 CPU(s) orderable: 1 to 16 BBs; each BB contains 1 or 2 CPU chips; the number of orderable total cores is 2, 3, 4, .. 384  
 Primary Cache: 64 KB I + 64 KB D on chip per core  
 Secondary Cache: 512 KB I+D on chip per core  
 L3 Cache: 32 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 512 GB (16 x 32 GB 2Rx4 PC4-2400T-R)  
 Disk Subsystem: 1 x 600 GB 10K RPM SAS (for system disk)  
 Other Hardware: None

## Software

Operating System: Oracle Solaris 11.3 (with June 2017 SRU)  
 Compiler: C/C++: Version 12.6 of Oracle Developer Studio  
 Auto Parallel: No  
 File System: tmpfs  
 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	8	1320	59.2	1314	59.5	<b>1317</b>	<b>59.3</b>	8	929	84.2	927	84.3	<b>928</b>	<b>84.2</b>
401.bzip2	8	<b>1388</b>	<b>55.6</b>	1389	55.6	1388	55.6	8	1339	57.7	<b>1337</b>	<b>57.7</b>	1337	57.8
403.gcc	8	859	74.9	<b>858</b>	<b>75.1</b>	857	75.1	8	758	85.0	755	85.3	<b>755</b>	<b>85.3</b>
429.mcf	8	580	126	581	126	<b>580</b>	<b>126</b>	8	508	144	<b>507</b>	<b>144</b>	507	144
445.gobmk	8	1218	68.9	1221	68.7	<b>1219</b>	<b>68.8</b>	8	1070	78.4	1071	78.3	<b>1071</b>	<b>78.3</b>
456.hammer	8	<b>851</b>	<b>87.8</b>	851	87.7	850	87.8	4	392	95.3	393	95.1	<b>392</b>	<b>95.2</b>
458.sjeng	8	<b>1621</b>	<b>59.7</b>	1625	59.6	1621	59.7	8	<b>1416</b>	<b>68.4</b>	1417	68.3	1413	68.5
462.libquantum	8	274	605	<b>274</b>	<b>605</b>	274	605	2	<b>44.9</b>	<b>924</b>	44.9	922	44.8	925
464.h264ref	8	1986	89.1	<b>1986</b>	<b>89.1</b>	1987	89.1	4	<b>912</b>	<b>97.1</b>	911	97.2	912	97.0
471.omnetpp	8	833	60.1	<b>833</b>	<b>60.0</b>	833	60.0	8	716	69.8	716	69.8	<b>716</b>	<b>69.8</b>
473.astar	8	<b>815</b>	<b>68.9</b>	814	69.0	815	68.9	8	782	71.8	<b>782</b>	<b>71.8</b>	781	71.9
483.xalancbmk	8	631	87.5	<b>630</b>	<b>87.6</b>	630	87.6	8	578	95.5	578	95.5	<b>578</b>	<b>95.5</b>

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

## 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

### Shell Environments:

ulimit -s 131072 was used to limit the space consumed by the stack (and therefore make more space available to the heap).

The "Logical Domains Manager" service was turned off using the command "svcadm disable ldmd".

### System Tunables:

(/etc/system parameters)

autoup = 86400

Causes pages older than the listed number of seconds to be written by fsflush.  
doiflush = 0

Controls whether file system metadata syncs will be executed during fsflush invocations.  
dopageflush = 0

Controls whether memory is examined for modified pages during fsflush invocations.  
zfs:zfs\_arc\_max=1073741824

Determines the maximum size of the ZFS Adaptive Replacement Cache (ARC).



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## Platform Notes

Firmware Settings:  
(XSCF operations)

Set High Speed Mode via XSCF command "sethsmode -s on".

Set 1 core per chip via "setcod -p 0 -s cpu 1".

Sysinfo program /export/cpu2006/config/sysinfo  
Revision 6993 of 2015-11-06 (5bc7c140478f0d042f37127effc8c1a9)  
running on H2S-256-D0 Wed Mar 1 18:55:47 2017

This section contains SUT (System Under Test) info as seen by  
some common utilities. To remove or add to this section, see:  
<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

From /usr/sbin/psrinfo

```
SPARC64-XIII (chipid 0, clock 4250 MHz)
1 chips
8 threads
4250 MHz
```

From kstat: 1 cores

From prtconf: 521728 Megabytes

/etc/release:

Oracle Solaris 11.3 SPARC

uname -a:

```
SunOS H2S-256-D0 5.11 11.3 sun4v sparc sun4v
```

SPEC is set to: /export/cpu2006

disk: df -h /export/cpu2006

Filesystem	Size	Used	Available	Capacity	Mounted on
rpool/export	547G	5.6G	269G	3%	/export

(End of data from sysinfo program)

## General Notes

The Building Block (BB) is just a Fujitsu SPARC M12-2S that is the basic unit to be expanded as if stacking up children's blocks.

File System:

tmpfs: output\_root was used to put run directories in /tmp/cpu2006

zfs: operating system

SPEC CPU2006 benchmark:

Updated with runspec --update



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## Base Compiler Invocation

C benchmarks:  
cc  
  
C++ benchmarks:  
CC

## 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:  
-std=c99 -m32 -fast -xtarget=sparc64xii -xipo=2 -xpagesize=4M  
-xsegment\_align=4M -xthroughput -xalias\_level=std  
  
C++ benchmarks:  
-m32 -fast -xtarget=sparc64xii -xipo=2 -xpagesize=4M  
-xsegment\_align=4M -xthroughput -xalias\_level=compatible  
-library=stlport4 -lfast

## Base Other Flags

C benchmarks:  
-xjobs=8  
  
C++ benchmarks:  
-xjobs=8

## Peak Compiler Invocation

C benchmarks:  
cc  
  
C++ benchmarks:  
CC



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## Peak Portability Flags

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

## Peak Optimization Flags

C benchmarks:

400.perlbench: -std=c99 -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -m32 -fast  
-xtarget=sparc64xii -xpagesize=256M -xsegment\_align=256M  
-xthroughput -xtarget=sparc64xplus -xipo=1  
-xalias\_level=std -xrestrict -xprefetch=no%auto -xO4  
-Wc,-Qiselect-funcalign=4 -xthroughput=no -lfast

401.bzip2: -std=c99 -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -m32 -fast  
-xtarget=sparc64xii -xpagesize=256M -xsegment\_align=256M  
-xthroughput -xalias\_level=strong -xprefetch=no%auto  
-Wc,-Qiselect-funcalign=4 -Wc,-Qicache-chbab=1  
-xinline\_param=max\_inst\_hard:1000,max\_inst\_soft:500,max\_growth:60  
-lfast

403.gcc: -std=c99 -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -m32 -fast  
-xtarget=sparc64xii -xpagesize=256M -xsegment\_align=256M  
-xthroughput -xO4 -xipo=2 -xprefetch=no%auto  
-Wc,-Qiselect-funcalign=64  
-xcache=32/128/4/4:256/128/8/4:8192/128/16/24  
-xalias\_level=layout

429.mcf: -std=c99 -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -m32 -fast  
-xtarget=sparc64xii -xpagesize=256M -xsegment\_align=256M  
-xthroughput -xipo=2 -xalias\_level=std -xprefetch=latx:0.2  
-W2,-Asac -Wc,-Qiselect-funcalign=64

445.gobmk: -std=c99 -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -m32 -fast  
-xtarget=sparc64xii -xpagesize=256M -xsegment\_align=256M  
-xthroughput -xO4 -xalias\_level=std -xrestrict  
-xprefetch=no%auto -Wc,-Qiselect-funcalign=64  
-Wc,-Qgsched-T=4

456.hmmer: -std=c99 -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -m32 -fast  
-xtarget=sparc64xii -xpagesize=256M -xsegment\_align=256M  
-xthroughput -xipo=1 -xunroll=8 -Wc,-Qms\_pipe-pref

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## Peak Optimization Flags (Continued)

456.hmmmer (continued):

-Wc,-Qiselect-funcalign=4  
-xcache=32/128/4/4:256/128/8/4:8192/128/16/48

458.sjeng: -std=c99 -xprofile=collect:./feedback(pass 1)

-xprofile=use:./feedback(pass 2) -m32 -fast  
-xtarget=sparc64xii -xpagesize=256M -xsegment\_align=256M  
-xthroughput -xO4 -xipo=2 -xalias\_level=std -xunroll=4  
-Wc,-Qiselect-funcalign=4 -W2,-Afully\_unroll:always=on  
-xprefetch=latx:0.6 -xcheck=%none

462.libquantum: -std=c99 -m32 -fast -xtarget=sparc64xii -xpagesize=256M

-xsegment\_align=256M -xthroughput -m64  
-xtarget=sparc64xplus -xipo=2  
-xcache=32/128/4/4:256/128/8/4:8192/128/16/24  
-xinline\_param=level:1 -Wc,-Qiselect-funcalign=4  
-xalias\_level=layout -xprefetch=latx:0.2

464.h264ref: -std=c99 -xprofile=collect:./feedback(pass 1)

-xprofile=use:./feedback(pass 2) -m32 -fast  
-xtarget=sparc64xii -xpagesize=256M -xsegment\_align=256M  
-xthroughput -xtarget=sparc64xplus -xipo=1  
-Wc,-Qiselect-funcalign=4 -xthroughput=no  
-xalias\_level=layout -xprefetch=latx:0.2 -xcheck=%none

C++ benchmarks:

471.omnetpp: -xprofile=collect:./feedback(pass 1)

-xprofile=use:./feedback(pass 2) -m32 -fast  
-xtarget=sparc64xii -xpagesize=256M -xsegment\_align=256M  
-xthroughput -xipo=1 -xalias\_level=compatible -xunroll=2  
-xprefetch\_level=3 -W2,-Asac -xthroughput=no -lfast

473.astar: -xprofile=collect:./feedback(pass 1)

-xprofile=use:./feedback(pass 2) -m32 -fast  
-xtarget=sparc64xii -xpagesize=256M -xsegment\_align=256M  
-xthroughput -xtarget=sparc64xplus -xalias\_level=compatible  
-xipo=2 -xunroll=6 -xrestrict=%source  
-Wc,-Qiselect-funcalign=64 -Wc,-Qgsched-T=4  
-xprefetch=latx:0.3 -lfast

483.xalancbmk: -xprofile=collect:./feedback(pass 1)

-xprofile=use:./feedback(pass 2) -m32 -fast  
-xtarget=sparc64xii -xpagesize=256M -xsegment\_align=256M  
-xthroughput -xipo=2 -xalias\_level=compatible -xdepend  
-xprefetch\_level=3 -xprefetch=latx:0.4 -library=stlport4  
-W2,-Asac -Wc,-Qiselect-funcalign=64 -features=no%except  
-lfast



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## Peak Other Flags

C benchmarks:  
-xjobs=8

C++ benchmarks:  
-xjobs=8

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Oracle-Developer-Studio12.6.html>  
<http://www.spec.org/cpu2006/flags/Fujitsu-M12-2S.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Oracle-Developer-Studio12.6.xml>  
<http://www.spec.org/cpu2006/flags/Fujitsu-M12-2S.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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