



# SPEC® CINT2006 Result

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Fujitsu Limited

SPECint®\_rate2006 = 1290

Fujitsu SPARC Enterprise M9000

SPECint\_rate\_base2006 = 1110

CPU2006 license: 19

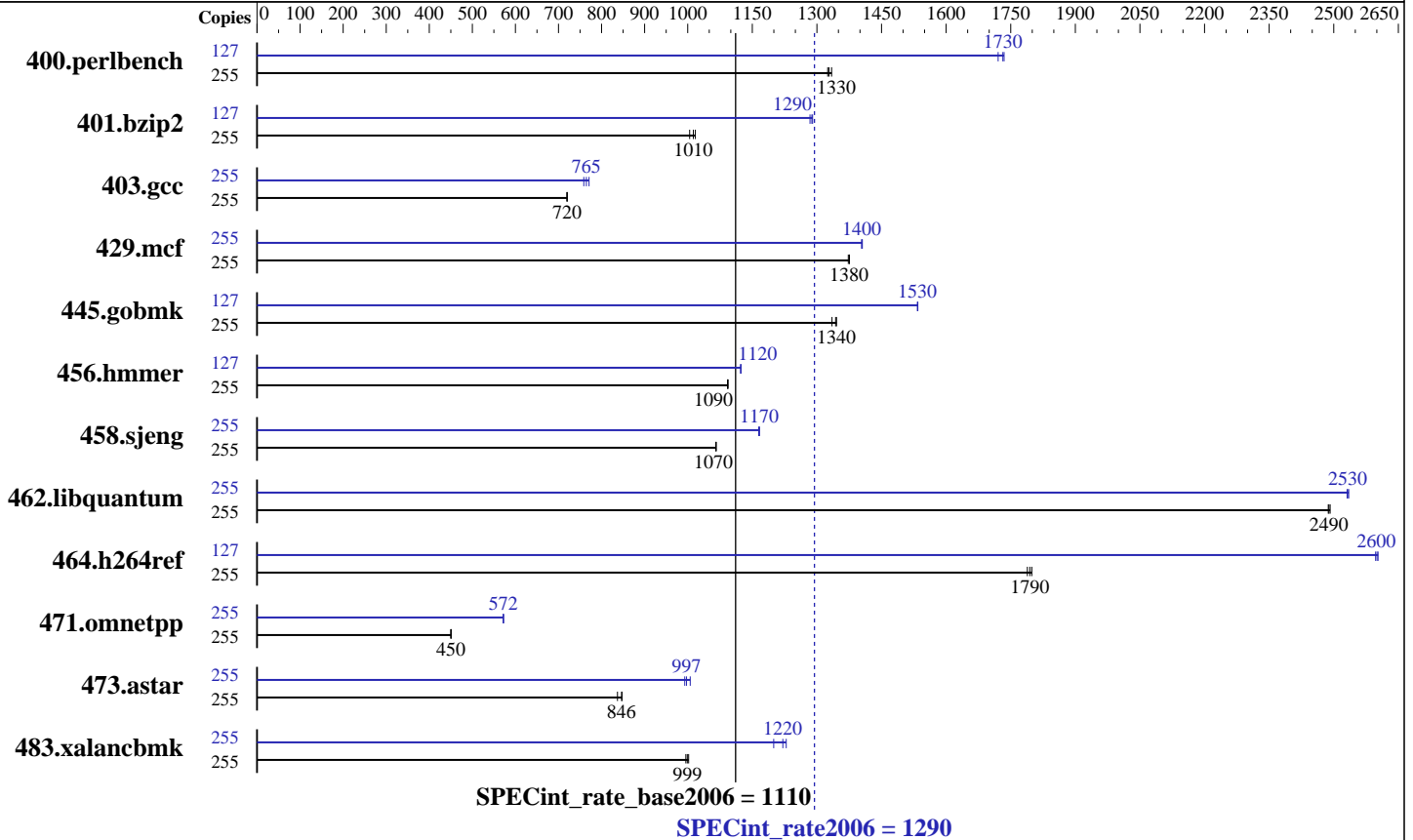
Test date: Apr-2007

Test sponsor: Fujitsu Limited

Hardware Availability: Apr-2007

Tested by: Sun Microsystems

Software Availability: Jul-2007



## Hardware

CPU Name: SPARC64 VI  
 CPU Characteristics:  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 128 cores, 64 chips, 2 cores/chip, 2 threads/core  
 CPU(s) orderable: 1 to 16 CMUs; each CMU contains 2 or 4 chips  
 Primary Cache: 128 KB I + 128 KB D on chip per core  
 Secondary Cache: 6 MB I+D on chip per chip  
 L3 Cache: None  
 Other Cache: None  
 Memory: 1 TB (512 x 2 GB)  
 Disk Subsystem: 792 GB RAID 1+0 created by Solaris Volume Manager with 24 x 73 GB  
 10,000 RPM Fujitsu MAY2073RC SAS  
 Other Hardware: None

## Software

Operating System: Solaris 10 7/07 (build s10s\_u4wos\_03)  
 Compiler: Sun Studio 12 (build 44.0)  
 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	1880	1330	1867	1330	<b>1876</b>	<b>1330</b>	127	721	1720	<b>716</b>	<b>1730</b>	715	1730
401.bzip2	255	2450	1000	<b>2429</b>	<b>1010</b>	2418	1020	127	955	1280	950	1290	<b>951</b>	<b>1290</b>
403.gcc	255	<b>2851</b>	<b>720</b>	2852	720	2850	720	255	2706	759	<b>2684</b>	<b>765</b>	2663	771
429.mcf	255	1691	1380	<b>1691</b>	<b>1380</b>	1694	1370	255	<b>1656</b>	<b>1400</b>	1655	1410	1657	1400
445.gobmk	255	1988	1350	<b>1991</b>	<b>1340</b>	2004	1330	127	<b>869</b>	<b>1530</b>	869	1530	868	1530
456.hammer	255	2175	1090	2178	1090	<b>2177</b>	<b>1090</b>	127	1055	1120	1055	1120	<b>1055</b>	<b>1120</b>
458.sjeng	255	2895	1070	<b>2895</b>	<b>1070</b>	2896	1070	255	2645	1170	<b>2646</b>	<b>1170</b>	2649	1160
462.libquantum	255	2121	2490	<b>2123</b>	<b>2490</b>	2124	2490	255	2084	2530	<b>2086</b>	<b>2530</b>	2088	2530
464.h264ref	255	3155	1790	<b>3145</b>	<b>1790</b>	3137	1800	127	<b>1081</b>	<b>2600</b>	1080	2600	1082	2600
471.omnetpp	255	3537	451	<b>3538</b>	<b>450</b>	3541	450	255	2785	572	<b>2785</b>	<b>572</b>	2790	571
473.astar	255	<b>2115</b>	<b>846</b>	2139	837	2112	848	255	<b>1795</b>	<b>997</b>	1802	993	1780	1010
483.xalancbmk	255	<b>1761</b>	<b>999</b>	1756	1000	1767	996	255	1432	1230	1467	1200	<b>1441</b>	<b>1220</b>

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".  
The SPEC toolset was bound to processor 0.

These shell commands request use of local 4MB pages:

```
export LD_PRELOAD=madv.so.1:mpss.so.1
export MPSSHEAP=4MB
export MPSSSTACK=4MB
export MADV=access_lwp
```

'access\_lwp' means that the next light weight process to touch the specified address range will access it the most heavily.

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

```
/etc/system parameters
```

```
autoup=300
```

```
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=3
```

```
Controls how many seconds elapse between runs of the page flush daemon, fsflush.
```

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## Operating System Notes (Continued)

The "webconsole" service was turned off using  
svcadm disable webconsole

## Platform Notes

"CMU" = CPU/Memory Unit; each holds 2 or 4 CPU chips.

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

This result was measured using a Sun SPARC Enterprise  
M9000 Server. Note that the Fujitsu SPARC Enterprise  
M9000 and Sun SPARC Enterprise M9000 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  
462.libquantum: -DSPEC\_CPU\_SOLARIS  
483.xalancbmk: -DSPEC\_CPU\_SOLARIS

## Base Optimization Flags

C benchmarks:

-fast -fma=fused -xcache=128/64/2:6144/256/12 -xipo=2 -xpagesize=4M  
-xprefetch\_level=2 -lbsdmalloc

C++ benchmarks:

-xdepend -library=stlport4 -fast -fma=fused  
-xcache=128/64/2:6144/256/12 -xipo=2 -xpagesize=4M -xprefetch\_level=2  
-lbsdmalloc



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## Base Other Flags

C benchmarks:  
-xjobs=24 -V -#

C++ benchmarks:  
-xjobs=24 -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

## Peak Optimization Flags

C benchmarks:

400.perlbench: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast  
-xcache=128/64/2:6144/256/12 -xpagesize=4M  
-xalias\_level=std -Xc -xipo=2 -xrestrict -fma=fused  
-xprefetch=latx:5 -lfast

401.bzip2: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast  
-xcache=128/64/2:6144/256/12 -xpagesize=4M  
-xalias\_level=strong -fma=fused -xprefetch=latx:5

403.gcc: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast  
-xcache=128/64/2:6144/256/12 -xpagesize=4M -xipo=2  
-xalias\_level=std -xprefetch\_level=2 -xarch=v8plusb  
-fma=fused -l12amm

429.mcf: -fast -xcache=128/64/2:6144/256/12 -xpagesize=4M -xipo=2  
-xprefetch\_level=2 -xrestrict -xalias\_level=std  
-W2,-Apf:l1list=3 -W2,-Apf:noninnerl1list -xprefetch=latx:5

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## Peak Optimization Flags (Continued)

429.mcf (continued):  
-lfast

445.gobmk: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast  
-xcache=128/64/2:6144/256/12 -xpagesize=4M  
-xalias\_level=std -xrestrict -fma=fused

456.hmmcr: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast  
-xcache=128/64/2:6144/256/12 -xpagesize=4M -xipo=2  
-fma=fused

458.sjeng: Same as 456.hmmcr

462.libquantum: -fast -xcache=128/64/2:6144/256/12 -xpagesize=4M -xipo=2  
-xprefetch\_level=2 -fma=fused -xprefetch=latx:3  
-lbsdmalloc

464.h264ref: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast  
-xcache=128/64/2:6144/256/12 -xpagesize=4M -xipo=2  
-xalias\_level=std -xarch=v8plusb -l12amm

C++ benchmarks:

471.omnetpp: -xdepend -library=stlport4  
-xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast  
-xcache=128/64/2:6144/256/12 -xpagesize=4M  
-xalias\_level=compatible -xipo=2 -xprefetch\_level=2  
-Qoption cg -Qlp-av=0 -fma=fused -lfast

473.astar: -xdepend -library=stlport4 -fast  
-xcache=128/64/2:6144/256/12 -xpagesize=4M  
-xalias\_level=compatible -xipo=2 -xprefetch\_level=2  
-fma=fused -xprefetch=latx:5 -lfast

483.xalancbmk: -xdepend -library=stlport4  
-xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast  
-xcache=128/64/2:6144/256/12 -xpagesize=4M  
-xalias\_level=compatible -xipo=2 -xprefetch\_level=2  
-fma=fused -xprefetch=latx:5 -lfast



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## Peak Other Flags

C benchmarks:

-xjobs=24 -V -#

C++ benchmarks:

-xjobs=24 -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-Studio12.20090714.02.html>

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

<http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12.20090714.02.xml>

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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