



SPEC[®] CFP2006 Result

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Fujitsu Limited

SPECfp[®]_rate2006 = 636

Fujitsu SPARC Enterprise M9000

SPECfp_rate_base2006 = 588

CPU2006 license: 19

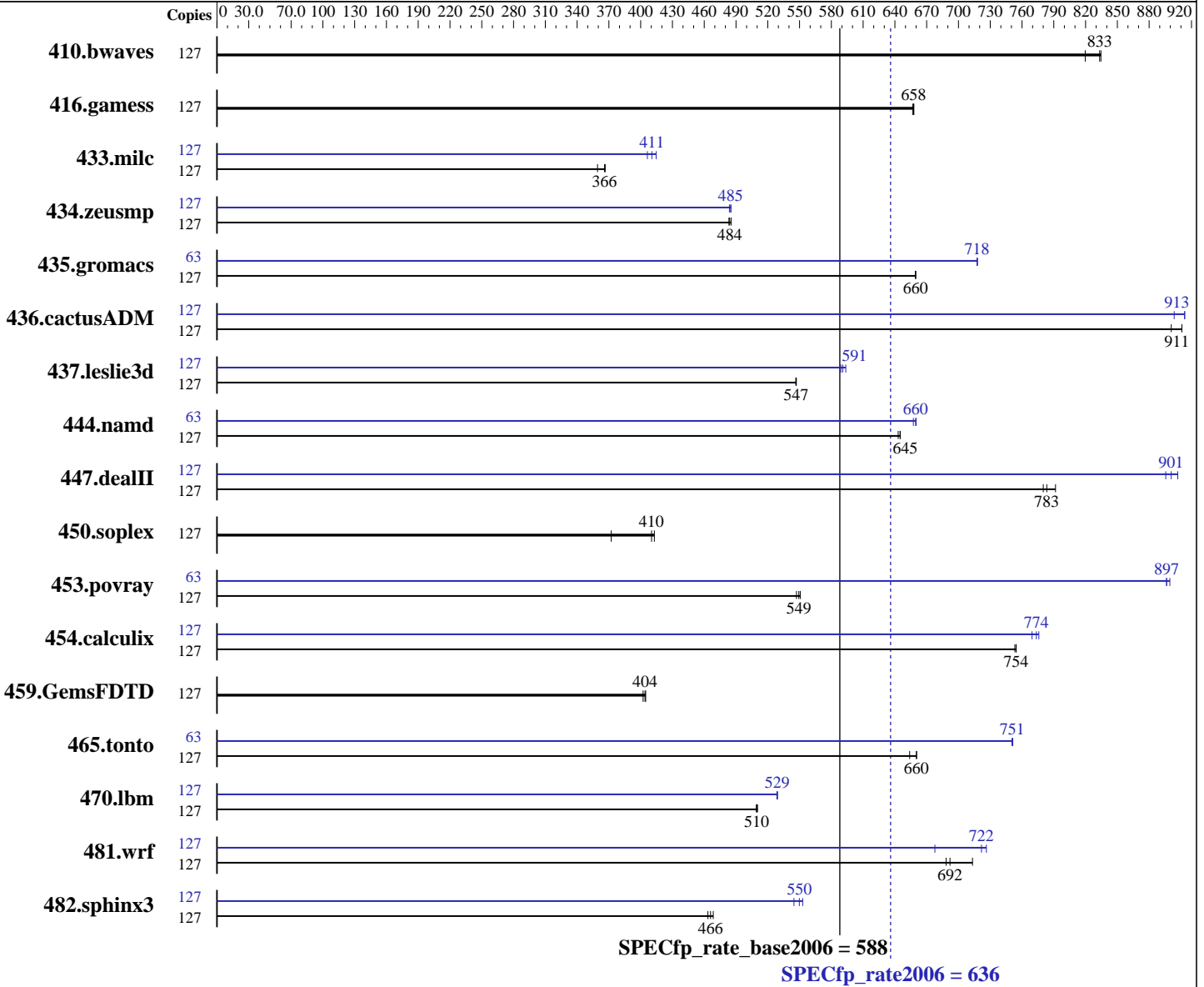
Test sponsor: Fujitsu Limited

Tested by: Fujitsu Limited

Test date: Apr-2007

Hardware Availability: Apr-2007

Software Availability: May-2007



Hardware

CPU Name: SPARC64 VI
 CPU Characteristics:
 CPU MHz: 2400
 FPU: Integrated
 CPU(s) enabled: 64 cores, 32 chips, 2 cores/chip, 2 threads/core
 CPU(s) orderable: 1 to 8 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

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Software

Operating System: Solaris 10 11/06
 Compiler: Sun Studio 12 (Early Access)
 Auto Parallel: No
 File System: ufs
 System State: Default
 Base Pointers: 32-bit
 Peak Pointers: 32-bit
 Other Software: None



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L3 Cache: None
Other Cache: None
Memory: 256 GB (256 x 1 GB)
Disk Subsystem: 1095 GB RAID 0 using 15 x 73 GB,
10,000 RPM Fujitsu ETERNUS4000 Model 80
Other Hardware: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	127	2106	820	<u>2071</u>	<u>833</u>	2068	834	127	2106	820	<u>2071</u>	<u>833</u>	2068	834
416.gamess	127	3779	658	<u>3782</u>	<u>658</u>	3786	657	127	3779	658	<u>3782</u>	<u>658</u>	3786	657
433.milc	127	3181	367	<u>3186</u>	<u>366</u>	3245	359	127	<u>2840</u>	<u>411</u>	2869	406	2812	415
434.zeusmp	127	<u>2388</u>	<u>484</u>	2391	483	2381	485	127	2389	484	<u>2383</u>	<u>485</u>	2382	485
435.gromacs	127	1375	659	<u>1375</u>	<u>660</u>	1375	660	63	<u>627</u>	<u>718</u>	627	718	627	718
436.cactusADM	127	1666	911	<u>1666</u>	<u>911</u>	1685	901	127	<u>1661</u>	<u>913</u>	1679	904	1661	914
437.leslie3d	127	2183	547	<u>2183</u>	<u>547</u>	2185	546	127	2027	589	2011	594	<u>2021</u>	<u>591</u>
444.namd	127	1584	643	1579	645	<u>1579</u>	<u>645</u>	63	769	657	<u>766</u>	<u>660</u>	765	660
447.dealII	127	1863	780	<u>1855</u>	<u>783</u>	1835	792	127	1622	896	1602	907	<u>1613</u>	<u>901</u>
450.soplex	127	2845	372	2565	413	<u>2581</u>	<u>410</u>	127	2845	372	2565	413	<u>2581</u>	<u>410</u>
453.povray	127	1235	547	1227	551	<u>1230</u>	<u>549</u>	63	374	896	<u>374</u>	<u>897</u>	373	900
454.calculix	127	<u>1389</u>	<u>754</u>	1389	755	1391	753	127	1350	776	<u>1354</u>	<u>774</u>	1362	769
459.GemsFDTD	127	3329	405	3349	402	<u>3334</u>	<u>404</u>	127	3329	405	3349	402	<u>3334</u>	<u>404</u>
465.tonto	127	<u>1893</u>	<u>660</u>	1911	654	1892	661	63	<u>826</u>	<u>751</u>	825	751	826	751
470.lbm	127	<u>3424</u>	<u>510</u>	3419	510	3427	509	127	<u>3299</u>	<u>529</u>	3301	529	3297	529
481.wrf	127	2061	688	<u>2050</u>	<u>692</u>	1989	713	127	2093	678	1953	726	<u>1966</u>	<u>722</u>
482.sphinx3	127	5341	463	<u>5312</u>	<u>466</u>	5283	469	127	4544	545	<u>4502</u>	<u>550</u>	4476	553

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".

Shell Environment:
Stack size set to unlimited via "ulimit -s unlimited"
MPSSHEAP=4MB
MPSSSTACK=4MB
MADV=access_lwp
LD_PRELOAD=mpss.so.1:madv.so.1

System Tunables:
(/etc/system parameters)
maxphys=4194304

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Operating System Notes (Continued)

Defines the maximum size of I/O requests, in bytes.
maxpgio=1024
Defines the maximum number of page I/O requests that can be queued by the paging system.
tune_t_fsflushr=30
Controls how many seconds elapse between runs of the page flush daemon, fsflush.
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

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 on a Fujitsu SPARC Enterprise M9000 Server. Note that the Fujitsu SPARC Enterprise M9000 and Sun SPARC Enterprise M9000 are electrically equivalent.

Base Compiler Invocation

C benchmarks:

/opt/SUNWspr012_EA070303/bin/cc

C++ benchmarks:

/opt/SUNWspr012_EA070303/bin/CC

Fortran benchmarks:

/opt/SUNWspr012_EA070303/bin/f90

Benchmarks using both Fortran and C:

/opt/SUNWspr012_EA070303/bin/cc /opt/SUNWspr012_EA070303/bin/f90

Base Optimization Flags

C benchmarks:

-fast -xipo=2 -xtarget=sparc64vi -xcache=128/64/2:6144/256/12
-xarch=sparcfmaf -fma=fused -Wc,-fma=fused -xprefetch_level=2

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Base Optimization Flags (Continued)

C++ benchmarks:

```
-library=stlport4 -fast -xipo=2 -xtarget=sparc64vi
-xcache=128/64/2:6144/256/12 -xarch=sparcfmaf -fma=fused
-Qoption cg -fma=fused
```

Fortran benchmarks:

```
-fast -xipo=2 -xtarget=sparc64vi -xcache=128/64/2:6144/256/12
-xarch=sparcfmaf -fma=fused -Qoption cg -fma=fused -xprefetch_level=2
```

Benchmarks using both Fortran and C:

```
-fast(cc) -fast(f90) -xipo=2 -xtarget=sparc64vi
-xcache=128/64/2:6144/256/12 -xarch=sparcfmaf -fma=fused
-Wc,-fma=fused -xprefetch_level=2 -Qoption cg -fma=fused
```

Peak Compiler Invocation

C benchmarks:

```
/opt/SUNWspro12_EA070303/bin/cc
```

C++ benchmarks:

```
/opt/SUNWspro12_EA070303/bin/CC
```

Fortran benchmarks:

```
/opt/SUNWspro12_EA070303/bin/f90
```

Benchmarks using both Fortran and C:

```
/opt/SUNWspro12_EA070303/bin/cc /opt/SUNWspro12_EA070303/bin/f90
```

Peak Optimization Flags

C benchmarks:

```
433.milc: -fast -xipo=2 -xtarget=sparc64vi
-xcache=128/64/2:6144/256/12 -xarch=sparcfmaf -fma=fused
-Wc,-fma=fused -xalias_level=strong -xprefetch_level=2
-xprefetch_auto_type=indirect_array_access
```

```
470.lbm: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2
-xtarget=sparc64vi -xcache=128/64/2:6144/256/12
-xarch=v8plusb -xprefetch_level=2 -fma=fused -Wc,-fma=fused
```

```
482.sphinx3: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2
-xtarget=sparc64vi -xcache=128/64/2:6144/256/12
```

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Peak Optimization Flags (Continued)

482.sphinx3 (continued):

-xarch=sparcfmaf -fma=fused -Wc,-fma=fused

C++ benchmarks:

444.namd: -library=stlport4 -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2
-xtarget=sparc64vi -xcache=128/64/2:6144/256/12
-xarch=sparcfmaf -fma=fused -Qoption cg -fma=fused -xdepend

447.dealII: -library=stlport4 -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2
-xtarget=sparc64vi -xcache=128/64/2:6144/256/12
-xarch=sparcfmaf -fma=fused -Qoption cg -fma=fused -xdepend
-xalias_level=compatible -xrestrict

450.soplex: basepeak = yes

453.povray: -library=stlport4 -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2
-xtarget=sparc64vi -xcache=128/64/2:6144/256/12
-xarch=sparcfmaf -fma=fused -Qoption cg -fma=fused -xdepend
-xalias_level=compatible

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: basepeak = yes

434.zeusmp: -fast -xipo=2 -xtarget=sparc64vi
-xcache=128/64/2:6144/256/12 -xarch=sparcfmaf -fma=fused
-Qoption cg -fma=fused -lmopt

437.leslie3d: -fast -xipo=2 -xtarget=sparc64vi
-xcache=128/64/2:6144/256/12 -xarch=sparcfmaf -fma=fused
-Qoption cg -fma=fused -xprefetch_level=2
-xprefetch=latx:8.0

459.GemsFDTD: basepeak = yes

465.tonto: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2
-xtarget=sparc64vi -xcache=128/64/2:6144/256/12
-xarch=v8plusa -fma=fused -Qoption cg -fma=fused -lfast

Benchmarks using both Fortran and C:

435.gromacs: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xipo=2 -xtarget=sparc64vi -xcache=128/64/2:6144/256/12

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Peak Optimization Flags (Continued)

435.gromacs (continued):

```
-xarch=sparcfmaf -fma=fused -Wc,-fma=fused
-Qoption cg -fma=fused
```

```
436.cactusADM: -fast(cc) -fast(f90) -xipo=2 -xtarget=sparc64vi
-xcache=128/64/2:6144/256/12 -xarch=sparcfmaf -fma=fused
-Wc,-fma=fused -Qoption cg -fma=fused
```

454.calculix: Same as 436.cactusADM

```
481.wrf: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xipo=2 -xtarget=sparc64vi -xcache=128/64/2:6144/256/12
-xarch=sparcfmaf -fma=fused -Wc,-fma=fused
-Qoption cg -fma=fused -xprefetch_level=2
```

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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