SPEC® CFP2006 Result

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Fujitsu Limited

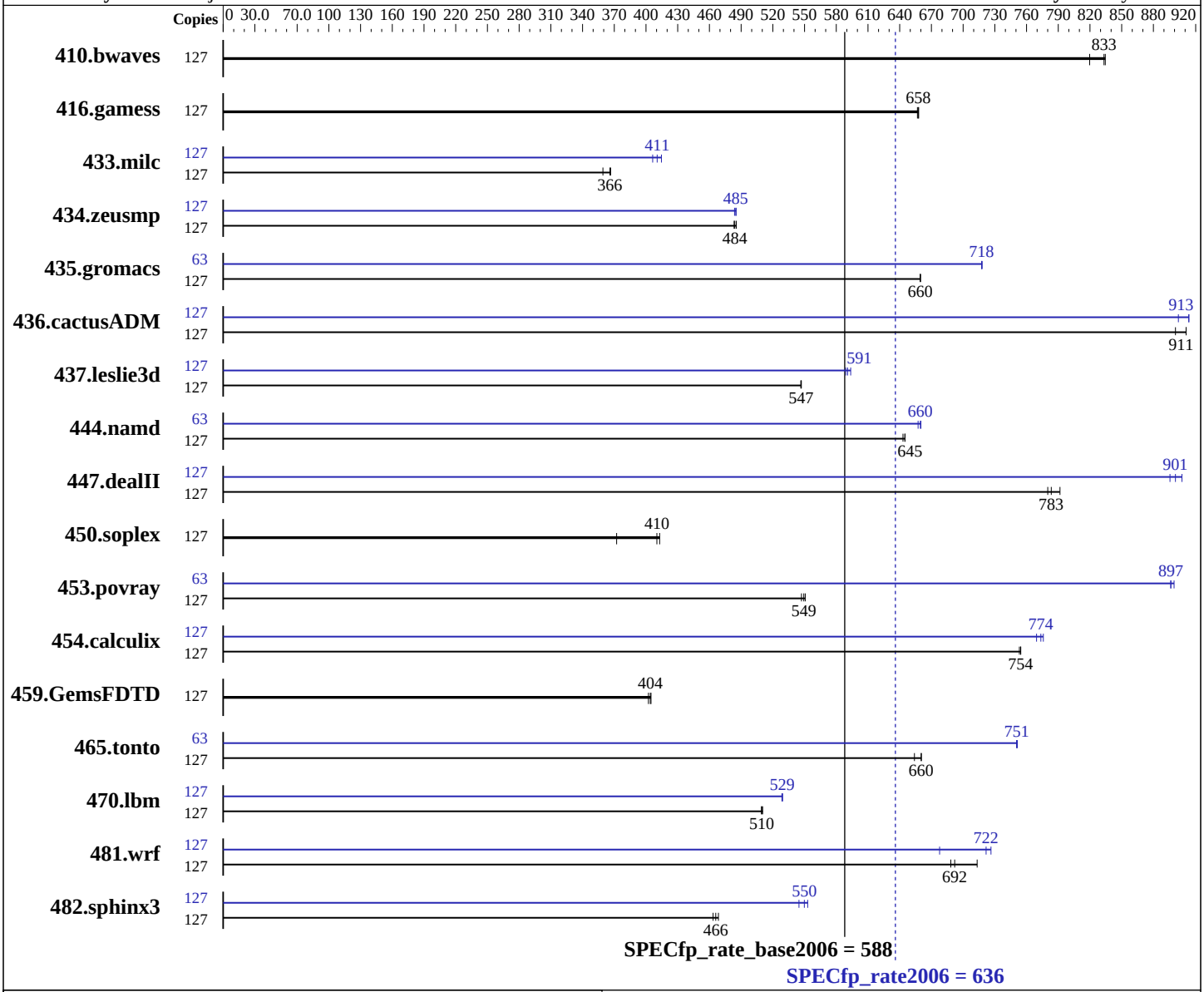
Fujitsu SPARC Enterprise M9000

SPECfp®_rate2006 = 636

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

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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