SPEC® CFP2006 Result

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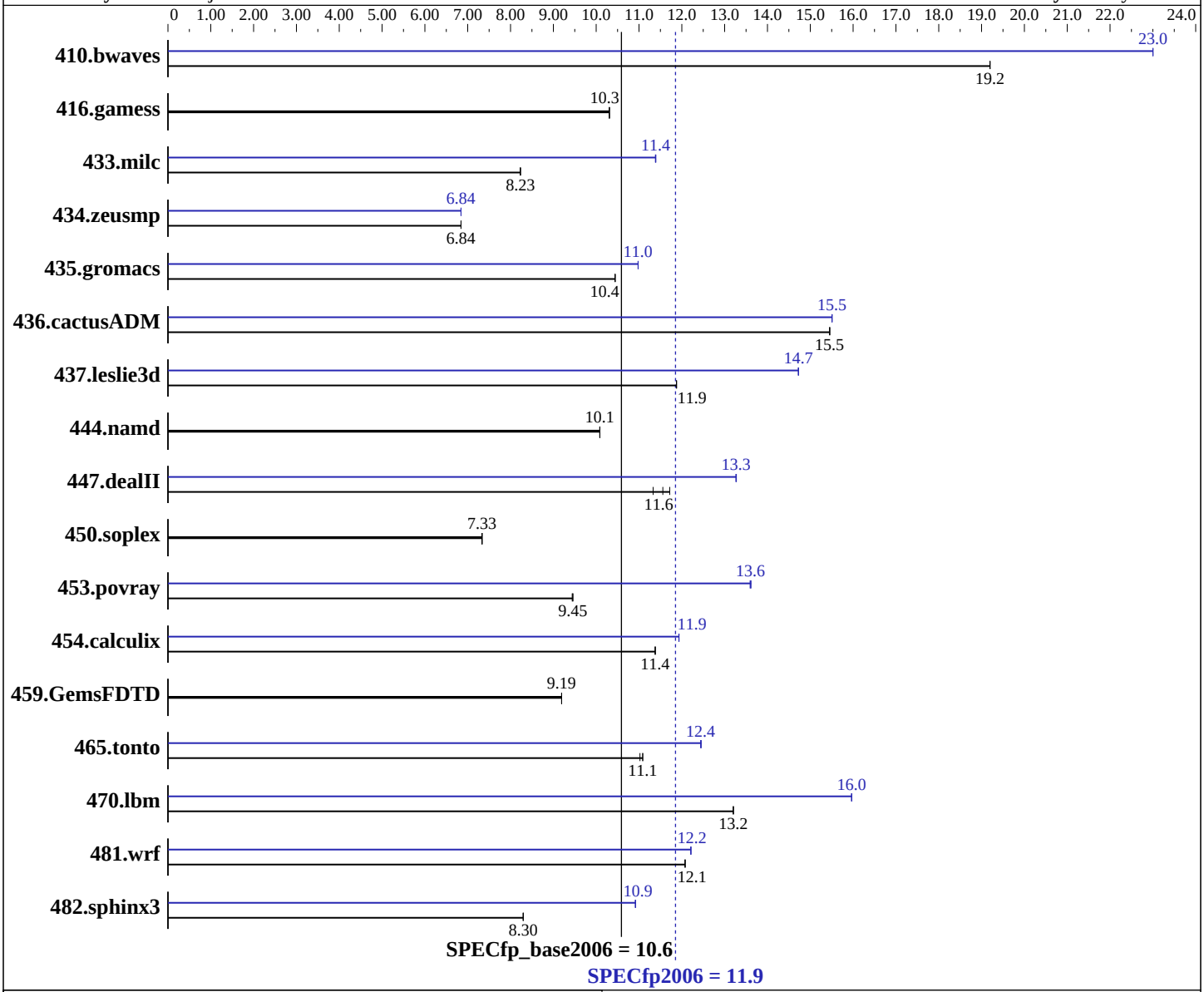
Sun Microsystems
Sun SPARC Enterprise M8000

SPECfp®2006 = 11.9

SPECfp_base2006 = 10.6

CPU2006 license: 6
Test sponsor: Sun Microsystems
Tested by: Fujitsu Limited

Test date: Mar-2007
Hardware Availability: Apr-2007
Software Availability: May-2007



Hardware

CPU Name:	SPARC64 VI
CPU Characteristics:	
CPU MHz:	2280
FPU:	Integrated
CPU(s) enabled:	32 cores, 16 chips, 2 cores/chip, 2 threads/core
CPU(s) orderable:	1 to 4 CMUs; each CMU contains 2 or 4 chips
Primary Cache:	128 KB I + 128 KB D on chip per core
Secondary Cache:	5 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: 64 GB (64 x 1 GB, see notes for details)
Disk Subsystem: 73 GB 10,000 RPM Fujitsu MAY2073RC SAS
Other Hardware: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	708	19.2	708	19.2	**708**	**19.2**	**591**	**23.0**	591	23.0	591	23.0
416.gamess	1899	10.3	1900	10.3	**1899**	**10.3**	1899	10.3	1900	10.3	**1899**	**10.3**
433.milc	1116	8.23	1115	8.23	**1115**	**8.23**	806	11.4	**806**	**11.4**	806	11.4
434.zeusmp	1330	6.84	**1330**	**6.84**	1330	6.84	1330	6.84	1330	6.84	**1330**	**6.84**
435.gromacs	684	10.4	684	10.4	**684**	**10.4**	**650**	**11.0**	650	11.0	650	11.0
436.cactusADM	**773**	**15.5**	773	15.5	773	15.5	771	15.5	771	15.5	**771**	**15.5**
437.leslie3d	791	11.9	792	11.9	**791**	**11.9**	**638**	**14.7**	638	14.7	639	14.7
444.namd	**795**	**10.1**	795	10.1	795	10.1	**795**	**10.1**	795	10.1	795	10.1
447.dealII	**990**	**11.6**	1010	11.3	976	11.7	**862**	**13.3**	862	13.3	863	13.3
450.soplex	**1137**	**7.33**	1137	7.33	1137	7.34	**1137**	**7.33**	1137	7.33	1137	7.34
453.povray	563	9.46	**563**	**9.45**	564	9.44	391	13.6	**391**	**13.6**	391	13.6
454.calculix	**725**	**11.4**	725	11.4	725	11.4	**691**	**11.9**	692	11.9	691	11.9
459.GemsFDTD	1154	9.19	1154	9.19	**1154**	**9.19**	1154	9.19	1154	9.19	**1154**	**9.19**
465.tonto	**888**	**11.1**	893	11.0	887	11.1	791	12.4	**791**	**12.4**	790	12.5
470.lbm	**1041**	**13.2**	1041	13.2	1041	13.2	861	16.0	**861**	**16.0**	861	16.0
481.wrf	**925**	**12.1**	925	12.1	925	12.1	915	12.2	**915**	**12.2**	915	12.2
482.sphinx3	**2349**	**8.30**	2350	8.29	2349	8.30	1785	10.9	**1785**	**10.9**	1785	10.9

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

Operating System Notes

```
These shell commands request use of local 4MB pages:
      MPSSHEAP=4MB
      MPSSSTACK=4MB
      MADV=access_lwp
      LD_PRELOAD=mpss.so.1:madv.so.1
  'access_lwp' means that the next light weight
  process to touch the specified address range
  will access it the most heavily.

Stack size set to unlimited via "ulimit -s unlimited"

The run was bound to processor #27 using the "psrset" command
    psrset -c processor id...: creates a set
```

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Operating System Notes (Continued)

```
    psrset -e set_id command:  runs command on a set


 System Tunables:
 (/etc/system parameters)
    maxphys=4194304
       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=1
       Controls how many seconds elapse between runs of the
       page flush daemon, fsflush.
    autoup=60
       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 same capacity
DIMMs in every other slot

This result is measured on a Fujitsu SPARC Enterprise
M8000 Server.  Note that the Fujitsu SPARC Enterprise
M8000 and Sun SPARC Enterprise M8000 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
```

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
```

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Peak Optimization Flags (Continued)

482.sphinx3: -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 -Wc,-fma=fused

C++ benchmarks:

444.namd: basepeak = yes

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: -fast -xipo=2 -xtarget=sparc64vi
-xcache=128/64/2:6144/256/12 -xarch=v8plusb -xchip=ultra3cu
-xprefetch_level=2 -xprefetch=latx:3.0 -fma=fused
-Qoption cg -fma=fused

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:

Continued on next page

Peak Optimization Flags (Continued)

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
-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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