SPEC® CFP2006 Result

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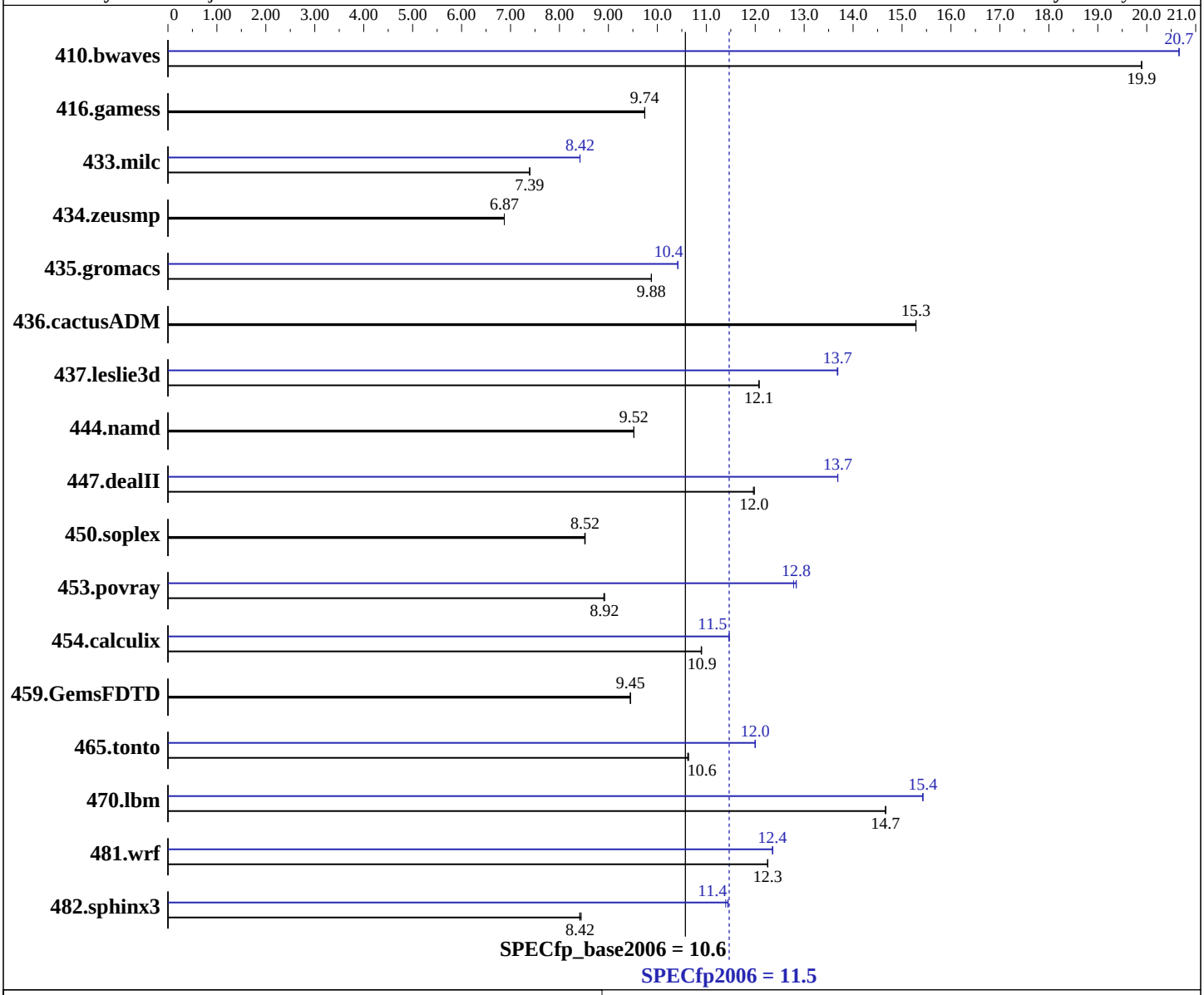
Sun Microsystems
Sun SPARC Enterprise M4000

SPECfp®2006 = 11.5

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:	2150
FPU:	Integrated
CPU(s) enabled:	8 cores, 4 chips, 2 cores/chip, 2 threads/core
CPU(s) orderable:	1 or 2 CPUM; each CPUM contains 2 CPU 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: 16 GB (16 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	**683**	**19.9**	683	19.9	683	19.9	658	20.7	658	20.7	**658**	**20.7**
416.gamess	2009	9.74	2010	9.74	**2010**	**9.74**	2009	9.74	2010	9.74	**2010**	**9.74**
433.milc	1242	7.39	**1242**	**7.39**	1242	7.39	1091	8.42	1090	8.42	**1090**	**8.42**
434.zeusmp	**1324**	**6.87**	1324	6.87	1324	6.87	**1324**	**6.87**	1324	6.87	1324	6.87
435.gromacs	723	9.88	**723**	**9.88**	723	9.88	685	10.4	685	10.4	**685**	**10.4**
436.cactusADM	782	15.3	**782**	**15.3**	782	15.3	782	15.3	**782**	**15.3**	782	15.3
437.leslie3d	**778**	**12.1**	779	12.1	778	12.1	687	13.7	**687**	**13.7**	687	13.7
444.namd	842	9.52	842	9.52	**842**	**9.52**	842	9.52	842	9.52	**842**	**9.52**
447.dealII	955	12.0	**955**	**12.0**	956	12.0	**836**	**13.7**	836	13.7	836	13.7
450.soplex	978	8.53	**979**	**8.52**	979	8.52	978	8.53	**979**	**8.52**	979	8.52
453.povray	**597**	**8.92**	597	8.91	596	8.92	**414**	**12.8**	416	12.8	414	12.8
454.calculix	757	10.9	757	10.9	**757**	**10.9**	719	11.5	**719**	**11.5**	720	11.5
459.GemsFDTD	1123	9.45	**1123**	**9.45**	1123	9.45	1123	9.45	**1123**	**9.45**	1123	9.45
465.tonto	925	10.6	**926**	**10.6**	927	10.6	**820**	**12.0**	820	12.0	820	12.0
470.lbm	**937**	**14.7**	937	14.7	937	14.7	891	15.4	891	15.4	**891**	**15.4**
481.wrf	912	12.3	**911**	**12.3**	911	12.3	904	12.4	904	12.4	**904**	**12.4**
482.sphinx3	**2314**	**8.42**	2308	8.44	2317	8.41	1710	11.4	1703	11.4	**1704**	**11.4**

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
```

Continued on next page

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

```
"CPUM" = CPU Module; each module holds two 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
M4000 Server.  Note that the Fujitsu SPARC Enterprise
M4000 and Sun SPARC Enterprise M4000 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 -xarch=sparcfmaf -fma=fused
-Wc,-fma=fused -xprefetch_level=2
```

C++ benchmarks:
```
-library=stlport4 -fast -xipo=2 -xtarget=sparc64vi -xarch=sparcfmaf
-fma=fused -Qoption cg -fma=fused
```

Fortran benchmarks:
```
-fast -xipo=2 -xtarget=sparc64vi -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 -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 -xarch=sparcfmaf -fma=fused -Wc,-fma=fused -xalias_level=strong -xprefetch_level=2 -xprefetch_auto_type=indirect_array_access -fsimple=0`

470.lbm: `-xprofile=collect:./feedback`(pass 1) `-xprofile=use:./feedback`(pass 2) `-fast -xipo=2 -xtarget=sparc64vi -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 -xarch=sparcfmaf -fma=fused`

Continued on next page

Peak Optimization Flags (Continued)

482.sphinx3 (continued):
-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 -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 -xarch=sparcfmaf -fma=fused
-Qoption cg -fma=fused -xdepend -xalias_level=compatible

Fortran benchmarks:

410.bwaves: -fast -xipo=2 -xtarget=sparc64vi -xarch=v8plusb
-xchip=ultra3cu -xprefetch_level=2 -xprefetch=latx:3.0
-fma=fused -Qoption cg -fma=fused

416.gamess: basepeak = yes

434.zeusmp: basepeak = yes

437.leslie3d: -fast -xipo=2 -xtarget=sparc64vi -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 -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 -xarch=sparcfmaf -fma=fused
-Wc,-fma=fused -Qoption cg -fma=fused

436.cactusADM: basepeak = yes

Continued on next page

Peak Optimization Flags (Continued)

454.calculix: `-fast`(cc) `-fast`(f90) `-xipo=2 -xtarget=sparc64vi -xarch=sparcfmaf -fma=fused -Wc,-fma=fused -Qoption cg -fma=fused`

481.wrf: `-xprofile=collect:./feedback`(pass 1) `-xprofile=use:./feedback`(pass 2) `-fast`(cc) `-fast`(f90) `-xipo=2 -xtarget=sparc64vi -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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