SPEC® CFP2006 Result

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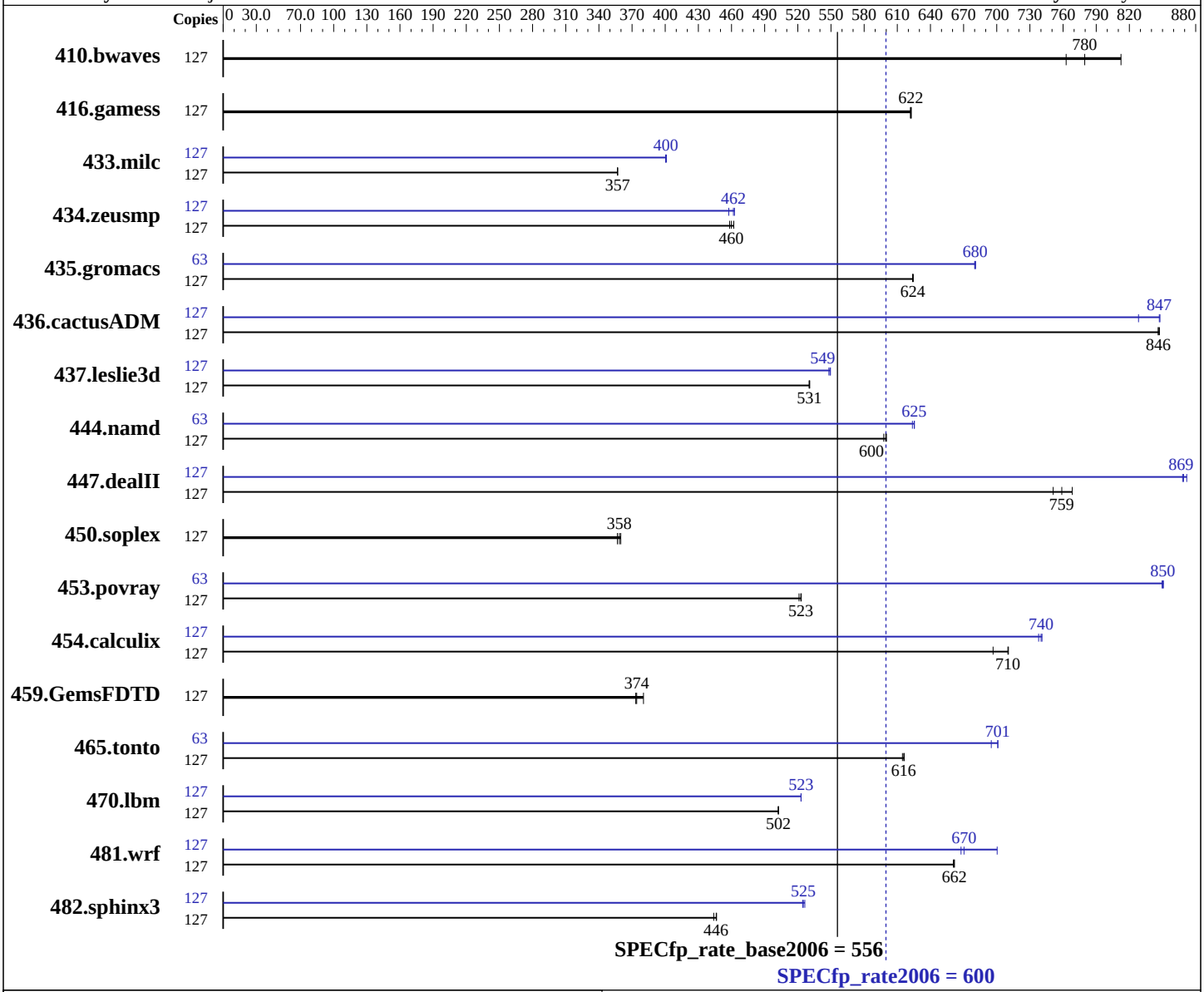
Sun Microsystems
Sun SPARC Enterprise M9000

SPECfp®_rate2006 = 600

SPECfp_rate_base2006 = 556

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

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



Hardware

CPU Name:	SPARC64 VI
CPU Characteristics:	
CPU MHz:	2280
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:	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: 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	2263	763	**2214**	**780**	2124	812	127	2263	763	**2214**	**780**	2124	812
416.gamess	127	**3996**	**622**	3994	623	3999	622	127	**3996**	**622**	3994	623	3999	622
433.milc	127	3267	357	3266	357	**3266**	**357**	127	2911	400	**2911**	**400**	2907	401
434.zeusmp	127	2501	462	2522	458	**2513**	**460**	127	**2503**	**462**	2498	463	2526	458
435.gromacs	127	1452	624	1453	624	**1453**	**624**	63	661	681	**661**	**680**	661	680
436.cactusADM	127	**1793**	**846**	1794	846	1791	847	127	1832	828	1790	848	**1792**	**847**
437.leslie3d	127	2249	531	2252	530	**2250**	**531**	127	**2174**	**549**	2178	548	2172	550
444.namd	127	**1699**	**600**	1697	600	1704	598	63	**808**	**625**	808	625	810	624
447.dealII	127	**1915**	**759**	1891	768	1934	751	127	1673	868	**1672**	**869**	1666	872
450.soplex	127	2969	357	2944	360	**2955**	**358**	127	2969	357	2944	360	**2955**	**358**
453.povray	127	1297	521	**1293**	**523**	1292	523	63	394	851	**394**	**850**	394	850
454.calculix	127	1504	697	**1476**	**710**	1475	711	127	1420	738	**1416**	**740**	1414	741
459.GemsFDTD	127	3543	380	3609	373	**3601**	**374**	127	3543	380	3609	373	**3601**	**374**
465.tonto	127	2028	616	2033	615	**2029**	**616**	63	**884**	**701**	892	695	884	701
470.lbm	127	**3473**	**502**	3473	503	3474	502	127	3337	523	**3337**	**523**	3337	523
481.wrf	127	2144	662	2147	661	**2144**	**662**	127	**2116**	**670**	2025	700	2125	668
482.sphinx3	127	5576	444	5544	446	**5548**	**446**	127	4703	526	**4715**	**525**	4720	524

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".
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"

 System Tunables:
 (/etc/system parameters)
```

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Operating System Notes (Continued)

```
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=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 is 8-way interleaved by filling all slots with
the same capacity DIMMs.

This result is 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
```

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: -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:

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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Tested with SPEC CPU2006 v1.0.
Report generated on Tue Jul 22 11:44:19 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 29 May 2007.