SPEC® CFP2006 Result

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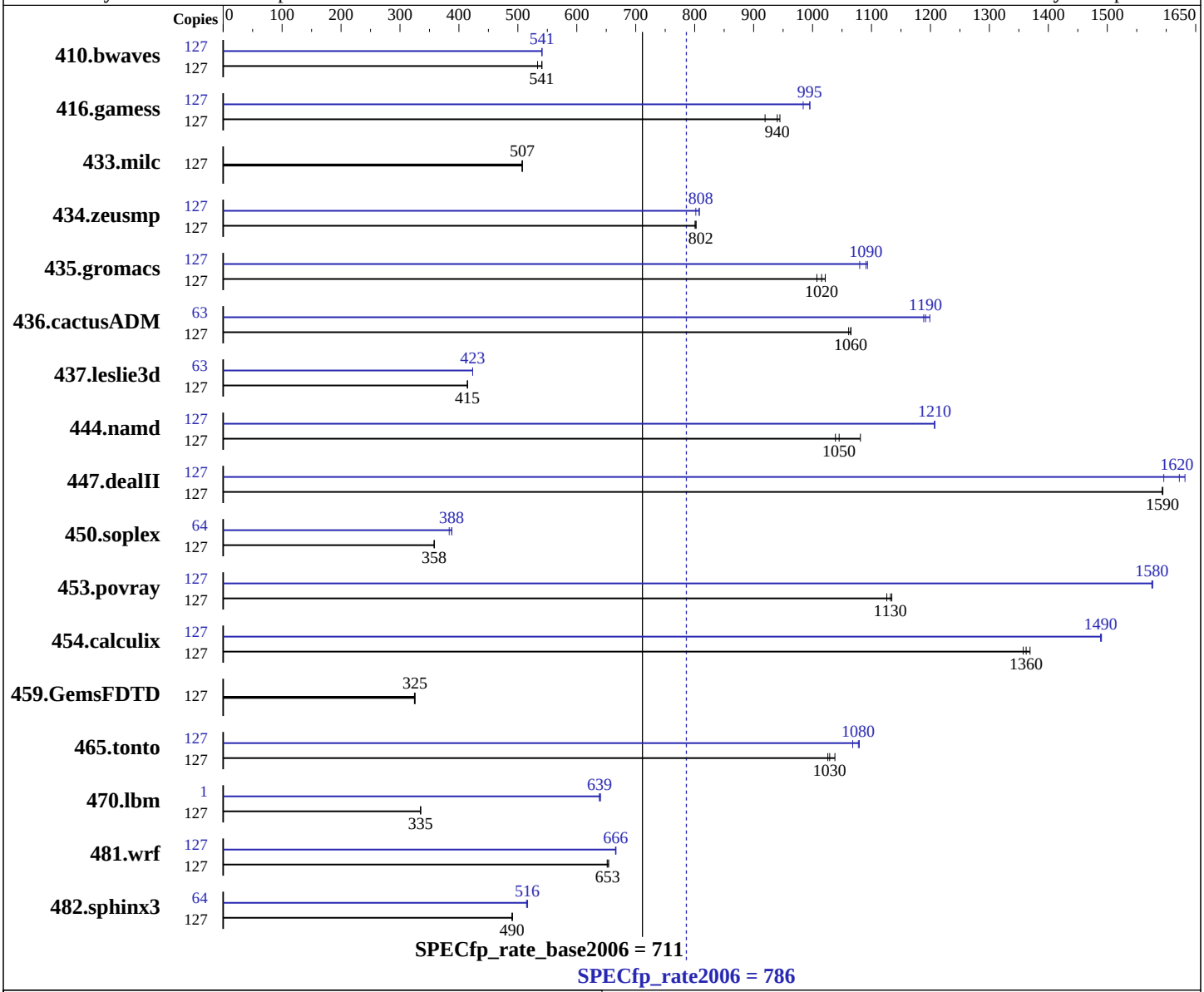
Oracle Corporation
SPARC Enterprise M8000

SPECfp®_rate2006 = 786

SPECfp_rate_base2006 = 711

CPU2006 license: 6
Test sponsor: Oracle Corporation
Tested by: Oracle Corporation

Test date: Nov-2010
Hardware Availability: Dec-2010
Software Availability: Sep-2010



Hardware

CPU Name:	SPARC64 VII+
CPU Characteristics:	
CPU MHz:	3000
FPU:	Integrated
CPU(s) enabled:	64 cores, 16 chips, 4 cores/chip, 2 threads/core
CPU(s) orderable:	1 to 4 CMUs; each CMU contains 2 or 4 CPU chips
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	12 MB I+D on chip per chip

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Software

Operating System:	Oracle Solaris 10 9/10
Compiler:	Oracle Solaris Studio 12.2
Auto Parallel:	Yes
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: 512 GB (128 x 4 GB, 8-way interleaved)
Disk Subsystem: 698 GB mirrored partition on 12 x 146 GB 15K RPM SAS disks in each of 2 StorageTek 2530 Array (24 total disk, 12 in each array)
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	3235	533	3191	541	**3192**	**541**	127	**3191**	**541**	3192	541	3191	541
416.gamess	127	**2645**	**940**	2632	945	2705	919	127	**2499**	**995**	2498	996	2527	984
433.milc	127	2297	508	2298	507	**2297**	**507**	127	2297	508	2298	507	**2297**	**507**
434.zeusmp	127	**1441**	**802**	1440	802	1444	801	127	1441	802	**1431**	**808**	1430	808
435.gromacs	127	900	1010	888	1020	**893**	**1020**	127	840	1080	**831**	**1090**	829	1090
436.cactusADM	127	**1426**	**1060**	1425	1070	1430	1060	63	633	1190	**632**	**1190**	628	1200
437.leslie3d	127	2881	414	**2880**	**415**	2879	415	63	**1399**	**423**	1399	423	1399	423
444.namd	127	981	1040	942	1080	**975**	**1050**	127	844	1210	**844**	**1210**	844	1210
447.dealII	127	**912**	**1590**	911	1590	912	1590	127	**896**	**1620**	890	1630	910	1600
450.soplex	127	**2958**	**358**	2954	359	2960	358	64	1392	384	**1377**	**388**	1375	388
453.povray	127	596	1130	600	1130	**597**	**1130**	127	**429**	**1580**	429	1580	428	1580
454.calculix	127	**769**	**1360**	765	1370	772	1360	127	**704**	**1490**	703	1490	704	1490
459.GemsFDTD	127	**4141**	**325**	4153	324	4141	325	127	**4141**	**325**	4153	324	4141	325
465.tonto	127	**1214**	**1030**	1204	1040	1218	1030	127	1158	1080	**1160**	**1080**	1170	1070
470.lbm	127	5210	335	**5210**	**335**	5210	335	1	21.5	640	21.5	638	**21.5**	**639**
481.wrf	127	**2174**	**653**	2177	652	2169	654	127	2131	666	2128	667	**2131**	**666**
482.sphinx3	127	5049	490	**5049**	**490**	5042	491	64	2415	517	2423	515	**2418**	**516**

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

Compiler Invocation Notes

```
Oracle Solaris Studio 12.2 is distributed with mandatory OS patches
 118683-05  119963-20  120753-08
Oracle Solaris Studio 12.2 and patches are available at
 http://oracle.com/goto/solarisstudio

The Apache C++ Standard Library V4.2.1 was installed from
   http://stdcxx.apache.org/download.html using:
     alias gmake=specmake
     gmake BUILDTYPE=8d CONFIG=sunpro.config
```

Submit Notes

```
Processes were assigned to specific processors using 'pbind'
commands.  The config file option 'submit' was used, along
with a list of processors in the 'BIND' variable, to generate
the pbind commands.  (For details, please see the config file.)
```

Operating System Notes

```
ulimit -s 131072 was used to limit the space
consumed by the stack (and therefore make more
space available to the heap).

 /etc/system parameters
    autoup=600
       Causes pages older than the listed number of seconds to
       be written by fsflush.
    tune_t_fsflushr=10
       Controls how many seconds elapse between runs of the
       page flush daemon, fsflush.
    lpg_alloc_prefer=1
        Indicates that extra effort should be taken to ensure
        that pages are created in the nearby lgroup (NUMA location).
 The "webconsole" service was turned off using
     svcadm disable webconsole
 The system had 75 GB of swap space.
```

Platform Notes

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

This result is measured on a SPARC Enterprise M8000 server from
Oracle.  The SPARC Enterprise M8000 server from Oracle and from
Fujitsu are electrically equivalent.
```

General Notes

```
Environment variables set by runspec before the start of the run:
OMP_NUM_THREADS = "128"
SUNW_MP_PROCBIND = "127 126 125 124 123 122 121 120 119 118 117 116
115 114 113 112 111 110 109 108 107 106 105 104 103 102 101 100 99
98 97 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 80 79 78 77
76 75 74 73 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55
54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33
32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11
10 9 8 7 6 5 4 3 2 1 0"
SUNW_MP_THR_IDLE = "SPIN"
```

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General Notes (Continued)

```
447.dealII (peak): "apache_stdcxx_4_2_1" src.alt was used.
447.dealII (base): "apache_stdcxx_4_2_1" src.alt was used.
```

Base Compiler Invocation

C benchmarks:
```
cc
```

C++ benchmarks:
```
CC
```

Fortran benchmarks:
```
f90
```

Benchmarks using both Fortran and C:
```
cc f90
```

Base Optimization Flags

C benchmarks:
```
-fast -fma=fused -xipo=2 -xpagesize=4M -xalias_level=std
-xprefetch_auto_type=indirect_array_access -xprefetch_level=3
-fsimple=1
```

C++ benchmarks:
```
-fast -fma=fused -xipo=2 -xpagesize=4M -xalias_level=compatible
-xdepend -xprefetch=latx:0.5 -library=no%Cstd
-I/export/home/apache/stdcxx-4.2.1/include
-I/export/home/apache/stdcxx-4.2.1/build/include
-L/export/home/apache/stdcxx-4.2.1/build/lib
-R/export/home/apache/stdcxx-4.2.1/build/lib -lstd8d
```

Fortran benchmarks:
```
-fast -fma=fused -xipo=2 -xpagesize=4M
```

Benchmarks using both Fortran and C:
```
-fast(cc) -fast(f90) -fma=fused -xipo=2 -xpagesize=4M
-xalias_level=std -xprefetch_auto_type=indirect_array_access
-xprefetch_level=3 -fsimple=1
```

Base Other Flags

C benchmarks:
```
-xjobs=32 -V -#
```

Continued on next page

Base Other Flags (Continued)

C++ benchmarks:
`-xjobs=32 -verbose=diags,version`

Fortran benchmarks:
`-xjobs=32 -V -v`

Benchmarks using both Fortran and C:
`-xjobs=32 -V -# -v`

Peak Compiler Invocation

C benchmarks:
`cc`

C++ benchmarks:
`CC`

Fortran benchmarks:
`f90`

Benchmarks using both Fortran and C:
`cc f90`

Peak Optimization Flags

C benchmarks:

433.milc: `basepeak = yes`

470.lbm: `-fast -xpagesize=4M -fma=fused -xipo=2 -xprefetch_level=3 -xvector -xarch=generic -xautopar -xreduction`

482.sphinx3: `-xprofile=collect:./feedback`(pass 1) `-xprofile=use:./feedback`(pass 2) `-fast -xpagesize=4M -fma=fused -xipo=2 -xinline= -xalias_level=strong -xprefetch_level=2 -lfast -ll2amm`

C++ benchmarks:

444.namd: `-xprofile=collect:./feedback`(pass 1) `-xprofile=use:./feedback`(pass 2) `-fast -xpagesize=4M -xalias_level=any -xdepend -library=stlport4 -fma=fused -xipo=2 -xchip=generic -xunroll=2`

447.dealII: `-fast -xpagesize=4M -xalias_level=compatible -xdepend -library=no%Cstd -I/export/home/apache/stdcxx-4.2.1/include -I/export/home/apache/stdcxx-4.2.1/build/include -fma=fused`

Continued on next page

Peak Optimization Flags (Continued)

447.dealII (continued):
-xipo=2 -xprefetch=latx:0.5
-L/export/home/apache/stdcxx-4.2.1/build/lib
-R/export/home/apache/stdcxx-4.2.1/build/lib -lstd8d

450.soplex: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-xalias_level=compatible -xdepend -library=stlport4
-fma=fused -xipo=2 -xrestrict -xprefetch=no -ll2amm

453.povray: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-xalias_level=compatible -xdepend -fma=fused -xipo=2
-xlinkopt=2 -xprefetch=no -xunroll=4 -xO4 -lfast

Fortran benchmarks:

410.bwaves: -fast -xpagesize=4M -fma=fused -xipo=2

416.gamess: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-fma=fused -xipo=2 -xprefetch=no%auto -xO3

434.zeusmp: -fast -xpagesize=4M -fma=fused -xipo=2 -xprefetch_level=1
-ll2amm -xunroll=5

437.leslie3d: -fast -xpagesize=4M -M /usr/lib/ld/map.bssalign
-xprefetch=no

459.GemsFDTD: basepeak = yes

465.tonto: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
-xipo=2 -xprefetch=no -lfast -ll2amm

Benchmarks using both Fortran and C:

435.gromacs: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xpagesize=4M -fma=fused -xtarget=generic -xinline=
-fsimple=0 -xlinkopt -xvector -xdepend

436.cactusADM: -fast(cc) -fast(f90) -xpagesize=4M -fma=fused -xipo=2

454.calculix: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xpagesize=4M -fma=fused -xipo=2 -xvector
-xprefetch=latx:3 -xalias_level=std

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Peak Optimization Flags (Continued)

481.wrf: `-xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast`(cc) `-fast`(f90)
`-xpagesize=4M -fma=fused -xipo=2 -xprefetch_level=3`
`-xprefetch_auto_type=indirect_array_access -ll2amm`

Peak Other Flags

C benchmarks:
`-xjobs=32 -V -#`

C++ benchmarks:
`-xjobs=32 -verbose=diags,version`

Fortran benchmarks:
`-xjobs=32 -V -v`

Benchmarks using both Fortran and C:
`-xjobs=32 -V -# -v`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.2-SPARC.20101221.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.2-SPARC.20101221.xml`

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