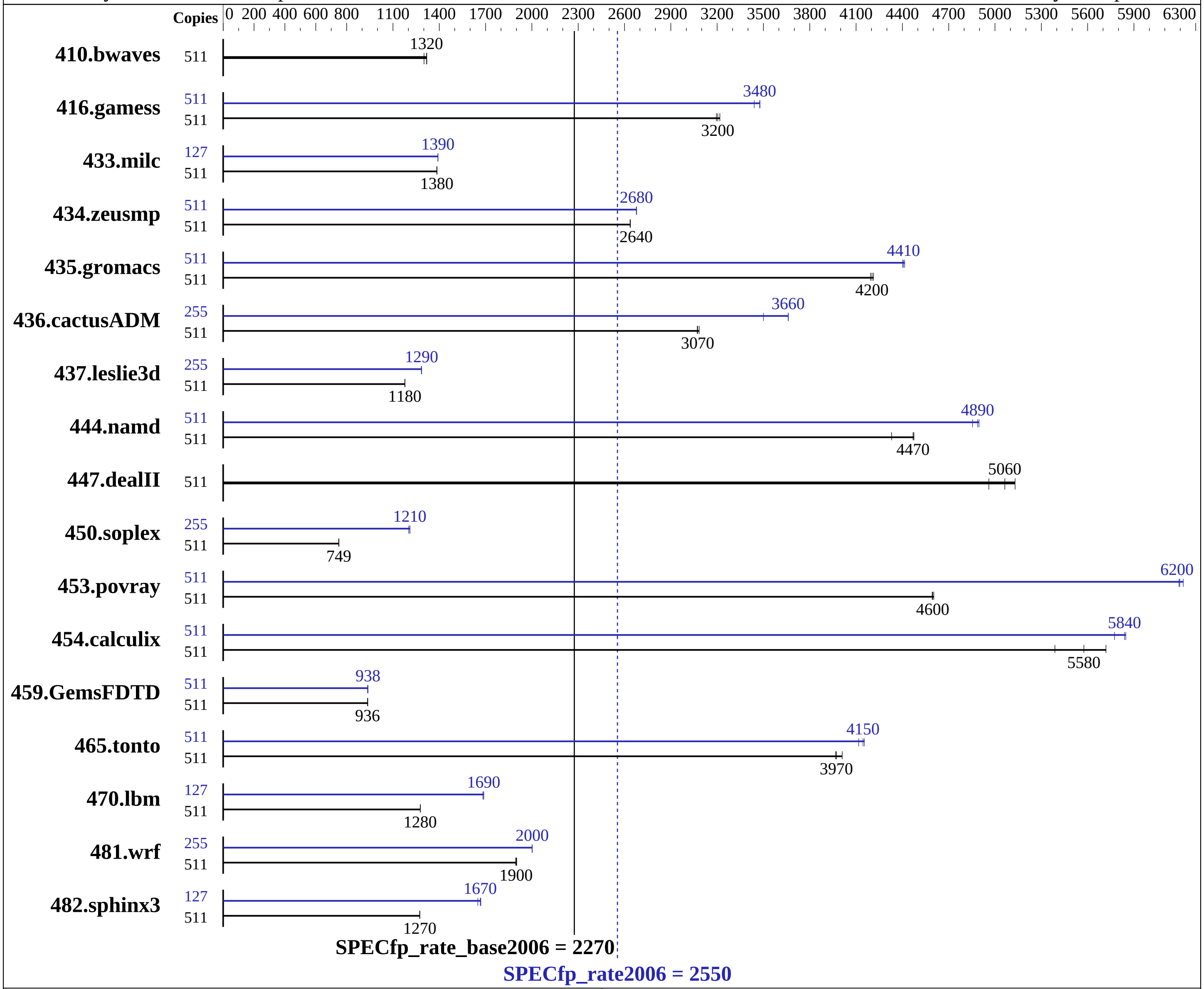
SPEC® CFP2006 Result

Fujitsu
SPARC Enterprise M9000

SPECfp®_rate2006 = 2550

SPECfp_rate_base2006 = 2270

CPU2006 license: 19		**Test date:**	Nov-2010
Test sponsor:	Fujitsu	**Hardware Availability:**	Dec-2010
Tested by:	Oracle Corporation	**Software Availability:**	Sep-2010



Hardware

CPU Name:	SPARC64 VII+
CPU Characteristics:	
CPU MHz:	3000
FPU:	Integrated
CPU(s) enabled:	256 cores, 64 chips, 4 cores/chip, 2 threads/core
CPU(s) orderable:	1 to 16 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:	No
File System:	zfs
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:	2 TB (512 x 4 GB, 8-way interleaved)
Disk Subsystem:	602 GB on 24 x 73 GB 10K RPM SAS disks, arranged as 8 x 3-way mirrors
Other Hardware:	None

Results Table

	Base							Peak						
Benchmark	**Copies**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Copies**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
410.bwaves	511	5337	1300	5264	1320	**5271**	**1320**	511	5337	1300	5264	1320	**5271**	**1320**
416.gamess	511	**3123**	**3200**	3109	3220	3131	3200	511	2908	3440	2877	3480	**2879**	**3480**
433.milc	511	3387	1390	**3388**	**1380**	3390	1380	127	838	1390	**838**	**1390**	838	1390
434.zeusmp	511	**1763**	**2640**	1763	2640	1764	2640	511	1738	2680	1736	2680	**1737**	**2680**
435.gromacs	511	**868**	**4200**	870	4190	866	4210	511	826	4410	829	4400	**828**	**4410**
436.cactusADM	511	1980	3080	**1987**	**3070**	1988	3070	255	832	3660	**832**	**3660**	871	3500
437.leslie3d	511	**4081**	**1180**	4081	1180	4081	1180	255	**1865**	**1290**	1864	1290	1867	1280
444.namd	511	916	4470	946	4330	**917**	**4470**	511	837	4900	**838**	**4890**	844	4850
447.dealII	511	**1154**	**5060**	1140	5130	1179	4960	511	**1154**	**5060**	1140	5130	1179	4960
450.soplex	511	5686	750	5691	749	**5687**	**749**	255	1770	1200	**1759**	**1210**	1758	1210
453.povray	511	592	4590	591	4600	**591**	**4600**	511	439	6190	437	6220	**439**	**6200**
454.calculix	511	782	5390	737	5720	**756**	**5580**	511	721	5850	**722**	**5840**	730	5770
459.GemsFDTD	511	**5795**	**936**	5785	937	5796	935	511	5780	938	5796	935	**5781**	**938**
465.tonto	511	1267	3970	**1266**	**3970**	1254	4010	511	1221	4120	1211	4150	**1213**	**4150**
470.lbm	511	5499	1280	5501	1280	**5500**	**1280**	127	1034	1690	**1034**	**1690**	1037	1680
481.wrf	511	3002	1900	**3008**	**1900**	3011	1900	255	1423	2000	**1423**	**2000**	1423	2000
482.sphinx3	511	**7819**	**1270**	7818	1270	7826	1270	127	1483	1670	1500	1650	**1486**	**1670**

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).
    kernel_cage_enable=0
       Allows the kernel to use memory in any locality group.
       In particular, allows ZFS file caches to be located on
       any memory board.
    zfs:zfs_arc_min=0x10000000
    zfs:zfs_arc_max=0x10000000000
       Limits the consumption of memory by the zfs file system
       cache to 1 TB.  (The arc_max sets the maximum cache
       size; arc_min sets the minimum.)
 The "webconsole" service was turned off using
     svcadm disable webconsole
 The system had 137 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 M9000 server from
Oracle.  The SPARC Enterprise M9000 server from Oracle and from
Fujitsu are electrically equivalent.
```

General Notes

```
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 -xlinkopt -xvector
-xalias_level=std -xprefetch_auto_type=indirect_array_access -ll2amm

C++ benchmarks:
-fast -fma=fused -xipo=2 -xpagesize=4M -xlinkopt -xvector
-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 -ll2amm
-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 -xlinkopt -xvector -ll2amm

Benchmarks using both Fortran and C:
-fast(cc) -fast(f90) -fma=fused -xipo=2 -xpagesize=4M -xlinkopt
-xvector -xalias_level=std -xprefetch_auto_type=indirect_array_access
-ll2amm

Base Other Flags

C benchmarks:
-xjobs=32 -V -#

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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: `-fast -xpagesize=4M -fma=fused -xipo=2 -xprefetch_level=2 -xprefetch_auto_type=indirect_array_access -xalias_level=strong -xdepend -ll2amm`

470.lbm: `-xprofile=collect:./feedback`(pass 1) `-xprofile=use:./feedback`(pass 2) `-fast -xpagesize=4M`

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`

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Peak Optimization Flags (Continued)

447.dealII: basepeak = yes

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: basepeak = yes

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: -xprofile=collect:./feedback(pass 1) -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M -fma=fused

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 -xunroll=8 -xprefetch=latx:3 -xalias_level=std

481.wrf: -xprofile=collect:./feedback(pass 1) -xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90) -xpagesize=4M -fma=fused -xipo=2 -xprefetch=no

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Peak Optimization Flags (Continued)

481.wrf (continued):
`-xcache=generic -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.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.xml`

Tested with SPEC CPU2006 v1.1.
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