SPEC® CFP2006 Result

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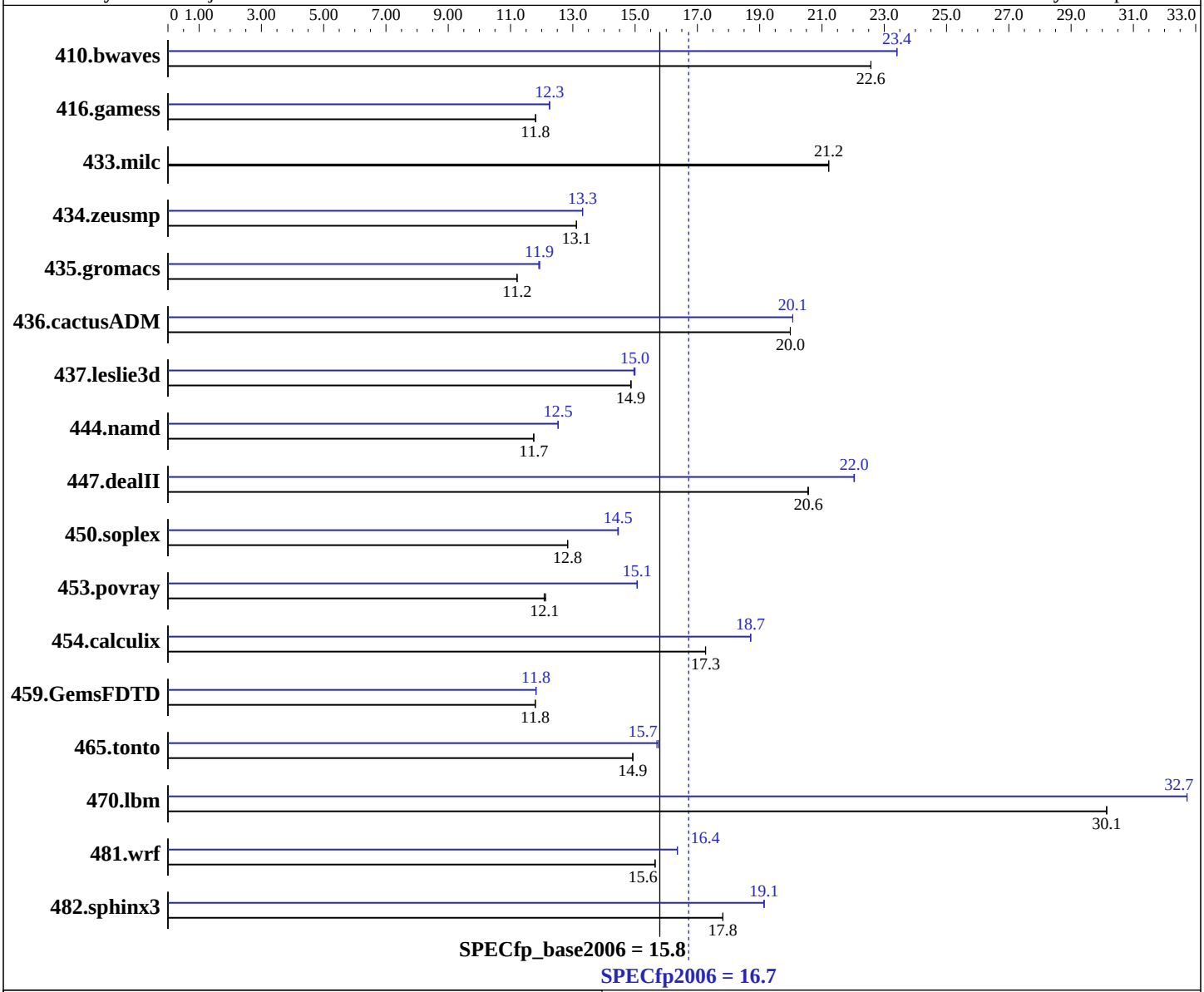
Oracle Corporation
SPARC Enterprise M4000

SPECfp®2006 = 16.7

SPECfp_base2006 = 15.8

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

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



Hardware

CPU Name:	SPARC64 VII+
CPU Characteristics:	
CPU MHz:	2660
FPU:	Integrated
CPU(s) enabled:	16 cores, 4 chips, 4 cores/chip, 2 threads/core
CPU(s) orderable:	1 to 2 CPUMs; each CPUM contains 2 CPU chips
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	11 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:	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: 128 GB (32 x 4 GB, 8-way interleaved)
Disk Subsystem: 1 x 300 GB 10,000 RPM SAS
Other Hardware: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	602	22.6	**602**	**22.6**	602	22.6	581	23.4	**581**	**23.4**	581	23.4
416.gamess	1658	11.8	1659	11.8	**1659**	**11.8**	**1598**	**12.3**	1598	12.2	1597	12.3
433.milc	**433**	**21.2**	433	21.2	433	21.2	**433**	**21.2**	433	21.2	433	21.2
434.zeusmp	694	13.1	**694**	**13.1**	694	13.1	**684**	**13.3**	684	13.3	683	13.3
435.gromacs	637	11.2	**637**	**11.2**	637	11.2	598	11.9	**599**	**11.9**	600	11.9
436.cactusADM	**598**	**20.0**	598	20.0	598	20.0	**596**	**20.1**	596	20.1	596	20.1
437.leslie3d	632	14.9	632	14.9	**632**	**14.9**	**627**	**15.0**	628	15.0	627	15.0
444.namd	683	11.7	**683**	**11.7**	683	11.7	640	12.5	**640**	**12.5**	640	12.5
447.dealII	557	20.5	556	20.6	**556**	**20.6**	519	22.0	519	22.0	**519**	**22.0**
450.soplex	**650**	**12.8**	650	12.8	650	12.8	**577**	**14.5**	577	14.4	577	14.5
453.povray	**440**	**12.1**	439	12.1	440	12.1	**353**	**15.1**	353	15.1	353	15.1
454.calculix	478	17.3	478	17.3	**478**	**17.3**	**441**	**18.7**	441	18.7	441	18.7
459.GemsFDTD	900	11.8	**900**	**11.8**	900	11.8	898	11.8	898	11.8	**898**	**11.8**
465.tonto	659	14.9	**659**	**14.9**	659	14.9	625	15.7	**625**	**15.7**	627	15.7
470.lbm	456	30.1	**456**	**30.1**	456	30.1	420	32.7	420	32.7	**420**	**32.7**
481.wrf	714	15.6	**714**	**15.6**	714	15.6	683	16.4	683	16.4	**683**	**16.4**
482.sphinx3	**1094**	**17.8**	1094	17.8	1094	17.8	**1018**	**19.1**	1018	19.1	1018	19.1

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

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

Operating System Notes

```
Shell Environments:

    ulimit -s 131072 was used to limit the space consumed
    by the stack.(making more space available for the heap)

 System Tunables (/etc/system parameters):

 tune_t_fsflushr=10
     Controls how many seconds elapse between runs of the
     page flush daemon, fsflush.
 autoup=600
     Causes pages older than the listed number of seconds to
     be written by fsflush.

 Other System Settings:

 The webconsole service was turned off using
     svcadm disable webconsole
```

Platform Notes

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

 This result is measured on a SPARC Enterprise M4000 server from
 Fujitsu.  The SPARC Enterprise M4000 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 -xprefetch_level=2 -xlinkopt
-xvector -xalias_level=std -xprefetch_auto_type=indirect_array_access
-xprefetch=latx:2 -M /usr/lib/ld/map.bssalign -ll2amm

C++ benchmarks:
-xdepend -fast -fma=fused -xipo=2 -xpagesize=4M -xprefetch_level=2
-xlinkopt -xvector -xalias_level=compatible -xprefetch_level=3
-library=no%Cstd -I/mnt/spec//stdcxx-4.2.1/include
-I/mnt/spec//stdcxx-4.2.1/build/include -M /usr/lib/ld/map.bssalign
-L/mnt/spec//stdcxx-4.2.1/build/lib -R/mnt/spec//stdcxx-4.2.1/build/lib
-lstd8d

Fortran benchmarks:
-fast -fma=fused -xipo=2 -xpagesize=4M -xprefetch_level=2 -xlinkopt
-xvector -xprefetch=latx:2 -M /usr/lib/ld/map.bssalign -ll2amm

Benchmarks using both Fortran and C:
-fast(cc) -fast(f90) -fma=fused -xipo=2 -xpagesize=4M
-xprefetch_level=2 -xlinkopt -xvector -xalias_level=std
-xprefetch_auto_type=indirect_array_access -xprefetch=latx:2
-M /usr/lib/ld/map.bssalign -ll2amm

Base Other Flags

C benchmarks:
-xjobs=2 -V -#

C++ benchmarks:
-xjobs=2 -verbose=diags,version

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Base Other Flags (Continued)

Fortran benchmarks:
`-xjobs=2 -V -v`

Benchmarks using both Fortran and C:
`-xjobs=2 -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: `-xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast -fma=fused`
`-xpagesize=4M -xipo=2 -xarch=generic -xvector -xunroll=8`
`-xprefetch=latx:2`

482.sphinx3: `-xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast -fma=fused`
`-xpagesize=4M -xalias_level=std -M /usr/lib/ld/map.bssalign`
`-xipo=2 -xprefetch_level=2 -xunroll=4 -xprefetch=latx:1.2`
`-ll2amm`

C++ benchmarks:

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

447.dealII: `-xdepend -xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast -fma=fused`
`-xpagesize=4M -xalias_level=compatible -library=no%Cstd`

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Peak Optimization Flags (Continued)

447.dealII (continued):
-I/mnt/spec//stdcxx-4.2.1/include
-I/mnt/spec//stdcxx-4.2.1/build/include -xipo=2
-xprefetch_auto_type=indirect_array_access -xrestrict
-xchip=generic -xunroll=4
-L/mnt/spec//stdcxx-4.2.1/build/lib
-R/mnt/spec//stdcxx-4.2.1/build/lib -lstd8d -ll2amm

450.soplex: -xdepend -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2
-xprefetch_level=2 -xprefetch_auto_type=indirect_array_access
-Qoption cg -Qlp-ol=1 -Qoption cg -Qlp-it=3
-Qoption cg -Qlp-imb=1 -Qoption iropt -Apf:pdl=3
-xalias_level=simple -xrestrict -library=stlport4

453.povray: -xdepend -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -fma=fused
-xpagesize=4M -xalias_level=compatible -library=stlport4
-xO4 -xipo=2 -xprefetch=latx:4 -xvector -xlinkopt=2
-xunroll=4 -ll2amm -lfast

Fortran benchmarks:

410.bwaves: -fast -fma=fused -xpagesize=4M -xipo=2 -xcache=generic
-xunroll=4 -xprefetch=latx:3

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

434.zeusmp: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -fma=fused
-xpagesize=4M -M /usr/lib/ld/map.bssalign -xipo=2
-xprefetch_level=2 -xprefetch=latx:3 -xO4 -ll2amm

437.leslie3d: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -fma=fused
-xpagesize=4M -M /usr/lib/ld/map.bssalign -xipo=2
-xprefetch_level=1 -xunroll=7 -ll2amm

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

465.tonto: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -fma=fused
-xpagesize=4M -xipo=2 -xprefetch=no%auto -xO4 -xunroll=3
-lfast

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Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

435.gromacs: -xprofile=tcov:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-fma=fused -xpagesize=4M -xipo=2 -xprefetch=latx:0.5
-xprefetch_level=3 -xprefetch_auto_type=indirect_array_access
-xinline= -xchip=generic -fsimple=0

436.cactusADM: -fast(cc) -fast(f90) -fma=fused -xipo=2 -xpagesize=4M
-xprefetch_level=2 -xalias_level=std -xprefetch_level=3
-xprefetch_auto_type=indirect_array_access

454.calculix: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-fma=fused -xpagesize=4M -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)
-fma=fused -xpagesize=4M -xalias_level=std -xipo=2
-xcache=generic -xunroll=5 -xprefetch=latx:2

Peak Other Flags

C benchmarks:
-xjobs=2 -V -#

C++ benchmarks:
-xjobs=2 -verbose=diags,version

Fortran benchmarks:
-xjobs=2 -V -v

Benchmarks using both Fortran and C:
-xjobs=2 -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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