SPEC® CFP2006 Result

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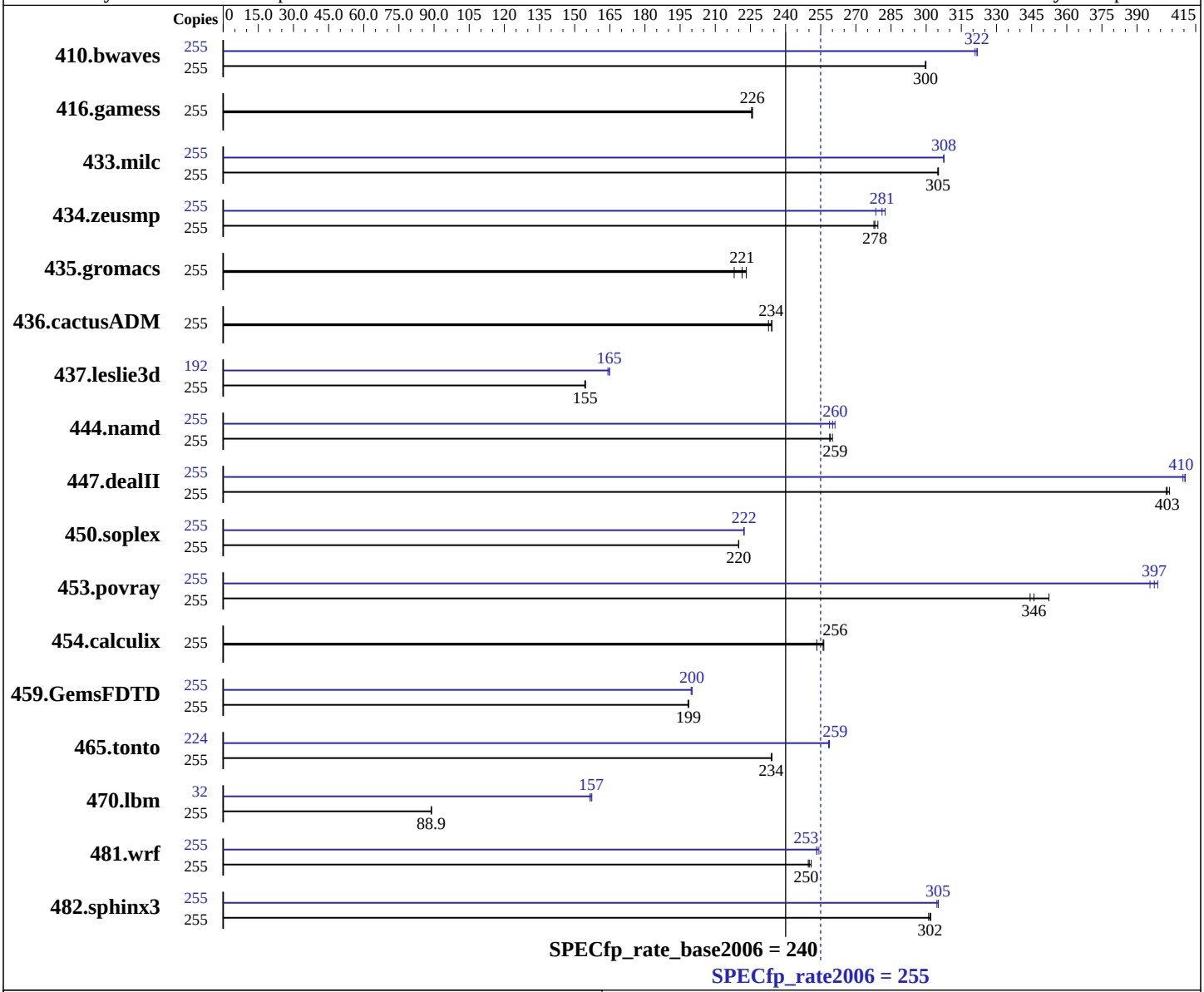
Oracle Corporation
SPARC T3-2

SPECfp®_rate2006 = 255

SPECfp_rate_base2006 = 240

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

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



Hardware

CPU Name:	SPARC T3
CPU Characteristics:	
CPU MHz:	1649
FPU:	Integrated
CPU(s) enabled:	32 cores, 2 chips, 16 cores/chip, 8 threads/core
CPU(s) orderable:	1 or 2 chips
Primary Cache:	16 KB I + 8 KB D on chip per core
Secondary Cache:	6 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 with gzip compression
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 (32 x 8 GB)
Disk Subsystem: 673 GB (zfs 3 x 2-way mirrors on 6x SAS 300G 10000 RPM)
Other Hardware: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	255	11555	300	11566	300	**11560**	**300**	255	**10773**	**322**	10768	322	10800	321
416.gamess	255	22108	226	**22111**	**226**	22143	225	255	22108	226	**22111**	**226**	22143	225
433.milc	255	**7674**	**305**	7675	305	7668	305	255	**7612**	**308**	7610	308	7613	307
434.zeusmp	255	**8344**	**278**	8356	278	8305	279	255	**8253**	**281**	8333	278	8214	283
435.gromacs	255	8349	218	8155	223	**8222**	**221**	255	8349	218	8155	223	**8222**	**221**
436.cactusADM	255	**13022**	**234**	13013	234	13094	233	255	**13022**	**234**	13013	234	13094	233
437.leslie3d	255	15503	155	15534	154	**15513**	**155**	192	**10950**	**165**	10993	164	10947	165
444.namd	255	7901	259	**7896**	**259**	7866	260	255	7904	259	7833	261	**7864**	**260**
447.dealII	255	**7240**	**403**	7223	404	7249	402	255	7106	411	**7108**	**410**	7122	410
450.soplex	255	**9667**	**220**	9664	220	9670	220	255	**9569**	**222**	9569	222	9567	222
453.povray	255	3850	352	3939	344	**3921**	**346**	255	3402	399	**3414**	**397**	3430	396
454.calculix	255	8304	253	8207	256	**8217**	**256**	255	8304	253	8207	256	**8217**	**256**
459.GemsFDTD	255	13640	198	13621	199	**13624**	**199**	255	13548	200	13524	200	**13526**	**200**
465.tonto	255	10725	234	10716	234	**10719**	**234**	224	8519	259	**8524**	**259**	8533	258
470.lbm	255	39438	88.8	**39429**	**88.9**	39426	88.9	32	2809	157	**2799**	**157**	2795	157
481.wrf	255	**11389**	**250**	11351	251	11408	250	255	11246	253	11204	254	**11243**	**253**
482.sphinx3	255	16510	301	**16479**	**302**	16458	302	255	16317	305	**16289**	**305**	16286	305

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
```

Submit Notes

```
Processes were bound to cores using "submit" and "pbind".  The config
file option 'submit' was used in order to accomplish this.
```

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).
    tsb_rss_factor=128
        Suggests that the the size of the TSB (Translation
        Storage Buffer) may be increased if it is more than
        25% (128/512) full.  Doing so may reduce TSB traps,
        at the cost of additional kernel memory.
    zfs:zfs_arc_max=0x10000000
    zfs:zfs_arc_min=0x10000000
        Limits the consumption of memory by the zfs file system
        cache to 256 MB.  (The arc_max sets the maximum cache
        size; arc_min sets the minimum.)
    zfs:zfs_prefetch_disable = 1
        Indicates that prefetching is not desired.  This setting
        may be desirable when the file system cache is small.
 USB devices were turned off with ILOM command
    set /SYS/MB/USB component_state=disabled
 The "webconsole" service was turned off using
     svcadm disable webconsole
 The system had 271 GB of swap space.
```

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:
```
-g -fast -fma=fused -xipo=2 -xpagesize=4M -xprefetch_level=2
-xalias_level=std -M /usr/lib/ld/map.bssalign
```

C++ benchmarks:
```
-g0 -library=stlport4 -fast -fma=fused -xipo=2 -xpagesize=4M
-xprefetch_level=2 -xdepend -xalias_level=compatible
-M /usr/lib/ld/map.bssalign
```

Fortran benchmarks:
```
-g -fast -fma=fused -xipo=2 -xpagesize=4M -xprefetch_level=2
-M /usr/lib/ld/map.bssalign
```

Benchmarks using both Fortran and C:
```
-g -fast(cc) -fast(f90) -fma=fused -xipo=2 -xpagesize=4M
-xprefetch_level=2 -xalias_level=std -M /usr/lib/ld/map.bssalign
```

Base 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
```

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: `-g -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_auto_type=indirect_array_access`
`-xalias_level=std -fsimple=1`

470.lbm: `-g -xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast -fma=fused`
`-xpagesize=4M -M /usr/lib/ld/map.bssalign -xprefetch_level=3`
`-xipo=2 -xrestrict`

482.sphinx3: `-g -xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast -fma=fused`
`-xpagesize=4M -M /usr/lib/ld/map.bssalign -xinline=`
`-xprefetch_level=2 -Wc,-Qlp-ol=1 -xrestrict`
`-xalias_level=strong -fsimple=1 -xlinkopt=2 -lfast`

C++ benchmarks:

444.namd: `-g0 -library=stlport4 -xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast -fma=fused`
`-xpagesize=4M -xdepend -xalias_level=compatible`
`-M /usr/lib/ld/map.bssalign -xprefetch_level=1 -xlinkopt=2`

447.dealII: `-g0 -library=stlport4 -xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast -fma=fused`
`-xpagesize=4M -xdepend -xalias_level=compatible`
`-M /usr/lib/ld/map.bssalign -xipo=2 -xrestrict`

450.soplex: `-g0 -library=stlport4 -fast -fma=fused -xipo=2`
`-xpagesize=4M -xprefetch=no%auto -xdepend`
`-xalias_level=compatible -M /usr/lib/ld/map.bssalign`

453.povray: `-g0 -library=stlport4 -xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast -fma=fused`
`-xpagesize=4M -xdepend -xalias_level=compatible`
`-M /usr/lib/ld/map.bssalign -xipo=2 -xrestrict -xlinkopt=2`

Fortran benchmarks:

410.bwaves: `-g -fast -fma=fused -xipo=2 -xpagesize=4M`
`-xprefetch_level=3 -M /usr/lib/ld/map.bssalign`

416.gamess: `basepeak = yes`

434.zeusmp: `-g -fast -fma=fused -xpagesize=4M`
`-M /usr/lib/ld/map.bssalign -xipo=1`
`-qoption cg -Qeps:enabled=1 -qoption cg -Qeps:ws=8 -lmopt`

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Peak Optimization Flags (Continued)

437.leslie3d: `-g -fast -fma=fused -xpagesize_heap=4M -xpagesize_stack=64K -M /usr/lib/ld/map.bssalign -xprefetch_level=3 -xprefetch=latx:1.6 -qoption cg -Qlp=1 -qoption cg -Qlp-fa=0 -qoption cg -Qlp-fl=1 -qoption cg -Qlp-av=448 -qoption cg -Qlp-t=4`

459.GemsFDTD: `-g -fast -fma=fused -xipo=2 -xpagesize=4M -xprefetch=no%auto -M /usr/lib/ld/map.bssalign`

465.tonto: `-g -fast -fma=fused -xpagesize=4M -M /usr/lib/ld/map.bssalign -xipo=2 -lfast`

Benchmarks using both Fortran and C:

435.gromacs: `basepeak = yes`

436.cactusADM: `basepeak = yes`

454.calculix: `basepeak = yes`

481.wrf: `-g -xprofile=collect:./feedback`(pass 1) `-xprofile=use:./feedback`(pass 2) `-fast`(cc) `-fast`(f90) `-fma=fused -xpagesize=4M -M /usr/lib/ld/map.bssalign -xlinkopt=2`

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.20110110.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.20110110.xml`

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