# SPEC® CFP2006 Result
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## Oracle Corporation
## SPARC T5-8

$SPECfp^{®}\_rate2006 = \quad 3020$

SPECfp_rate_base2006 = 2770

**CPU2006 license:** 6　　　　　　　　　　　　　　　　　　　**Test date:** Mar-2013
**Test sponsor:** Oracle Corporation　　　　　　　　　**Hardware Availability:** Mar-2013
**Tested by:** Oracle Corporation　　　　　　　　　　**Software Availability:** Feb-2013



SPECfp_rate_base2006 = 2770

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## Hardware

| | |
|---|---|
| CPU Name: | SPARC T5 |
| CPU Characteristics: | |
| CPU MHz: | 3600 |
| FPU: | Integrated |
| CPU(s) enabled: | 128 cores, 8 chips, 16 cores/chip, 8 threads/core |
| CPU(s) orderable: | 8 chips |
| Primary Cache: | 16 KB I + 16 KB D on chip per core |
| Secondary Cache: | 128 KB I+D on chip per core |

*Continued on next page*

## Software

| | |
|---|---|
| Operating System: | Oracle Solaris 11.1, SRU 4.6 |
| Compiler: | C/C++/Fortran: Version 12.3 of Oracle Solaris, 1/13 Platform Specific Enhancement |
| 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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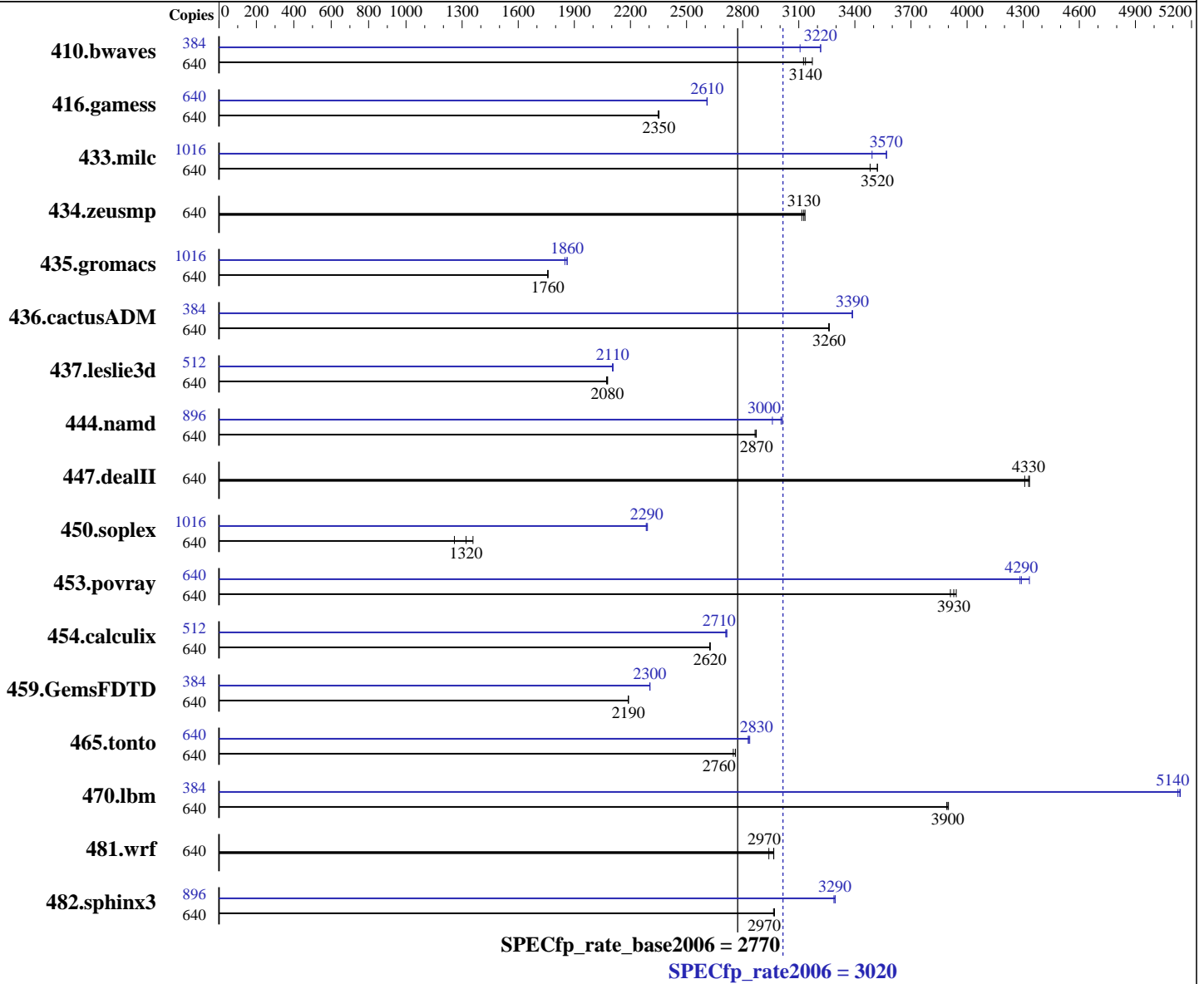SPECfp_rate_base2006 =  2770

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| | |
|---|---|
| L3 Cache: | 8 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 4 TB (128 x 32 GB), 4-way interleaved |
| Disk Subsystem: | 2 TB on 8x 600 GB 10K RPM SAS disks, arranged as 4x 2-way mirrors |
| Other Hardware: | None |

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 640 | 2783 | 3130 | **2774** | **3140** | 2742 | 3170 | 384 | **1623** | **3220** | 1680 | 3110 | 1622 | 3220 |
| 416.gamess | 640 | 5326 | 2350 | 5337 | 2350 | **5327** | **2350** | 640 | 4803 | 2610 | **4802** | **2610** | 4800 | 2610 |
| 433.milc | 640 | 1669 | 3520 | 1688 | 3480 | **1669** | **3520** | 1016 | 2671 | 3490 | 2612 | 3570 | **2614** | **3570** |
| 434.zeusmp | 640 | 1859 | 3130 | 1869 | 3120 | **1863** | **3130** | 640 | 1859 | 3130 | 1869 | 3120 | **1863** | **3130** |
| 435.gromacs | 640 | 2600 | 1760 | **2599** | **1760** | 2597 | 1760 | 1016 | 3923 | 1850 | 3897 | 1860 | **3898** | **1860** |
| 436.cactusADM | 640 | 2346 | 3260 | 2344 | 3260 | **2344** | **3260** | 384 | 1354 | 3390 | 1355 | 3390 | **1355** | **3390** |
| 437.leslie3d | 640 | 2896 | 2080 | **2896** | **2080** | 2903 | 2070 | 512 | 2284 | 2110 | **2286** | **2110** | 2288 | 2100 |
| 444.namd | 640 | 1787 | 2870 | 1791 | 2870 | **1788** | **2870** | 896 | **2391** | **3000** | 2429 | 2960 | 2386 | 3010 |
| 447.dealII | 640 | **1691** | **4330** | 1700 | 4310 | 1689 | 4330 | 640 | **1691** | **4330** | 1700 | 4310 | 1689 | 4330 |
| 450.soplex | 640 | 3930 | 1360 | 4241 | 1260 | **4041** | **1320** | 1016 | 3698 | 2290 | 3709 | 2280 | **3705** | **2290** |
| 453.povray | 640 | 871 | 3910 | **867** | **3930** | 864 | 3940 | 640 | 795 | 4280 | **794** | **4290** | 786 | 4330 |
| 454.calculix | 640 | **2012** | **2620** | 2012 | 2620 | 2010 | 2630 | 512 | 1559 | 2710 | 1556 | 2720 | **1557** | **2710** |
| 459.GemsFDTD | 640 | **3102** | **2190** | 3104 | 2190 | 3102 | 2190 | 384 | 1768 | 2300 | 1769 | 2300 | **1768** | **2300** |
| 465.tonto | 640 | 2280 | 2760 | 2290 | 2750 | **2281** | **2760** | 640 | **2224** | **2830** | 2219 | 2840 | 2225 | 2830 |
| 470.lbm | 640 | 2255 | 3900 | **2256** | **3900** | 2260 | 3890 | 384 | **1027** | **5140** | 1029 | 5130 | 1026 | 5140 |
| 481.wrf | 640 | **2411** | **2970** | 2432 | 2940 | 2410 | 2970 | 640 | **2411** | **2970** | 2432 | 2940 | 2410 | 2970 |
| 482.sphinx3 | 640 | 4199 | 2970 | 4207 | 2970 | **4201** | **2970** | 896 | 5311 | 3290 | 5300 | 3290 | **5302** | **3290** |

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

## 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

    /etc/system parameters
       autoup=600
          Causes pages older than the listed number of seconds to
          be written by fsflush.

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## Operating System Notes (Continued)

```
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_min =  1073741824
zfs:zfs_arc_max =  0x10000000000
    Limits the consumption of memory by the zfs file system
    cache to the range 1 GB to 1 TB.
plat_disable_mempm=1
    Do not attempt to allocate kernel memory in a power-aware fashion

poweradm set administrative-authority=none
    Disables Solaris power management

A swapfile of 4 TB was connected via Fibre Channel
on a Sun Storage 2540-M2 with 12x SAS 600 GB
disks, Raid-5
```

## Platform Notes

```
Power policy set to 'disabled' at ILOM Power Managment menu
Sysinfo program /cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ 5569a0425e2ad530534e4c79a46e4d28
running on bur407-139.us.oracle.com Mon Mar 18 12:54:17 2013

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
  http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /usr/sbin/psrinfo
    SPARC-T5 (chipid 0, clock 3600 MHz)
    SPARC-T5 (chipid 1, clock 3600 MHz)
    SPARC-T5 (chipid 2, clock 3600 MHz)
    SPARC-T5 (chipid 3, clock 3600 MHz)
    SPARC-T5 (chipid 4, clock 3600 MHz)
    SPARC-T5 (chipid 5, clock 3600 MHz)
    SPARC-T5 (chipid 6, clock 3600 MHz)
    SPARC-T5 (chipid 7, clock 3600 MHz)
    8 chips
    1024 threads
    3600 MHz

From kstat:       128 cores
```

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## Platform Notes (Continued)

```
From prtconf: 4 Terabytes

/etc/release:
    Oracle Solaris 11.1 SPARC
uname -a:
   SunOS bur407-139.us.oracle.com 5.11 11.1 sun4v sparc sun4v

disk: df -h  $SPEC
Filesystem              Size    Used   Available Capacity   Mounted on
rpool/export/cpu2006    98G    973M        86G       2%     /cpu2006

(End of data from sysinfo program)
```

## Base Compiler Invocation

C benchmarks:
    cc

C++ benchmarks:
    CC

Fortran benchmarks:
    f90

Benchmarks using both Fortran and C:
    cc f90

(*) Indicates a compiler flag that was found in a non-compiler variable.

## Base Optimization Flags

C benchmarks:
    -g -fast -fma=fused -xipo=2 -xpagesize=4M -xprefetch_level=2
    -xalias_level=std -xprefetch_level=3
    -xprefetch_auto_type=indirect_array_access -M map.4M.align

C++ benchmarks:
    -g -fast -fma=fused -xipo=2 -xpagesize=4M -xprefetch_level=2
    -xdepend -xalias_level=compatible -library=stdcxx4 -M map.4M.align

Fortran benchmarks:
    -g -fast -fma=fused -xipo=2 -xpagesize=4M -xprefetch_level=2
    -M map.4M.align

Benchmarks using both Fortran and C:
    -g -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 -M map.4M.align

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## 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:

       433.milc: `cc`

       470.lbm: `cc`

    482.sphinx3: `cc`

C++ benchmarks (except as noted below):
```
CC
```

      450.soplex: `CC`

     453.povray: `CC`

Fortran benchmarks (except as noted below):
```
f90
```

     410.bwaves: `f90`

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

(*) Indicates a compiler flag that was found in a non-compiler variable.

## Peak Optimization Flags

C benchmarks:

       433.milc: `-g -fast -fma=fused -Wc,-Qiselect-funcalign=64`
`-M map.4M.align -xipo=2 -xprefetch_level=2 -xpagesize=4M`
`-xalias_level=std -xprefetch_auto_type=indirect_array_access`
`-xprefetch=latx:3`

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# Peak Optimization Flags (Continued)

```
470.lbm: -g -fast -fma=fused -Wc,-Qiselect-funcalign=64
         -xalias_level=std -xprefetch_auto_type=indirect_array_access
         -xpagesize=256M -Wc,-xthroughput -W2,-xthroughput=yes
         -M map.256M.align -xipo=2 -xprefetch_level=2
         -xprefetch=latx:3

482.sphinx3: -g -xprofile=collect:./feedback(pass 1)
         -xprofile=use:./feedback(pass 2) -fast -fma=fused
         -Wc,-Qiselect-funcalign=64 -xinline= -xprefetch_level=2
         -Wc,-Qlp-ol=1 -xrestrict -xalias_level=strong -fsimple=1
         -xlinkopt=2 -lfast
```

C++ benchmarks:

```
444.namd: -g -xprofile=collect:./feedback(pass 1)
         -xprofile=use:./feedback(pass 2) -fast -fma=fused
         -Wc,-Qiselect-funcalign=64 -xalias_level=compatible
         -M map.4M.align -xipo=2 -xprefetch=no%auto -xdepend
         -library=stdcxx4 -xpagesize=4M -Wc,-xthroughput
         -W2,-xthroughput=yes -xprefetch_level=1

447.dealII: basepeak = yes

450.soplex: -g -xprofile=collect:./feedback(pass 1)
         -xprofile=use:./feedback(pass 2) -fast -fma=fused
         -Wc,-Qiselect-funcalign=64 -xdepend -xprefetch_level=2
         -xprefetch_auto_type=indirect_array_access
         -xalias_level=simple -xrestrict -library=stlport4 -xipo=2

453.povray: -g -xprofile=collect:./feedback(pass 1)
         -xprofile=use:./feedback(pass 2) -fast -fma=fused
         -Wc,-Qiselect-funcalign=64 -xalias_level=compatible
         -M map.256M.align -xipo=2 -xdepend -xlinkopt=2
         -library=stdcxx4 -xpagesize=256M -Wc,-xthroughput
         -W2,-xthroughput=yes
```

Fortran benchmarks:

```
410.bwaves: -g -fast -fma=fused -Wc,-Qiselect-funcalign=64
         -M map.256M.align -xipo=2 -xprefetch_level=2
         -xpagesize=256M -lfast

416.gamess: -g -xprofile=collect:./feedback(pass 1)
         -xprofile=use:./feedback(pass 2) -fast -fma=fused
         -Wc,-Qiselect-funcalign=64 -M map.4M.align -xipo=2
         -xprefetch=no%auto -xpagesize=4M
```

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# Peak Optimization Flags (Continued)

```
434.zeusmp: basepeak = yes

437.leslie3d: -g -xprofile=collect:./feedback(pass 1)
              -xprofile=use:./feedback(pass 2) -fast -fma=fused
              -Wc,-Qiselect-funcalign=64 -M map.4M.align -xipo=2
              -xpagesize=4M -Wc,-xthroughput -W2,-xthroughput=yes
              -xprefetch_level=1

459.GemsFDTD: -g -xprofile=collect:./feedback(pass 1)
              -xprofile=use:./feedback(pass 2) -fast -fma=fused
              -Wc,-Qiselect-funcalign=64 -M map.4M.align -xipo=2
              -xprefetch_level=3 -xpagesize=4M -Wc,-xthroughput
              -W2,-xthroughput=yes

465.tonto: -g -xprofile=collect:./feedback(pass 1)
           -xprofile=use:./feedback(pass 2) -fast -xpagesize=4M
           -stackvar -Wc,-xthroughput -W2,-xthroughput=yes
           -M map.4M.align -xipo=2 -lfast
```

Benchmarks using both Fortran and C:

```
435.gromacs: -g -xprofile=collect:./feedback(pass 1)
             -xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
             -fma=fused -Wc,-Qiselect-funcalign=64 -M map.4M.align
             -xipo=2 -xpagesize=4M -Wc,-xthroughput -W2,-xthroughput=yes

436.cactusADM: -g -fast(cc) -fast(f90) -fma=fused
               -Wc,-Qiselect-funcalign=64 -xalias_level=std
               -xprefetch_auto_type=indirect_array_access -M map.4M.align
               -xipo=2 -xprefetch_level=2 -xpagesize=4M -Wc,-xthroughput
               -W2,-xthroughput=yes

454.calculix: -g -fast(cc) -fast(f90) -fma=fused
              -Wc,-Qiselect-funcalign=64 -xalias_level=std
              -xprefetch_auto_type=indirect_array_access -M map.4M.align
              -xipo=2 -xprefetch_level=2 -xprefetch=latx:3 -xpagesize=4M

481.wrf: basepeak = yes
```

# Peak Other Flags

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

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

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# Peak Other Flags (Continued)

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

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

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.3-SPARC.html
http://www.spec.org/cpu2006/flags/Oracle-Tseries.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.3-SPARC.xml
http://www.spec.org/cpu2006/flags/Oracle-Tseries.xml

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