



SPEC® CFP2006 Result

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Oracle Corporation

SPECfp®2006 = **95.9**

Sun Server X3-2L (Intel Xeon E5-2690 2.9GHz)

SPECfp_base2006 = **85.1**

CPU2006 license: 6

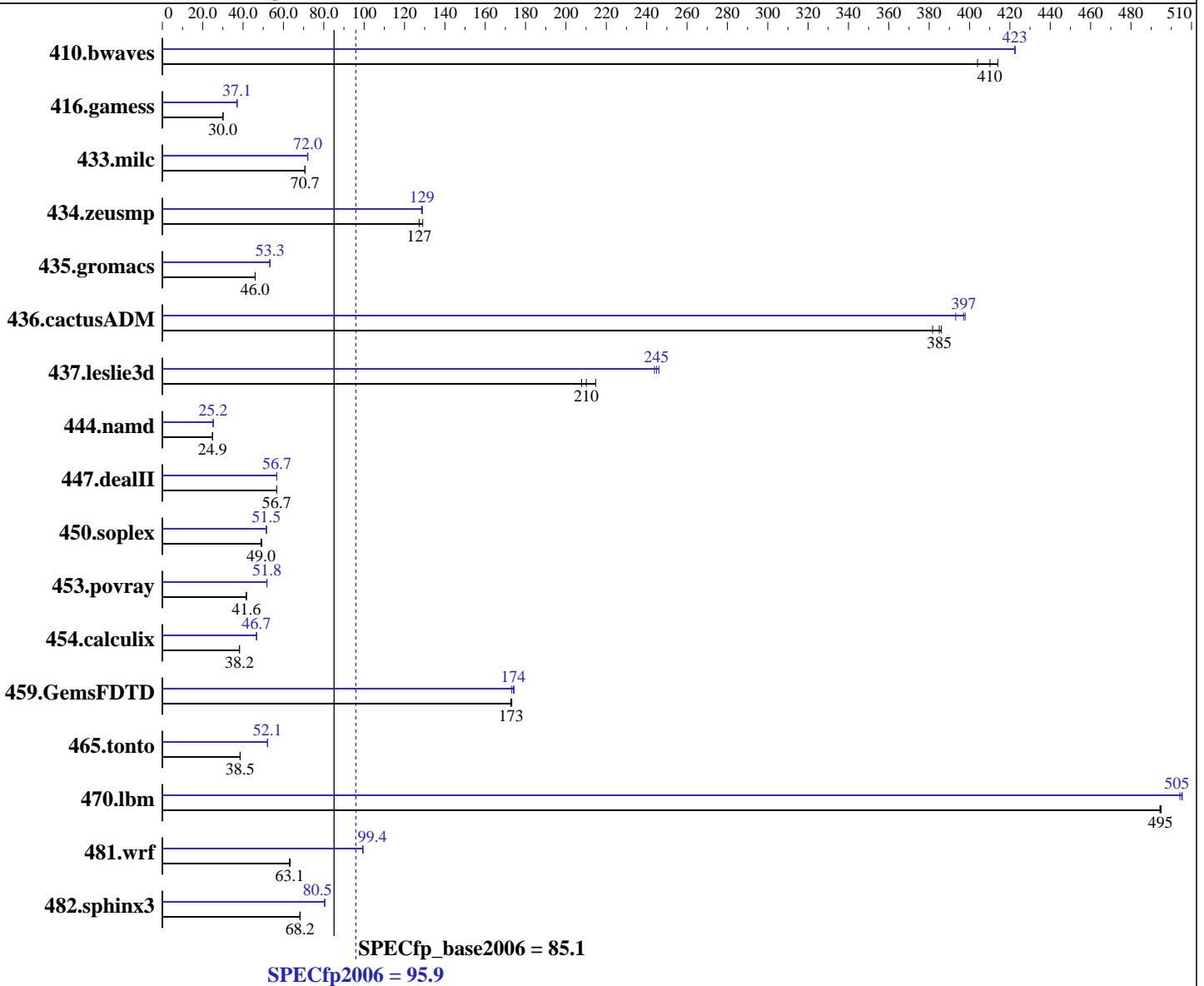
Test date: Apr-2012

Test sponsor: Oracle Corporation

Hardware Availability: Apr-2012

Tested by: Oracle Corporation

Software Availability: Jun-2012



Hardware

CPU Name: Intel Xeon E5-2690
 CPU Characteristics: Intel Turbo Boost Technology up to 3.80 GHz
 CPU MHz: 2900
 FPU: Integrated
 CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip, 2 threads/core
 CPU(s) orderable: 1 or 2 chips
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 256 KB I+D on chip per core

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Software

Operating System: Oracle Solaris 11 11/11 (SRU 03)
 Compiler: C/C++/Fortran: Version 12.3 of Oracle Solaris Studio (patch update 1, tested with nightly build 20120313)
 Auto Parallel: Yes
 File System: zfs
 System State: Default
 Base Pointers: 64-bit
 Peak Pointers: 32/64-bit

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L3 Cache: 20 MB I+D on chip per chip
 Other Cache: None
 Memory: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)
 Disk Subsystem: 1 x 600 GB 10K RPM SAS
 Other Hardware: None

Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	33.6	404	<u>33.1</u>	<u>410</u>	32.8	414	32.2	422	32.2	423	<u>32.2</u>	<u>423</u>
416.gamess	652	30.0	<u>652</u>	<u>30.0</u>	652	30.0	528	37.1	<u>528</u>	<u>37.1</u>	528	37.1
433.milc	<u>130</u>	<u>70.7</u>	130	70.7	130	70.7	127	72.0	127	72.1	<u>127</u>	<u>72.0</u>
434.zeusmp	70.5	129	71.5	127	<u>71.5</u>	<u>127</u>	70.9	128	70.6	129	<u>70.7</u>	<u>129</u>
435.gromacs	<u>155</u>	<u>46.0</u>	155	46.0	155	46.0	134	53.3	134	53.3	<u>134</u>	<u>53.3</u>
436.cactusADM	31.0	386	<u>31.0</u>	<u>385</u>	31.3	382	30.4	393	<u>30.1</u>	<u>397</u>	30.0	398
437.leslie3d	<u>44.7</u>	<u>210</u>	45.2	208	43.8	215	38.5	244	38.2	246	<u>38.4</u>	<u>245</u>
444.namd	323	24.9	<u>323</u>	<u>24.9</u>	323	24.9	<u>318</u>	<u>25.2</u>	318	25.2	318	25.2
447.dealII	202	56.7	<u>202</u>	<u>56.7</u>	202	56.7	<u>202</u>	<u>56.7</u>	202	56.7	202	56.7
450.soplex	<u>170</u>	<u>49.0</u>	170	48.9	169	49.2	162	51.5	<u>162</u>	<u>51.5</u>	162	51.6
453.povray	128	41.6	<u>128</u>	<u>41.6</u>	128	41.6	<u>103</u>	<u>51.8</u>	103	51.8	103	51.9
454.calculix	216	38.2	<u>216</u>	<u>38.2</u>	216	38.2	177	46.7	177	46.7	<u>177</u>	<u>46.7</u>
459.GemsFDTD	<u>61.4</u>	<u>173</u>	61.4	173	61.3	173	<u>61.0</u>	<u>174</u>	60.8	174	61.3	173
465.tonto	255	38.5	255	38.5	<u>255</u>	<u>38.5</u>	189	52.1	<u>189</u>	<u>52.1</u>	189	52.1
470.lbm	27.8	495	<u>27.8</u>	<u>495</u>	27.8	494	27.2	504	27.2	505	<u>27.2</u>	<u>505</u>
481.wrf	<u>177</u>	<u>63.1</u>	178	62.9	176	63.3	<u>112</u>	<u>99.4</u>	112	99.4	113	99.3
482.sphinx3	286	68.2	<u>286</u>	<u>68.2</u>	286	68.2	<u>242</u>	<u>80.5</u>	242	80.5	242	80.4

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

Submit Notes

The config file option 'submit' was used to bind processes to CPU threads with pbind(1)

Operating System Notes

ulimit -s 10000 (shell): increases stack

```

/etc/system parameters
  autoup=1000
  zfs:zfs_arc_max=0x400000000
  zfs:zfs_arc_min=0x400000000
  ncsiz=0x10000
  lpg_alloc_prefer=1

```

gzip compression set using "zfs set compression=gzip <zfs-filesystem>"



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Platform Notes

Default BIOS Settings were used, except:
Energy Performance set to Performance

Oracle's Sun Server X3-2L was formerly known as the Sun Fire X4270 M3

Single processor configuration of this system is available as of Sep-2012

```
Sysinfo program /export/home/gnana/cpu2006v1.2/Docs/sysinfo
: 6775 2011-08-16 #f7622badcf24e01c368b1db4377c
running on bur398-107 Fri Apr 6 07:06:07 2012
```

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 -pv
Intel(r) Xeon(r) CPU E5-2690 0 @ 2.90GHz
x86 (GenuineIntel 206D7 family 6 model 45 step 7 clock 2900 MHz)
```

```
/usr/sbin/psrinfo -p: 2 chips
/usr/sbin/psrinfo -pv | grep "core has" | wc -l: 16 cores
/usr/sbin/psrinfo | wc -l: 32 threads
```

```
/usr/sbin/prtconf | grep "Memory size:": 131062 Megabytes
```

```
/etc/release:
```

```
Oracle Solaris 11 11/11 X86
```

```
uname -a:
SunOS bur398-107 5.11 11.0 i86pc i386 i86pc
```

```
disk: df -h
```

Filesystem	Size	Used	Available	Capacity	Mounted on
rpool/export/home	547G	15G	83G	16%	/export/home

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:

```
MTEXCLUSIVE = "Y"
OMP_NUM_THREADS = "16"
SUNW_MP_PROCBIND = "true"
SUNW_MP_THR_IDLE = "spin"
```



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Base Compiler Invocation

C benchmarks:

cc

C++ benchmarks:

CC

Fortran benchmarks:

f90

Benchmarks using both Fortran and C:

cc f90

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64
436.cactusADM: -DSPEC_CPU_LP64
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_WORDS_LITTLEENDIAN
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:

-g -fast -xipo=2 -m64 -xautopar -xreduction -xalias_level=std

C++ benchmarks:

-fast -xipo=2 -m64 -xpagesize=2M -xalias_level=compatible
-library=stdcxx4

Fortran benchmarks:

-fast -xipo=2 -m64 -xautopar -xreduction -xpagesize=2M

Benchmarks using both Fortran and C:

-g -fast(cc) -xipo=2 -m64 -xautopar -xreduction -xalias_level=std
-fast(f90) -xpagesize=2M



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Peak Compiler Invocation

C benchmarks:

cc

C++ benchmarks:

CC

Fortran benchmarks:

f90

Benchmarks using both Fortran and C:

cc f90

Peak Portability Flags

436.cactusADM: -DSPEC_CPU_LP64

481.wrf: -DSPEC_CPU_WORDS_LITTLEENDIAN

Peak Optimization Flags

C benchmarks:

433.milc: -g -fast -xipo=2 -m64 -xpagesize=2M -xalias_level=std
-xautopar -xreduction -lmtmalloc

470.lbm: -g -fast -Wu,-nontemporal -xprefetch_level=3 -xipo=2 -m64
-xautopar -xreduction -xpagesize=4K -lmtmalloc

482.sphinx3: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
-xpagesize=2M -xalias_level=std -xrestrict
-xprefetch=no%auto -xautopar -xreduction
-W2,-Aparallel:nthreads=8

C++ benchmarks:

444.namd: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xO3
-xprefetch=no%auto -m64 -xpagesize=2M
-xalias_level=compatible -library=stlport4

447.dealII: -fast -xipo=2 -m64 -xpagesize=2M -xalias_level=compatible
-library=stdcxx4

450.soplex: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2
-xpagesize=2M -xalias_level=compatible -library=stlport4
-m64 -Qoption iropt -Rtile

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Peak Optimization Flags (Continued)

```
453.povray: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xprefetch=no%auto
-xipo=2 -m64 -xpagesize=2M -xalias_level=compatible
-qoption iropt -Atiline:skew=on -qoption iropt -Ainline:cs=700
-library=stlport4
```

Fortran benchmarks:

```
410.bwaves: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
-xpagesize=4K -xautopar -xreduction
```

```
416.gamess: -fast -xipo=2 -m64 -xpagesize=2M -xunroll=1
-xvector=no%simd -xprefetch=no%auto
```

```
434.zeusmp: -fast -xipo=2 -m64 -xpagesize=2M -xautopar -xreduction
```

```
437.leslie3d: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
-xautopar -xreduction -lmtmalloc
```

459.GemsFDTD: Same as 434.zeusmp

```
465.tonto: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=2M -O3
-m64 -stackvar -xprefetch=no%auto -xalias -xautopar
-xreduction -Qoption iropt -Aparallel:nthreads=8 -lfast_r
```

Benchmarks using both Fortran and C:

```
435.gromacs: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xipo=2 -m64 -xpagesize=2M -fsimple=2
-Qoption ube -fsimple=3 -xautopar -xreduction
-Qoption iropt -Aparallel:nthreads=8 -lmtmalloc
```

```
436.cactusADM: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90) -m64
-xautopar -xreduction -xpagesize=2M -lumem -lmvec
```

```
454.calculix: -g -fast(cc) -fast(f90) -xipo=0 -m64 -xpagesize=2M
-xprefetch_level=2 -xprefetch_auto_type=indirect_array_access
-Qoption ube -xprefetch_mult=24 -xunroll=2
```

```
481.wrf: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90) -O4
-xchip=nehalem -xarch=sse4_2 -xipo=2 -m64 -xpagesize=2M
-xprefetch=no%auto -xautopar -xreduction
-Qoption iropt -Aparallel:nthreads=8
```



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The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.3-x86_64.html

http://www.spec.org/cpu2006/flags/Oracle-platform-x86_64.CPUv1.2-RevA.20120425.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.3-x86_64.xml

http://www.spec.org/cpu2006/flags/Oracle-platform-x86_64.CPUv1.2-RevA.20120425.xml

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