Oracle Corporation
Sun Server X2-4 (Intel Xeon E7-4820 2.0 GHz)

SPECfp®2006 = 50.5
SPECfp_base2006 = 47.7

CPU2006 license: 6
Test date: Dec-2011
Test sponsor: Oracle Corporation
Hardware Availability: Jun-2011
Tested by: Oracle Corporation
Software Availability: Oct-2011

Hardware
CPU Name: Intel Xeon E7-4820
CPU Characteristics: Intel Turbo Boost Technology up to 2.27 GHz
CPU MHz: 2000
FPU: Integrated
CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip
CPU(s) orderable: 2,4 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core

Software
Operating System: Oracle Linux 6.1
cKernel 2.6.32-100.34.1.el6uek.x86_64
Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux;
Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux
Auto Parallel: Yes
File System: ext4
System State: Run level 5 (multi-user)

Continued on next page
## SPEC CFP2006 Result

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L3 Cache: 18 MB I+D on chip per chip  
Other Cache: None  
Memory: 256 GB (64 x 4 GB 2Rx8 PC3L-10600R-9, ECC)  
Disk Subsystem: 1 x 300 GB, SATA, 7200 RPM  
Other Hardware: None  
Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other Software: None

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seconds</td>
<td>Ratio</td>
</tr>
<tr>
<td>410.bwaves</td>
<td>34.3</td>
<td>396</td>
</tr>
<tr>
<td>416.game7</td>
<td>1274</td>
<td>15.4</td>
</tr>
<tr>
<td>433.milc</td>
<td>363</td>
<td>25.3</td>
</tr>
<tr>
<td>434.zesmp</td>
<td>96.7</td>
<td>94.1</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>644</td>
<td>11.1</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>35.2</td>
<td>340</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>63.5</td>
<td>148</td>
</tr>
<tr>
<td>444.namd</td>
<td>614</td>
<td>13.1</td>
</tr>
<tr>
<td>447.dealII</td>
<td>418</td>
<td>27.4</td>
</tr>
<tr>
<td>450.soplex</td>
<td>406</td>
<td>20.5</td>
</tr>
<tr>
<td>453.povray</td>
<td>256</td>
<td>20.7</td>
</tr>
<tr>
<td>454.calculix</td>
<td>406</td>
<td>20.3</td>
</tr>
<tr>
<td>459.GemsFD</td>
<td>93.2</td>
<td>114</td>
</tr>
<tr>
<td>465.tonto</td>
<td>513</td>
<td>19.2</td>
</tr>
<tr>
<td>470.lbm</td>
<td>23.6</td>
<td>582</td>
</tr>
<tr>
<td>481.wrf</td>
<td>396</td>
<td>28.2</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>509</td>
<td>30.3</td>
</tr>
</tbody>
</table>

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

### Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

### Platform Notes

Load Default BIOS Settings and then change the following  
Intel Hyperthreading Option Disabled

Oracle’s Sun Server X2-4 was formerly known as the Sun Fire X4470 M2
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General Notes
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/cpu2006v1.2/libs/32:/home/cpu2006v1.2/libs/64"
OMP_NUM_THREADS = "32"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RHEL5.5

Base Compiler Invocation

C benchmarks:
   icc -m64

C++ benchmarks:
   icpc -m64

Fortran benchmarks:
   ifort -m64

Benchmarks using both Fortran and C:
   icc -m64 ifort -m64

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 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
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
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
   -xSSE4.2 -ipo -03 -no-prec-div -static -parallel -opt-prefetch
   -ansi-alias

Continued on next page
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### Base Optimization Flags (Continued)

C++ benchmarks:
- `-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias`

Fortran benchmarks:
- `-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch`

Benchmarks using both Fortran and C:
- `-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch -ansi-alias`

### Peak Compiler Invocation

C benchmarks:
- `icc  -m64`

C++ benchmarks:
- `icpc  -m64`

Fortran benchmarks:
- `ifort -m64`

Benchmarks using both Fortran and C:
- `icc  -m64 ifort -m64`

### Peak Portability Flags

Same as Base Portability Flags

### Peak Optimization Flags

C benchmarks:
- `433.milc: -xSSE4.2(pas2) -prof-gen(pas1) -ipo(pas2) -O3(pas2) -no-prec-div(pas2) -prof-use(pas2) -static -auto-ilp32 -ansi-alias`
- `470.lbm: basepeak = yes`
- `482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias -parallel`

Continued on next page
Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xsSE4.2(pass 2) - prof-gen(pass 1) -ipo(pass 2) -03(pass 2)
         -no-prec-div(pass 2) -prof-use(pass 2) -fno-alias
         -auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xsSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -03(pass 2)
           -no-prec-div(pass 2) -prof-use(pass 2) -unroll14 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xsSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -03(pass 2)
           -no-prec-div(pass 2) -prof-use(pass 2) -unroll12
           -inline-level=0 -scalar-rep -static

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xsSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -03(pass 2)
           -no-prec-div(pass 2) -prof-use(pass 2) -unroll12
           -inline-level=0 -opt-prefetch -parallel

465.tonto: -xsSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -03(pass 2)
           -no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc
           -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xsSE4.2 -ipo -03 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.html
http://www.spec.org/cpu2006/flags/Oracle-platform-x86_64.CPUv1.2-RevA.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml
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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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