# SPEC® CINT2006 Result

**Sun Microsystems**  
**Sun Fire X4140**

**SPECint®_rate2006 = 60.2**  
**SPECint_rate_base2006 = 52.8**

<table>
<thead>
<tr>
<th>CPU2006 license: 6</th>
<th>Test date: Mar-2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor: Sun Microsystems</td>
<td>Hardware Availability: Apr-2008</td>
</tr>
<tr>
<td>Tested by: Sun Microsystems</td>
<td>Software Availability: Dec-2007</td>
</tr>
</tbody>
</table>

## Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>AMD Opteron 2222</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics:</td>
<td></td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>3000</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>4 cores, 2 chips, 2 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1.2 chips</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>64 KB I + 64 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>1 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache:</td>
<td>None</td>
</tr>
<tr>
<td>Other Cache:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>16 GB (8x2GB, DDR2-667 CL5 Reg Dual Rank)</td>
</tr>
<tr>
<td>Disk Subsystem:</td>
<td>SAS, 72 GB, 10 K RPM</td>
</tr>
<tr>
<td>Other Hardware:</td>
<td>None</td>
</tr>
</tbody>
</table>

## Software

<table>
<thead>
<tr>
<th>Operating System:</th>
<th>SuSE Linux Enterprise Server 10 SP1 64-bit kernel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>The Portland Group (PGI)</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>No</td>
</tr>
<tr>
<td>File System:</td>
<td>ReiserFS</td>
</tr>
<tr>
<td>System State:</td>
<td>Multi-user, run level 3</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other Software:</td>
<td>SmartHeap 8.1 32-bit Library for Linux</td>
</tr>
</tbody>
</table>

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[Standard Performance Evaluation Corporation](http://www.spec.org)  
info@spec.org  
http://www.spec.org/
**SPEC CINT2006 Result**

Sun Microsystems
Sun Fire X4140

SPECint_rate2006 = 60.2
SPECint_rate_base2006 = 52.8

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## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>4</td>
<td>776</td>
<td>50.4</td>
<td>778</td>
<td>50.2</td>
<td>780</td>
<td>50.1</td>
<td>4</td>
<td>586</td>
<td>66.7</td>
<td>588</td>
<td>66.5</td>
<td>586</td>
<td>66.7</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>4</td>
<td>940</td>
<td>41.0</td>
<td>940</td>
<td>41.0</td>
<td>937</td>
<td>41.2</td>
<td>4</td>
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<td>42.0</td>
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<td>41.9</td>
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<td>41.8</td>
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<tr>
<td>403.gcc</td>
<td>4</td>
<td>919</td>
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<td>932</td>
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<td>930</td>
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<td>687</td>
<td>46.8</td>
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<tr>
<td>429.mcf</td>
<td>4</td>
<td>823</td>
<td>44.3</td>
<td>827</td>
<td>44.1</td>
<td>824</td>
<td>44.3</td>
<td>4</td>
<td>626</td>
<td>58.3</td>
<td>621</td>
<td>58.7</td>
<td>622</td>
<td>58.6</td>
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<tr>
<td>445.gobmk</td>
<td>4</td>
<td>706</td>
<td>59.5</td>
<td>703</td>
<td>59.7</td>
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<td>456.hmmer</td>
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<tr>
<td>458.sjeng</td>
<td>4</td>
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<td>56.5</td>
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<td>462.libquantum</td>
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<td>464.h264ref</td>
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<td>471.omnetpp</td>
<td>4</td>
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<td>37.1</td>
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<td>37.1</td>
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<tr>
<td>473.astar</td>
<td>4</td>
<td>759</td>
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<td>760</td>
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<tr>
<td>483.xalancbmk</td>
<td>4</td>
<td>546</td>
<td>50.5</td>
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<td>50.5</td>
<td>547</td>
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<td>4</td>
<td>442</td>
<td>62.5</td>
<td>443</td>
<td>62.3</td>
<td>443</td>
<td>62.4</td>
</tr>
</tbody>
</table>

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

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**Operating System Notes**

'ulimit -s unlimited' used to set environment stack size
'ulimit -l 2457600' was used to set environment lock pages quantity
'numactl' was used to bind copies to the cores
Set `vm/nr_hugepages=1200` in `/etc/sysctl.conf`
`mount -t hugetlbfs nodev /mnt/hugepages`
Environment variable PGI_HUGE_PAGES set to 150

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**Platform Notes**

Default BIOS configurations were used.

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**Base Compiler Invocation**

C benchmarks:
- pgcc

C++ benchmarks:
- pgcpp

---

**Base Portability Flags**

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64

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SPECint_rate2006 = 60.2
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CPU2006 license: 6
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Tested by: Sun Microsystems
Test date: Mar-2008
Hardware Availability: Apr-2008
Software Availability: Dec-2007

Base Portability Flags (Continued)

401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
-fast -Mipa=fast -Mipa=inline -Mipa=noarg -Mfprelaxed
-Msmartalloc=huge:840 -tp k8-64 -Bstatic_pgi

C++ benchmarks:
-fastsse -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:448
--zc_eh -tp k8 -Bstatic_pgi

Base Other Flags

C benchmarks:
-w

C++ benchmarks:
-w

Peak Compiler Invocation

C benchmarks (except as noted below):
pgcc
400.perlbench: pathcc
403.gcc: pathcc
445.gobmk: pathcc
464.h264ref: pathcc

C++ benchmarks (except as noted below):
pgcpp

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Peak Compiler Invocation (Continued)

483.xalancbmk: pathCC

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
- LNO:opt=0
401.bzip2: -Mpf(1) -Mpf0(pass 2) -fast -04
- Msmartalloc=huge:448 -tp k8-64 -Bstatic_pgi
403.gcc: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -m32 -03
- OPT:Ofast
- tp k8 - Bstatic_pgi
445.gobmk: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -03
- OPT:alias=disjoint -LNO:simd=0 -LNO:minvariant=off
- WOPT:retype_expr=on
456.hmmer: -fast -Msmartalloc=huge:448 -Mfprelaxed -Msafeptr
- Mipa=const -Mipa=ptr -Mipa=arg -tp k8-64 -Bstatic_pgi
458.sjeng: -Mpf(1) -Mipa=fast(pass 2) -Mipa=inline:1(pass 2)
- Mipa=noarg(pass 2) -Mpf0(pass 2) -fast
- Msmartalloc=huge:448 -Mfprelaxed -tp k8-64 -Bstatic_pgi
462.libquantum: -fast -Mfprelaxed -Msmartalloc=huge:448 -Munroll=m:4
- Mipa=fast -Mipa=inline -Mipa=noarg -Bstatic_pgi
464.h264ref: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -03
- IPA:plimit=20000 -OPT:alias=disjoint -LNO:prefetch=0

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Peak Optimization Flags (Continued)

C++ benchmarks:

471.omnetpp: basepeak = yes
473.astar: basepeak = yes
483.xalancbmk: -Ofast -m32 -OPT:unroll_times_max=8
-L/data1/SmartHeap_8.1/lib -lsmartheap

Peak Other Flags

C benchmarks (except as noted below):
-w

400.perlbench: No flags used
403.gcc: No flags used
445.gobmk: No flags used
464.h264ref: No flags used

C++ benchmarks (except as noted below):
-w

483.xalancbmk: No flags used

The flags file that was used to format this result can be browsed at

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/amd814GH-flags.xml

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For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.0.