SPEC® CINT2006 Result
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Sun Microsystems
Sun Fire X4600 M2

SPECint®_rate2006 =   157
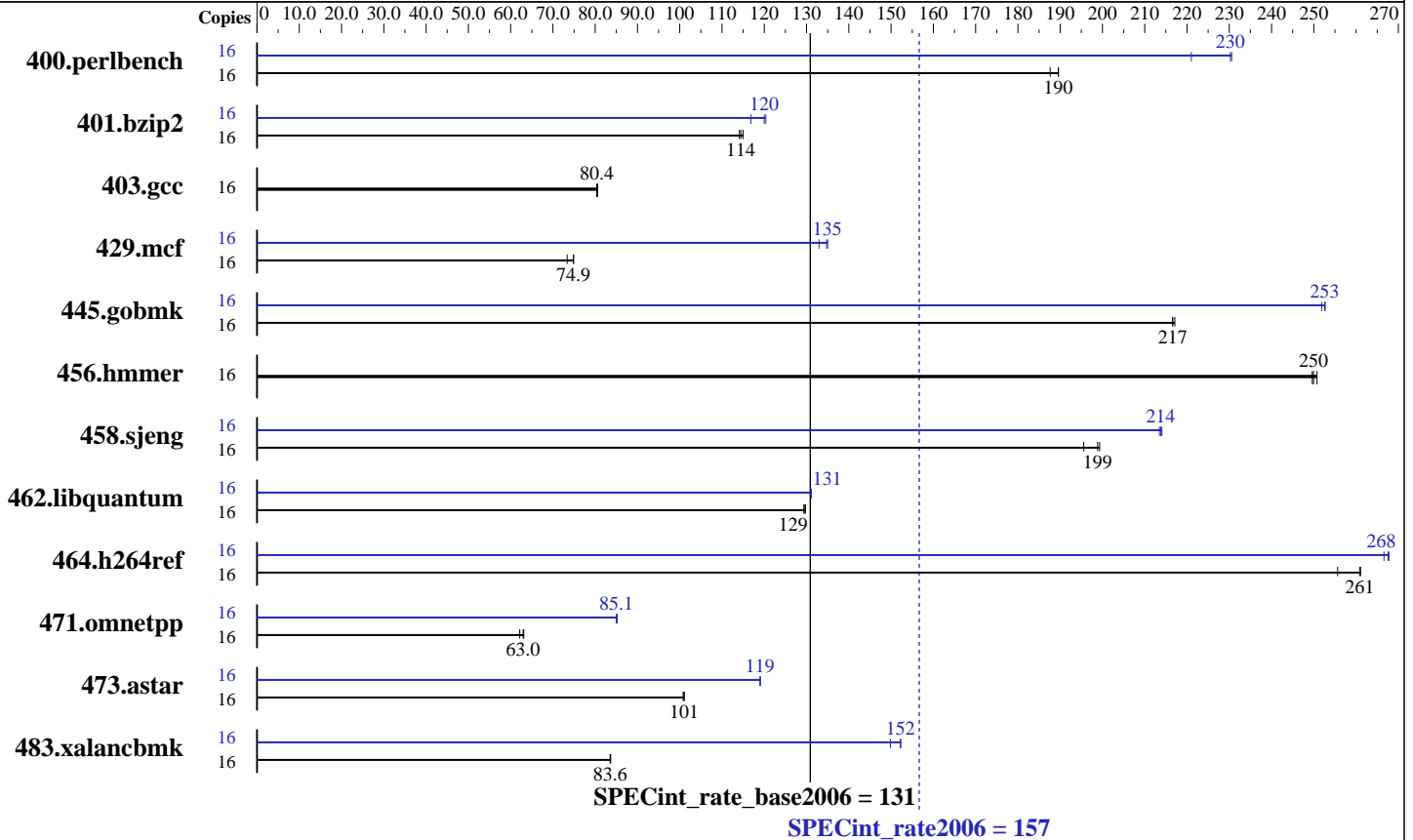
SPECint_rate_base2006 = 131

CPU2006 license: 6
Test sponsor: Sun Microsystems
Tested by: Sun Microsystems

Test date: May-2007
Hardware Availability: Jun-2007
Software Availability: Jul-2007

Benchmark	Base	Peak
400.perlbench	190	230
401.bzip2	114	120
403.gcc	80.4	
429.mcf	74.9	135
445.gobmk	217	253
456.hmmer	250	
458.sjeng	199	214
462.libquantum	129	131
464.h264ref	261	268
471.omnetpp	63.0	85.1
473.astar	101	119
483.xalancbmk	83.6	152

(Copies: 16 for all benchmarks)

SPECint_rate_base2006 = 131

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Hardware
CPU Name:	AMD Opteron 8220
CPU Characteristics:	
CPU MHz:	2800
FPU:	Integrated
CPU(s) enabled:	16 cores, 8 chips, 2 cores/chip
CPU(s) orderable:	4-8 (order by number of chips)
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	None
Other Cache:	None
Memory:	96 GB (16x4GB+16x2GB, DDR2-667 CL5 ECC Registered SDRAM)
Disk Subsystem:	SAS, 72 GB, 10K RPM
Other Hardware:	None

Software
Operating System:	Solaris 10 6/06
Compiler:	Sun Studio 12
Auto Parallel:	No
File System:	ufs
System State:	Default
Base Pointers:	64-bit
Peak Pointers:	32/64-bit
Other Software:	MicroQuill SmartHeap Library v7.4

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Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	16	833	188	824	190	**825**	**190**	16	707	221	678	231	**679**	**230**
401.bzip2	16	1353	114	**1349**	**114**	1343	115	16	1321	117	1283	120	**1287**	**120**
403.gcc	16	1598	80.6	**1602**	**80.4**	1603	80.4	16	1598	80.6	**1602**	**80.4**	1603	80.4
429.mcf	16	1989	73.4	1948	74.9	**1949**	**74.9**	16	**1083**	**135**	1081	135	1097	133
445.gobmk	16	775	217	**775**	**217**	773	217	16	**664**	**253**	666	252	664	253
456.hmmer	16	595	251	**597**	**250**	598	250	16	595	251	**597**	**250**	598	250
458.sjeng	16	990	196	971	199	**974**	**199**	16	904	214	907	213	**905**	**214**
462.libquantum	16	2555	130	**2561**	**129**	2562	129	16	**2529**	**131**	2529	131	2530	131
464.h264ref	16	1385	256	**1357**	**261**	1356	261	16	1322	268	1328	267	**1323**	**268**
471.omnetpp	16	1609	62.2	**1588**	**63.0**	1584	63.1	16	1173	85.2	1176	85.0	**1176**	**85.1**
473.astar	16	1112	101	**1112**	**101**	1114	101	16	943	119	944	119	**944**	**119**
483.xalancbmk	16	1321	83.6	**1321**	**83.6**	1319	83.7	16	737	150	725	152	**725**	**152**

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

Operating System Notes

```
   Processes were bound to cores using "submit" and "pbind".


   ulimit -s unlimited  (shell): increases stack
```

Platform Notes

```
   Default BIOS settings were used.
```

Base Compiler Invocation

C benchmarks:
```
     cc
```

C++ benchmarks:
```
     CC
```

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Base Portability Flags

```
    400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_SOLARIS_X64
       401.bzip2: -DSPEC_CPU_LP64
         403.gcc: -DSPEC_CPU_LP64 -DSPEC_CPU_SOLARIS
         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_SOLARIS
      464.h264ref: -DSPEC_CPU_LP64
     471.omnetpp: -DSPEC_CPU_LP64
       473.astar: -DSPEC_CPU_LP64
   483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_SOLARIS
```

Base Optimization Flags

C benchmarks:
```
    -fast -xipo=2 -xarch=sse2a -m64
```

C++ benchmarks:
```
    -fast -xipo=2 -xarch=sse2a -m64 -library=stlport4
```

Base Other Flags

C benchmarks:
```
    -V
```

C++ benchmarks:
```
    -verbose=version
```

Peak Compiler Invocation

C benchmarks:
```
    cc
```

C++ benchmarks:
```
    CC
```

Peak Portability Flags

```
    400.perlbench: -DSPEC_CPU_SOLARIS_X64
         403.gcc: -DSPEC_CPU_LP64 -DSPEC_CPU_SOLARIS
```

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Peak Portability Flags (Continued)

```
    456.hmmer: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_SOLARIS
483.xalancbmk: -DSPEC_CPU_SOLARIS
```

Peak Optimization Flags

C benchmarks:

```
    400.perlbench: -xprofile=collect:./feedback(pass 1)
                -xprofile=use:./feedback(pass 2) -fast -xipo=2
                -xalias_level=std -xvector=simd -lbsdmalloc
                -L/data1/SmartHeap_7.4smp/lib -lsmartheap_smp

       401.bzip2: -xprofile=collect:./feedback(pass 1)
                -xprofile=use:./feedback(pass 2) -fast -xipo=2 -xarch=sse2
                -m64 -xalias_level=strong

         403.gcc: basepeak = yes

         429.mcf: -xprofile=collect:./feedback(pass 1)
                -xprofile=use:./feedback(pass 2) -fast -xipo=2
                -xarch=sse2a -xalias_level=strict -lbsdmalloc

       445.gobmk: -xprofile=collect:./feedback(pass 1)
                -xprofile=use:./feedback(pass 2) -fast -xarch=sse2a -m64
                -xrestrict -xalias_level=strong -xdepend -xpagesize=2m
                -lmvec

       456.hmmer: basepeak = yes

       458.sjeng: -fast -xarch=sse2a -m64 -xipo=2 -xprefetch=auto
                -xprefetch_level=3 -xpagesize=2m -lmvec

  462.libquantum: -xprofile=collect:./feedback(pass 1)
                -xprofile=use:./feedback(pass 2) -fast -xipo=2
                -xarch=sse2a -m64 -xunroll=8

      464.h264ref: -fast -xarch=sse2a -m64 -xipo=2 -xvector -xunroll=8
                -xalias_level=strong -xrestrict -xpagesize=2m -lmvec
```

C++ benchmarks:

```
     471.omnetpp: -xprofile=collect:./feedback(pass 1)
                -xprofile=use:./feedback(pass 2) -fast -xipo=2
                -xprefetch_level=3 -xarch=sse2a -Qoption ube -fsimple=3
                -L/data1/SmartHeap_7.4smp/lib -lsmartheap_smp
                -library=stlport4
```

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Peak Optimization Flags (Continued)

473.astar: `-fast -xipo=2 -L/data1/SmartHeap_7.4smp/lib -lsmartheap_smp -library=stlport4`

483.xalancbmk: `-xprofile=collect:./feedback(pass 1) -xprofile=use:./feedback(pass 2) -fast -xipo=2 -xarch=sse2a -xpagesize_stack=2m -L/data1/SmartHeap_7.4smp/lib -lsmartheap_smp -library=stlport4`

Peak Other Flags

C benchmarks:
`-V`

C++ benchmarks:
`-verbose=version`

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio-Opteron.20090715.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio-Opteron.20090715.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.0.
Report generated on Tue Jul 22 11:21:00 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 26 June 2007.