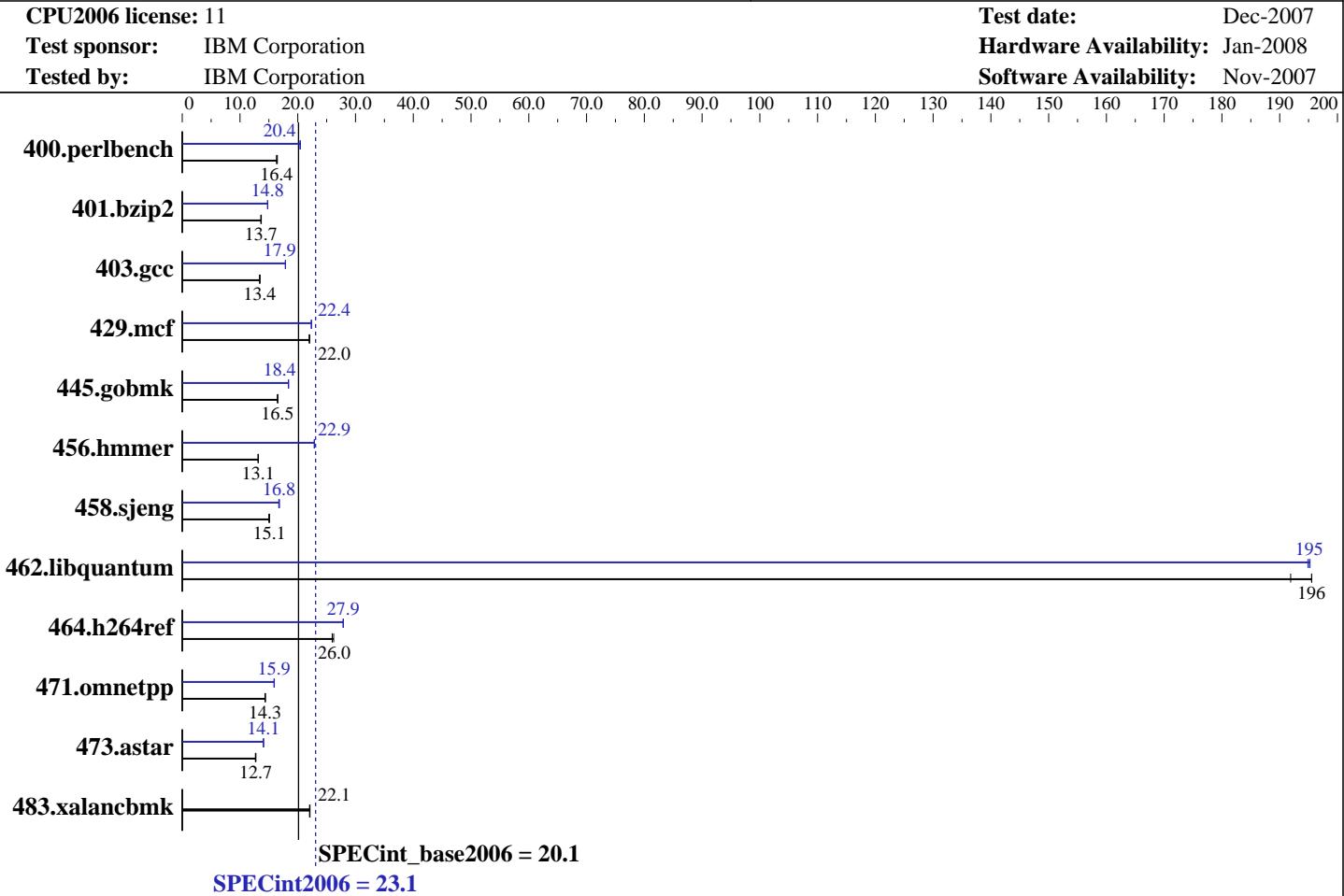# SPEC® CINT2006 Result
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IBM Corporation

IBM BladeCenter HS21 XM (Intel Xeon E5420)

$SPECint^{®}2006 =$ 23.1

$SPECint\_base2006 =$ 20.1

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Dec-2007
Hardware Availability: Jan-2008
Software Availability: Nov-2007

Results chart with benchmarks:
- 400.perlbench: 20.4 / 16.4
- 401.bzip2: 14.8 / 13.7
- 403.gcc: 17.9 / 13.4
- 429.mcf: 22.4 / 22.0
- 445.gobmk: 18.4 / 16.5
- 456.hmmer: 22.9 / 13.1
- 458.sjeng: 16.8 / 15.1
- 462.libquantum: 195 / 196
- 464.h264ref: 27.9 / 26.0
- 471.omnetpp: 15.9 / 14.3
- 473.astar: 14.1 / 12.7
- 483.xalancbmk: 22.1

SPECint_base2006 = 20.1
SPECint2006 = 23.1

Hardware

CPU Name:	Intel Xeon E5420
CPU Characteristics:	1333MHz system bus
CPU MHz:	2500
FPU:	Integrated
CPU(s) enabled:	8 cores, 2 chips, 4 cores/chip
CPU(s) orderable:	1,2 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	12 MB I+D on chip per chip, 6 MB shared / 2 cores
L3 Cache:	None
Other Cache:	None
Memory:	16 GB (8 x 2 GB DDR2-5300F ECC)
Disk Subsystem:	1 x 36 GB SAS, 10000 RPM
Other Hardware:	None

Software

Operating System:	SuSE Linux Enterprise Server 10 (x86_64), Kernel 2.6.16.21-0.8-smp
Compiler:	Intel C++ Compiler 10.1 for Linux Build 20070913 Package ID: l_cc_p_10.1.008
Auto Parallel:	Yes
File System:	ReiserFS
System State:	Multi-user, run level 3
Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other Software:	MicroQuill SmartHeap 8.1 Binutils 2.17.50.0.15

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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	**597**	**16.4**	598	16.3	593	16.5	**478**	**20.4**	479	20.4	478	20.5
401.bzip2	709	13.6	**707**	**13.7**	705	13.7	653	14.8	652	14.8	**653**	**14.8**
403.gcc	601	13.4	**599**	**13.4**	599	13.4	450	17.9	**451**	**17.9**	451	17.9
429.mcf	414	22.0	415	22.0	**414**	**22.0**	**408**	**22.4**	408	22.4	408	22.4
445.gobmk	**635**	**16.5**	635	16.5	636	16.5	570	18.4	570	18.4	**570**	**18.4**
456.hmmer	709	13.2	710	13.1	**710**	**13.1**	408	22.9	408	22.9	**408**	**22.9**
458.sjeng	807	15.0	**802**	**15.1**	802	15.1	724	16.7	**721**	**16.8**	719	16.8
462.libquantum	106	196	108	192	**106**	**196**	106	195	**106**	**195**	106	195
464.h264ref	852	26.0	844	26.2	**852**	**26.0**	794	27.9	794	27.9	**794**	**27.9**
471.omnetpp	433	14.4	**436**	**14.3**	437	14.3	392	15.9	393	15.9	**393**	**15.9**
473.astar	554	12.7	**552**	**12.7**	551	12.7	500	14.0	**499**	**14.1**	499	14.1
483.xalancbmk	312	22.1	313	22.0	**312**	**22.1**	312	22.1	313	22.0	**312**	**22.1**

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

General Notes

    All benchmarks compiled in 32-bit mode except 401.bzip2 and 456.hmmer,
    for peak, are compiled in 64-bit mode
    Hardware Sector Prefetch Enabled and Adjacent Sector Prefetch Enabled
    OMP_NUM_THREADS set to number of cores
    KMP_AFFINITY set to physical,0
    KMP_STACKSIZE set to null

Base Compiler Invocation

C benchmarks:
     icc

C++ benchmarks:
     icpc

Base Portability Flags

       400.perlbench: -DSPEC_CPU_LINUX_IA32
       462.libquantum: -DSPEC_CPU_LINUX
       483.xalancbmk: -DSPEC_CPU_LINUX

SPEC CINT2006 Result

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Base Optimization Flags

C benchmarks:
```
-fast -vec-guard-write -parallel -par-runtime-control
```

C++ benchmarks:
```
-xT -ipo -O3 -no-prec-div -Wl,-z,muldefs
-L/spec/users/rahul/cpu2006.1.0/lib  -lsmartheap
```

Base Other Flags

C benchmarks:

```
403.gcc: -Dalloca=_alloca
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc
```

```
401.bzip2: /opt/intel/cce/10.1.008/bin/icc
           -L/opt/intel/cce/10.1.008/lib
           -I/opt/intel/cce/10.1.008/include
```

```
456.hmmer: /opt/intel/cce/10.1.008/bin/icc
           -L/opt/intel/cce/10.1.008/lib
           -I/opt/intel/cce/10.1.008/include
```

C++ benchmarks:
```
icpc
```

Peak Portability Flags

```
400.perlbench: -DSPEC_CPU_LINUX_IA32
   401.bzip2: -DSPEC_CPU_LP64
   456.hmmer: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX
```

Peak Optimization Flags

C benchmarks:

Continued on next page

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CPU2006 license: 11

Test sponsor: IBM Corporation

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Test date: Dec-2007

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Peak Optimization Flags (Continued)

```
   400.perlbench: -prof-gen(pass 1) -prof-use(pass 2) -fast -ansi-alias
                  -prefetch

       401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch
                  -auto-ilp32

         403.gcc: -fast -inline-calloc -opt-malloc-options=3

         429.mcf: -fast -prefetch

       445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xT -O2 -ipo
                  -no-prec-div -ansi-alias

       456.hmmer: -fast -unroll2 -ansi-alias -opt-multi-version-aggressive
                  -auto-ilp32

       458.sjeng: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4

   462.libquantum: -fast -unroll4 -Ob0 -prefetch
                  -opt-streaming-stores always -vec-guard-write
                  -opt-malloc-options=3 -parallel -par-runtime-control

      464.h264ref: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2
                  -ansi-alias
```

C++ benchmarks:

```
     471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xT -O3 -ipo
                  -no-prec-div -ansi-alias -opt-ra-region-strategy=block
                  -Wl,-z,muldefs
                  -L/spec/users/rahul/cpu2006.1.0/lib  -lsmartheap

        473.astar: -prof-gen(pass 1) -prof-use(pass 2) -xT -O3 -ipo
                  -no-prec-div -ansi-alias -opt-ra-region-strategy=routine
                  -Wl,-z,muldefs
                  -L/spec/users/rahul/cpu2006.1.0/lib  -lsmartheap

    483.xalancbmk: basepeak = yes
```

Peak Other Flags

C benchmarks:

```
         403.gcc: -Dalloca=_alloca
```

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The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Intel-ic10-ia32-intel64-linux-flags.20090714.14.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Intel-ic10-ia32-intel64-linux-flags.20090714.14.xml`

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