SPEC® CINT2006 Result
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IBM Corporation

IBM BladeCenter HS21 (Intel Xeon E5440)

SPECint®2006 =   25.4
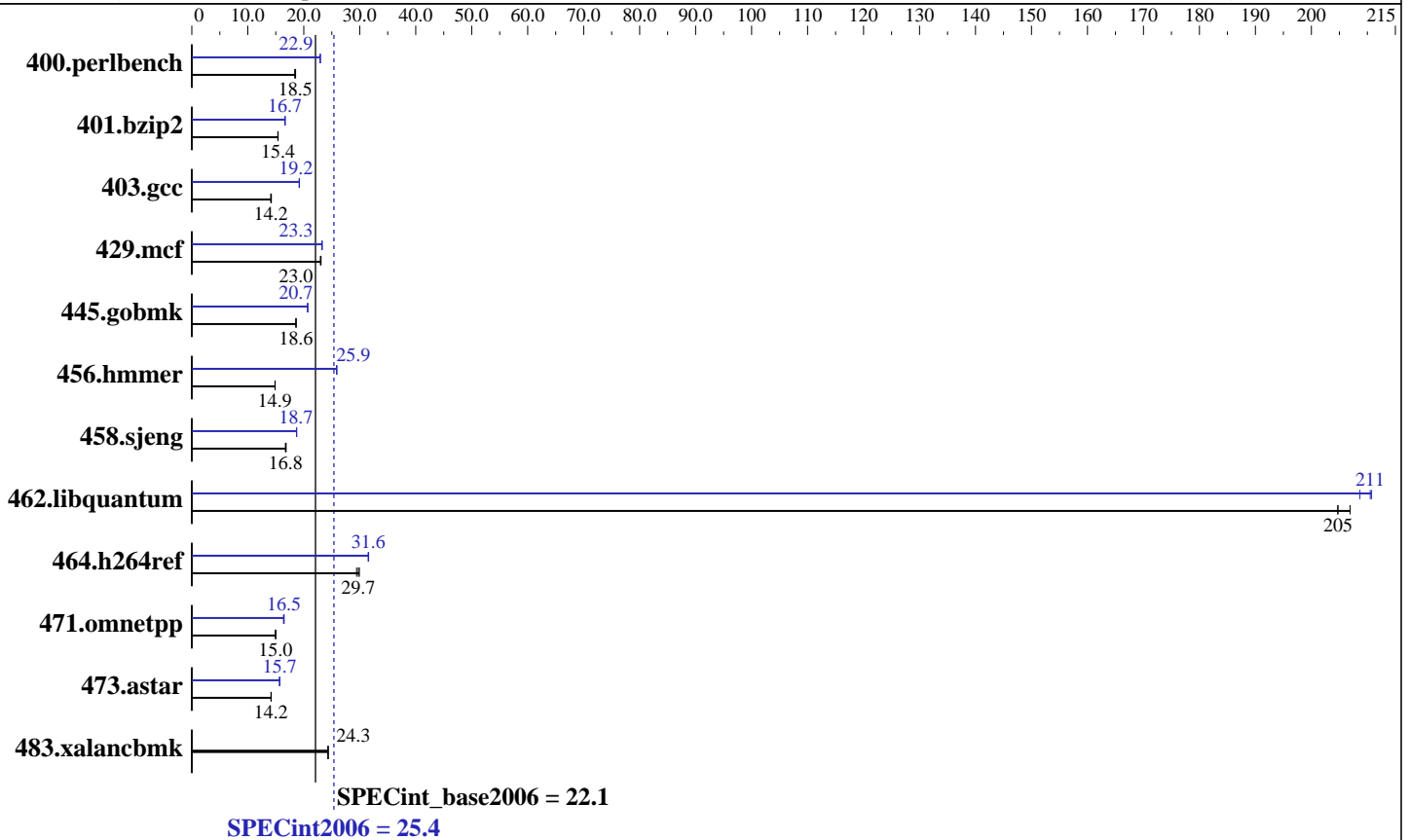
SPECint_base2006 =   22.1

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

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

400.perlbench 22.9 / 18.5
401.bzip2 16.7 / 15.4
403.gcc 19.2 / 14.2
429.mcf 23.3 / 23.0
445.gobmk 20.7 / 18.6
456.hmmer 25.9 / 14.9
458.sjeng 18.7 / 16.8
462.libquantum 211 / 205
464.h264ref 31.6 / 29.7
471.omnetpp 16.5 / 15.0
473.astar 15.7 / 14.2
483.xalancbmk 24.3

SPECint_base2006 = 22.1
SPECint2006 = 25.4

Hardware

CPU Name:	Intel Xeon E5440
CPU Characteristics:	1333MHz system bus
CPU MHz:	2833
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:	Memory and I/O Expansion Unit (P/N 42C1600)

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	531	18.4	527	18.5	**529**	**18.5**	426	22.9	426	23.0	**426**	**22.9**
401.bzip2	628	15.4	**627**	**15.4**	626	15.4	579	16.7	580	16.7	**579**	**16.7**
403.gcc	571	14.1	**568**	**14.2**	566	14.2	419	19.2	419	19.2	**419**	**19.2**
429.mcf	**396**	**23.0**	397	23.0	395	23.1	**392**	**23.3**	392	23.3	393	23.2
445.gobmk	**564**	**18.6**	564	18.6	563	18.6	507	20.7	**507**	**20.7**	507	20.7
456.hmmer	628	14.9	626	14.9	**628**	**14.9**	361	25.9	360	25.9	**360**	**25.9**
458.sjeng	718	16.9	**721**	**16.8**	723	16.7	647	18.7	**647**	**18.7**	646	18.7
462.libquantum	**101**	**205**	101	205	100	207	98.3	211	99.3	209	**98.4**	**211**
464.h264ref	**744**	**29.7**	740	29.9	752	29.4	701	31.6	703	31.5	**701**	**31.6**
471.omnetpp	**418**	**15.0**	417	15.0	418	14.9	382	16.4	**380**	**16.5**	379	16.5
473.astar	496	14.2	495	14.2	**496**	**14.2**	**447**	**15.7**	447	15.7	448	15.7
483.xalancbmk	283	24.4	**283**	**24.3**	284	24.3	283	24.4	**283**	**24.3**	284	24.3

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`

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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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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

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

Tested with SPEC CPU2006 v1.0.
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