SPEC® CINT2006 Result
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IBM Corporation

IBM System x3850 X5 (Intel Xeon E7-4870)

SPECint®2006 = 36.1

SPECint_base2006 = 33.3

CPU2006 license: 11		**Test date:**	Mar-2011
Test sponsor: IBM Corporation		**Hardware Availability:**	May-2011
Tested by: IBM Corporation		**Software Availability:**	Apr-2011

Benchmark results graph:
- 400.perlbench: 25.0 / 21.7
- 401.bzip2: 16.4 / 15.7
- 403.gcc: 22.5 / 19.9
- 429.mcf: 39.5 / 34.4
- 445.gobmk: 21.4 / 19.3
- 456.hmmer: 40.4 / 39.9
- 458.sjeng: 21.8 / 21.4
- 462.libquantum: 1080
- 464.h264ref: 34.4 / 29.5
- 471.omnetpp: 33.7 / 24.4
- 473.astar: 19.3
- 483.xalancbmk: 29.0 / 31.7

SPECint_base2006 = 33.3
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Hardware

CPU Name:	Intel Xeon E7-4870
CPU Characteristics:	Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	40 cores, 4 chips, 10 cores/chip, 2 threads/core
CPU(s) orderable:	1,2,3,4 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	30 MB I+D on chip per chip
Other Cache:	None
Memory:	512 GB (64 x 8 GB 4Rx8 PC3L-8500R-7, ECC)
Disk Subsystem:	2 x 146 GB SAS, 15000 RPM, RAID 0
Other Hardware:	None

Software

Operating System:	SUSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.12-0.7-default
Compiler:	Intel C++ Intel 64 Compiler XE for applications running on Intel 64 Version 12.0.1.116 Build 20101116
Auto Parallel:	Yes
File System:	ext3
System State:	Run level 3 (multi-user)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V9.01

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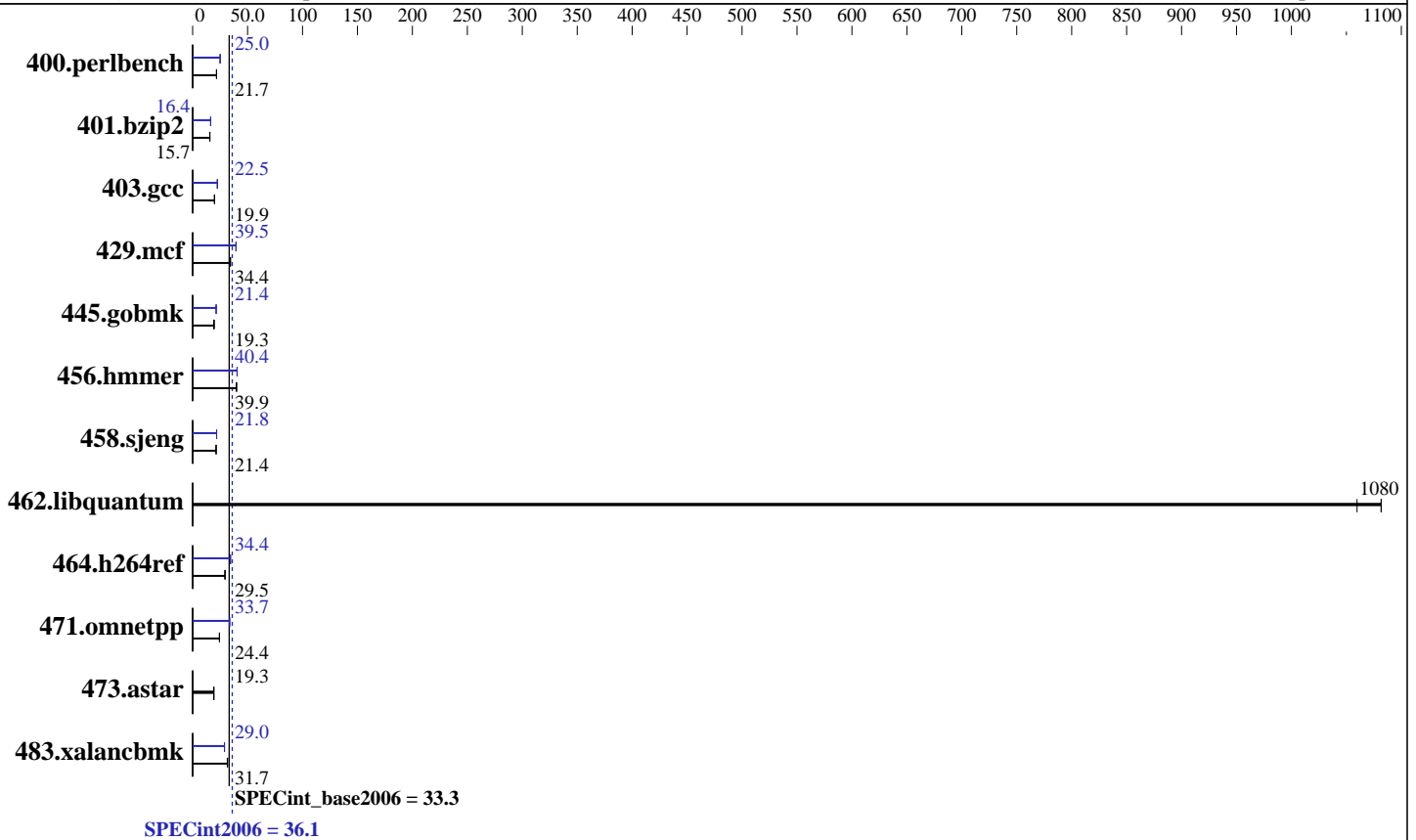
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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	**450**	**21.7**	450	21.7	450	21.7	**390**	**25.0**	391	25.0	390	25.1
401.bzip2	**616**	**15.7**	618	15.6	616	15.7	**589**	**16.4**	588	16.4	589	16.4
403.gcc	**405**	**19.9**	405	19.9	405	19.9	358	22.5	**358**	**22.5**	358	22.5
429.mcf	265	34.5	266	34.3	**265**	**34.4**	231	39.5	231	39.4	**231**	**39.5**
445.gobmk	531	19.8	548	19.1	**543**	**19.3**	**490**	**21.4**	490	21.4	490	21.4
456.hmmer	234	39.9	234	39.9	**234**	**39.9**	231	40.4	**231**	**40.4**	230	40.5
458.sjeng	567	21.3	**567**	**21.4**	566	21.4	554	21.8	**554**	**21.8**	554	21.8
462.libquantum	**19.2**	**1080**	19.6	1060	19.2	1080	**19.2**	**1080**	19.6	1060	19.2	1080
464.h264ref	756	29.3	746	29.7	**750**	**29.5**	642	34.5	**643**	**34.4**	643	34.4
471.omnetpp	255	24.5	257	24.3	**256**	**24.4**	**185**	**33.7**	185	33.7	186	33.5
473.astar	363	19.3	**364**	**19.3**	366	19.2	363	19.3	**364**	**19.3**	366	19.2
483.xalancbmk	**218**	**31.7**	219	31.5	216	31.9	238	29.0	**238**	**29.0**	238	28.9

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

Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

Platform Notes

```
BIOS Settings:
Turbo Boost Power Optimization set to Traditional
```

General Notes

```
OMP_NUM_THREADS set to number of cores
Binaries were compiled on RHEL5.5
```

Base Compiler Invocation

C benchmarks:
```
icc -m64
```

C++ benchmarks:
```
icpc -m64
```

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Base Portability Flags

```
   400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
      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
    471.omnetpp: -DSPEC_CPU_LP64
      473.astar: -DSPEC_CPU_LP64
  483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
```

Base Optimization Flags

C benchmarks:

```
    -xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32
    -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT
```

C++ benchmarks:

```
    -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -Wl,-z,muldefs
    -L/smartheap -lsmartheap64
    -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT
```

Base Other Flags

C benchmarks:

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

Peak Compiler Invocation

C benchmarks (except as noted below):
```
    icc -m64
```

```
  400.perlbench: icc -m32
```

```
      429.mcf: icc -m32
```

```
  445.gobmk: icc -m32
```

```
    464.h264ref: icc -m32
```

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Peak Compiler Invocation (Continued)

C++ benchmarks (except as noted below):
```
icpc -m32
```

473.astar: `icpc -m64`

Peak Portability Flags

```
   400.perlbench: -DSPEC_CPU_LINUX_IA32
       401.bzip2: -DSPEC_CPU_LP64
         403.gcc: -DSPEC_CPU_LP64
      456.hmmer: -DSPEC_CPU_LP64
       458.sjeng: -DSPEC_CPU_LP64
  462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
       473.astar: -DSPEC_CPU_LP64
   483.xalancbmk: -DSPEC_CPU_LINUX
```

Peak Optimization Flags

C benchmarks:

```
   400.perlbench: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
                  -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
                  -opt-prefetch -ansi-alias
                  -B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

       401.bzip2: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
                  -O3(pass 2) -no-prec-div -prof-use(pass 2) -auto-ilp32
                  -opt-prefetch -ansi-alias

         403.gcc: -xSSE4.2 -ipo -O3 -no-prec-div -inline-calloc
                  -opt-malloc-options=3 -auto-ilp32
                  -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

         429.mcf: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
                  -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
                  -auto-ilp32 -ansi-alias
                  -B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

       445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
                  -auto-ilp32 -ansi-alias
                  -B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

       456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
                  -ansi-alias
                  -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT
```

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Peak Optimization Flags (Continued)

458.sjeng: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll4

462.libquantum: basepeak = yes

464.h264ref: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll2 -ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

C++ benchmarks:

471.omnetpp: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-opt-ra-region-strategy=block -ansi-alias -Wl,-z,muldefs
-L/smartheap -lsmartheap
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

473.astar: basepeak = yes

483.xalancbmk: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
-Wl,-z,muldefs -L/smartheap -lsmartheap
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revA.html
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revA.xml
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.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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