SPEC® CINT2006 Result
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IBM Corporation

IBM BladeCenter HS23E
(Intel Xeon E5-2470, 2.30 GHz)

$SPECint^{®}2006 =$ 49.1
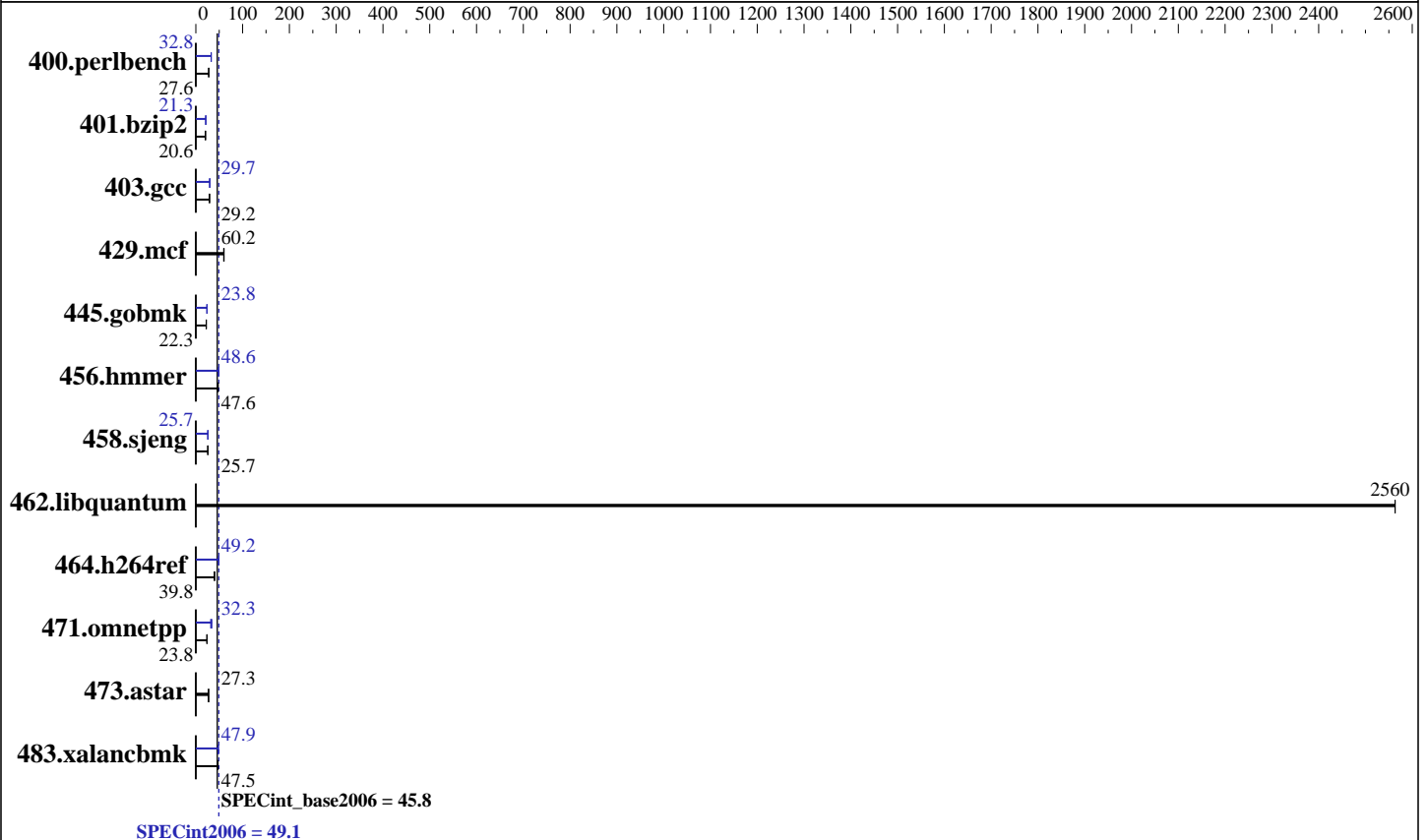
$SPECint\_base2006 =$ 45.8

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

Test date: May-2012
Hardware Availability: Jun-2012
Software Availability: Dec-2011

Graph scale: 0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2600

- 400.perlbench: 32.8 / 27.6
- 401.bzip2: 21.3 / 20.6
- 403.gcc: 29.7 / 29.2
- 429.mcf: 60.2
- 445.gobmk: 23.8 / 22.3
- 456.hmmer: 48.6 / 47.6
- 458.sjeng: 25.7 / 25.7
- 462.libquantum: 2560
- 464.h264ref: 49.2 / 39.8
- 471.omnetpp: 32.3 / 23.8
- 473.astar: 27.3
- 483.xalancbmk: 47.9 / 47.5

SPECint_base2006 = 45.8

SPECint2006 = 49.1

Hardware

CPU Name: Intel Xeon E5-2470
CPU Characteristics: Intel Turbo Boost Technology up to 3.10 GHz
CPU MHz: 2300
FPU: Integrated
CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip, 2 threads/core
CPU(s) orderable: 1,2 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: 20 MB I+D on chip per chip
Other Cache: None
Memory: 96 GB (12 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem: 1 x 300 GB SAS, 10000 RPM
Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 6.2 (Santiago)
2.6.32-220.el6.x86_64
Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux
Auto Parallel: Yes
File System: ext4
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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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	**354**	**27.6**	355	27.5	354	27.6	**298**	**32.8**	298	32.8	298	32.8
401.bzip2	**469**	**20.6**	469	20.6	469	20.6	**454**	**21.3**	454	21.3	454	21.3
403.gcc	276	29.2	**276**	**29.2**	276	29.2	271	29.7	**271**	**29.7**	271	29.7
429.mcf	151	60.2	**152**	**60.2**	153	59.5	151	60.2	**152**	**60.2**	153	59.5
445.gobmk	**470**	**22.3**	470	22.3	471	22.3	441	23.8	**441**	**23.8**	441	23.8
456.hmmer	**196**	**47.6**	196	47.6	196	47.5	192	48.6	**192**	**48.6**	192	48.6
458.sjeng	472	25.7	472	25.7	**472**	**25.7**	471	25.7	**471**	**25.7**	471	25.7
462.libquantum	8.08	2560	8.08	2560	**8.08**	**2560**	8.08	2560	8.08	2560	**8.08**	**2560**
464.h264ref	**556**	**39.8**	550	40.3	558	39.7	449	49.3	459	48.2	**450**	**49.2**
471.omnetpp	263	23.8	**263**	**23.8**	263	23.8	195	32.0	**194**	**32.3**	182	34.3
473.astar	259	27.1	257	27.3	**257**	**27.3**	259	27.1	257	27.3	**257**	**27.3**
483.xalancbmk	**145**	**47.5**	145	47.5	146	47.2	144	47.9	**144**	**47.9**	143	48.1

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

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
```

Platform Notes

```
Operating Mode set to Maximum Perfomance in BIOS
Sysinfo program /cpu2006.1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on angleshark-pete Sat May 12 15:30:25 2012

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
  http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2470 0 @ 2.30GHz
      2 "physical id"s (chips)
      32 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
      cpu cores : 8
      siblings  : 16
      physical 0: cores 0 1 2 3 4 5 6 7
      physical 1: cores 0 1 2 3 4 5 6 7
   cache size : 20480 KB

From /proc/meminfo
```

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Platform Notes (Continued)

```
    MemTotal:        99042340 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 /usr/bin/lsb_release -d
    Red Hat Enterprise Linux Server release 6.2 (Santiago)

 From /etc/*release* /etc/*version*
    redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
    system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
    system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

 uname -a:
    Linux angleshark-pete 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST
    2011 x86_64 x86_64 x86_64 GNU/Linux

 run-level 3 May 11 14:30

 SPEC is set to: /cpu2006.1.2
    Filesystem      Type     Size  Used Avail Use% Mounted on
    /dev/mapper/vg_anglesharkpet-lv_root
                    ext4     265G   36G  217G  15% /

 Additional information from dmidecode:
   Memory:
    12x Samsung M392B1K70DM0-CK0 8 GB 1600 MHz 2 rank

 (End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/cpu2006.1.2/libs/32:/cpu2006.1.2/libs/64"
OMP_NUM_THREADS = "16"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RHEL5.5
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```

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
```

C++ benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-Wl,-z,muldefs -L/smartheap -lsmartheap64
```

Base Other Flags

C benchmarks:

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

Peak Compiler Invocation

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

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

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

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

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

```
473.astar: icpc -m64
```

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Peak Portability Flags

```
        400.perlbench: -DSPEC_CPU_LINUX_IA32
           401.bzip2: -DSPEC_CPU_LP64
             403.gcc: -DSPEC_CPU_LP64
             429.mcf: -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

           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

             429.mcf: basepeak = yes

           445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
                       -ansi-alias

          456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
                       -ansi-alias

           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
```

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
```

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Peak Optimization Flags (Continued)

473.astar: basepeak = yes

483.xalancbmk: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
-Wl,-z,muldefs -L/smartheap -lsmartheap

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/Intel-ic12.1-official-linux64.20111122.html
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-SNB-C.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-SNB-C.xml

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

Tested with SPEC CPU2006 v1.2.
Report generated on Thu Jul 24 06:14:31 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 5 June 2012.