SPEC® CINT2006 Result
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IBM Corporation

IBM System x3250 M5
(Intel Pentium G3220, 3.00 GHz)

$SPECint^{®}2006 =$ 44.1
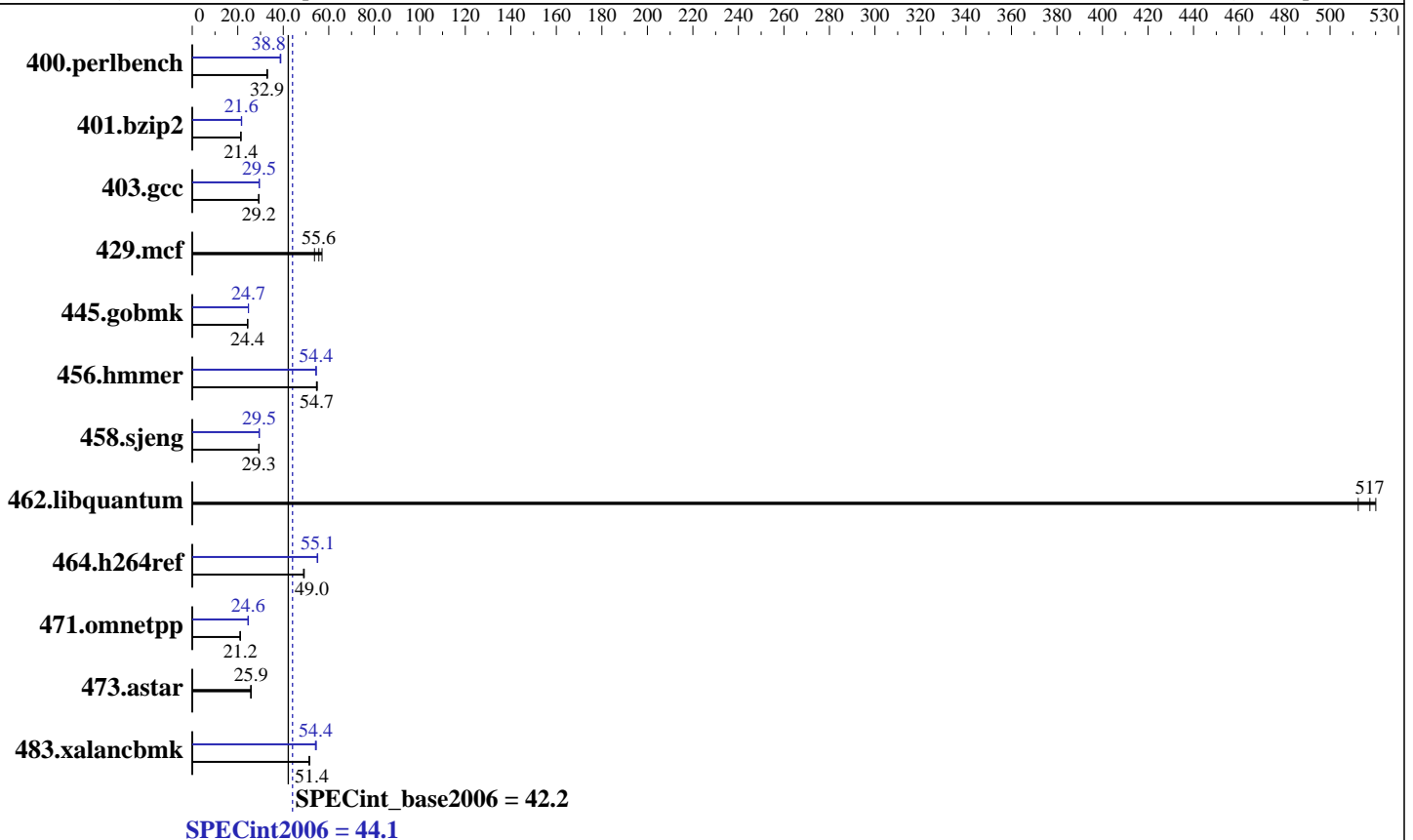
$SPECint\_base2006 =$ 42.2

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

Test date: Mar-2014
Hardware Availability: Dec-2013
Software Availability: Sep-2013

SPECint_base2006 = 42.2

SPECint2006 = 44.1

Benchmark	base	peak
400.perlbench	32.9	38.8
401.bzip2	21.4	21.6
403.gcc	29.2	29.5
429.mcf	55.6	
445.gobmk	24.4	24.7
456.hmmer	54.7	54.4
458.sjeng	29.3	29.5
462.libquantum	517	
464.h264ref	49.0	55.1
471.omnetpp	21.2	24.6
473.astar	25.9	
483.xalancbmk	51.4	54.4

Hardware

CPU Name:	Intel Pentium G3220
CPU Characteristics:	
CPU MHz:	3000
FPU:	Integrated
CPU(s) enabled:	2 cores, 1 chip, 2 cores/chip
CPU(s) orderable:	1 chip
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	3 MB I+D on chip per chip
Other Cache:	None
Memory:	16 GB (2 x 8 GB 2Rx8 PC3-12800E-11, ECC, running at 1333 MHz)
Disk Subsystem:	1 x 1 TB SATA, 7200 RPM
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 6.4 (Santiago) 2.6.32-358.el6.x86_64
Compiler:	C/C++: Version 14.0.0.080 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 V10.0

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Results Table

Benchmark	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
400.perlbench	295	33.1	**297**	**32.9**	298	32.8	**252**	**38.8**	253	38.6	251	38.9
401.bzip2	450	21.4	453	21.3	**451**	**21.4**	444	21.7	**446**	**21.6**	447	21.6
403.gcc	275	29.3	275	29.2	**275**	**29.2**	273	29.4	**273**	**29.5**	273	29.5
429.mcf	170	53.7	160	57.0	**164**	**55.6**	170	53.7	160	57.0	**164**	**55.6**
445.gobmk	432	24.3	431	24.4	**431**	**24.4**	425	24.7	**425**	**24.7**	425	24.7
456.hmmer	170	55.0	171	54.6	**171**	**54.7**	172	54.4	171	54.5	**171**	**54.4**
458.sjeng	412	29.3	**413**	**29.3**	413	29.3	411	29.5	**411**	**29.5**	411	29.4
462.libquantum	39.8	520	**40.0**	**517**	40.4	512	39.8	520	**40.0**	**517**	40.4	512
464.h264ref	450	49.2	452	48.9	**452**	**49.0**	403	54.9	401	55.1	**402**	**55.1**
471.omnetpp	299	20.9	**295**	**21.2**	294	21.2	**254**	**24.6**	253	24.7	255	24.5
473.astar	271	25.9	**271**	**25.9**	273	25.7	271	25.9	**271**	**25.9**	273	25.7
483.xalancbmk	134	51.4	**134**	**51.4**	134	51.6	127	54.5	**127**	**54.4**	127	54.1

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

```
    BIOS setting:
    Operating Mode set to Maximum Performance
    Sysinfo program /home/SPECcpu-new/config/sysinfo.rev6818
    $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
    running on x3250M5 Fri Mar 28 02:44:27 2014

    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) Pentium(R) CPU G3220 @ 3.00GHz
          1 "physical id"s (chips)
          2 "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 : 2
          siblings  : 2
          physical 0: cores 0 1
       cache size : 3072 KB

    From /proc/meminfo
```

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Platform Notes (Continued)

```
    MemTotal:        16299404 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 /usr/bin/lsb_release -d
    Red Hat Enterprise Linux Server release 6.4 (Santiago)

 From /etc/*release* /etc/*version*
    redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
    system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
    system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

 uname -a:
    Linux x3250M5 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013
    x86_64 x86_64 x86_64 GNU/Linux

 run-level 3 Mar 27 11:05

 SPEC is set to: /home/SPECcpu-new
    Filesystem      Type     Size  Used Avail Use% Mounted on
    /dev/mapper/vg_x3250m5-lv_home
                    ext4     852G   19G  790G   3% /home

 Additional information from dmidecode:
   BIOS IBM -[JUE109OUS-1.00]- 11/20/2013
   Memory:
    2x Micron 18KSF1G72AZ-1G6E1 8 GB 1333 MHz 2 rank
    2x Not Specified Not Specified

 (End of data from sysinfo program)
 "Not Specified" memory information from dmidecode indicates unused DIMM slots.
```

General Notes

```
 Environment variables set by runspec before the start of the run:
 KMP_AFFINITY = "granularity=fine,scatter"
 LD_LIBRARY_PATH = "/home/SPECcpu-new/libs/32:/home/SPECcpu-new/libs/64:/home/SPECcpu-new/sh"
 OMP_NUM_THREADS = "2"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RedHat EL 6.4
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
```

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Base Compiler Invocation

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

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

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/sh -lsmartheap64
```

Base Other Flags

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

Peak Compiler Invocation

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

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Peak Compiler Invocation (Continued)

```
400.perlbench: icc -m32

445.gobmk: icc -m32

464.h264ref: icc -m32
```

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
       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
```

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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
```

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/sh -lsmartheap

     473.astar: basepeak = yes

  483.xalancbmk: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
                -Wl,-z,muldefs -L/sh -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-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-HSW-A.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-HSW-A.xml

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

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