SPEC® CINT2006 Result

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IBM Corporation

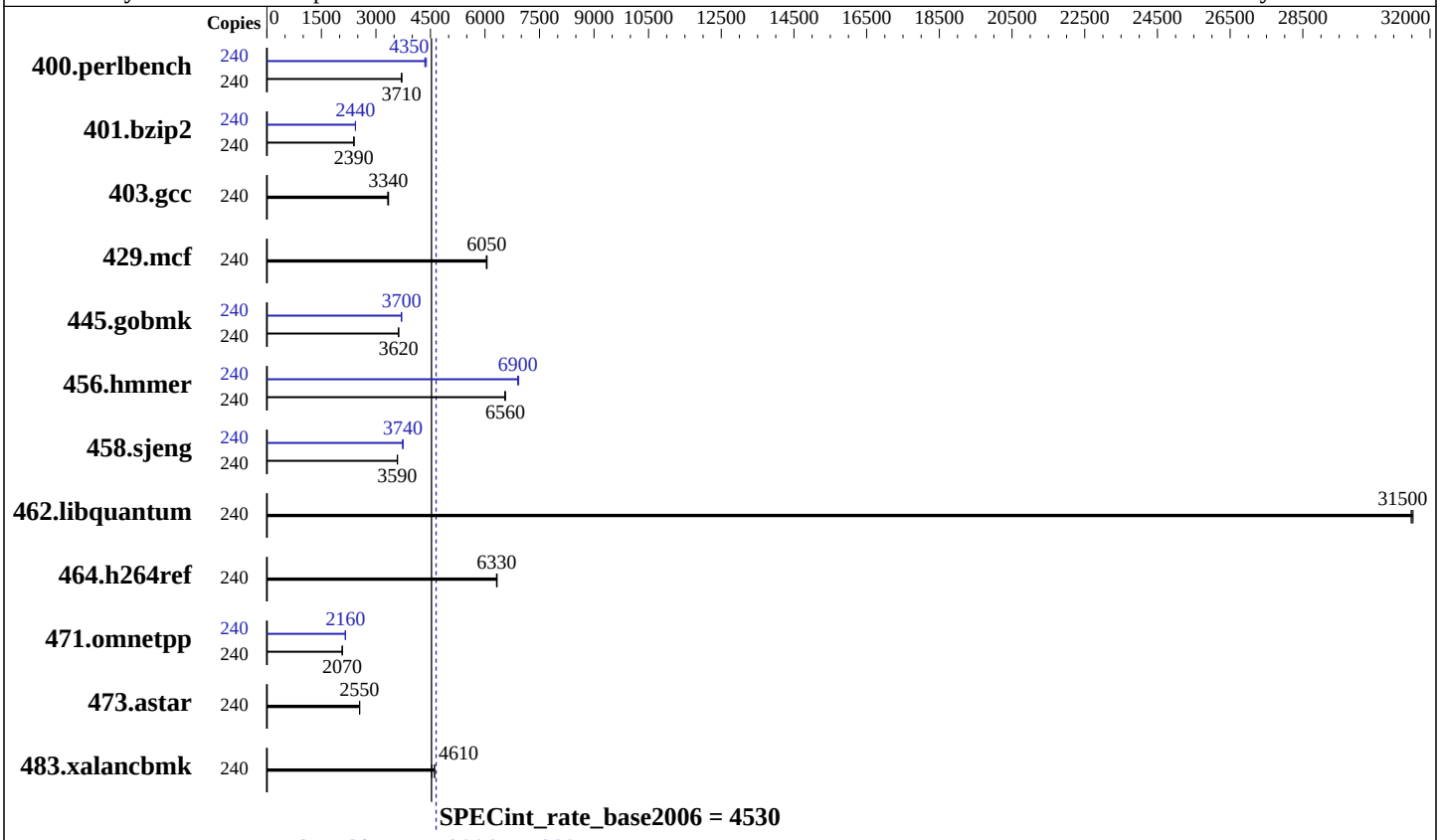
IBM System x3950 X6
(Intel Xeon E7-8890 v2, 2.80 GHz)

SPECint®_rate2006 = 4660

SPECint_rate_base2006 = 4530

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

Test date: May-2014
Hardware Availability: Jun-2014
Software Availability: Nov-2013



Hardware

CPU Name:	Intel Xeon E7-8890 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.40 GHz
CPU MHz:	2800
FPU:	Integrated
CPU(s) enabled:	120 cores, 8 chips, 15 cores/chip, 2 threads/core
CPU(s) orderable:	4,6,8 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:	37.5 MB I+D on chip per chip
Other Cache:	None
Memory:	2 TB (128 x 16 GB 2Rx4 PC3L-12800R-11, ECC, running at 1333 MHz)
Disk Subsystem:	1 x 400 GB SATA, SSD
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 6.5 (Santiago) 2.6.32-431.el6.x86_64
Compiler:	C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux
Auto Parallel:	No
File System:	ext4
System State:	Run level 3 (multi-user)
Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V10.0

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	240	632	3710	**632**	**3710**	633	3700	240	**539**	**4350**	539	4350	534	4390
401.bzip2	240	**967**	**2390**	970	2390	965	2400	240	**950**	**2440**	951	2440	950	2440
403.gcc	240	577	3350	**579**	**3340**	581	3330	240	577	3350	**579**	**3340**	581	3330
429.mcf	240	363	6040	362	6050	**362**	**6050**	240	363	6040	362	6050	**362**	**6050**
445.gobmk	240	694	3630	**695**	**3620**	696	3620	240	**680**	**3700**	679	3710	681	3700
456.hmmer	240	341	6560	**341**	**6560**	342	6550	240	**324**	**6900**	323	6930	324	6900
458.sjeng	240	**809**	**3590**	808	3590	810	3590	240	775	3750	**777**	**3740**	777	3740
462.libquantum	240	158	31500	**158**	**31500**	158	31500	240	158	31500	**158**	**31500**	158	31500
464.h264ref	240	839	6330	841	6320	**840**	**6330**	240	839	6330	841	6320	**840**	**6330**
471.omnetpp	240	723	2070	723	2070	**723**	**2070**	240	695	2160	**694**	**2160**	694	2160
473.astar	240	661	2550	**660**	**2550**	660	2550	240	661	2550	**660**	**2550**	660	2550
483.xalancbmk	240	359	4610	**359**	**4610**	365	4540	240	359	4610	**359**	**4610**	365	4540

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

Submit Notes

```
The numactl mechanism was used to bind copies to processors. The config file option 'submit'
was used to generate numactl commands to bind each copy to a specific processor.
For details, please see the config file.
```

Operating System Notes

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

Platform Notes

```
Operating Mode set to Maximum Perfomance in BIOS
Memory Data Scrambling Disabled
Patrol Scrub Disabled
Sysinfo program /cpu2006.1.2_14_aug2013/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on x3950x6 Wed May  7 20:54:11 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) Xeon(R) CPU E7-8890 v2 @ 2.80GHz
      8 "physical id"s (chips)
      240 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
```

Continued on next page

Platform Notes (Continued)

```
      caution.)
         cpu cores : 15
         siblings  : 30
         physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
         physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
         physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
         physical 3: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
         physical 4: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
         physical 5: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
         physical 6: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
         physical 7: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      cache size : 38400 KB

   From /proc/meminfo
      MemTotal:       2117446648 kB
      HugePages_Total:       0
      Hugepagesize:       2048 kB

   /usr/bin/lsb_release -d
      Red Hat Enterprise Linux Server release 6.5 (Santiago)

   From /etc/*release* /etc/*version*
      redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
      system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
      system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

   uname -a:
      Linux x3950x6 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013
      x86_64 x86_64 x86_64 GNU/Linux

   run-level 3 May 7 20:21

   SPEC is set to: /cpu2006.1.2_14_aug2013
      Filesystem                     Type  Size  Used Avail Use% Mounted on
      /dev/mapper/vg_x3950x6-lv_root ext4  357G  7.4G  332G   3% /

   Additional information from dmidecode:
     BIOS IBM -[A8E107JUS-1.00]- 05/02/2014
     Memory:
      64x Hynix HMT42GR7AFR4A-PB 16 GB 1333 MHz 2 rank
      64x NO DIMM Unknown
      64x Samsung M393B2G70QH0-YK0 16 GB 1333 MHz 2 rank

   (End of data from sysinfo program)
  Memory speed from dmidecode lists the downclocked speed of the run.
```

General Notes

```
  Environment variables set by runspec before the start of the run:
  LD_LIBRARY_PATH = "/cpu2006.1.2_14_aug2013/libs/32:/cpu2006.1.2_14_aug2013/libs/64:/cpu2006.1.2_14_aug2013/sh"
```

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General Notes (Continued)

```
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
Filesystem page cache cleared with:
echo 1>       /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>
```

Base Compiler Invocation

C benchmarks:
```
icc  -m32
```

C++ benchmarks:
```
icpc -m32
```

Base Portability Flags

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

Base Optimization Flags

C benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
```

C++ benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
-Wl,-z,muldefs -L/sh -lsmartheap
```

Base Other Flags

C benchmarks:

403.gcc: `-Dalloca=_alloca`

Peak Compiler Invocation

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

Continued on next page

Peak Compiler Invocation (Continued)

400.perlbench: icc -m64

401.bzip2: icc -m64

456.hmmer: icc -m64

458.sjeng: icc -m64

C++ benchmarks:
icpc -m32

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LINUX
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)
-auto-ilp32

401.bzip2: -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 -auto-ilp32 -ansi-alias

403.gcc: basepeak = yes

429.mcf: basepeak = yes

445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias -opt-mem-layout-trans=3

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

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 -auto-ilp32

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Peak Optimization Flags (Continued)

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

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) -ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs -L/sh -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: basepeak = yes

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-IVB-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-IVB-A.xml

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For other inquiries, please contact webmaster@spec.org.

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