



SPEC® CINT2006 Result

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IBM Corporation

IBM System x3950 X6
(Intel Xeon E7-8891 v2, 3.20 GHz)

SPECint®_rate2006 = 3560

SPECint_rate_base2006 = 3440

CPU2006 license: 11

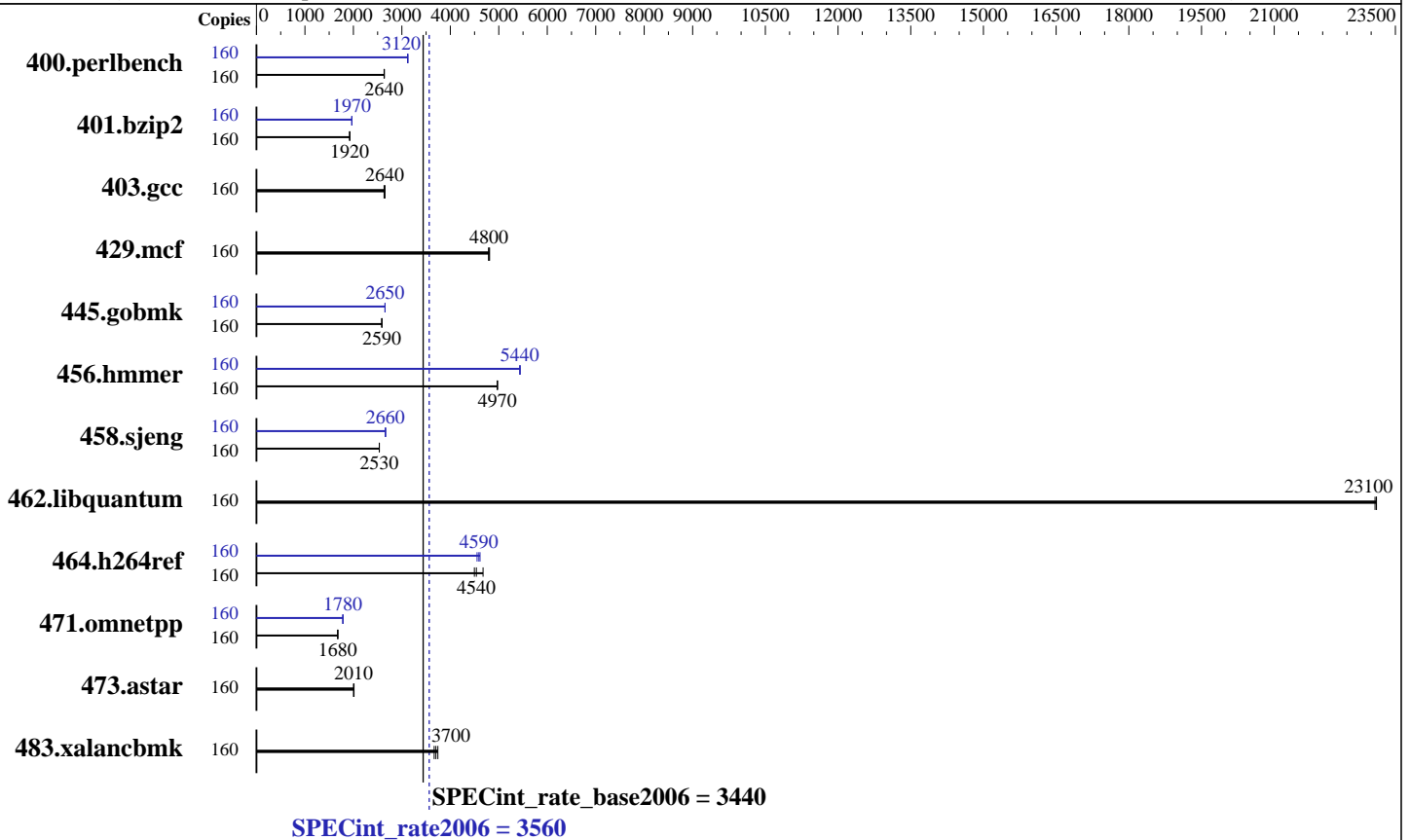
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Aug-2014

Hardware Availability: Jun-2014

Software Availability: Nov-2013



Hardware

CPU Name: Intel Xeon E7-8891 v2
 CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
 CPU MHz: 3200
 FPU: Integrated
 CPU(s) enabled: 80 cores, 8 chips, 10 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	160	593	2640	<u>593</u>	<u>2640</u>	594	2630	160	502	3120	<u>501</u>	<u>3120</u>	500	3130
401.bzip2	160	802	1920	803	1920	<u>803</u>	<u>1920</u>	160	<u>785</u>	<u>1970</u>	784	1970	785	1970
403.gcc	160	<u>487</u>	<u>2640</u>	486	2650	489	2630	160	<u>487</u>	<u>2640</u>	486	2650	489	2630
429.mcf	160	303	4810	<u>304</u>	<u>4800</u>	305	4790	160	303	4810	<u>304</u>	<u>4800</u>	305	4790
445.gobmk	160	649	2590	649	2590	<u>649</u>	<u>2590</u>	160	<u>633</u>	<u>2650</u>	632	2650	633	2650
456.hammer	160	300	4970	300	4970	<u>300</u>	<u>4970</u>	160	274	5440	<u>275</u>	<u>5440</u>	275	5430
458.sjeng	160	764	2530	764	2540	<u>764</u>	<u>2530</u>	160	<u>727</u>	<u>2660</u>	729	2660	726	2670
462.libquantum	160	<u>143</u>	<u>23100</u>	144	23100	143	23100	160	<u>143</u>	<u>23100</u>	144	23100	143	23100
464.h264ref	160	787	4500	757	4680	<u>780</u>	<u>4540</u>	160	778	4550	768	4610	<u>772</u>	<u>4590</u>
471.omnetpp	160	<u>596</u>	<u>1680</u>	597	1680	596	1680	160	561	1780	<u>561</u>	<u>1780</u>	560	1780
473.astar	160	<u>560</u>	<u>2010</u>	560	2000	558	2010	160	<u>560</u>	<u>2010</u>	560	2000	558	2010
483.xalancbmk	160	295	3740	<u>298</u>	<u>3700</u>	301	3670	160	295	3740	<u>298</u>	<u>3700</u>	301	3670

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 Performance 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 Fri Aug 15 11:32:42 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 E7-8891 v2 @ 3.20GHz
8 "physical id"s (chips)
160 "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



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Platform Notes (Continued)

```

caution.)
  cpu cores : 10
  siblings  : 20
  physical 0: cores 2 3 4 5 6 7 8 10 11 12
  physical 1: cores 2 3 4 5 6 7 8 10 11 12
  physical 2: cores 2 3 4 5 6 7 8 10 11 12
  physical 3: cores 2 3 4 5 6 7 8 10 11 12
  physical 4: cores 2 3 4 5 6 7 8 10 11 12
  physical 5: cores 2 3 4 5 6 7 8 10 11 12
  physical 6: cores 2 3 4 5 6 7 8 10 11 12
  physical 7: cores 2 3 4 5 6 7 8 10 11 12
cache size : 38400 KB

```

```

From /proc/meminfo
MemTotal:      2117456592 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 Aug 15 11:17

```

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   78G  262G  23% /

```

```

Additional information from dmidecode:
BIOS IBM  -[A8E107JUS-1.00]- 05/02/2014
Memory:
 96x Hynix HMT42GR7AFR4A-PB 16 GB 1333 MHz 2 rank
 64x NO DIMM Unknown
 32x Samsung M393B2G70QH0-YK0 16 GB 1333 MHz 2 rank

```

(End of data from sysinfo program)

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"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB

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General Notes (Continued)

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 -lsmarthearp

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

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

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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: -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)
-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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