



# 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

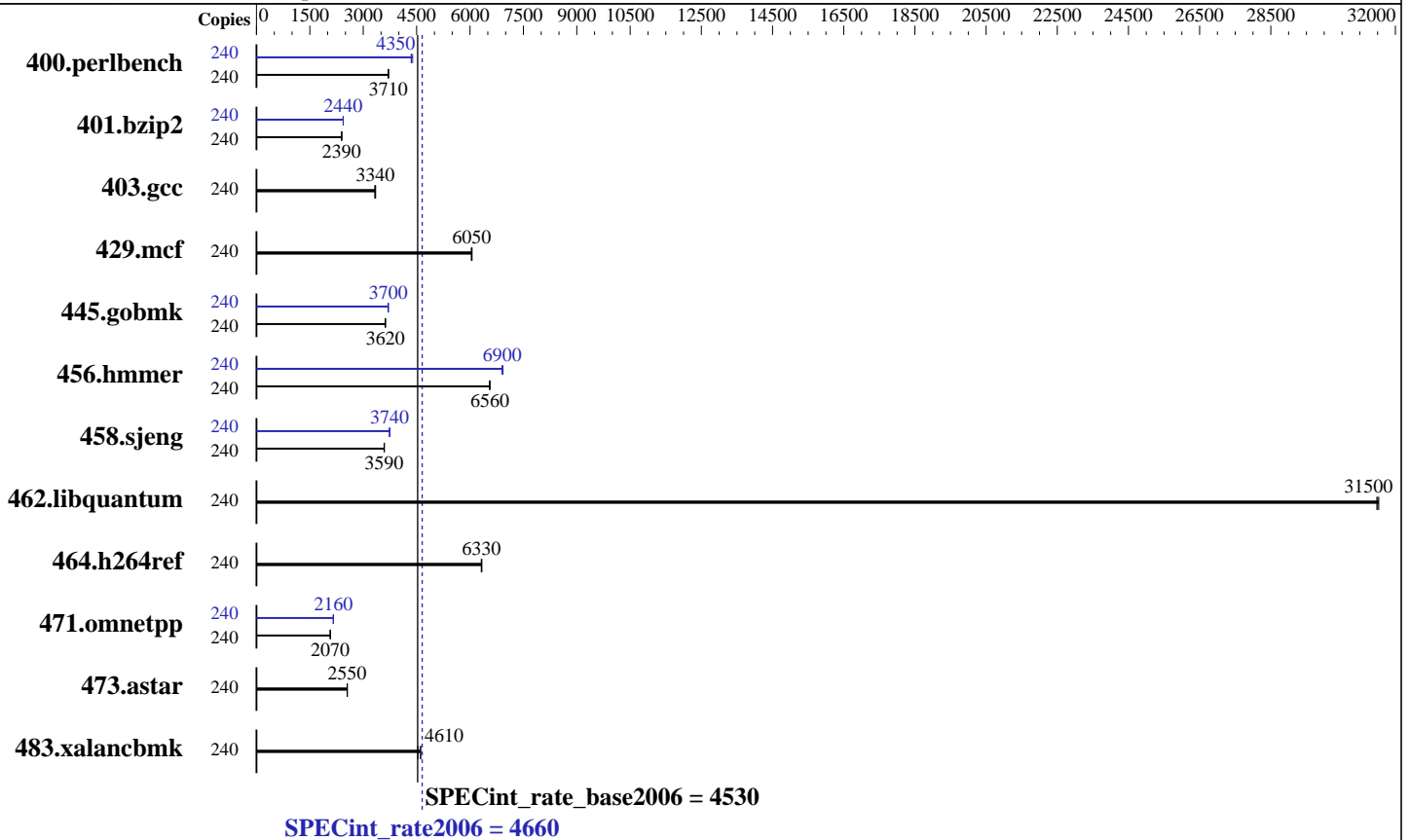
Test sponsor: IBM Corporation

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

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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: 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](mailto:webmaster@spec.org).

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