



SPEC® CINT2006 Result

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IBM Corporation

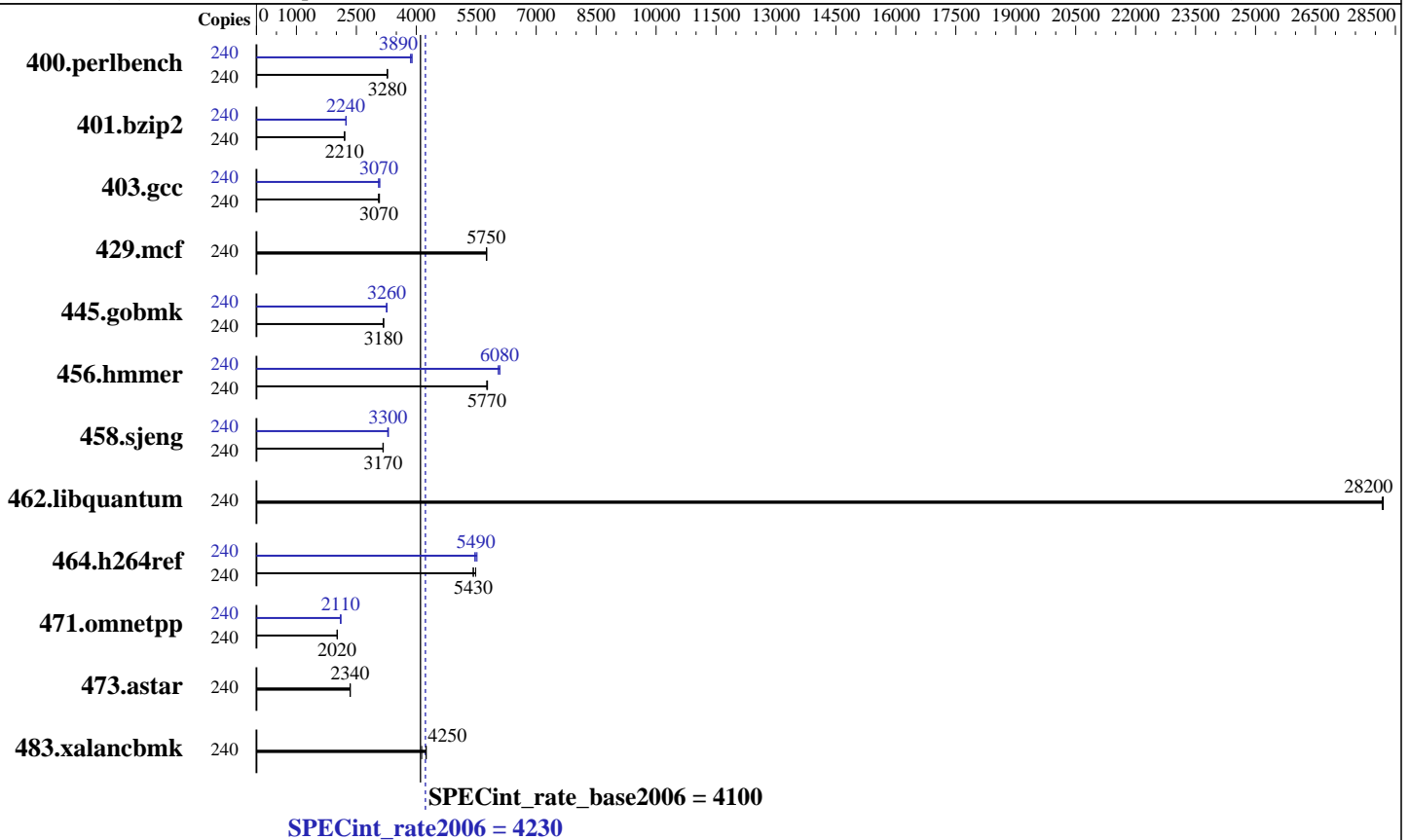
IBM System x3950 X6
(Intel Xeon E7-8880 v2, 2.50 GHz)

SPECint®_rate2006 = 4230

SPECint_rate_base2006 = 4100

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 E7-8880 v2
 CPU Characteristics: Intel Turbo Boost Technology up to 3.10 GHz
 CPU MHz: 2500
 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	715	3280	<u>715</u>	<u>3280</u>	717	3270	240	603	3890	608	3860	<u>603</u>	<u>3890</u>
401.bzip2	240	1052	2200	1050	2210	<u>1050</u>	<u>2210</u>	240	1035	2240	1032	2240	<u>1034</u>	<u>2240</u>
403.gcc	240	633	3050	630	3070	628	3080	240	626	3090	630	3070	632	3060
429.mcf	240	380	5750	380	5760	380	5750	240	380	5750	380	5760	380	5750
445.gobmk	240	793	3180	791	3180	<u>792</u>	<u>3180</u>	240	772	3260	773	3260	<u>773</u>	<u>3260</u>
456.hammer	240	388	5760	388	5770	387	5780	240	370	6050	368	6090	368	6080
458.sjeng	240	917	3170	915	3170	<u>917</u>	<u>3170</u>	240	884	3280	880	3300	<u>881</u>	<u>3300</u>
462.libquantum	240	176	28200	177	28200	<u>176</u>	<u>28200</u>	240	176	28200	177	28200	<u>176</u>	<u>28200</u>
464.h264ref	240	978	5430	968	5490	979	5420	240	972	5460	967	5490	962	5520
471.omnetpp	240	742	2020	<u>742</u>	<u>2020</u>	743	2020	240	711	2110	712	2110	<u>712</u>	<u>2110</u>
473.astar	240	718	2350	718	2340	719	2340	240	718	2350	718	2340	719	2340
483.xalancbmk	240	390	4250	390	4250	400	4140	240	390	4250	390	4250	400	4140

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 Tue May 27 14:57:14 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 E7-8880 v2 @ 2.50GHz
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



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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 27 14:52

```

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  8.4G  331G   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: `-xSSE4.2 -ipo -O3 -no-prec-div`

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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