



SPEC® CINT2006 Result

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IBM Corporation

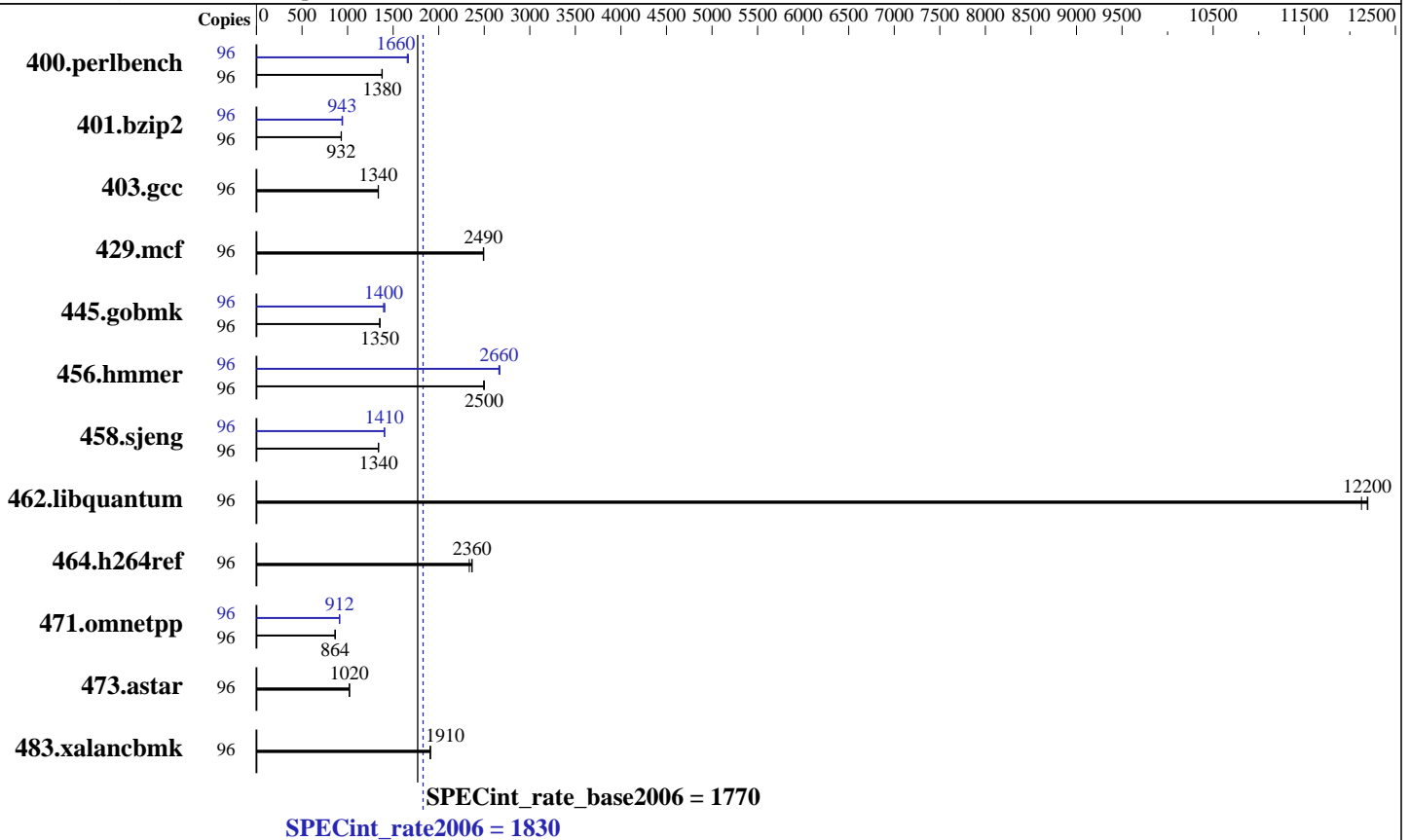
IBM Flex System x480 X6
(Intel Xeon E7-4860 v2, 2.60 GHz)

SPECint®_rate2006 = 1830

SPECint_rate_base2006 = 1770

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 E7-4860 v2
 CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
 CPU MHz: 2600
 FPU: Integrated
 CPU(s) enabled: 48 cores, 4 chips, 12 cores/chip, 2 threads/core
 CPU(s) orderable: 2,4 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: 30 MB I+D on chip per chip
 Other Cache: None
 Memory: 1 TB (64 x 16 GB 2Rx4 PC3L-12800R-11, ECC, running at 1333 MHz)
 Disk Subsystem: 1 x 300 GB SAS, 10000 RPM
 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	96	681	1380	680	1380	679	1380	96	565	1660	563	1670	567	1650
401.bzip2	96	994	932	997	929	994	932	96	987	939	982	943	981	945
403.gcc	96	577	1340	578	1340	579	1340	96	577	1340	578	1340	579	1340
429.mcf	96	351	2490	351	2490	352	2490	96	351	2490	351	2490	352	2490
445.gobmk	96	743	1350	743	1350	744	1350	96	715	1410	720	1400	721	1400
456.hammer	96	359	2490	358	2500	359	2500	96	335	2670	336	2660	337	2660
458.sjeng	96	867	1340	868	1340	867	1340	96	827	1400	827	1410	826	1410
462.libquantum	96	164	12100	163	12200	163	12200	96	164	12100	163	12200	163	12200
464.h264ref	96	910	2340	898	2360	898	2370	96	910	2340	898	2360	898	2370
471.omnetpp	96	696	862	694	864	693	866	96	658	913	658	911	658	912
473.astar	96	660	1020	662	1020	660	1020	96	660	1020	662	1020	660	1020
483.xalancbmk	96	348	1910	347	1910	347	1910	96	348	1910	347	1910	347	1910

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_14.0_aug2013/config/sysinfo.rev6818
\$Rev: 6818 \$ \$Date:: 2012-07-17 # \$ e86d102572650a6e4d596a3cee98f191
running on newport-rhel6.5 Thu Aug 14 20:23:49 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 E7-4860 v2 @ 2.60GHz
4 "physical id"s (chips)
96 "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 : 12
siblings  : 24
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 13
cache size : 30720 KB
```

```
From /proc/meminfo
MemTotal:      1058506284 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 newport-rhel6.5 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 14 20:23 last=5
```

```
SPEC is set to: /cpu2006.1.2_14.0_aug2013
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/mapper/vg_newportrhel6-lv_root ext4  265G   29G  223G  12% /
```

```
Additional information from dmidecode:
BIOS IBM  -[N2E107JUS-1.00]- 05/03/2014
Memory:
32x Hynix HMT42GR7AFR4A-PB 16 GB 1333 MHz 2 rank
32x 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_14.0_aug2013/libs/32:/cpu2006.1.2_14.0_aug2013/libs/64:/cpu2006.1.2_14.0_aug2013/sh"

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:

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General Notes (Continued)

```
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

400.perlbench: icc -m64

401.bzip2: icc -m64

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Peak Compiler Invocation (Continued)

456.hmmr: `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.hmmr: `-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.hmmr: `-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`

462.libquantum: `basepeak = yes`

464.h264ref: `basepeak = yes`

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Peak Optimization Flags (Continued)

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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