SPEC® CINT2006 Result
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IBM Corporation
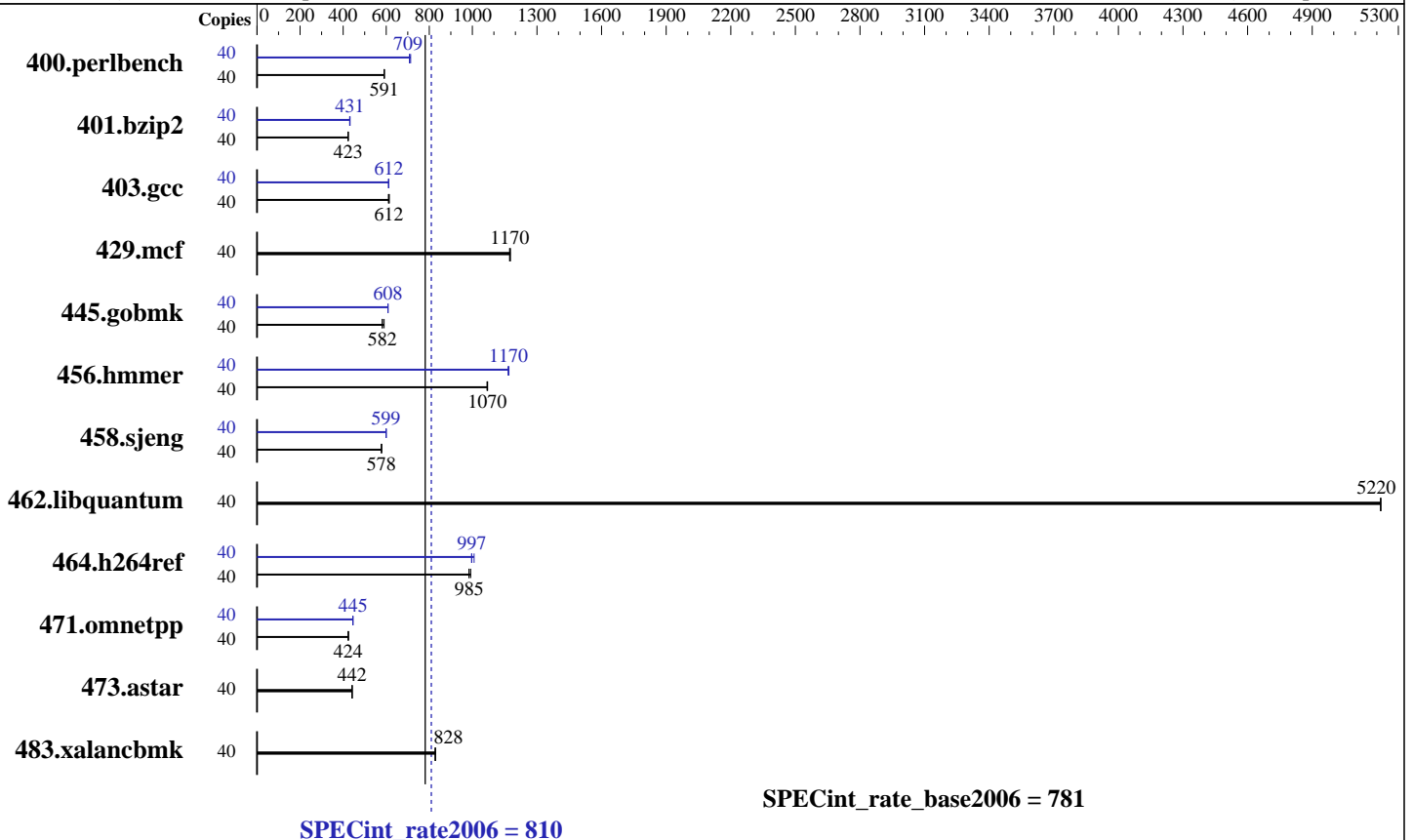
IBM System x3650 M4
(Intel Xeon E5-2670 v2, 2.50 GHz)

SPECint®_rate2006 =   810

SPECint_rate_base2006 =   781

SPECint_rate_base2006 = 781

SPECint_rate2006 = 810

Benchmark	Copies	Peak	Base
400.perlbench	40	709	591
401.bzip2	40	431	423
403.gcc	40	612	612
429.mcf	40		1170
445.gobmk	40	608	582
456.hmmer	40	1170	1070
458.sjeng	40	599	578
462.libquantum	40		5220
464.h264ref	40	997	985
471.omnetpp	40	445	424
473.astar	40		442
483.xalancbmk	40		828

Hardware

CPU Name: Intel Xeon E5-2670 v2

CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz

CPU MHz: 2500

FPU: Integrated

CPU(s) enabled: 20 cores, 2 chips, 10 cores/chip, 2 threads/core

CPU(s) orderable: 1,2 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: 25 MB I+D on chip per chip

Other Cache: None

Memory: 256 GB (16 x 16 GB 2Rx4 PC3-14900R-13, ECC)

Disk Subsystem: 1 x 400 GB SAS SSD, RAID 0

Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 6.4 (Santiago)
2.6.32-358.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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Software Availability: Sep-2013

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	40	662	591	661	591	**661**	**591**		40	548	713	552	708	**551**	**709**
401.bzip2	40	**912**	**423**	911	424	913	423		40	893	432	**895**	**431**	897	430
403.gcc	40	528	610	524	614	**526**	**612**		40	**526**	**612**	526	612	528	610
429.mcf	40	311	1170	**311**	**1170**	310	1180		40	311	1170	**311**	**1170**	310	1180
445.gobmk	40	**721**	**582**	721	582	711	590		40	690	608	**690**	**608**	690	608
456.hmmer	40	**349**	**1070**	349	1070	349	1070		40	**320**	**1170**	319	1170	320	1170
458.sjeng	40	839	577	**837**	**578**	836	579		40	808	599	**807**	**599**	806	600
462.libquantum	40	159	5220	**159**	**5220**	159	5220		40	159	5220	**159**	**5220**	159	5220
464.h264ref	40	892	992	899	984	**899**	**985**		40	888	996	878	1010	**888**	**997**
471.omnetpp	40	591	423	**590**	**424**	588	425		40	**561**	**445**	562	445	561	446
473.astar	40	635	442	**636**	**442**	636	441		40	635	442	**636**	**442**	636	441
483.xalancbmk	40	333	829	334	827	**333**	**828**		40	333	829	334	827	**333**	**828**

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"
   Zone reclaim mode enabled with:
   echo 1 > /proc/sys/vm/zone_reclaim_mode
   Intel Idle Driver disabled with the following Linux kernel parameter in /etc/grub.conf:
   intel_idle.max_cstate=0
```

Platform Notes

```
   BIOS setting:
   Operating Mode set to Maximum Performance
   Sysinfo program /home/SPECcpu-20140116-ic14.0/config/sysinfo.rev6818
   $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
   running on x3650M4 Tue Jul  1 01:42:31 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 E5-2670 v2 @ 2.50GHz
        2 "physical id"s (chips)
```

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Platform Notes (Continued)

```
      40 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
      cpu cores : 10
      siblings  : 20
      physical 0: cores 0 1 2 3 4 8 9 10 11 12
      physical 1: cores 0 1 2 3 4 8 9 10 11 12
   cache size : 25600 KB

 From /proc/meminfo
    MemTotal:      264339612 kB
    HugePages_Total:        0
    Hugepagesize:       2048 kB

 /usr/bin/lsb_release -d
    Red Hat Enterprise Linux Server release 6.4 (Santiago)

 From /etc/*release* /etc/*version*
    redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
    system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
    system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

 uname -a:
    Linux x3650M4 2.6.32-358.18.1.el6.x86_64 #1 SMP Fri Aug 2 17:04:38 EDT 2013
    x86_64 x86_64 x86_64 GNU/Linux

 run-level 3 Jun 25 18:00

 SPEC is set to: /home/SPECcpu-20140116-ic14.0
    Filesystem     Type    Size  Used Avail Use% Mounted on
    /dev/mapper/vg_x3650m4-lv_home
                    ext4    313G  114G  183G  39% /home

 Additional information from dmidecode:
   BIOS IBM -[VVE135VUS-1.60]- 12/05/2013
   Memory:
    8x Not Specified Not Specified
    16x Samsung M393B2G70QH0-CMA 16 GB 1867 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 = "/home/SPECcpu-20140116-ic14.0/libs/32:/home/SPECcpu-20140116-ic14.0/libs/64:/home/SPECcpu-20140116-ic14.0/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
```

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General Notes (Continued)

```
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

   400.perlbench: icc -m64

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Peak Compiler Invocation (Continued)

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`

462.libquantum: `basepeak = yes`

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Peak Optimization Flags (Continued)

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-B.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-B.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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