SPEC® CINT2006 Result
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IBM Corporation
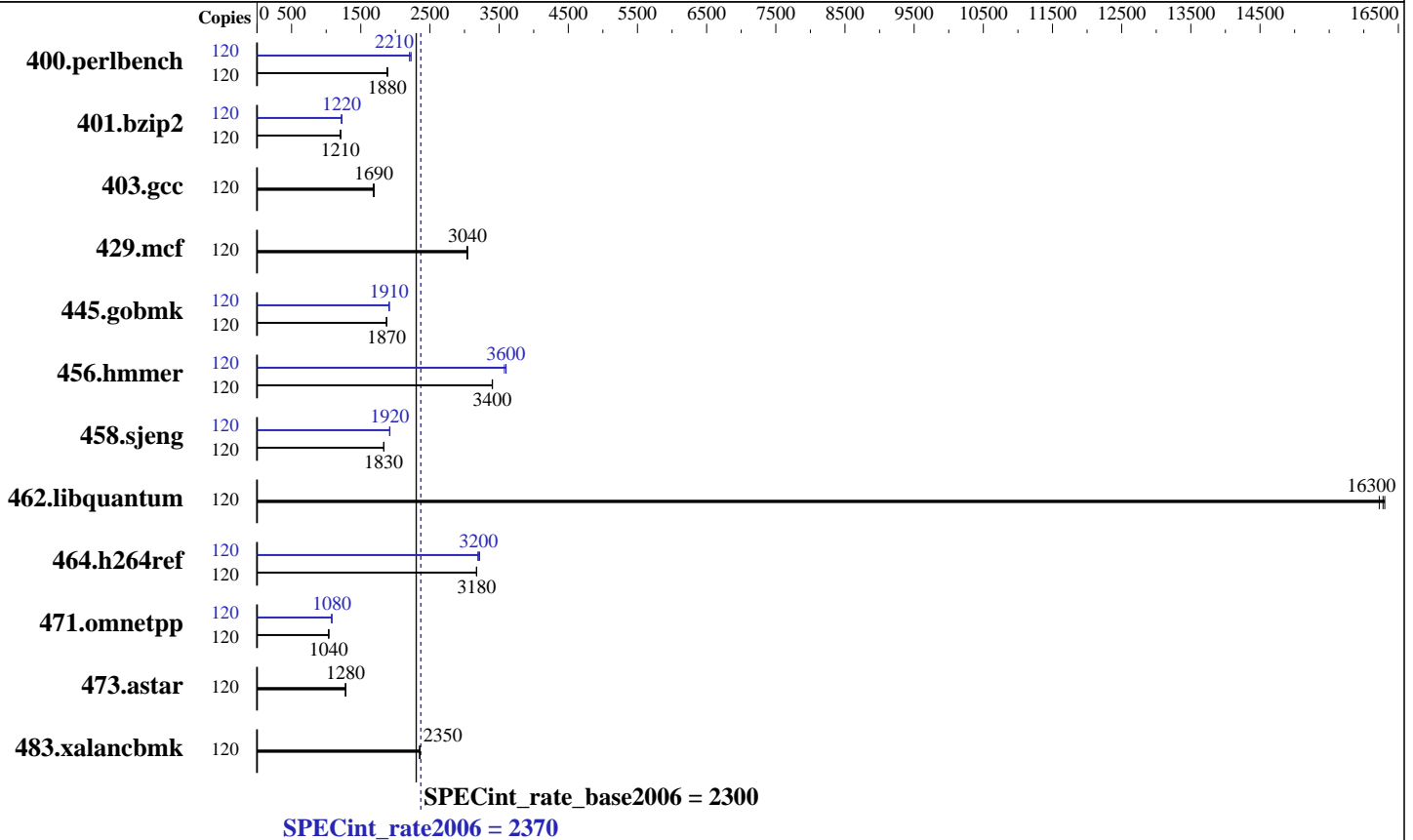
IBM System x3850 X6
(Intel Xeon E7-4890 v2, 2.80 GHz)

$SPECint^®\_rate2006 =$ 2370

$SPECint\_rate\_base2006 =$ 2300

CPU2006 license: 11	**Test date:** Mar-2014
Test sponsor: IBM Corporation	**Hardware Availability:** Mar-2014
Tested by: IBM Corporation	**Software Availability:** Nov-2013

SPECint_rate_base2006 = 2300

SPECint_rate2006 = 2370

Hardware

CPU Name:	Intel Xeon E7-4890 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.40 GHz
CPU MHz:	2800
FPU:	Integrated
CPU(s) enabled:	60 cores, 4 chips, 15 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:	37.5 MB I+D on chip per chip
Other Cache:	None
Memory:	1 TB (64 x 16 GB 2Rx4 PC3L-12800R-11, ECC, running at 1333MHz)
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	120	**622**	**1880**	621	1890	623	1880	120	531	2210	**531**	**2210**	526	2230
401.bzip2	120	960	1210	**959**	**1210**	957	1210	120	949	1220	**945**	**1220**	945	1230
403.gcc	120	571	1690	**572**	**1690**	575	1680	120	571	1690	**572**	**1690**	575	1680
429.mcf	120	361	3030	**360**	**3040**	360	3040	120	361	3030	**360**	**3040**	360	3040
445.gobmk	120	671	1870	**672**	**1870**	673	1870	120	659	1910	658	1910	**659**	**1910**
456.hmmer	120	329	3400	**329**	**3400**	329	3400	120	**311**	**3600**	311	3600	313	3580
458.sjeng	120	**792**	**1830**	792	1830	792	1830	120	756	1920	758	1920	**757**	**1920**
462.libquantum	120	153	16300	**153**	**16300**	153	16200	120	153	16300	**153**	**16300**	153	16200
464.h264ref	120	838	3170	836	3180	**836**	**3180**	120	832	3190	825	3220	**829**	**3200**
471.omnetpp	120	725	1040	**723**	**1040**	723	1040	120	**694**	**1080**	694	1080	694	1080
473.astar	120	660	1280	656	1280	**657**	**1280**	120	660	1280	656	1280	**657**	**1280**
483.xalancbmk	120	352	2350	**352**	**2350**	351	2360	120	352	2350	**352**	**2350**	351	2360

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 Perfomance in BIOS
    Sysinfo program /cpu2006.1.2_14.0_aug2013/config/sysinfo.rev6818
    $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
    running on Larry-Andromeda Thu Mar 20 16:10:24 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 E7-4890 v2 @ 2.80GHz
          4 "physical id"s (chips)
          120 "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 : 15
```

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Platform Notes (Continued)

```
     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
   cache size : 38400 KB

 From /proc/meminfo
   MemTotal:      1058467616 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 Larry-Andromeda 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 Mar 20 15:54

 SPEC is set to: /cpu2006.1.2_14.0_aug2013
   Filesystem                        Type  Size  Used Avail Use% Mounted on
   /dev/mapper/vg_larryandromed-lv_root ext4  357G  122G  218G  36% /

 Additional information from dmidecode:
   BIOS IBM -[A8E103KUS-1.00]- 11/21/2013
   Memory:
   64x Hynix Unknown 16 GB 1333 MHz 2 rank
   32x NO DIMM Unknown

 (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:
 echo 1>      /proc/sys/vm/drop_caches
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
```

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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

    456.hmmer: icc -m64

      458.sjeng: icc -m64

C++ benchmarks:
    icpc -m32

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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

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
```

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Peak Optimization Flags (Continued)

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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