SPEC® CINT2006 Result
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IBM Corporation
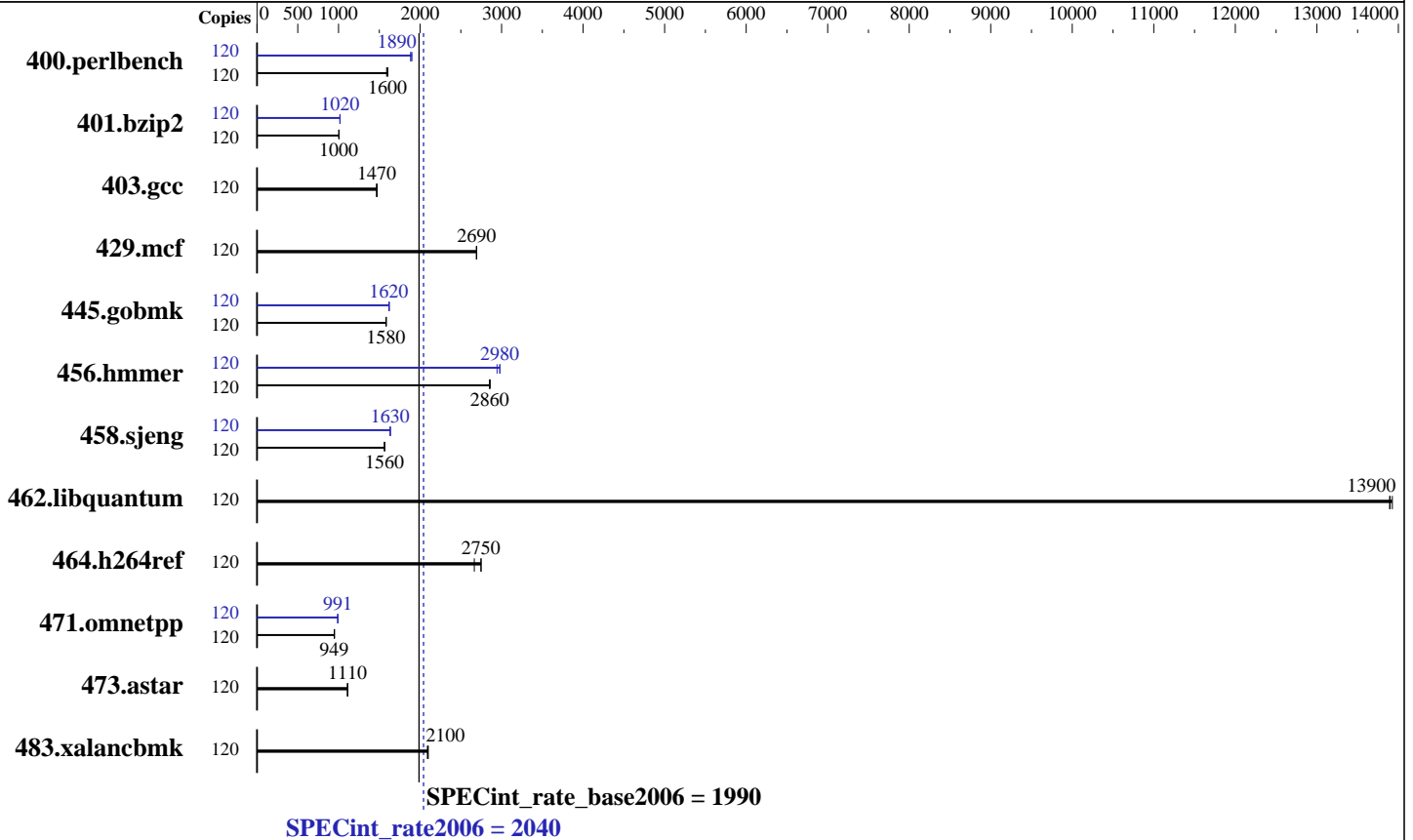
IBM System x3850 X6
(Intel Xeon E7-4870 v2, 2.30 GHz)

SPECint®_rate2006 = 2040

SPECint_rate_base2006 = 1990

CPU2006 license: 11

Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Apr-2014

Hardware Availability: Mar-2014

Software Availability: Nov-2013

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Hardware

CPU Name:	Intel Xeon E7-4870 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 2.90 GHz
CPU MHz:	2300
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:	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 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	737	1590	**732**	**1600**	732	1600	120	**622**	**1890**	617	1900	622	1890
401.bzip2	120	1152	1010	**1153**	**1000**	1153	1000	120	1139	1020	**1137**	**1020**	1136	1020
403.gcc	120	656	1470	659	1470	**657**	**1470**	120	656	1470	659	1470	**657**	**1470**
429.mcf	120	407	2690	**406**	**2690**	406	2690	120	407	2690	**406**	**2690**	406	2690
445.gobmk	120	794	1580	**795**	**1580**	795	1580	120	778	1620	**777**	**1620**	776	1620
456.hmmer	120	392	2860	393	2850	**392**	**2860**	120	380	2940	376	2980	**376**	**2980**
458.sjeng	120	929	1560	**928**	**1560**	928	1570	120	**888**	**1630**	888	1640	889	1630
462.libquantum	120	**179**	**13900**	179	13900	179	13900	120	**179**	**13900**	179	13900	179	13900
464.h264ref	120	**967**	**2750**	966	2750	996	2670	120	**967**	**2750**	966	2750	996	2670
471.omnetpp	120	790	950	**791**	**949**	791	948	120	756	992	**757**	**991**	757	991
473.astar	120	759	1110	**758**	**1110**	757	1110	120	759	1110	**758**	**1110**	757	1110
483.xalancbmk	120	**395**	**2100**	396	2090	394	2100	120	**395**	**2100**	396	2090	394	2100

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 Tue Apr 29 16:50:31 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 E7-4870 v2 @ 2.30GHz
      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 : 30720 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 Apr 29 16:35

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  217G  37% /

Additional information from dmidecode:
  BIOS IBM -[A8E103KUS-1.00]- 11/21/2013
  Memory:
   32x NO DIMM Unknown
   64x Samsung Unknown 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_14.0_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.:
```

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General Notes (Continued)

```
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
```

```
     456.hmmer: icc -m64
```

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Test sponsor: IBM Corporation		**Hardware Availability:**	Mar-2014
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Peak Compiler Invocation (Continued)

    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`

    462.libquantum: `basepeak = yes`

      464.h264ref: `basepeak = yes`

C++ benchmarks:

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Peak Optimization Flags (Continued)

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

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

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