SPEC® CINT2006 Result
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IBM Corporation

IBM Flex System x440
(Intel Xeon E5-4620, 2.20 GHz)

$SPECint^®\_rate2006 =$ 977

$SPECint\_rate\_base2006 =$ 939

Benchmark	Copies	Result
400.perlbench	64	848
400.perlbench	64	719
401.bzip2	64	529
401.bzip2	64	513
403.gcc	64	745
429.mcf	64	1410
445.gobmk	64	734
445.gobmk	64	720
456.hmmer	64	1390
456.hmmer	64	1200
458.sjeng	64	747
458.sjeng	64	716
462.libquantum	64	5750
464.h264ref	64	1230
464.h264ref	64	1220
471.omnetpp	64	581
471.omnetpp	64	551
473.astar	64	550
483.xalancbmk	64	930

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Hardware

CPU Name: Intel Xeon E5-4620
CPU Characteristics: Intel Turbo Boost Technology up to 2.60 GHz
CPU MHz: 2200
FPU: Integrated
CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip, 2 threads/core
CPU(s) orderable: 1,2,3,4 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: 16 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (32 x 8 GB 2Rx4 PC3-12800R-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 6.2 (Santiago)
2.6.32-220.el6.x86_64
Compiler: C/C++: Version 12.1.0.225 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 V9.01

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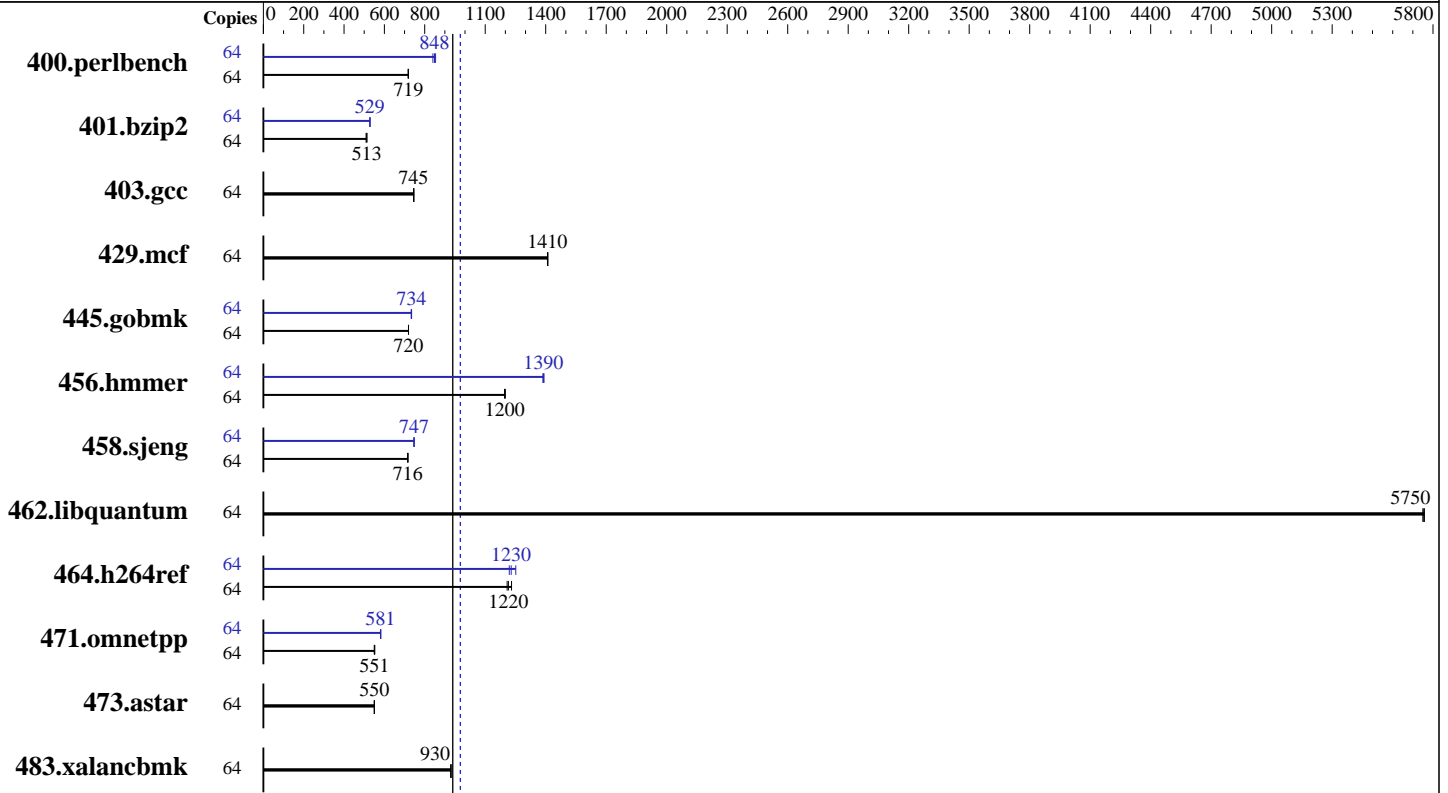
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CPU2006 license: 11
Test sponsor: IBM Corporation
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Test date: Aug-2012
Hardware Availability: Aug-2012
Software Availability: Dec-2011

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	64	869	720	**870**	**719**	871	718	64	744	841	732	854	**737**	**848**
401.bzip2	64	1203	513	1213	509	**1205**	**513**	64	1170	528	**1168**	**529**	1168	529
403.gcc	64	**692**	**745**	692	744	690	747	64	**692**	**745**	692	744	690	747
429.mcf	64	414	1410	**414**	**1410**	414	1410	64	414	1410	**414**	**1410**	414	1410
445.gobmk	64	933	720	**933**	**720**	933	719	64	913	735	**914**	**734**	916	733
456.hmmer	64	498	1200	499	1200	**498**	**1200**	64	429	1390	431	1390	**430**	**1390**
458.sjeng	64	1080	717	1082	716	**1081**	**716**	64	**1036**	**747**	1037	747	1036	748
462.libquantum	64	230	5760	**230**	**5750**	231	5750	64	230	5760	**230**	**5750**	231	5750
464.h264ref	64	1172	1210	1151	1230	**1166**	**1220**	64	1162	1220	1132	1250	**1153**	**1230**
471.omnetpp	64	724	553	728	550	**726**	**551**	64	689	581	**688**	**581**	687	583
473.astar	64	816	550	**816**	**550**	817	550	64	816	550	**816**	**550**	817	550
483.xalancbmk	64	475	929	**475**	**930**	474	931	64	475	929	**475**	**930**	474	931

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/config/sysinfo.rev6800
    $Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
    running on congo-pete Fri Aug 24 11:10:05 2012

    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 E5-4620 0 @ 2.20GHz
          4 "physical id"s (chips)
          64 "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 : 8

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Platform Notes (Continued)

```
      siblings  : 16
      physical 0: cores 0 1 2 3 4 5 6 7
      physical 1: cores 0 1 2 3 4 5 6 7
      physical 2: cores 0 1 2 3 4 5 6 7
      physical 3: cores 0 1 2 3 4 5 6 7
   cache size : 16384 KB

From /proc/meminfo
   MemTotal:       264501720 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.2 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux congo-pete 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST 2011
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Aug 24 10:59

SPEC is set to: /cpu2006.1.2
   Filesystem     Type    Size  Used Avail Use% Mounted on
   /dev/mapper/vg_congopete-lv_root
                  ext4    264G  5.9G  245G   3% /

Additional information from dmidecode:
  Memory:
   32x Micron 36JSF1G72PZ-1G6M1 8 GB 1600 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/libs/32:/cpu2006.1.2/libs/64"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
memory using RHEL5.5
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/smartheap -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/smartheap -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-ic12.1-official-linux64.20120425.html
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-SNB-C.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-SNB-C.xml

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