# SPEC® CINT2006 Result
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## IBM Corporation
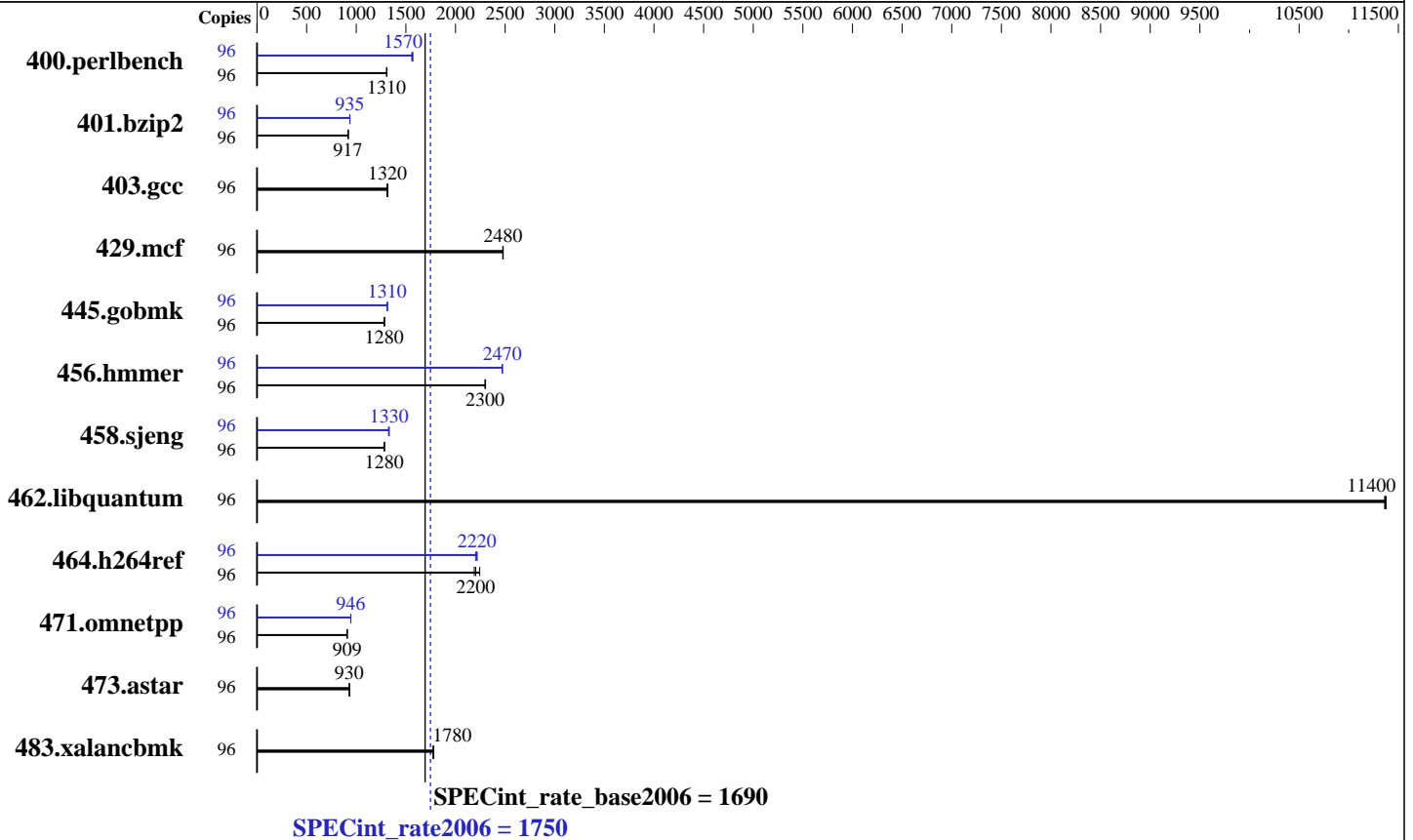
IBM System x3750 M4
(Intel Xeon E5-4657L v2, 2.40 GHz)

$SPECint^{®}\_rate2006 =$ 1750

$SPECint\_rate\_base2006 =$ 1690

SPECint_rate_base2006 = 1690
SPECint_rate2006 = 1750

## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-4657L v2 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 2.90 GHz |
| CPU MHz: | 2400 |
| FPU: | Integrated |
| CPU(s) enabled: | 48 cores, 4 chips, 12 cores/chip, 2 threads/core |
| CPU(s) orderable: | 4 chip |
| 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: | 512 GB (32 x 16 GB 2Rx4 PC3-14900R-13, ECC) |
| 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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**Test date:** Jul-2014
**Hardware Availability:** Jun-2014
**Software Availability:** Nov-2013

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 400.perlbench | 96 | 716 | 1310 | **<u>718</u>** | **<u>1310</u>** | 718 | 1310 | 96 | 597 | 1570 | **<u>599</u>** | **<u>1570</u>** | 602 | 1560 |
| 401.bzip2 | 96 | 1011 | 916 | **<u>1011</u>** | **<u>917</u>** | 1005 | 921 | 96 | 991 | 935 | **<u>991</u>** | **<u>935</u>** | 989 | 937 |
| 403.gcc | 96 | **<u>588</u>** | **<u>1320</u>** | 590 | 1310 | 587 | 1320 | 96 | **<u>588</u>** | **<u>1320</u>** | 590 | 1310 | 587 | 1320 |
| 429.mcf | 96 | 353 | 2480 | 354 | 2480 | **<u>353</u>** | **<u>2480</u>** | 96 | 353 | 2480 | 354 | 2480 | **<u>353</u>** | **<u>2480</u>** |
| 445.gobmk | 96 | 784 | 1280 | **<u>785</u>** | **<u>1280</u>** | 785 | 1280 | 96 | 766 | 1310 | 767 | 1310 | **<u>767</u>** | **<u>1310</u>** |
| 456.hmmer | 96 | **<u>389</u>** | **<u>2300</u>** | 389 | 2300 | 390 | 2300 | 96 | 362 | 2470 | 363 | 2470 | **<u>362</u>** | **<u>2470</u>** |
| 458.sjeng | 96 | 904 | 1280 | 906 | 1280 | **<u>905</u>** | **<u>1280</u>** | 96 | 877 | 1330 | **<u>873</u>** | **<u>1330</u>** | 873 | 1330 |
| 462.libquantum | 96 | **<u>175</u>** | **<u>11400</u>** | 175 | 11400 | 175 | 11400 | 96 | **<u>175</u>** | **<u>11400</u>** | 175 | 11400 | 175 | 11400 |
| 464.h264ref | 96 | **<u>964</u>** | **<u>2200</u>** | 947 | 2240 | 970 | 2190 | 96 | 965 | 2200 | 958 | 2220 | **<u>959</u>** | **<u>2220</u>** |
| 471.omnetpp | 96 | 660 | 909 | 660 | 909 | **<u>660</u>** | **<u>909</u>** | 96 | **<u>634</u>** | **<u>946</u>** | 634 | 946 | 635 | 945 |
| 473.astar | 96 | **<u>724</u>** | **<u>930</u>** | 725 | 930 | 723 | 932 | 96 | **<u>724</u>** | **<u>930</u>** | 725 | 930 | 723 | 932 |
| 483.xalancbmk | 96 | 372 | 1780 | **<u>373</u>** | **<u>1780</u>** | 373 | 1770 | 96 | 372 | 1780 | **<u>373</u>** | **<u>1780</u>** | 373 | 1770 |

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

    Sysinfo program /cpu2006.1.2_14.0_aug2013/config/sysinfo.rev6818
    $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
    running on Larry-KongIVB Sat Jul 26 12:47:09 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 E5-4657L v2 @ 2.40GHz
          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
       caution.)
          cpu cores : 12
          siblings  : 24

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## Platform Notes (Continued)

```
     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:       529081040 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-KongIVB 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 Jul 26 12:46

SPEC is set to: /cpu2006.1.2_14.0_aug2013
   Filesystem                        Type  Size  Used Avail Use% Mounted on
   /dev/mapper/vg_larrykongivb-lv_root ext4  264G  100G  151G  40% /

Additional information from dmidecode:
  BIOS IBM -[KOE141AUS-1.50]- 05/03/2014
  Memory:
   31x Micron 36JSF2G72PZ-1G9E1 16 GB 1867 MHz 2 rank
   16x Not Specified Not Specified
   1x 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 = "/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
```

Continued on next page

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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/IBM-Platform-Flags-V1.2-IVB-A.html
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-IVB-A.xml
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml

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

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