# SPEC® CINT2006 Result



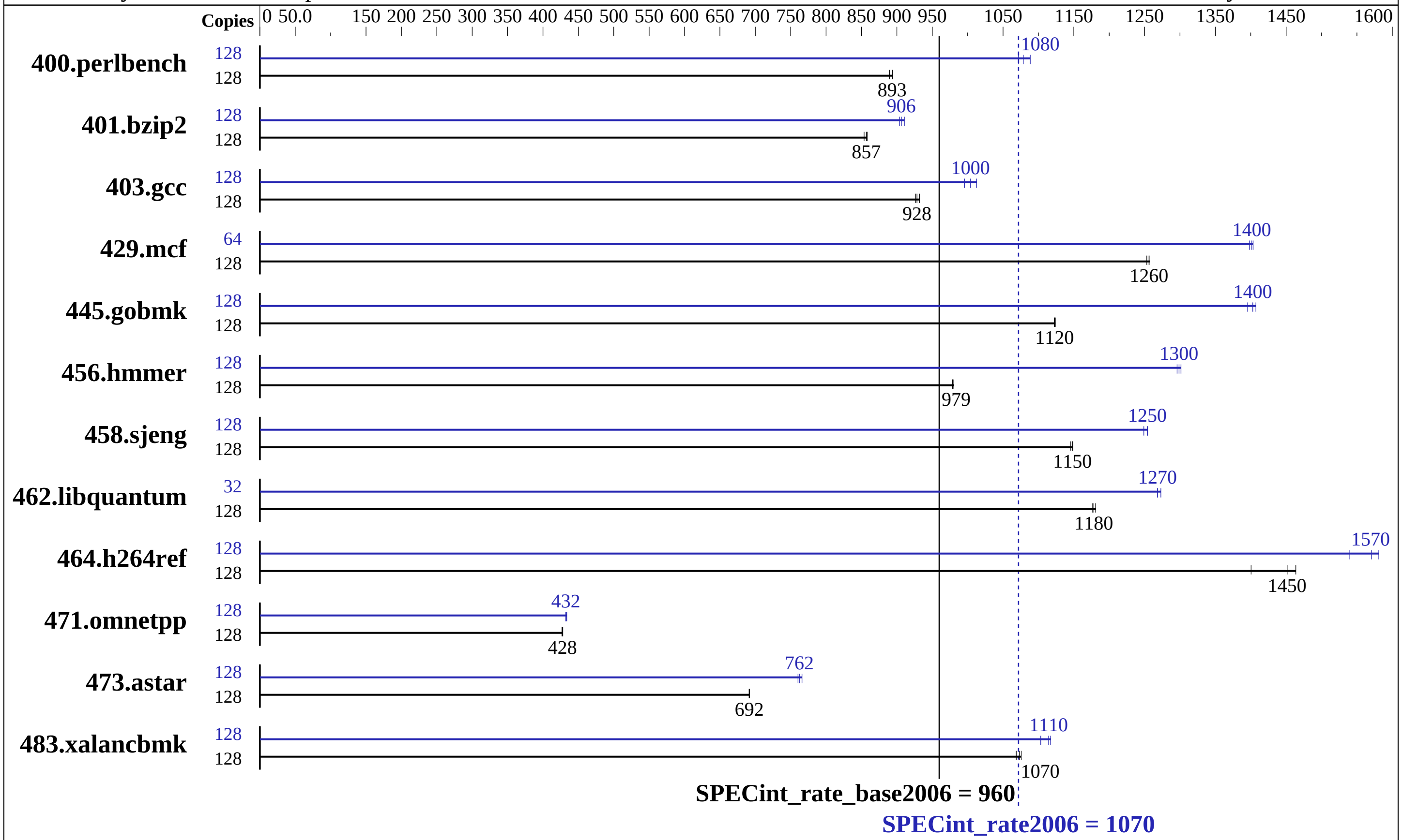
## IBM Corporation

IBM Power 750 Express (3.55 GHz, 32 core, SLES)

**SPECint®_rate2006 = 1070**

**SPECint_rate_base2006 = 960**

| | | | |
|---|---|---|---|
| **CPU2006 license:** | 11 | **Test date:** | Jan-2010 |
| **Test sponsor:** | IBM Corporation | **Hardware Availability:** | Feb-2010 |
| **Tested by:** | IBM Corporation | **Software Availability:** | Dec-2009 |




## Hardware

| | |
|---|---|
| CPU Name: | POWER7 |
| CPU Characteristics: | Intelligent Energy Optimization enabled, up to 3.86 GHz |
| CPU MHz: | 3550 |
| FPU: | Integrated |
| CPU(s) enabled: | 32 cores, 4 chips, 8 cores/chip, 4 threads/core |
| CPU(s) orderable: | 8,16,24,32 cores |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 256 KB I+D on chip per core |
| L3 Cache: | 4 MB I+D on chip per core |
| Other Cache: | None |
| Memory: | 256 GB (32x8 GB) DDR3 1066 MHz |
| Disk Subsystem: | 8x146.8 GB SAS SFF 15K RPM |
| Other Hardware: | None |

## Software

| | |
|---|---|
| Operating System: | SUSE Linux Enterprise Server 11 (ppc64), Kernel 2.6.27.19-5-ppc64 |
| Compiler: | IBM XL C/C++ for Linux, V10.1 Updated with the Oct2009 PTF |
| Auto Parallel: | No |
| File System: | ext3 |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 32-bit |
| Peak Pointers: | 32/64-bit |
| Other Software: | -Post-Link Optimization for Linux on POWER, Version 5.5.0-1<br>-MicroQuill SmartHeap 9 |

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 400.perlbench | 128 | 1406 | 890 | 1399 | 894 | **1400** | **893** | 128 | 1149 | 1090 | 1167 | 1070 | **1159** | **1080** |
| 401.bzip2 | 128 | 1440 | 858 | **1442** | **857** | 1447 | 854 | 128 | 1356 | 911 | **1363** | **906** | 1367 | 904 |
| 403.gcc | 128 | 1105 | 932 | **1110** | **928** | 1112 | 927 | 128 | **1026** | **1000** | 1018 | 1010 | 1035 | 996 |
| 429.mcf | 128 | 928 | 1260 | 932 | 1250 | **929** | **1260** | 64 | 417 | 1400 | 416 | 1400 | **416** | **1400** |
| 445.gobmk | 128 | 1195 | 1120 | **1196** | **1120** | 1196 | 1120 | 128 | 954 | 1410 | **957** | **1400** | 962 | 1400 |
| 456.hmmer | 128 | **1220** | **979** | 1218 | 980 | 1220 | 979 | 128 | 918 | 1300 | 922 | 1300 | **920** | **1300** |
| 458.sjeng | 128 | 1348 | 1150 | 1352 | 1150 | **1349** | **1150** | 128 | 1235 | 1250 | 1240 | 1250 | **1235** | **1250** |
| 462.libquantum | 128 | 2246 | 1180 | 2254 | 1180 | **2251** | **1180** | 32 | 523 | 1270 | **523** | **1270** | 521 | 1270 |
| 464.h264ref | 128 | **1952** | **1450** | 1935 | 1460 | 2023 | 1400 | 128 | **1804** | **1570** | 1839 | 1540 | 1792 | 1580 |
| 471.omnetpp | 128 | 1874 | 427 | **1871** | **428** | 1869 | 428 | 128 | 1845 | 434 | **1850** | **432** | 1851 | 432 |
| 473.astar | 128 | **1299** | **692** | 1300 | 691 | 1299 | 692 | 128 | 1173 | 766 | **1179** | **762** | 1182 | 760 |
| 483.xalancbmk | 128 | 826 | 1070 | **823** | **1070** | 821 | 1080 | 128 | 801 | 1100 | 790 | 1120 | **793** | **1110** |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

```
The config file option 'submit' was used.
```

## Operating System Notes

```
ulimit -s (stack) set to 1048576.
Large pages reserved as follows by root user:
    echo 7040 > /proc/sys/vm/nr_hugepages
System configured with libhugetlbfs library for application access to large pages
Environment variables set before executing benchmarks.
    export HUGETLB_VERBOSE=0
    export HUGETLB_MORECORE=yes
    export XLFRTEOPTS=intrinthds=1
```

## General Notes

```
IBM Post-Link Optimization tool with
options "-O4 -omullX -see 0 -m power6" used for
    400.perlbench 401.bzip2 403.gcc 456.hmmer 458.sjeng
    483.xalancbmk
options "-bf -dp -hr -las -pca -RC -RD -rmte -si -tlo -A 64 -isf 104 -lu 8 -rt 0.16
        -hrf 0.18 -ihf 40 -sdp 6 -sdpms 128 -shci 65 -si -sidf 45 -omullX" used for
   429.mcf
options "-q -O3 -A 32 -omullX" used for
   445.gobmk
options "-bf -dp -lro -nop -RC -RD -tb -tlo -vro -A 4
        -isf 88 -lu 8 -hrf 0.10 -sdp 4 -lun 27 -omullX" used for
```

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## General Notes (Continued)

```
      462.libquantum
   options "-O4 -omullX -see 1" used for
      473.astar
   options "-O4" used for
      464.h264ref
   Whenever option "-omullX" was used during the optimization phase,
      option "-imullX" was also used during the instrumentation phase.

 Benchmarks bound to a processor using numactl on the submit command.
 See flags file for details on settings.
```

## Base Compiler Invocation

C benchmarks:
`xlc -qlanglvl=extc99`

C++ benchmarks:
`xlC`

## Base Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_PPC
462.libquantum: -DSPEC_CPU_LINUX
464.h264ref: -qchars=signed
483.xalancbmk: -DSPEC_CPU_LINUX

## Base Optimization Flags

C benchmarks:
`-O5 -qalias=noansi -qalloca -lhugetlbfs`

C++ benchmarks:
`-O5 -qrtti -lsmartheap`

## Base Other Flags

C benchmarks:
`-qipa=noobject -qipa=threads`

C++ benchmarks:
`-qipa=noobject -qipa=threads`

## Peak Compiler Invocation

C benchmarks:
xlc -qlanglvl=extc99

C++ benchmarks:
xlC

## Peak Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_PPC
462.libquantum: -DSPEC_CPU_LINUX
464.h264ref: -qchars=signed
483.xalancbmk: -DSPEC_CPU_LINUX

## Peak Optimization Flags

C benchmarks:

400.perlbench: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qalias=noansi -lsmartheap

401.bzip2: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -lhugetlbfs

403.gcc: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qalloca -lhugetlbfs

429.mcf: -Wl,-q -O5 -qnoenablevmx -lhugetlbfs

445.gobmk: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qnoenablevmx -lhugetlbfs

456.hmmer: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -lhugetlbfs

458.sjeng: -Wl,-q -O5 -lhugetlbfs

462.libquantum: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qnoenablevmx -q64 -lhugetlbfs

464.h264ref: Same as 456.hmmer

C++ benchmarks:

471.omnetpp: -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qrtti -lsmartheap

473.astar: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qnoenablevmx -lsmartheap

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## Peak Optimization Flags (Continued)

483.xalancbmk: `-Wl,-q -O5 -lsmartheap`

## Peak Other Flags

C benchmarks:
`-qipa=noobject -qipa=threads`

C++ benchmarks:
`-qipa=noobject -qipa=threads`

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20100302.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20100302.xml



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

Tested with SPEC CPU2006 v1.1.
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