# SPEC® CINT2006 Result
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## IBM Corporation

IBM Power 570 (4.2 GHz, 32 core)

SPECint®_rate2006 = 832

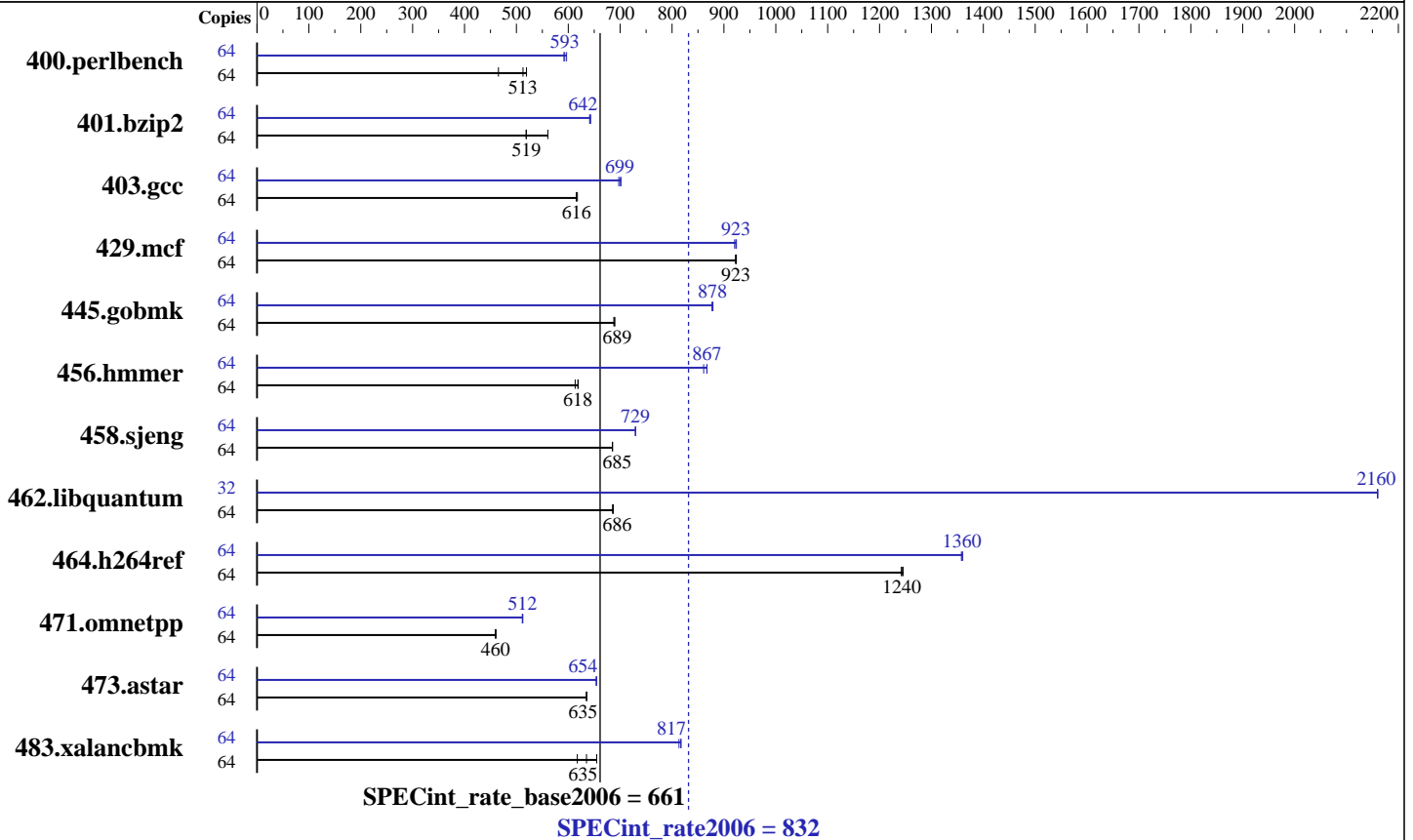SPECint_rate_base2006 = 661

**CPU2006 license:** 11  
**Test sponsor:** IBM Corporation  
**Tested by:** IBM Corporation  

**Test date:** Sep-2008  
**Hardware Availability:** Nov-2008  
**Software Availability:** Nov-2008  

| Benchmark | Copies | Result |
|---|---|---|
| 400.perlbench | 64 | 593 |
| 400.perlbench | 64 | 513 |
| 401.bzip2 | 64 | 642 |
| 401.bzip2 | 64 | 519 |
| 403.gcc | 64 | 699 |
| 403.gcc | 64 | 616 |
| 429.mcf | 64 | 923 |
| 429.mcf | 64 | 923 |
| 445.gobmk | 64 | 878 |
| 445.gobmk | 64 | 689 |
| 456.hmmer | 64 | 867 |
| 456.hmmer | 64 | 618 |
| 458.sjeng | 64 | 729 |
| 458.sjeng | 64 | 685 |
| 462.libquantum | 32 | 2160 |
| 462.libquantum | 64 | 686 |
| 464.h264ref | 64 | 1360 |
| 464.h264ref | 64 | 1240 |
| 471.omnetpp | 64 | 512 |
| 471.omnetpp | 64 | 460 |
| 473.astar | 64 | 654 |
| 473.astar | 64 | 635 |
| 483.xalancbmk | 64 | 817 |
| 483.xalancbmk | 64 | 635 |

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## Hardware

CPU Name: POWER6+  
CPU Characteristics:  
CPU MHz: 4200  
FPU: Integrated  
CPU(s) enabled: 32 cores, 16 chips, 2 cores/chip, 2 threads/core  
CPU(s) orderable: 4,8,16,24,32 cores  
Primary Cache: 64 KB I + 64 KB D on chip per core  
Secondary Cache: 4 MB I+D on chip per core  
L3 Cache: 32 MB I+D off chip per chip  
Other Cache: None  
Memory: 128 GB (64x2 GB) DDR2 667 MHz  
Disk Subsystem: 4x73 GB 4x146 GB SAS 15K RPM  
Other Hardware: None  

## Software

Operating System: IBM AIX V6.1  
with the 6100-02 Technology Level  
Compiler: IBM XL C/C++ V10.1 for AIX  
Auto Parallel: No  
File System: AIX/JFS2  
System State: Multi-user  
Base Pointers: 32-bit  
Peak Pointers: 32/64-bit  
Other Software: None

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**Hardware Availability:** Nov-2008
**Software Availability:**  Nov-2008

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 400.perlbench | 64 | 1204 | 519 | 1344 | 465 | **1219** | **513** | 64 | 1048 | 597 | **1054** | **593** | 1057 | 592 |
| 401.bzip2 | 64 | 1102 | 561 | 1191 | 519 | **1190** | **519** | 64 | 960 | 643 | 963 | 641 | **962** | **642** |
| 403.gcc | 64 | **837** | **616** | 834 | 618 | 837 | 616 | 64 | **737** | **699** | 734 | 702 | 739 | 697 |
| 429.mcf | 64 | **632** | **923** | 633 | 922 | 632 | 924 | 64 | 632 | 924 | **632** | **923** | 634 | 921 |
| 445.gobmk | 64 | 976 | 688 | **974** | **689** | 974 | 689 | 64 | 764 | 879 | **765** | **878** | 766 | 877 |
| 456.hmmer | 64 | 965 | 619 | 974 | 613 | **965** | **618** | 64 | 688 | 867 | **689** | **867** | 694 | 861 |
| 458.sjeng | 64 | 1131 | 685 | 1130 | 685 | **1130** | **685** | 64 | **1062** | **729** | 1061 | 730 | 1062 | 729 |
| 462.libquantum | 64 | 1931 | 687 | 1935 | 685 | **1932** | **686** | 32 | 307 | 2160 | **307** | **2160** | 307 | 2160 |
| 464.h264ref | 64 | 1140 | 1240 | 1137 | 1250 | **1139** | **1240** | 64 | **1042** | **1360** | 1043 | 1360 | 1041 | 1360 |
| 471.omnetpp | 64 | 870 | 460 | 868 | 461 | **870** | **460** | 64 | **781** | **512** | 781 | 512 | 782 | 511 |
| 473.astar | 64 | **707** | **635** | 707 | 635 | 708 | 635 | 64 | 687 | 654 | **687** | **654** | 686 | 655 |
| 483.xalancbmk | 64 | 674 | 655 | **695** | **635** | 715 | 617 | 64 | **541** | **817** | 540 | 817 | 543 | 813 |

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

## Peak Tuning Notes

```
fdpr binary optimization tool used for 400.perlbench 401.bzip2 403.gcc 456.hmmer 458.sjeng
                                       464.h264ref 471.omnetpp 473.astar 483.xalancbmk
   with options -O4 -vrox -pbsi
fdpr binary optimization tool used for 445.gobmk
   with options -O3 -vrox -sdp 9
fdpr binary optimization tool used for 429.mcf
   with options -kr -lap -lro -nop -nopr -RC -tb -tlo -vro -lu 9 -rt 0.95 -sdpla 8
                -sdpms 512 -shci 15 -si -sidf 45 -siht 10 -lun 13 -m ppc405 -vrox -gcpyp
fdpr binary optimization tool used for 462.libquantum
   with options -bf -bp -dp -hr -kr -las -lro -nop -RC -RD -tlo -vro -A 32 -isf 12
                -lu 9 -rt 0.00 -ihf 20 -sdp 9 -shci 90 -si -sidf 50 -vrox -dce
```

## Submit Notes

```
The config file option 'submit' was used
to assign benchmark copy to specific kernel thread using
the "bindprocessor" command (see flags file for details).
```

## Operating System Notes

```
all ulimits set to unlimited.
6400 16M large pages defined with vmo command
```

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## Platform Notes

```
System set to "Enhanced" mode when defining partition on HMC.
```

## General Notes

```
Environment variables set by runspec before the start of the run:
MALLOCOPTIONS = "pool"
MEMORY_AFFINITY = "MCM"
XLFRTEOPTS = "intrinthds=1"

 See the flags file for details on settings.
```

## Base Compiler Invocation

C benchmarks:
      /usr/vac/bin/xlc -qlanglvl=extc99

C++ benchmarks:
      /usr/vacpp/bin/xlC

## Base Portability Flags

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

## Base Optimization Flags

C benchmarks:
      -bmaxdata:0x50000000 -O5 -qlargepage -D_ILS_MACROS -qalias=noansi
      -qalloca -blpdata

C++ benchmarks:
      -bmaxdata:0x20000000 -O5 -qlargepage -D_ILS_MACROS -qrtti=all
      -D__IBM_FAST_SET_MAP_ITERATOR -blpdata

## Base Other Flags

C benchmarks:
      -qipa=threads -qipa=noobject -qsuppress=1500-036

C++ benchmarks:
      -qipa=threads -qipa=noobject -qsuppress=1500-036

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## Peak Compiler Invocation

C benchmarks:
        /usr/vac/bin/xlc -qlanglvl=extc99

C++ benchmarks:
        /usr/vacpp/bin/xlC

## Peak Portability Flags

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

## Peak Optimization Flags

C benchmarks:

        400.perlbench: -bmaxdata:0x50000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5
                -qlargepage -D_ILS_MACROS -qalias=noansi -qfdpr -blpdata

        401.bzip2: -bmaxdata:0x4fffffffc -qpdf1(pass 1) -qpdf2(pass 2) -O4
                -qlargepage -D_ILS_MACROS -qfdpr -blpdata

        403.gcc: -bmaxdata:0x50000000 -qpdf1(pass 1) -qpdf2(pass 2) -O4
                -qlargepage -D_ILS_MACROS -qalloca -qfdpr -blpdata

        429.mcf: -bmaxdata:0x50000000 -O5 -qlargepage -D_ILS_MACROS -qfdpr
                -blpdata

        445.gobmk: -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto
                -qlargepage -D_ILS_MACROS -qfdpr -blpdata

        456.hmmer: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qenablevmx -qvecnvol
                -D_ILS_MACROS -qfdpr -bdatapsize:64K -bstackpsize:64K
                -btextpsize:64K

        458.sjeng: -O5 -qlargepage -qenablevmx -qvecnvol -D_ILS_MACROS
                -qfdpr -blpdata

        462.libquantum: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -q64
                -D_ILS_MACROS -qfdpr -blpdata

        464.h264ref: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -D_ILS_MACROS -qfdpr
                -bdatapsize:64K -bstackpsize:64K -btextpsize:64K

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## Peak Optimization Flags (Continued)

C++ benchmarks:

```
471.omnetpp: -bmaxdata:0x20000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5
             -qlargepage -D_ILS_MACROS -qfdpr -qalign=natural
             -qrtti=all -qinlglue -D__IBM_FAST_SET_MAP_ITERATOR
             -blpdata

    473.astar: -bmaxdata:0x20000000 -O5 -qlargepage -D_ILS_MACROS -qfdpr
             -qenablevmx -qvecnvol -qinlglue -qalign=natural -blpdata

483.xalancbmk: -bmaxdata:0x20000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5
             -qlargepage -D_ILS_MACROS -qfdpr -qinlglue
             -D__IBM_FAST_VECTOR -blpdata
```

## Peak Other Flags

C benchmarks:
```
-qipa=threads -qipa=noobject -qsuppress=1500-036
```

C++ benchmarks:
```
-qipa=threads -qipa=noobject -qsuppress=1500-036
```

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/IBM-AIX.html
http://www.spec.org/cpu2006/flags/IBM-XL.20090713.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-AIX.xml
http://www.spec.org/cpu2006/flags/IBM-XL.20090713.xml

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