# SPEC® CINT2006 Result

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## IBM Corporation

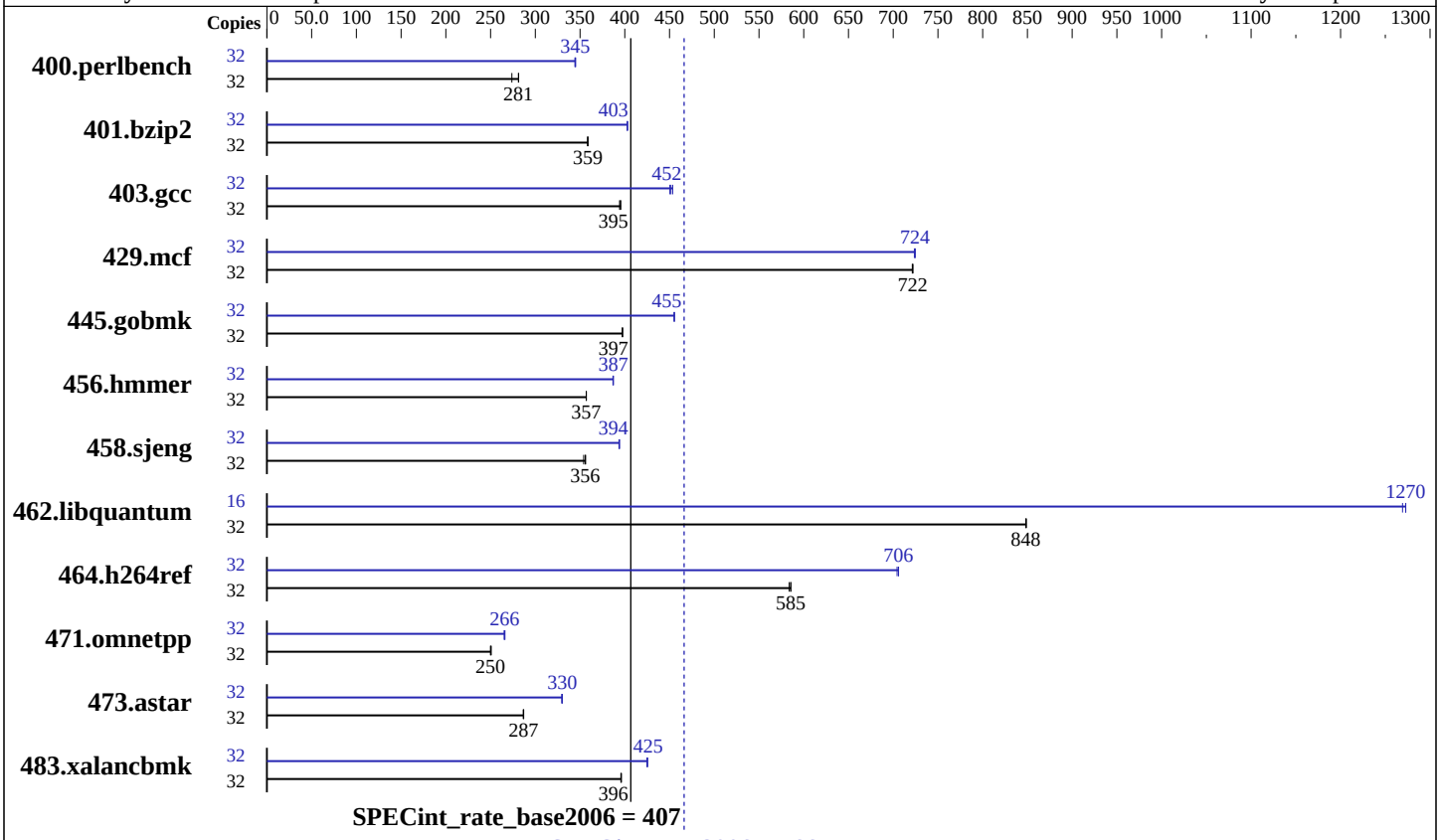
## IBM System p 570 (4.7 GHz, 16 core, SLES)

SPECint®_rate2006 = 466

SPECint_rate_base2006 = 407

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

**Test date:** Jul-2007
**Hardware Availability:** Jun-2007
**Software Availability:** Sep-2007




### Hardware

| | |
|---|---|
| CPU Name: | POWER6 |
| CPU Characteristics: | |
| CPU MHz: | 4700 |
| FPU: | Integrated |
| CPU(s) enabled: | 16 cores, 8 chips, 2 cores/chip, 2 threads/core |
| CPU(s) orderable: | 2,4,8,12,16 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: | 2x73 GB SAS 15K RPM |
| Other Hardware: | None |

### Software

| | |
|---|---|
| Operating System: | SUSE Linux Enterprise 10 SP1 |
| Compiler: | IBM XL C/C++ Advanced Edition for Linux, V9.0 |
| Auto Parallel: | No |
| File System: | ReiserFS |
| System State: | Multi-User |
| Base Pointers: | 32-bit |
| Peak Pointers: | 32/64-bit |
| Other Software: | -Post-Link Optimization for Linux on POWER, Version 5.4.0<br>-MicroQuill SmartHeap 7.3 |

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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 | 32 | 1142 | 274 | **1112** | **281** | 1111 | 281 | 32 | 906 | 345 | 908 | 344 | **907** | **345** |
| 401.bzip2 | 32 | 861 | 359 | 861 | 358 | **861** | **359** | 32 | 766 | 403 | 767 | 403 | **767** | **403** |
| 403.gcc | 32 | 651 | 395 | **652** | **395** | 654 | 394 | 32 | 568 | 454 | **570** | **452** | 572 | 450 |
| 429.mcf | 32 | **404** | **722** | 404 | 722 | 405 | 721 | 32 | **403** | **724** | 403 | 725 | 403 | 724 |
| 445.gobmk | 32 | 845 | 397 | 845 | 397 | **845** | **397** | 32 | **737** | **455** | 737 | 455 | 737 | 455 |
| 456.hmmer | 32 | 836 | 357 | **836** | **357** | 837 | 357 | 32 | 772 | 387 | 771 | 387 | **771** | **387** |
| 458.sjeng | 32 | 1094 | 354 | **1088** | **356** | 1087 | 356 | 32 | 983 | 394 | **983** | **394** | 984 | 393 |
| 462.libquantum | 32 | 782 | 848 | 781 | 849 | **782** | **848** | 16 | 261 | 1270 | **260** | **1270** | 260 | 1270 |
| 464.h264ref | 32 | 1209 | 586 | 1213 | 584 | **1210** | **585** | 32 | 1003 | 706 | 1005 | 704 | **1003** | **706** |
| 471.omnetpp | 32 | 800 | 250 | **800** | **250** | 798 | 251 | 32 | 752 | 266 | **753** | **266** | 754 | 265 |
| 473.astar | 32 | **783** | **287** | 784 | 286 | 783 | 287 | 32 | **681** | **330** | 682 | 329 | 680 | 330 |
| 483.xalancbmk | 32 | 557 | 396 | **558** | **396** | 558 | 396 | 32 | **519** | **425** | 519 | 425 | 520 | 425 |

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

## General Notes

```
kernel release 2.6.16.46-0.12-ppc64.

See flags file for details on following settings.

ulimit -s (stack) set to unlimited.


System set to Enhanced mode when defining partition on HMC

Large pages reserved as follows by root user:
    echo 3200 > /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 HUGETLB_MORECORE_HEAPBASE=0x50000000
    export XLFRTEOPTS=intrinthds=1

fdpr binary optimization tool used for
    400.perlbench 401.bzip2 403.gcc 429.mcf 456.hmmer 458.sjeng
    462.libquantum 464.h264ref 473.astar 483.xalancbmk

Benchmarks bound to a processor using taskset on the submit command.
```

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## 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
403.gcc: -DSPEC_CPU_LP64
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) -O4 -lhugetlbfs

403.gcc: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qalloca -q64 -lhugetlbfs

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

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

456.hmmer: Same as 401.bzip2

458.sjeng: Same as 401.bzip2

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

464.h264ref: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -q64 -lhugetlbfs

C++ benchmarks:

471.omnetpp: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qrtti -lsmartheap

473.astar: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qnoenablevmx -lhugetlbfs

483.xalancbmk: -Wl,-q -O4 -lsmartheap

## Peak Other Flags

C benchmarks:
-qipa=noobject -qipa=threads

Continued on next page

## Peak Other Flags (Continued)

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/lop-xl-flags.20090714.01.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/lop-xl-flags.20090714.01.xml`


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For other inquiries, please contact webmaster@spec.org.

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