



SPEC® CINT2006 Result

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IBM Corporation

SPECint®_rate2006 = 2100

IBM Power 595 (5.0 GHz, 64 core, RedHat)

SPECint_rate_base2006 = 1840

CPU2006 license: 11

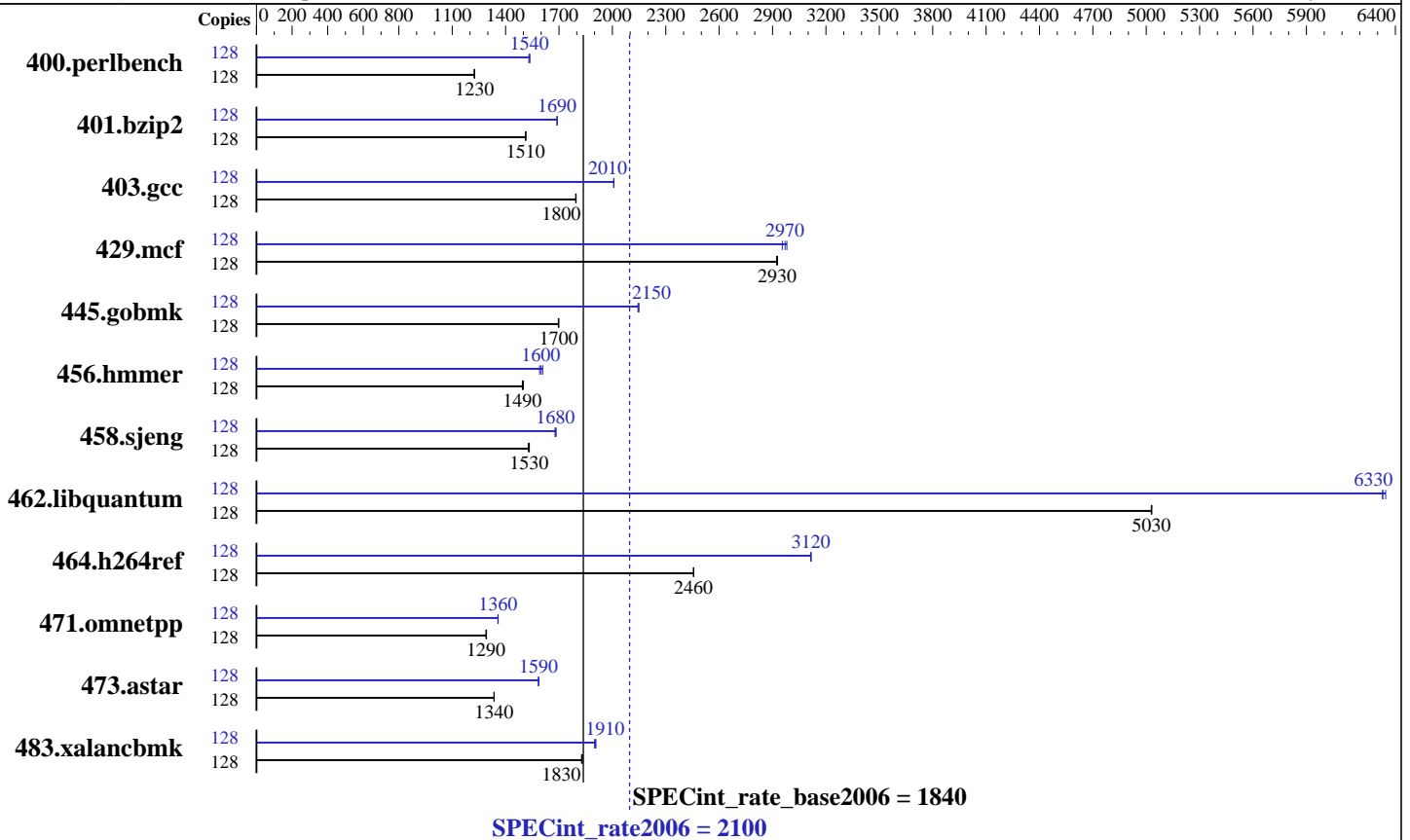
Test date: Jun-2008

Test sponsor: IBM Corporation

Hardware Availability: Jun-2008

Tested by: IBM Corporation

Software Availability: May-2008



Hardware

CPU Name: POWER6
 CPU Characteristics: 5000
 CPU MHz: Integrated
 FPU: 64 cores, 32 chips, 2 cores/chip, 2 threads/core
 CPU(s) enabled: 8,16,24,32,40,48,56,64 cores
 CPU(s) orderable: 64 KB I + 64 KB D on chip per core
 Primary Cache: 4 MB I+D on chip per core
 Secondary Cache: 32 MB I+D off chip per chip
 L3 Cache: None
 Other Cache: 512 GB (256x2 GB) DDR2 667 MHz
 Memory: 4x146 GB SCSI 15K RPM
 Disk Subsystem: None
 Other Hardware:

Software

Operating System: Red Hat Enterprise Linux Advanced Platform 5.2 for IBM POWER
 Compiler: IBM XL C/C++ Advanced Edition for Linux, V9.0 Updated with the Mar2008 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: -IBM Post-Link Optimization for Linux on POWER, Version 5.4.0-17
 -MicroQuill SmartHeap 8.1



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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 | 128 | 1023 | 1220 | 1020 | 1230 | 1020 | 1230 | 128 | 814 | 1540 | 817 | 1530 | 815 | 1540 |
| 401.bzip2 | 128 | 816 | 1510 | 817 | 1510 | 817 | 1510 | 128 | 731 | 1690 | 731 | 1690 | 731 | 1690 |
| 403.gcc | 128 | 574 | 1800 | 574 | 1790 | 574 | 1800 | 128 | 513 | 2010 | 513 | 2010 | 513 | 2010 |
| 429.mcf | 128 | 399 | 2920 | 399 | 2930 | 399 | 2930 | 128 | 393 | 2970 | 392 | 2980 | 395 | 2960 |
| 445.gobmk | 128 | 791 | 1700 | 791 | 1700 | 790 | 1700 | 128 | 625 | 2150 | 625 | 2150 | 626 | 2140 |
| 456.hmmer | 128 | 799 | 1490 | 799 | 1490 | 796 | 1500 | 128 | 747 | 1600 | 751 | 1590 | 742 | 1610 |
| 458.sjeng | 128 | 1011 | 1530 | 1014 | 1530 | 1010 | 1530 | 128 | 923 | 1680 | 922 | 1680 | 920 | 1680 |
| 462.libquantum | 128 | 527 | 5030 | 527 | 5030 | 527 | 5030 | 128 | 419 | 6330 | 419 | 6330 | 418 | 6350 |
| 464.h264ref | 128 | 1153 | 2460 | 1153 | 2460 | 1153 | 2460 | 128 | 909 | 3120 | 909 | 3120 | 910 | 3110 |
| 471.omnetpp | 128 | 619 | 1290 | 620 | 1290 | 620 | 1290 | 128 | 589 | 1360 | 590 | 1360 | 589 | 1360 |
| 473.astar | 128 | 673 | 1340 | 673 | 1330 | 673 | 1340 | 128 | 567 | 1590 | 567 | 1580 | 566 | 1590 |
| 483.xalancbmk | 128 | 483 | 1830 | 483 | 1830 | 482 | 1830 | 128 | 465 | 1900 | 463 | 1910 | 463 | 1910 |

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.

General Notes

kernel release 2.6.18-92.el5.

See flags file for details on following settings.

ulimit -s (stack) set to 1048576.

System in normal architected mode

Large pages reserved as follows by root user:

```
echo 8960 > /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
```

IBM Post-Link 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 numactl 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 -qarch=pwr6 -qtune=pwr6 -qalias=noansi -qalloca -lhugetlbfs

C++ benchmarks:

-O5 -qarch=pwr6 -qtune=pwr6 -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



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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 -qarch=pwr6
 -qtune=pwr6 -qalias=noansi -lsmartheap

401.bzip2: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr6
 -qtune=pwr6 -lhugetlbfs

403.gcc: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr6
 -qtune=pwr6 -qalloca -q64 -lhugetlbfs

429.mcf: -Wl,-q -O5 -qarch=pwr6 -qtune=pwr6 -qnoenablevmx
 -lhugetlbfs

445.gobmk: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr6
 -qtune=pwr6 -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 -qarch=pwr6
 -qtune=pwr6 -qnoenablevmx -q64 -lhugetlbfs

464.h264ref: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr6
 -qtune=pwr6 -q64 -lhugetlbfs

C++ benchmarks:

471.omnetpp: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr6 -qtune=pwr6
 -qrtti -lsmartheap

473.astar: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr6
 -qtune=pwr6 -qnoenablevmx -lsmartheap

483.xalancbmk: -Wl,-q -O4 -qarch=pwr6 -qtune=pwr6 -lsmartheap



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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.20090713.00.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20090713.00.xml>

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

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