SPEC® CINT2006 Result

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IBM Corporation

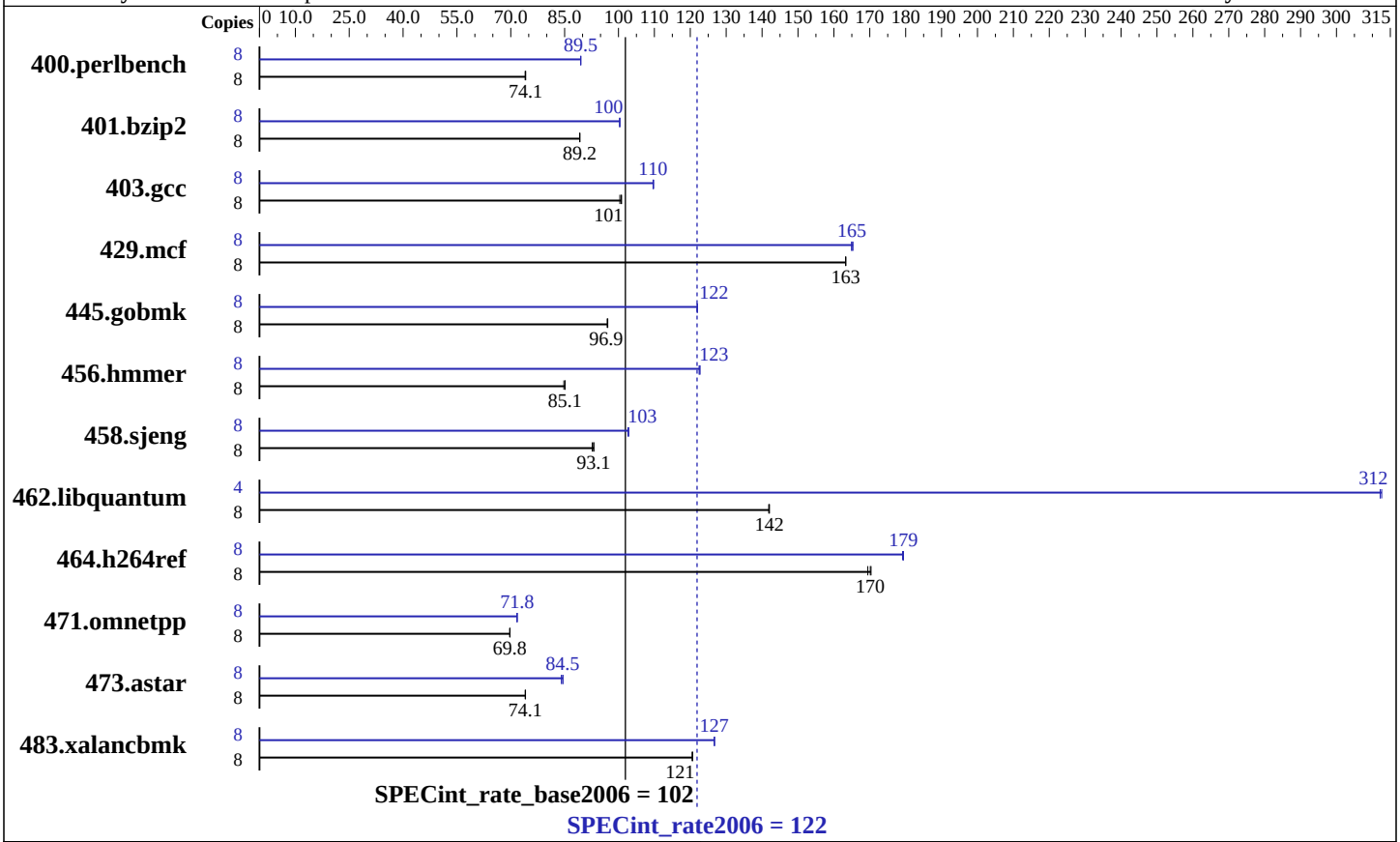
IBM Power 520 (4.7 GHz, 4 core, SLES)

SPECint®_rate2006 = 122

SPECint_rate_base2006 = 102

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

Test date: Mar-2009
Hardware Availability: May-2009
Software Availability: Mar-2009



Hardware

CPU Name:	POWER6+
CPU Characteristics:	
CPU MHz:	4700
FPU:	Integrated
CPU(s) enabled:	4 cores, 2 chips, 2 cores/chip, 2 threads/core
CPU(s) orderable:	2,4 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:	32 GB (8x4 GB) DDR2 667 MHz
Disk Subsystem:	2x146 GB SAS 15K RPM
Other Hardware:	None

Software

Operating System:	SUSE Linux Enterprise Server 11
Compiler:	IBM XL C/C++ for Linux, V10.1 Updated with the Mar2009 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 5.4.0-21 -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	8	**1055**	**74.1**	1056	74.0	1054	74.2	8	874	89.5	**873**	**89.5**	873	89.5
401.bzip2	8	865	89.2	**865**	**89.2**	865	89.2	8	**769**	**100**	770	100	769	100
403.gcc	8	**639**	**101**	638	101	642	100	8	586	110	**587**	**110**	587	110
429.mcf	8	447	163	447	163	**447**	**163**	8	442	165	**442**	**165**	441	165
445.gobmk	8	865	97.0	**866**	**96.9**	866	96.9	8	688	122	**688**	**122**	688	122
456.hmmer	8	877	85.1	880	84.8	**877**	**85.1**	8	**608**	**123**	610	122	608	123
458.sjeng	8	1044	92.7	**1040**	**93.1**	1039	93.1	8	943	103	**942**	**103**	941	103
462.libquantum	8	**1167**	**142**	1167	142	1169	142	4	**265**	**312**	265	312	265	313
464.h264ref	8	1039	170	**1041**	**170**	1045	169	8	**987**	**179**	987	179	988	179
471.omnetpp	8	717	69.7	717	69.8	**717**	**69.8**	8	698	71.7	**696**	**71.8**	696	71.8
473.astar	8	758	74.0	**758**	**74.1**	758	74.1	8	668	84.1	664	84.5	**665**	**84.5**
483.xalancbmk	8	458	121	**458**	**121**	458	121	8	**436**	**127**	436	127	436	127

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

General Notes

```
kernel release 2.6.27.19-5-ppc64.
See flags file for details on following settings.
ulimit -s (stack) set to 1048576.
System configured with libhugetlbfs library for application access to large pages
Large pages reserved as follows by root user:
    echo 530 > /proc/sys/vm/nr_hugepages
Environment variables set before executing benchmarks.
    export HUGETLB_VERBOSE=0
    export HUGETLB_MORECORE=yes
    export XLFRTEOPTS=intrinthds=1
IBM Post-Link Optimization tool was used for these benchmarks, with options:
  400.perlbench : "-imullX" (instrumentation phase), "-O4 -omullX" (optimization phase)
  401.bzip2 : same as 400.perlbench
  403.gcc : same as 400.perlbench
  456.hmmer : same as 400.perlbench
  458.sjeng : same as 400.perlbench
  483.xalancbmk : same as 400.perlbench
  429.mcf : "-imullX" (instrumentation phase), "-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" (optimization phase)
  445.gobmk : "-imullX" (instrumentation phase), "-q -O3 -A 32 -omullX" (optimization phase)
  462.libquantum : "-imullX" (instrumentation phase), "-bf -dp -lro -nop -RC -RD -tb -tlo -vro -A 4
```

Continued on next page

General Notes (Continued)

```
          -isf 88 -lu 8 -hrf 0.10 -sdp 4 -lun 27 -omullX" (optimization phase)
    473.astar : "-imullX" (instrumentation phase), "-O4 -omullX -see 1" (optimization phase)
    464.h264ref : "-O4" (optimization phase)
```

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
```

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) -O3 -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: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr6 -qtune=pwr6 -lhugetlbfs

458.sjeng: -Wl,-q -O5 -qarch=pwr6 -qtune=pwr6 -lhugetlbfs

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) -O4 -qarch=pwr6 -qtune=pwr6 -qrtti -lsmartheap

473.astar: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr6 -qtune=pwr6 -qnoenablevmx -lsmartheap

483.xalancbmk: -Wl,-q -O5 -qarch=pwr6 -qtune=pwr6 -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.html`

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

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

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