SPEC® CINT2006 Result

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IBM Corporation

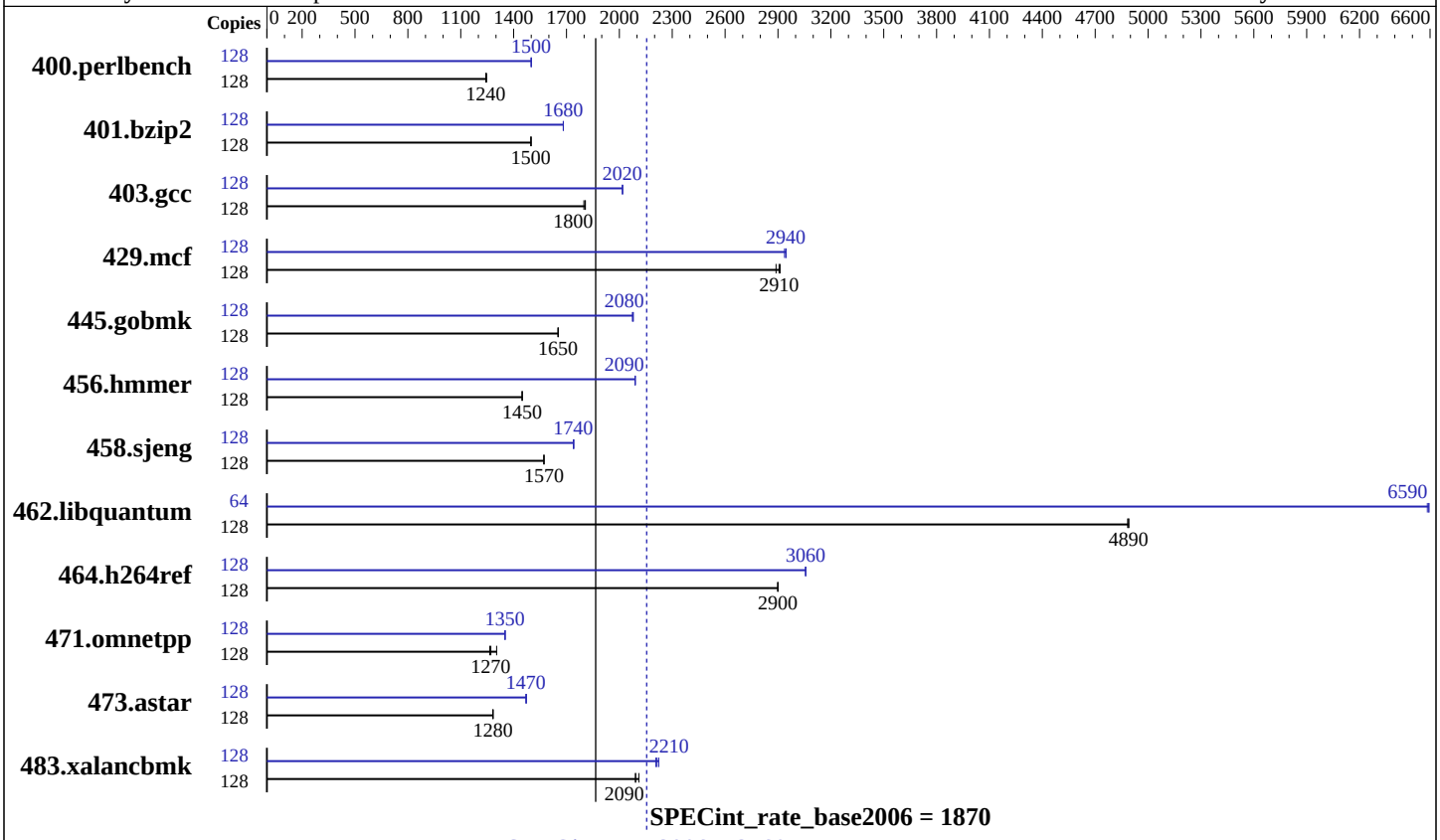
IBM Power 595 (5.0 GHz, 64 core, SLES)

SPECint®_rate2006 = 2160

SPECint_rate_base2006 = 1870

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

Test date: Mar-2009
Hardware Availability: Jun-2008
Software Availability: Mar-2009



Hardware

CPU Name:	POWER6
CPU Characteristics:	
CPU MHz:	5000
FPU:	Integrated
CPU(s) enabled:	64 cores, 32 chips, 2 cores/chip, 2 threads/core
CPU(s) orderable:	8,16,24,32,40,48,56,64 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:	512 GB (256x2 GB) DDR2 667 MHz
Disk Subsystem:	4x146 GB SCSI 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:	-IBM 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	128	**1006**	**1240**	1007	1240	1003	1250	128	833	1500	834	1500	**834**	**1500**
401.bzip2	128	824	1500	**824**	**1500**	825	1500	128	734	1680	**734**	**1680**	734	1680
403.gcc	128	**571**	**1800**	573	1800	570	1810	128	**511**	**2020**	511	2020	510	2020
429.mcf	128	404	2890	**402**	**2910**	401	2910	128	397	2940	396	2950	**397**	**2940**
445.gobmk	128	813	1650	812	1650	**813**	**1650**	128	**647**	**2080**	647	2070	646	2080
456.hmmer	128	825	1450	**824**	**1450**	824	1450	128	571	2090	**572**	**2090**	572	2090
458.sjeng	128	986	1570	**985**	**1570**	985	1570	128	889	1740	891	1740	**890**	**1740**
462.libquantum	128	542	4890	**543**	**4890**	543	4880	64	201	6580	**201**	**6590**	201	6590
464.h264ref	128	977	2900	977	2900	**977**	**2900**	128	926	3060	**927**	**3060**	927	3060
471.omnetpp	128	633	1260	**630**	**1270**	614	1300	128	592	1350	**592**	**1350**	592	1350
473.astar	128	700	1280	**700**	**1280**	701	1280	128	611	1470	610	1470	**611**	**1470**
483.xalancbmk	128	**422**	**2090**	418	2110	422	2090	128	**399**	**2210**	397	2220	400	2210

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 taskset 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 7680 > /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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