SPEC® CINT2006 Result

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IBM Corporation

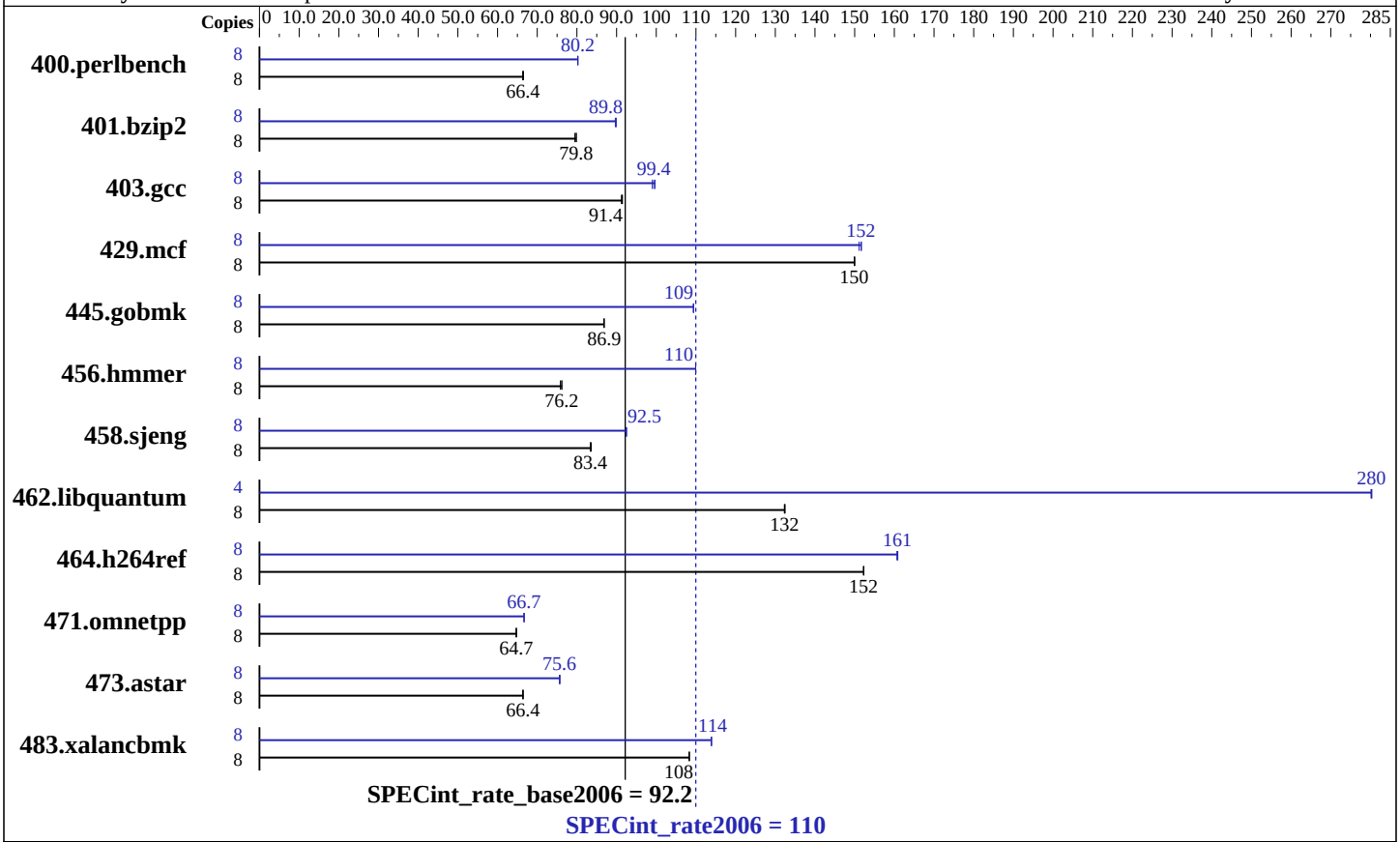
IBM BladeCenter JS23 Express (4.2 GHz, 4 core, SLES)

SPECint®_rate2006 = 110

SPECint_rate_base2006 = 92.2

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:	4200
FPU:	Integrated
CPU(s) enabled:	4 cores, 2 chips, 2 cores/chip, 2 threads/core
CPU(s) orderable:	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:	1x146 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	1175	66.5	**1177**	**66.4**	1178	66.4	8	**974**	**80.2**	974	80.2	974	80.2
401.bzip2	8	971	79.5	**967**	**79.8**	967	79.8	8	861	89.7	**859**	**89.8**	859	89.9
403.gcc	8	704	91.5	**704**	**91.4**	706	91.2	8	651	99.0	**648**	**99.4**	646	99.7
429.mcf	8	487	150	**487**	**150**	486	150	8	483	151	**481**	**152**	481	152
445.gobmk	8	966	86.9	967	86.8	**966**	**86.9**	8	767	109	**767**	**109**	767	109
456.hmmer	8	980	76.2	984	75.8	**980**	**76.2**	8	**679**	**110**	679	110	679	110
458.sjeng	8	1161	83.4	1158	83.6	**1161**	**83.4**	8	**1047**	**92.5**	1047	92.4	1047	92.5
462.libquantum	8	1253	132	**1253**	**132**	1251	132	4	296	280	296	280	**296**	**280**
464.h264ref	8	1163	152	1163	152	**1163**	**152**	8	1100	161	**1101**	**161**	1102	161
471.omnetpp	8	773	64.7	772	64.8	**773**	**64.7**	8	**750**	**66.7**	750	66.7	750	66.7
473.astar	8	**846**	**66.4**	845	66.5	846	66.4	8	742	75.7	743	75.6	**742**	**75.6**
483.xalancbmk	8	510	108	510	108	**510**	**108**	8	**485**	**114**	484	114	485	114

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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