



SPEC® CINT2006 Result

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IBM Corporation

SPECint®_rate2006 = 10900

IBM Power 795 (4.0 GHz, 256 core, SLES)

SPECint_rate_base2006 = 9410

CPU2006 license: 11

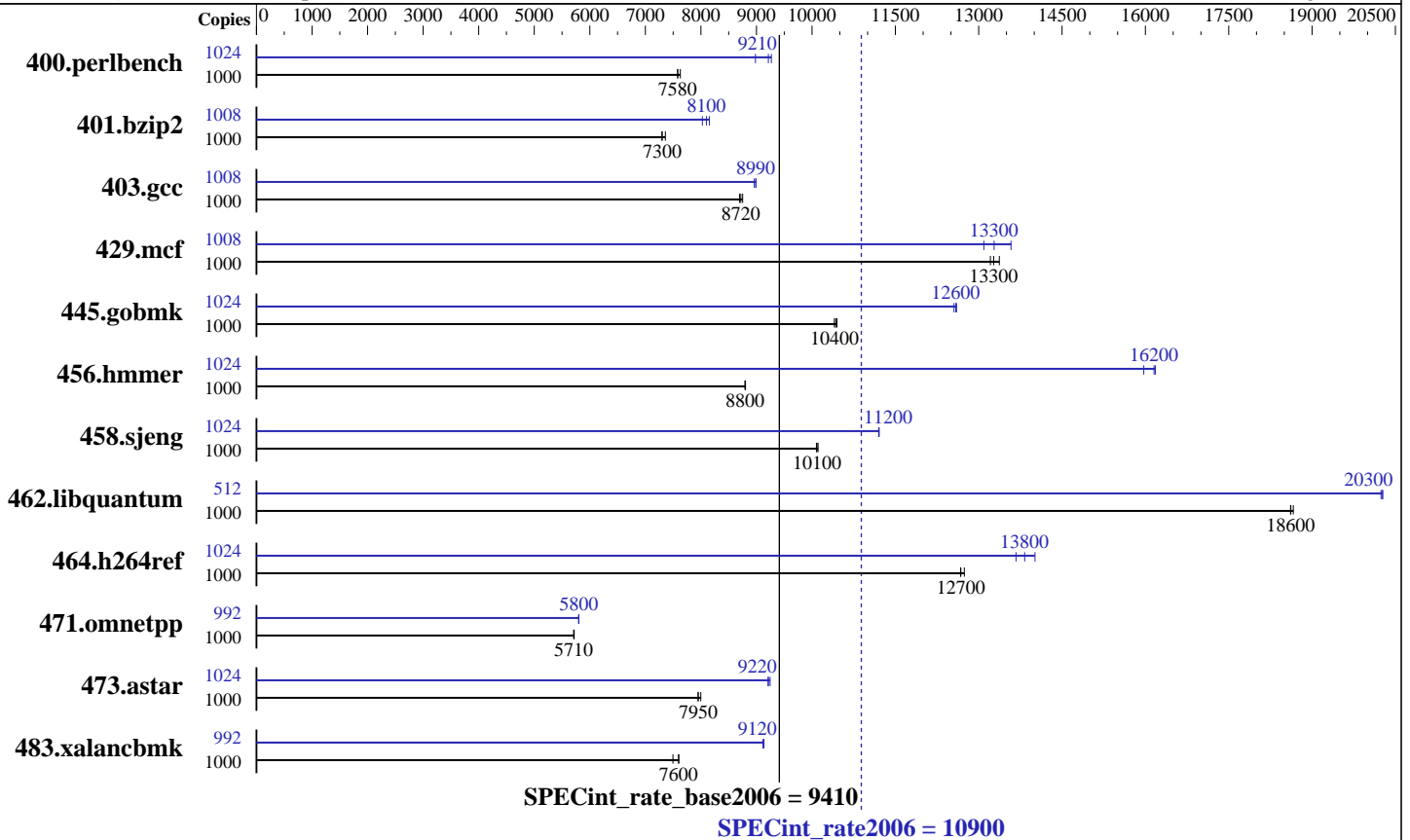
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Aug-2010

Hardware Availability: Sep-2010

Software Availability: Aug-2010



Hardware

CPU Name: POWER7
 CPU Characteristics: Intelligent Energy Optimization enabled, up to 4.14 GHz
 CPU MHz: 4004
 FPU: Integrated
 CPU(s) enabled: 256 cores, 32 chips, 8 cores/chip, 4 threads/core
 CPU(s) orderable: 32,64,96,128,160,192,224,256 cores
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 256 KB I+D on chip per core
 L3 Cache: 4 MB I+D on chip per core
 Other Cache: None
 Memory: 2 TB (256x8 GB) DDR3 1066 MHz
 Disk Subsystem: 42x146 GB Raid0 SAS SFF 15K RPM
 Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 11 SP1 (ppc64), Kernel 2.6.32.12-0.7-ppc64
 Compiler: IBM XL C/C++ for Linux, V11.1
 Auto Parallel: No
 File System: xfs
 System State: Run level 5 (multi-user)
 Base Pointers: 32-bit
 Peak Pointers: 32/64-bit
 Other Software: -Post-Link Optimization for Linux on POWER, Version 5.5.0-3
 -MicroQuill Smartheap 9



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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	1000	1289	7580	<u>1289</u>	<u>7580</u>	1281	7630	1024	1114	8980	1080	9270	<u>1086</u>	<u>9210</u>
401.bzip2	1000	1322	7300	1311	7360	<u>1321</u>	<u>7300</u>	1008	1193	8150	1212	8030	<u>1201</u>	<u>8100</u>
403.gcc	1000	920	8750	<u>923</u>	<u>8720</u>	926	8690	1008	903	8990	906	8960	<u>903</u>	<u>8990</u>
429.mcf	1000	<u>687</u>	<u>13300</u>	682	13400	690	13200	1008	<u>692</u>	<u>13300</u>	702	13100	677	13600
445.gobmk	1000	<u>1006</u>	<u>10400</u>	1008	10400	1004	10400	1024	<u>853</u>	<u>12600</u>	852	12600	856	12600
456.hmmer	1000	<u>1061</u>	<u>8800</u>	1061	8800	1060	8800	1024	<u>591</u>	<u>16200</u>	598	16000	590	16200
458.sjeng	1000	1197	10100	1200	10100	<u>1199</u>	<u>10100</u>	1024	1105	11200	<u>1106</u>	<u>11200</u>	1106	11200
462.libquantum	1000	1110	18700	1113	18600	<u>1113</u>	<u>18600</u>	512	<u>523</u>	<u>20300</u>	523	20300	524	20200
464.h264ref	1000	1737	12700	1746	12700	<u>1746</u>	<u>12700</u>	1024	1617	14000	<u>1639</u>	<u>13800</u>	1658	13700
471.omnetpp	1000	<u>1094</u>	<u>5710</u>	1094	5710	1093	5720	992	1069	5800	<u>1069</u>	<u>5800</u>	1068	5800
473.astar	1000	<u>883</u>	<u>7950</u>	878	8000	883	7950	1024	777	9250	<u>780</u>	<u>9220</u>	781	9210
483.xalanbmk	1000	908	7600	920	7500	<u>908</u>	<u>7600</u>	992	751	9120	749	9140	<u>751</u>	<u>9120</u>

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

Peak Tuning Notes

```

fdpr binary optimization tool used for:
400.perlbench
  with options -O4 -omullX for optimization phase,
  and -imullX for instrumentation phase
401.bzip2
  with options -O4 -vrox
403.gcc
  with options -O4 -nodp -rtb
429.mcf 445.gobmk 458.sjeng 473.astar
  with options -O3
456.hmmer
  with options -O4 -nodp -m power7
462.libquantum
  with options -O4 -vrox -nodp
464.h264ref
  with options -O4 -vrox -nodp -rtb
471.omnetpp
  with options -O3 -lu -l -nodp -sdp 9
483.xalanbmk
  with options -O3 -m power7

```

Submit Notes

The config file option 'submit' was used.
Benchmarks bound to a processor using numactl on the submit command.



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Operating System Notes

```
ulimit -s (stack) set to 1048576.  
Large pages reserved as follows by root user:  
echo 56320 > /proc/sys/vm/nr_overcommit_hugepages  
The following environment variables were set before the runspec command:  
export HUGETLB_VERBOSE=0  
export HUGETLB_MORECORE=yes  
export XLFRTEOPTS=intrinthds=1
```

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=pwr7 -qtune=pwr7 -qalias=noansi -qalloca -lhugetlbfs

C++ benchmarks:
-O5 -qarch=pwr7 -qtune=pwr7 -qrtti -lsmartheap

Base Other Flags

C benchmarks:
-qipa=noobject -qipa=threads

C++ benchmarks:
-qipa=noobject -qipa=threads



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Peak Compiler Invocation

C benchmarks:

xlC -qlanglvl=extc99

C++ benchmarks:

xlC

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_PPC
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=pwr7
-qtune=pwr7 -qalias=noansi -qipa=level=2 -lsmartheap
401.bzip2: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=pwr7
-qtune=pwr7 -lhugetlbfs
403.gcc: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr7
-qtune=pwr7 -qalloca -lhugetlbfs
429.mcf: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr7
-qtune=pwr7 -lhugetlbfs
445.gobmk: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr7
-qtune=pwr7 -lhugetlbfs
456.hmmer: -Wl,-q -O5 -qarch=pwr7 -qtune=pwr7 -qsimd
-qassert=refalign -qipa=inline=threshold=2888
-qipa=inline=limit=11880 -lhugetlbfs
458.sjeng: Same as 429.mcf
462.libquantum: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr7
-qtune=pwr7 -q64 -lhugetlbfs
464.h264ref: Same as 429.mcf

C++ benchmarks:

Continued on next page



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Peak Optimization Flags (Continued)

471.omnetpp: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr7
-qtune=pwr7 -qrtti -lsmartheap

473.astar: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr7
-qtune=pwr7 -qipa=inline=threshold=2468
-qipa=inline=limit=11060 -qipa=partition=large -lhugetlbfs
-lsmartheap

483.xalancbmk: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr5
-qtune=pwr5 -qipa=inline=threshold=2468
-qipa=inline=limit=11060 -qipa=partition=large -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.20100901.html>

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

<http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20100901.xml>

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

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