SPEC® CINT2006 Result

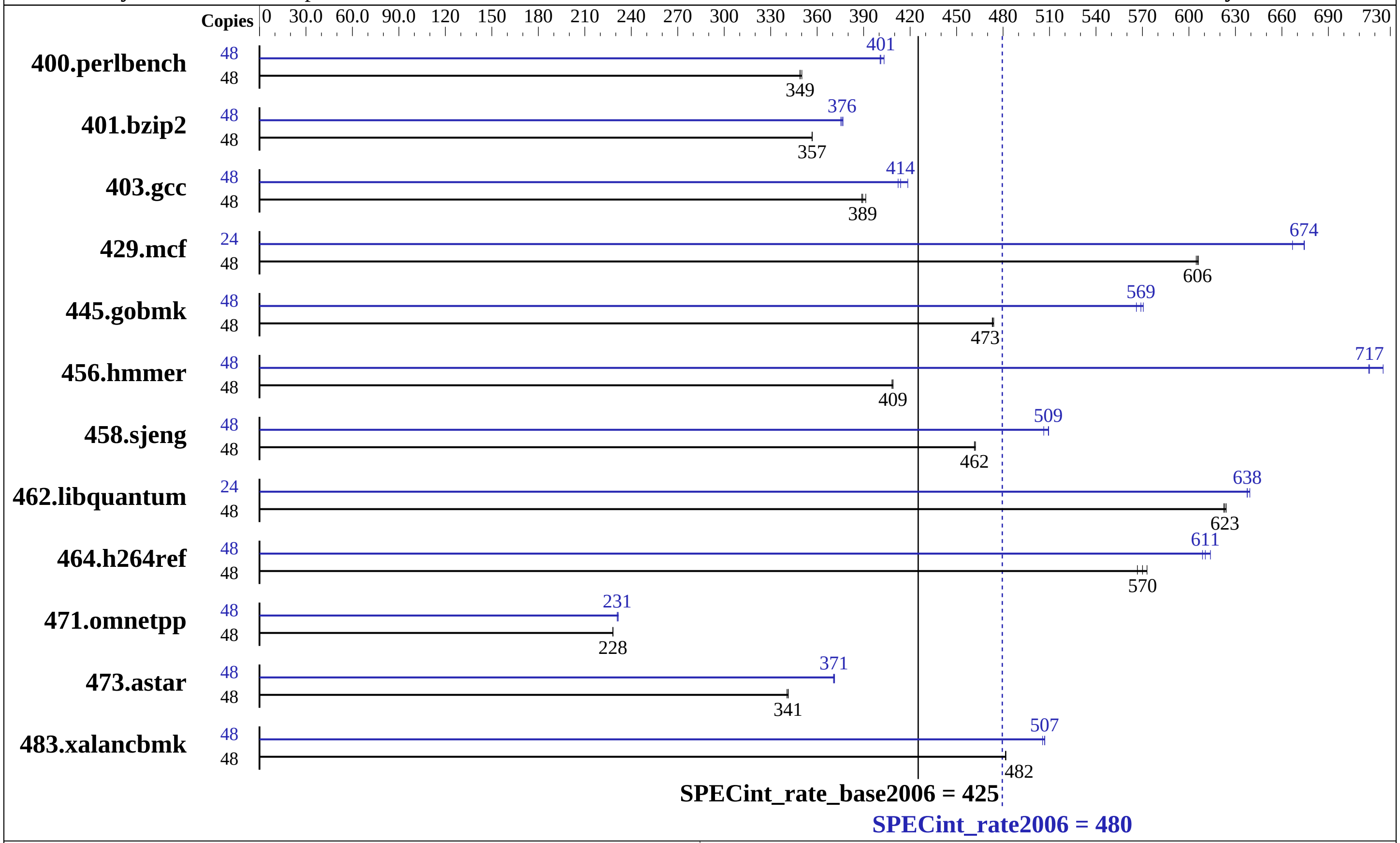
IBM Corporation

IBM Power 730 Express (3.7 GHz, 12 core, RedHat)

SPECint®_rate2006 = 480

SPECint_rate_base2006 = 425

CPU2006 license: 11		**Test date:**	Jan-2011
Test sponsor:	IBM Corporation	**Hardware Availability:**	Sep-2010
Tested by:	IBM Corporation	**Software Availability:**	Nov-2010



Hardware

CPU Name:	POWER7
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 3.92 GHz
CPU MHz:	3724
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 cores/chip, 4 threads/core
CPU(s) orderable:	12 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:	128 GB (16 x 8 GB) DDR3 1066 MHz
Disk Subsystem:	2 x 146.8 GB SAS SFF 15K RPM
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 6.0 (ppc64), Kernel 2.6.32-71.el6.ppc64
Compiler:	IBM XL C/C++ for Linux, V11.1 Version: 11.01.0000.0001
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 5.6.0-2 -MicroQuill SmartHeap 9

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	48	**1344**	**349**	1344	349	1339	350	48	1171	401	**1169**	**401**	1163	403
401.bzip2	48	1298	357	**1298**	**357**	1299	357	48	**1232**	**376**	1234	375	1230	377
403.gcc	48	994	389	**992**	**389**	987	391	48	**934**	**414**	923	419	937	412
429.mcf	48	724	605	722	606	**723**	**606**	24	324	675	328	667	**325**	**674**
445.gobmk	48	1062	474	1064	473	**1064**	**473**	48	882	571	**885**	**569**	890	566
456.hmmer	48	1097	408	**1095**	**409**	1095	409	48	617	725	625	716	**625**	**717**
458.sjeng	48	1259	461	1257	462	**1258**	**462**	48	1140	509	**1141**	**509**	1147	506
462.libquantum	48	1598	622	**1596**	**623**	1594	624	24	778	639	780	638	**780**	**638**
464.h264ref	48	1854	573	1874	567	**1863**	**570**	48	**1740**	**611**	1730	614	1745	609
471.omnetpp	48	1316	228	**1315**	**228**	1314	228	48	1299	231	**1299**	**231**	1295	232
473.astar	48	**987**	**341**	987	341	990	340	48	909	371	**909**	**371**	908	371
483.xalancbmk	48	**688**	**482**	688	482	687	482	48	**653**	**507**	653	507	655	506

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

Peak Tuning Notes

```
IBM Post-Link Optimization tool with
options "-O4 -omullX" used for
  400.perlbench
options "-O4 -vrox" used for
  401.bzip2
options "-O4 -nodp -rtb"
  403.gcc
options "-O3" used for
  429.mcf 445.gobmk 458.sjeng 473.astar
options "-O4 -nodp -m power7" used for
  456.hmmer
options "-O4 -vrox -nodp" used for
  462.libquantum
options "-O4 -vrox -nodp -rtb" used for
  464.h264ref
options "-O3 -lu -1 -nodp -sdp 9" used for
  471.omnetpp
options "-O3 -m power7" used for
  483.xalancbmk
Whenever option "-omullX" was used during the optimization phase,
option "-imullX" was also used during the instrumentation phase.
```

Submit Notes

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

Operating System Notes

```
ulimit -s (stack) set to 1048576.
Large pages reserved as follows by root user:
  echo 3520 > /proc/sys/vm/nr_hugepages
The following environment varibles were set before the runspec command:
  XLFRTEOPTS=intrinthds=1
  HUGETLB_VERBOSE=0
  HUGETLB_MORECORE=yes
  HUGETLB_ELFMAP=RW
```

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 -qipa=threads -qalias=noansi -qalloca -lhugetlbfs`

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

Base Other Flags

C benchmarks:

C++ benchmarks:

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 -qipa=threads -qalias=noansi -qipa=level=2 -lsmartheap`

401.bzip2: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O3 -qarch=pwr7 -qtune=pwr7 -qipa=threads -lhugetlbfs`

403.gcc: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O4 -qarch=pwr7 -qtune=pwr7 -qipa=threads -qalloca -lhugetlbfs`

429.mcf: `-Wl,-q -O5 -qarch=pwr7 -qtune=pwr7 -qipa=threads -lhugetlbfs`

445.gobmk: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O4 -qarch=pwr7 -qtune=pwr7 -qipa=threads -lhugetlbfs`

456.hmmer: `-Wl,-q -O5 -qarch=pwr7 -qtune=pwr7 -qipa=threads -qsimd -qassert=refalign -qipa=inline=threshold=2888 -qipa=inline=limit=11880 -lhugetlbfs`

458.sjeng: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qarch=pwr7 -qtune=pwr7 -qipa=threads -lhugetlbfs`

462.libquantum: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qarch=pwr7 -qtune=pwr7 -qipa=threads -q64 -lhugetlbfs`

464.h264ref: `Same as 458.sjeng`

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Peak Optimization Flags (Continued)

C++ benchmarks:

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

473.astar: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O4 -qarch=pwr7 -qtune=pwr7 -qipa=threads -lhugetlbfs -lsmartheap`

483.xalancbmk: `-Wl,-q -O5 -qarch=pwr7 -qtune=pwr7 -qipa=threads -lsmartheap`

Peak Other Flags

C benchmarks:

C++ benchmarks:

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20110426.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20110426.xml

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

Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 19:03:25 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 26 April 2011.