SPEC® CINT2006 Result

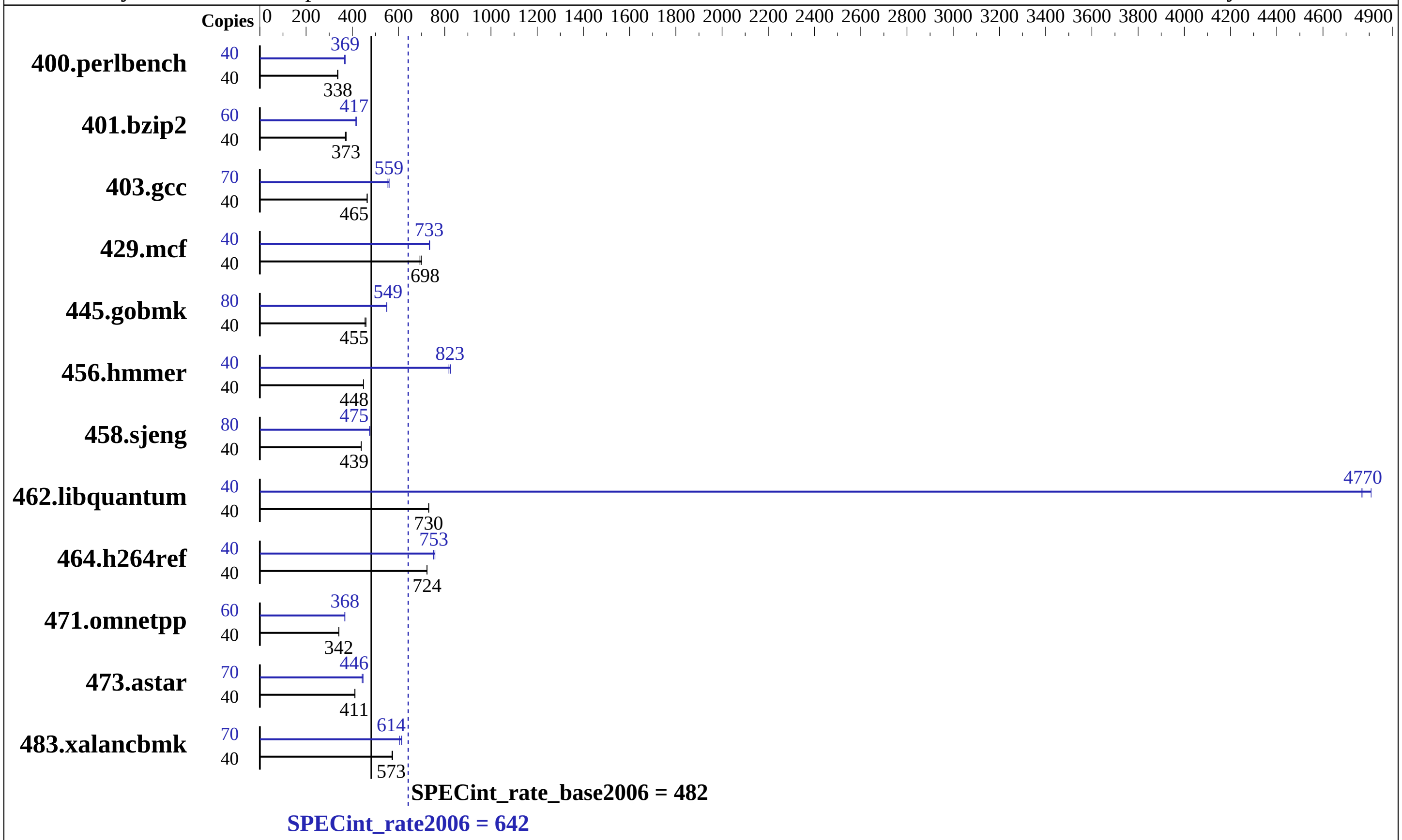
IBM Corporation

IBM Power S812LC (2.92 GHz, 10 core, Red Hat)

SPECint®_rate2006 = 642

SPECint_rate_base2006 = 482

CPU2006 license: 11		**Test date:**	Oct-2015
Test sponsor:	IBM Corporation	**Hardware Availability:**	Oct-2015
Tested by:	IBM Corporation	**Software Availability:**	Nov-2015



Hardware

CPU Name:	POWER8
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 3.49 GHz
CPU MHz:	2926
FPU:	Integrated
CPU(s) enabled:	10 cores, 1 chip, 10 cores/chip, 8 threads/core
CPU(s) orderable:	1 Modules
Primary Cache:	32 KB I + 64 KB D on chip per core
Secondary Cache:	512 KB I+D on chip per core
L3 Cache:	8 MB I+D on chip per core
Other Cache:	16 MB I+D off chip per 4 DIMMs
Memory:	256 GB (16 x 16 GB DIMMs) DDR3 1333 MHz
Disk Subsystem:	1 x 6TB 7200 RPM SATA LFF Disk
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 7.1 (ppc64) kernel <3.10.0-229> PowerKVM 3.1 kernel <3.18.17-348>
Compiler:	C/C++: Version 13.1 of IBM XL C/C++ for Linux
Auto Parallel:	No
File System:	xfs
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 5.6.2.6 IBM Advance Toolchain 7.0-3

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	40	1165	335	**1157**	**338**	1157	338	40	1066	366	**1059**	**369**	1059	369
401.bzip2	40	1044	370	**1036**	**373**	1033	374	60	1395	415	1387	417	**1387**	**417**
403.gcc	40	**693**	**465**	695	463	693	465	70	1007	559	**1009**	**559**	1017	554
429.mcf	40	521	701	**523**	**698**	527	693	40	496	735	**498**	**733**	498	733
445.gobmk	40	913	460	922	455	**921**	**455**	80	1528	549	**1528**	**549**	1528	549
456.hmmer	40	**833**	**448**	832	448	833	448	40	**453**	**823**	452	825	456	818
458.sjeng	40	**1103**	**439**	1104	438	1102	439	80	**2038**	**475**	2038	475	2035	476
462.libquantum	40	**1135**	**730**	1135	730	1134	731	40	174	4770	**174**	**4770**	172	4810
464.h264ref	40	1225	723	1223	724	**1223**	**724**	40	1168	758	1178	752	**1176**	**753**
471.omnetpp	40	732	342	731	342	**732**	**342**	60	**1019**	**368**	1020	368	1019	368
473.astar	40	684	411	681	412	**683**	**411**	70	**1103**	**446**	1100	447	1111	442
483.xalancbmk	40	480	575	483	571	**482**	**573**	70	799	604	**787**	**614**	787	614

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

Peak Tuning Notes

```
400.perlbench fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
401.bzip2 fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
403.gcc fdpr options: -O4 -m power8 -A 2 -sls -dir -vrox
429.mcf fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
456.hmmer fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
458.sjeng fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
462.libquantum fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
464.h264ref fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
471.omnetpp fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
473.astar fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
483.xalancbmk fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
```

Submit Notes

```
The config file option 'submit' was used
to assign benchmark copy to specific kernel thread using
the "numactl" command (see flags file for details).
```

Operating System Notes

```
Red Hat 7.1 guest running on PowerKVM 3.1 host

ulimit -s (stack) set to unlimited

Transparent huge page disabled with
echo never > /sys/kernel/mm/transparent_hugepage/enabled
sysctl vm.nr_hugepages=N and reboot to set large page pool
```

General Notes

```
Environment variables set by runspec before the start of the run:
HUGETLB_MORECORE = "yes"
HUGETLB_VERBOSE = "0"
TCMALLOC_MEMFS_MALLOC_PATH = "/dev/hugepages/"
XLFRTEOPTS = "intrinthds=1"

This result uses the post_setup and/or bench_post_setup to drop caches. SPEC has
determined that although the effect may have been negligible for this run, future
submissions will not be considered rule compliant if the post_setup actions drop
caches (e.g. : "echo 3 > /proc/sys/vm/drop_caches").
```

Base Compiler Invocation

C benchmarks:
/opt/ibm/xlC/13.1.0/bin/xlc_at -qlanglvl=extc99

C++ benchmarks:
/opt/ibm/xlC/13.1.0/bin/xlC_at

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:
-qinline=40 -qipa=threads -qlargepage -O5 -qalias=noansi -qalloca
-lhugetlbfs

C++ benchmarks:
-qinline=40 -qipa=threads -qlargepage -O5 -qrtti -ltcmalloc

Base Other Flags

C benchmarks:
-qipa=noobject -qsuppress=1500-036

C++ benchmarks:
-qipa=noobject -qsuppress=1500-036

Peak Compiler Invocation

C benchmarks:
`/opt/ibm/xlC/13.1.0/bin/xlc_at -qlanglvl=extc99`

C++ benchmarks:
`/opt/ibm/xlC/13.1.0/bin/xlC_at`

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: -qinline=40 -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -qfdpr -qalias=noansi -lhugetlbfs -Wl,-q

401.bzip2: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qsimd=noauto -qlargepage -qfdpr -lhugetlbfs -Wl,-q

403.gcc: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O4 -q64 -qlargepage -qfdpr -qalloca -lhugetlbfs -Wl,-q

429.mcf: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qnoprefetch -qfdpr -lhugetlbfs -Wl,-q

445.gobmk: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -lhugetlbfs

456.hmmer: -qinline=40 -qipa=threads -O5 -qlargepage -qassert=refalign -qfdpr -lhugetlbfs -Wl,-q

458.sjeng: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -qprefetch=dscr=0x54 -qfdpr -lhugetlbfs -Wl,-q

462.libquantum: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qsimd=noauto -qinline=400 -q64 -qlargepage -qfdpr -lhugetlbfs -Wl,-q

464.h264ref: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qfdpr -lhugetlbfs -Wl,-q

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Peak Optimization Flags (Continued)

C++ benchmarks:

471.omnetpp: `-qinline=40 -qipa=threads -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qsimd=noauto -qarch=pwr7 -qtune=pwr7 -qprefetch=dscr=0x54 -qfdpr -qrtti -lhugetlbfs -Wl,-q -ltcmalloc`

473.astar: `-qinline=40 -qipa=threads -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qlargepage -qprefetch=dscr=0x93 -qfdpr -lhugetlbfs -Wl,-q -ltcmalloc`

483.xalancbmk: `-qinline=40 -qipa=threads -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O3 -qarch=auto -qtune=auto -qsimd -qlargepage -qprefetch=dscr=0x93 -qipa=partition=large -qfdpr -lhugetlbfs -Wl,-q -ltcmalloc`

Peak Other Flags

C benchmarks (except as noted below):
`-qsuppress=1586-476`(pass 2) `-qipa=noobject -qsuppress=1500-036`

400.perlbench: `-qsuppress=1586-476`(pass 2) `-qsuppress=1500-036`

456.hmmer: `-qipa=noobject -qsuppress=1500-036`

C++ benchmarks:
`-qsuppress=1586-476`(pass 2) `-qipa=noobject -qsuppress=1500-036`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/IBM-XL.V13La.html
http://www.spec.org/cpu2006/flags/IBM-Linux-V7.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-XL.V13La.xml
http://www.spec.org/cpu2006/flags/IBM-Linux-V7.xml

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

Tested with SPEC CPU2006 v1.2.
Report generated on Wed Dec 20 18:27:47 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 17 November 2015.