SPEC® CINT2006 Result

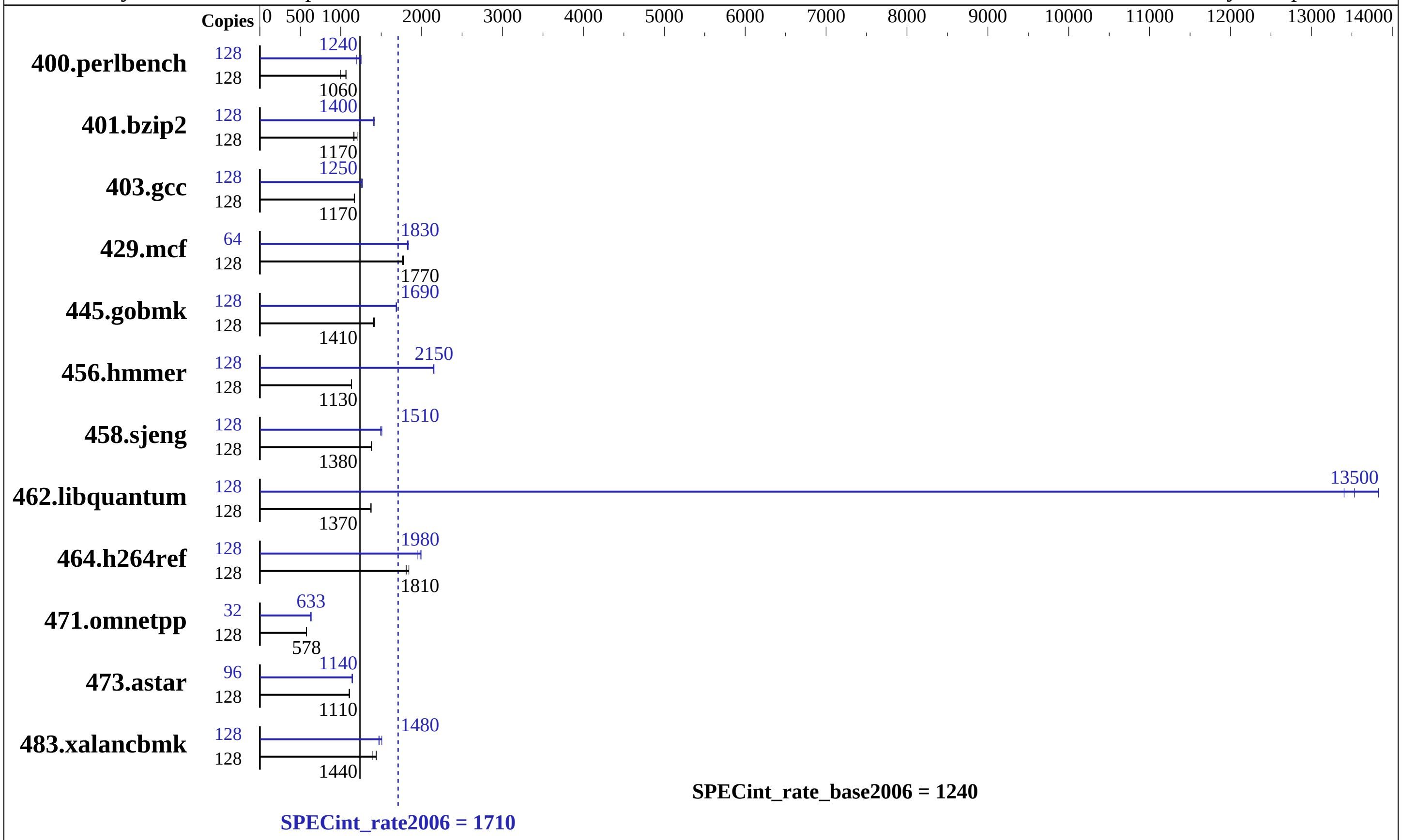
IBM Corporation

IBM PowerLinux 7R4 (4.0 GHz, 32 core, RHEL)

SPECint®_rate2006 = 1710

SPECint_rate_base2006 = 1240

CPU2006 license:	11	**Test date:**	May-2013
Test sponsor:	IBM Corporation	**Hardware Availability:**	Aug-2013
Tested by:	IBM Corporation	**Software Availability:**	Apr-2013



Hardware

CPU Name:	POWER7+
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 4.431 GHz
CPU MHz:	4060
FPU:	Integrated
CPU(s) enabled:	32 cores, 8 chips, 4 cores/chip, 4 threads/core
CPU(s) orderable:	16, 32 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:	10 MB I+D on chip per core
Other Cache:	None
Memory:	256 GB (64 x 4 GB) DDR3 1066 MHz
Disk Subsystem:	1 x 300 GB SAS SFF 15K RPM
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 6.4 (ppc64) kernel 2.6.32-358.6.1.el6.ppc64
Compiler:	C/C++: Version 12.1 of IBM XL C/C++ for Linux
Auto Parallel:	No
File System:	ext4
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 5.6.2-1 -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	128	1172	1070	1256	995	**1177**	**1060**	128	1048	1190	999	1250	**1010**	**1240**
401.bzip2	128	1064	1160	1027	1200	**1060**	**1170**	128	1005	1230	**880**	**1400**	870	1420
403.gcc	128	881	1170	884	1170	**883**	**1170**	128	813	1270	**821**	**1250**	821	1250
429.mcf	128	657	1780	**659**	**1770**	662	1760	64	317	1840	320	1820	**319**	**1830**
445.gobmk	128	956	1410	948	1420	**952**	**1410**	128	**796**	**1690**	794	1690	797	1680
456.hmmer	128	1055	1130	1054	1130	**1054**	**1130**	128	556	2150	**555**	**2150**	555	2150
458.sjeng	128	1120	1380	**1121**	**1380**	1123	1380	128	1037	1490	**1028**	**1510**	1027	1510
462.libquantum	128	**1931**	**1370**	1942	1370	1926	1380	128	192	13800	**196**	**13500**	198	13400
464.h264ref	128	**1566**	**1810**	1538	1840	1566	1810	128	1421	1990	1457	1940	**1429**	**1980**
471.omnetpp	128	**1385**	**578**	1389	576	1384	578	32	315	636	320	626	**316**	**633**
473.astar	128	815	1100	**810**	**1110**	809	1110	96	592	1140	**591**	**1140**	588	1150
483.xalancbmk	128	632	1400	614	1440	**614**	**1440**	128	**599**	**1480**	586	1510	600	1470

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

Compiler Invocation Notes

```
C/C++ compiler updated to April 2013 PTF
Version: 12.01.0000.0003
```

Peak Tuning Notes

```
Post-Link 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
462.libquantum
    with options -O4 -vrox -nodp
464.h264ref
    with options -O4 -vrox -nodp -rtb
471.omnetpp
    with options -O3 -lu -1 -nodp -sdp 9
483.xalancbmk
    with options -O3 -m power7
```

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

```
ulimit -s (stack) set to 1048576.

Large pages reserved as follows by root user:
echo 8448 > /proc/sys/vm/nr_hugepages
```

General Notes

```
Environment variables set by runspec before the start of the run:
HUGETLB_ELFMAP = "RW"
HUGETLB_MORECORE = "yes"
HUGETLB_VERBOSE = "0"
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=auto -qtune=auto -qipa=threads -qalias=noansi -qalloca -lhugetlbfs`

C++ benchmarks:
`-O5 -qarch=auto -qtune=auto -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` `-qipa=threads` `-qalias=noansi` `-qipa=level=2` `-lsmartheap`

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

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

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

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

456.hmmer: `-Wl,-q` `-O5` `-qarch=auto` `-qtune=auto` `-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=auto` `-qtune=auto` `-qipa=threads` `-lhugetlbfs`

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Peak Optimization Flags (Continued)

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

464.h264ref: Same as 458.sjeng

C++ benchmarks:

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

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

483.xalancbmk: -Wl,-q -O4 -qipa=threads -qipa=partition=large -lsmartheap

Peak Other Flags

C benchmarks:

C++ benchmarks:

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/IBM-Power.html
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20121024.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-Power.xml
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20121024.xml

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

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