SPEC® CINT2006 Result

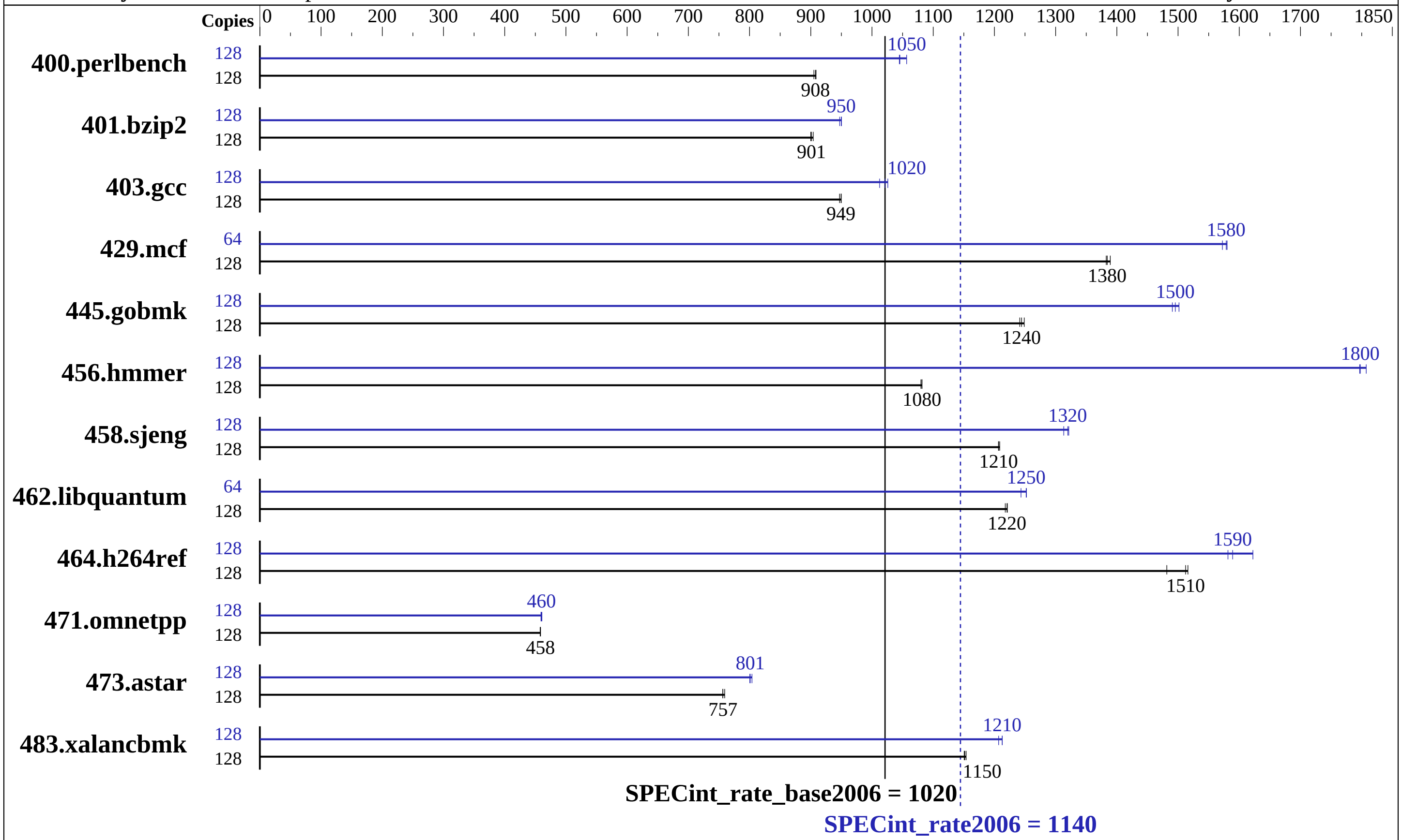
IBM Corporation

IBM Power 750 Express (3.55 GHz, 32 core, RedHat)

SPECint®_rate2006 = 1140

SPECint_rate_base2006 = 1020

CPU2006 license:	11	**Test date:**	Oct-2010
Test sponsor:	IBM Corporation	**Hardware Availability:**	Feb-2010
Tested by:	IBM Corporation	**Software Availability:**	Nov-2010



Hardware

CPU Name:	POWER7
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 3.86 GHz
CPU MHz:	3556
FPU:	Integrated
CPU(s) enabled:	32 cores, 4 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable:	8,16,24,32 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:	4 MB I+D on chip per core
Other Cache:	None
Memory:	256 GB (32x8 GB) DDR3 1066 MHz
Disk Subsystem:	6x146.8 GB Software RAID-0 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 Updated with the Nov2010 PTF
Auto Parallel:	No
File System:	ext2
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 5.5.0-3 -MicroQuill SmartHeap 9

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Results Table

	Base							Peak						
Benchmark	**Copies**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Copies**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
400.perlbench	128	1382	905	1376	909	**1378**	**908**	128	1197	1040	1184	1060	**1196**	**1050**
401.bzip2	128	1373	900	1366	904	**1371**	**901**	128	**1300**	**950**	1304	947	1300	950
403.gcc	128	**1085**	**949**	1085	950	1088	947	128	1018	1010	**1009**	**1020**	1004	1030
429.mcf	128	844	1380	840	1390	**843**	**1380**	64	371	1570	**370**	**1580**	369	1580
445.gobmk	128	1075	1250	1082	1240	**1079**	**1240**	128	894	1500	**898**	**1500**	901	1490
456.hmmer	128	1104	1080	**1104**	**1080**	1106	1080	128	661	1810	**664**	**1800**	665	1800
458.sjeng	128	**1283**	**1210**	1284	1210	1281	1210	128	1172	1320	**1174**	**1320**	1179	1310
462.libquantum	128	**2173**	**1220**	2178	1220	2172	1220	64	**1059**	**1250**	1066	1240	1059	1250
464.h264ref	128	1868	1520	**1873**	**1510**	1912	1480	128	1746	1620	**1782**	**1590**	1791	1580
471.omnetpp	128	1747	458	1745	458	**1745**	**458**	128	1742	459	**1739**	**460**	1736	461
473.astar	128	1183	759	1188	756	**1188**	**757**	128	1118	804	1123	800	**1122**	**801**
483.xalancbmk	128	768	1150	**767**	**1150**	766	1150	128	732	1210	728	1210	**728**	**1210**

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.
```

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Operating System Notes

```
ulimit -s (stack) set to 1048576.
Large pages reserved as follows by root user:
  echo 9000 > /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 -qalias=noansi -qalloca -lhugetlbfs`

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

Base Other Flags

C benchmarks:
`-qipa=threads`

C++ benchmarks:
`-qipa=threads`

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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 -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: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr7 -qtune=pwr7 -lhugetlbfs

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

464.h264ref: Same as 458.sjeng

C++ benchmarks:

Continued on next page

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 -lhugetlbfs -lsmartheap`

483.xalancbmk: `-Wl,-q -O4 -qarch=pwr7 -qtune=pwr7 -qipa=partition=large -lsmartheap`

Peak Other Flags

C benchmarks (except as noted below):
`-qipa=threads`

C++ benchmarks:
`-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.20101123.01.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20101123.01.xml

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

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