SPEC® CINT2006 Result

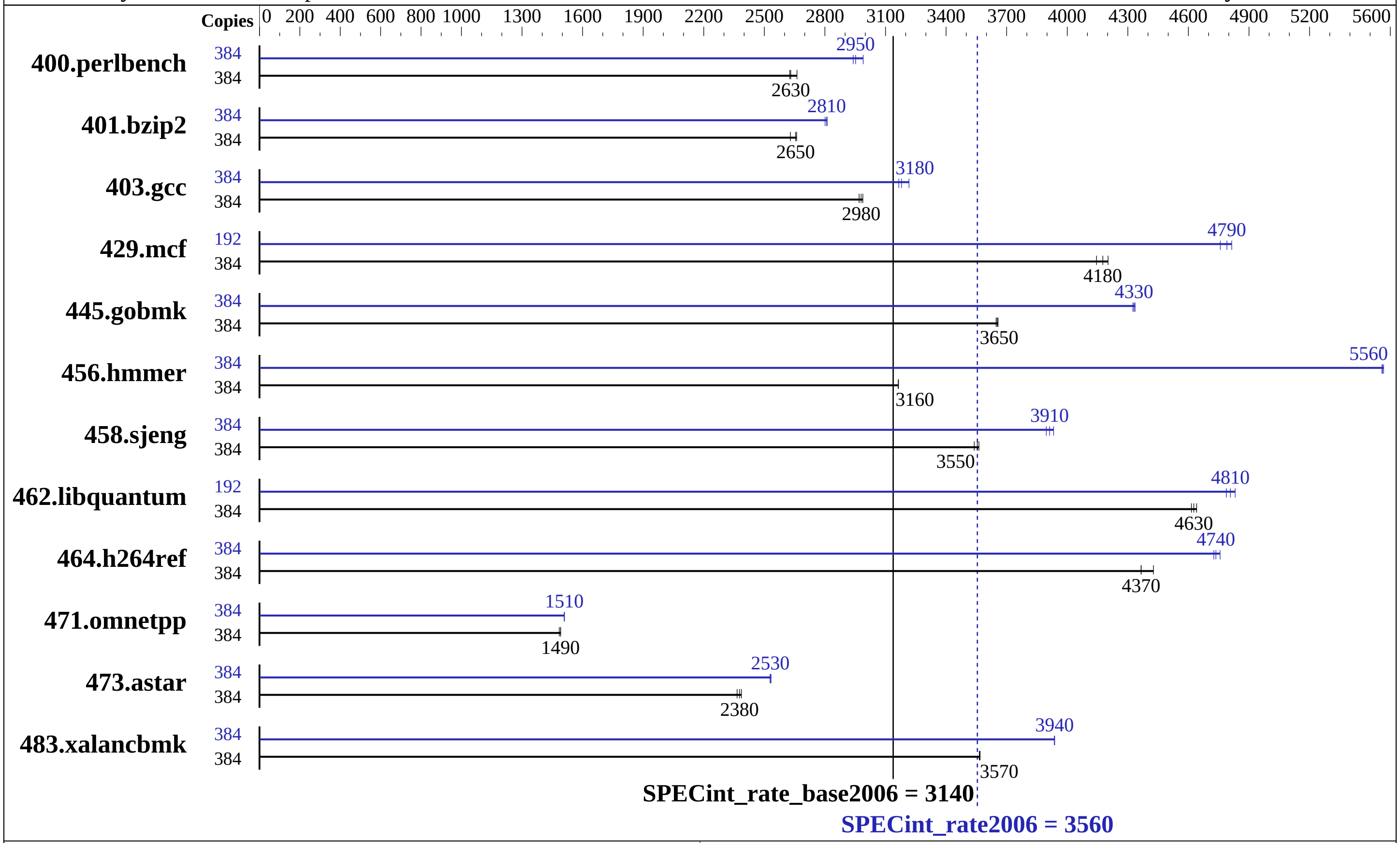
IBM Corporation

IBM Power 780 (3.44 GHz, 96 core, SLES)

SPECint®_rate2006 = 3560

SPECint_rate_base2006 = 3140

CPU2006 license: 11		**Test date:**	Aug-2011
Test sponsor:	IBM Corporation	**Hardware Availability:**	Oct-2011
Tested by:	IBM Corporation	**Software Availability:**	Jul-2011



Hardware

CPU Name:	POWER7
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 3.780 GHz
CPU MHz:	3444
FPU:	Integrated
CPU(s) enabled:	96 cores, 16 chips, 6 cores/chip, 4 threads/core
CPU(s) orderable:	24,48,72,96 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:	1 TB (64 x 16 GB) DDR3 1066 MHz
Disk Subsystem:	10 x 146.8 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:	C/C++: Version 11.1 of IBM XL C/C++ for Linux
Auto Parallel:	No
File System:	ext2
System State:	Run level 3 (multi-user)
Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other Software:	-IBM Post-Link Optimization for Linux on POWER, version 5.6.0-4 -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	384	1429	2630	1410	2660	**1426**	**2630**	384	1255	2990	1276	2940	**1271**	**2950**
401.bzip2	384	**1396**	**2650**	1409	2630	1393	2660	384	1323	2800	**1319**	**2810**	1318	2810
403.gcc	384	1041	2970	1035	2990	**1037**	**2980**	384	976	3170	961	3220	**972**	**3180**
429.mcf	384	**839**	**4180**	845	4150	833	4200	192	364	4810	368	4760	**366**	**4790**
445.gobmk	384	1104	3650	1101	3660	**1103**	**3650**	384	929	4340	931	4330	**930**	**4330**
456.hmmer	384	1133	3160	**1132**	**3160**	1132	3160	384	644	5570	**644**	**5560**	645	5560
458.sjeng	384	1304	3560	1313	3540	**1307**	**3550**	384	1193	3900	**1188**	**3910**	1182	3930
462.libquantum	384	1724	4620	**1720**	**4630**	1714	4640	192	823	4830	831	4790	**827**	**4810**
464.h264ref	384	1947	4370	1920	4430	**1946**	**4370**	384	**1794**	**4740**	1798	4730	1786	4760
471.omnetpp	384	1617	1480	**1610**	**1490**	1610	1490	384	1590	1510	**1590**	**1510**	1589	1510
473.astar	384	1130	2390	**1134**	**2380**	1140	2370	384	**1066**	**2530**	1066	2530	1064	2530
483.xalancbmk	384	**743**	**3570**	743	3570	743	3560	384	**673**	**3940**	673	3940	673	3940

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 July2011 PTF
   Version 11.01.0000.0003
```

Peak Tuning Notes

```
IBM 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
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 -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 21120 > /proc/sys/vm/nr_hugepages
The following environment varibles were set before the runspec command:
  export XLFRTEOPTS=intrinthds=1
  export HUGETLB_VERBOSE=0
  export HUGETLB_MORECORE=yes
```

General Notes

```
IBM Post-Link optimization tool can be downloaded from
http://www-304.ibm.com/webapp/set2/sas/f/lopdiags/sdkdownload.html
```

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 -qalias=noansi -qalloca -lhugetlbfs`

C++ benchmarks:
`-O5 -qrtti -lsmartheap -lhugetlbfs`

Base Other Flags

C benchmarks:
  -qipa=noobject -qipa=threads

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

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 -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 -qalloca -lhugetlbfs

429.mcf: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -lhugetlbfs

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

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

458.sjeng: Same as 429.mcf

Continued on next page

Peak Optimization Flags (Continued)

462.libquantum: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -q64 -lhugetlbfs`

464.h264ref: `Same as 429.mcf`

C++ benchmarks:

471.omnetpp: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qrtti -lhugetlbfs -lsmartheap`

473.astar: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O4 -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 -lhugetlbfs -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.20101123.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20101123.xml

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

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