SPEC® CINT2006 Result

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IBM Corporation

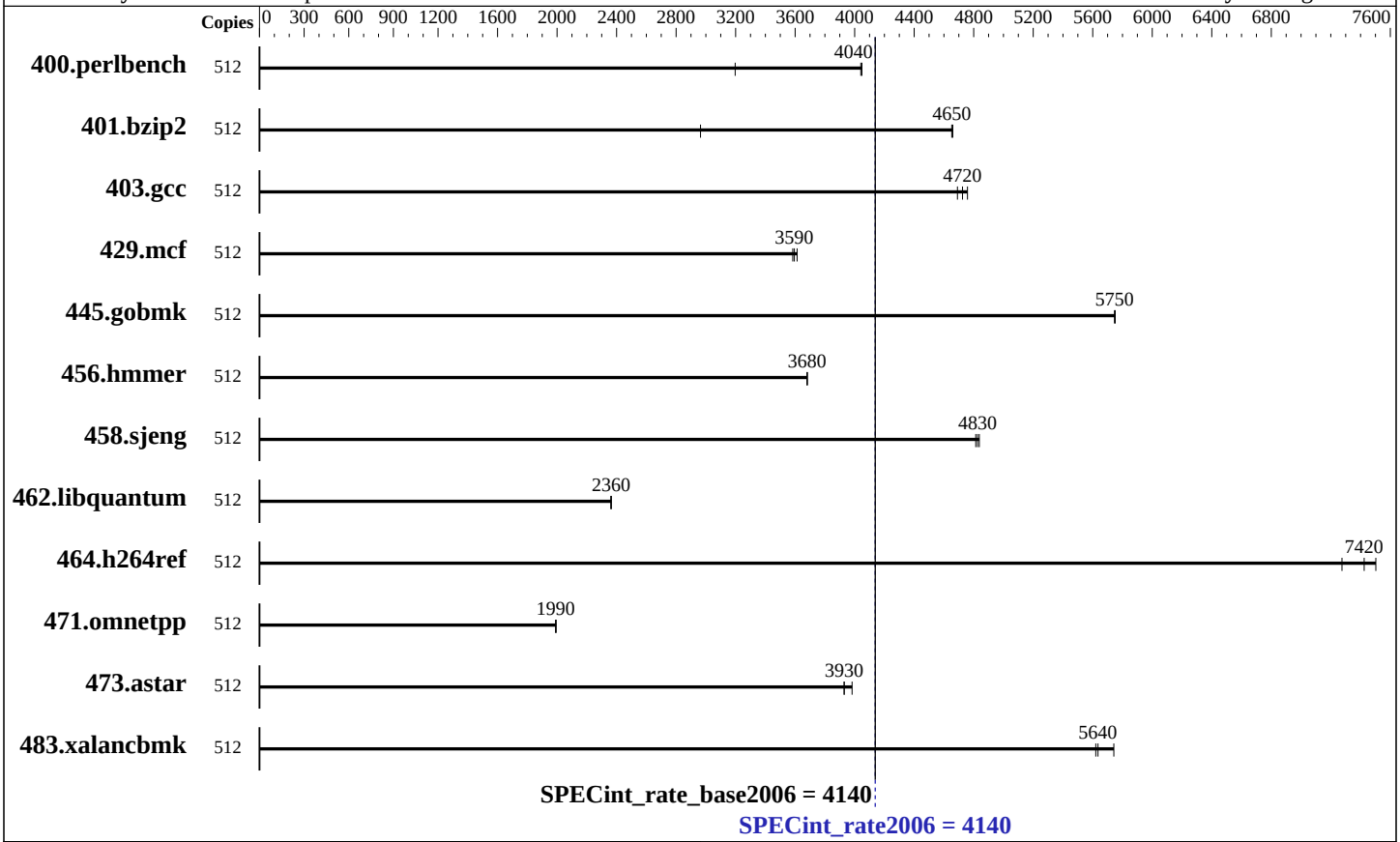
IBM Power 780 (3.7 GHz, 128 core, RHEL, GCC)

SPECint®_rate2006 = 4140

SPECint_rate_base2006 = 4140

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Sep-2012
Hardware Availability: Oct-2012
Software Availability: Aug-2012



Hardware

CPU Name:	POWER7+
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 4.144 GHz
CPU MHz:	3724
FPU:	Integrated
CPU(s) enabled:	128 cores, 16 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable:	32,64,96,128 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:	1 TB (64 x 16 GB) DDR3 1066 MHz
Disk Subsystem:	12x146.8 GB SAS SFF 15K RPM
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 6.3 (ppc64) kernel 2.6.32-279.el6.ppc64
Compiler:	C/C++: Version 4.7.2 of IBM Advance Toolchain 6.0-0 gcc/g++ compiler
Auto Parallel:	No
File System:	ext4
System State:	Run level 3 (multi-user)
Base Pointers:	32-bit
Peak Pointers:	32-bit
Other Software:	-IBM Advance Toolchain 6.0-0

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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	512	**1238**	**4040**	1565	3200	1235	4050	512	**1238**	**4040**	1565	3200	1235	4050
401.bzip2	512	**1062**	**4650**	1667	2960	1060	4660	512	**1062**	**4650**	1667	2960	1060	4660
403.gcc	512	879	4690	866	4760	**872**	**4720**	512	879	4690	866	4760	**872**	**4720**
429.mcf	512	1303	3580	1292	3610	**1299**	**3590**	512	1303	3580	1292	3610	**1299**	**3590**
445.gobmk	512	934	5750	**934**	**5750**	934	5750	512	934	5750	**934**	**5750**	934	5750
456.hmmer	512	**1298**	**3680**	1298	3680	1298	3680	512	**1298**	**3680**	1298	3680	1298	3680
458.sjeng	512	1281	4840	**1284**	**4830**	1287	4810	512	1281	4840	**1284**	**4830**	1287	4810
462.libquantum	512	4488	2360	**4488**	**2360**	4492	2360	512	4488	2360	**4488**	**2360**	4492	2360
464.h264ref	512	1557	7280	**1526**	**7420**	1510	7500	512	1557	7280	**1526**	**7420**	1510	7500
471.omnetpp	512	1607	1990	1605	1990	**1607**	**1990**	512	1607	1990	1605	1990	**1607**	**1990**
473.astar	512	**915**	**3930**	902	3980	915	3930	512	**915**	**3930**	902	3980	915	3930
483.xalancbmk	512	629	5620	615	5740	**627**	**5640**	512	629	5620	615	5740	**627**	**5640**

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

Compiler Invocation Notes

```
For more information about IBM Advance Toolchain, including support, see
ftp://linuxpatch.ncsa.uiuc.edu/toolchain/at/redhat/RHEL6/at6.0/release_notes.at6.0-6.0-0.html
```

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.
ulimit -n (open files) set to 500000.

Large pages reserved as follows by root user:
echo 30000 > /proc/sys/vm/nr_hugepages
echo 6000 > /proc/sys/vm/nr_overcommit_hugepages
```

Platform Notes

```
Service processor memory mirroring property disabled.
```

General Notes

```
The following environment varibles were set before the runspec command:
  export HUGETLB_VERBOSE=0
  export HUGETLB_MORECORE=yes
  export XLFRTEOPTS=intrinthds=1
```

Base Compiler Invocation

C benchmarks:
```
/opt/at6.0/bin/gcc
```

C++ benchmarks:
```
/opt/at6.0/bin/g++
```

Base Portability Flags

400.perlbench: `-DSPEC_CPU_LINUX_PPC`
462.libquantum: `-DSPEC_CPU_LINUX`
464.h264ref: `-fsigned-char`
483.xalancbmk: `-DSPEC_CPU_LINUX`

Base Optimization Flags

C benchmarks:
```
-O3 -mcpu=power7 -mtune=power7 -m32 -fpeel-loops -funroll-loops
-ffast-math -ftree-vectorize -mvsx -maltivec -mpopcntd -mrecip=rsqrt
-flto -fwhole-program -fuse-linker-plugin -lhugetlbfs
```

C++ benchmarks:
```
-O3 -mcpu=power7 -mtune=power7 -m32 -fpeel-loops -funroll-loops
-ffast-math -ftree-vectorize -mvsx -maltivec -mpopcntd -mrecip=rsqrt
-flto -fwhole-program -fuse-linker-plugin -ltcmalloc
```

Peak Optimization Flags

C benchmarks:

400.perlbench: `basepeak = yes`

401.bzip2: `basepeak = yes`

403.gcc: `basepeak = yes`

429.mcf: `basepeak = yes`

Continued on next page

Peak Optimization Flags (Continued)

445.gobmk: basepeak = yes

456.hmmer: basepeak = yes

458.sjeng: basepeak = yes

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: basepeak = yes

473.astar: basepeak = yes

483.xalancbmk: basepeak = yes

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-AT.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-AT.xml

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