SPEC® CINT2006 Result

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IBM Corporation

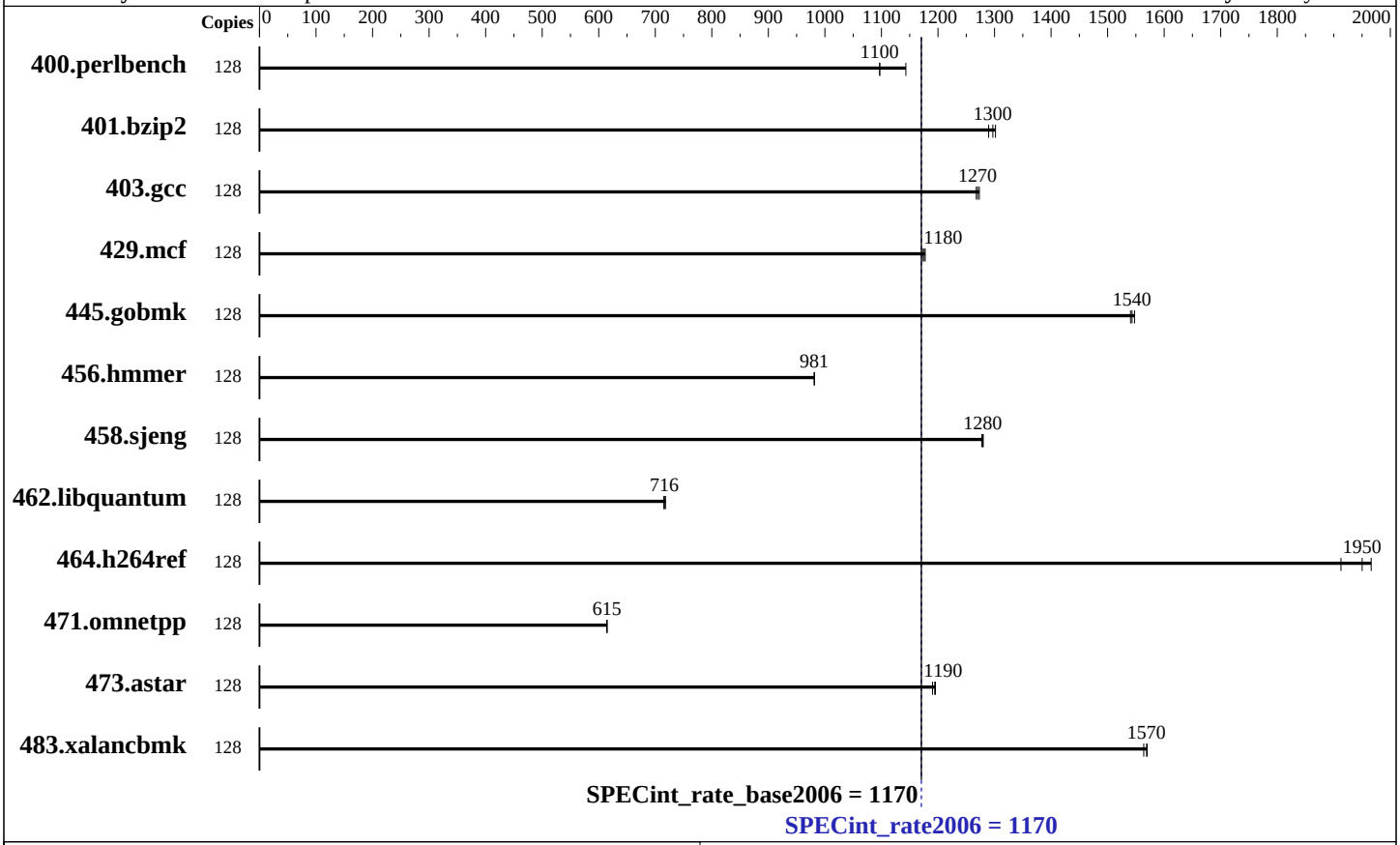
IBM PowerLinux 7R4 (4.0 GHz, 32 core, RHEL, GCC)

SPECint®_rate2006 = 1170

SPECint_rate_base2006 = 1170

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

Test date: May-2013
Hardware Availability: Aug-2013
Software Availability: May-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 4.7.3 of IBM Advance Toolchain 6.0-4 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 6.0-4 -IBM Mathematical Acceleration Subsystem (MASS) libraries 7.1.0.2

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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	**1140**	**1100**	1140	1100	1094	1140	128	**1140**	**1100**	1140	1100	1094	1140
401.bzip2	128	958	1290	949	1300	**952**	**1300**	128	958	1290	949	1300	**952**	**1300**
403.gcc	128	813	1270	**811**	**1270**	809	1270	128	813	1270	**811**	**1270**	809	1270
429.mcf	128	**993**	**1180**	995	1170	991	1180	128	**993**	**1180**	995	1170	991	1180
445.gobmk	128	**870**	**1540**	872	1540	868	1550	128	**870**	**1540**	872	1540	868	1550
456.hmmer	128	1217	981	1217	982	**1217**	**981**	128	1217	981	1217	982	**1217**	**981**
458.sjeng	128	1210	1280	**1211**	**1280**	1212	1280	128	1210	1280	**1211**	**1280**	1212	1280
462.libquantum	128	3693	718	**3703**	**716**	3708	715	128	3693	718	**3703**	**716**	3708	715
464.h264ref	128	**1453**	**1950**	1441	1970	1481	1910	128	**1453**	**1950**	1441	1970	1481	1910
471.omnetpp	128	1302	614	1301	615	**1302**	**615**	128	1302	614	1301	615	**1302**	**615**
473.astar	128	752	1200	755	1190	**752**	**1190**	128	752	1200	755	1190	**752**	**1190**
483.xalancbmk	128	565	1560	563	1570	**563**	**1570**	128	565	1560	563	1570	**563**	**1570**

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://ftp.unicamp.br/pub/linuxpatch/toolchain/at/redhat/RHEL6/at6.0/release_notes.at6.0-6.0-4.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.

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

The Mathematical Acceleration Subsystem libraries
are shipped with IBM XL C/C++ version 12.1 and
IBM XL Fortran version 14.1 compiler products.

General Notes

Environment variables set by runspec before the start of the run:
HUGETLB_ELFMAP = "RW"
HUGETLB_MORECORE = "yes"

Continued on next page

General Notes (Continued)

```
HUGETLB_VERBOSE = "0"
TCMALLOC_MEMFS_MALLOC_PATH = "/libhugetlbfs"
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:
```
-ffast-math -O3 -mcpu=power7 -mtune=power7 -mrecip=rsqrt
-fpeel-loops -funroll-loops -mpopcntd -m32 -flto -fwhole-program
-fuse-linker-plugin -Wl,-q -Wl,-Map=link.map,--cref -L /opt/at6.0/lib
-L /opt/ibmcmp/xlmass/7.1/lib -Wl,-rpath,/opt/at6.0/lib
-Wl,-rpath,/opt/ibmcmp/xlmass/7.1/lib -lhugetlbfs -lmassvp7
-lmass_simdp7 -lmass
```

C++ benchmarks:
```
-ffast-math -O3 -mcpu=power7 -mtune=power7 -mrecip=rsqrt
-fpeel-loops -funroll-loops -mpopcntd -m32
--param max-inline-insns-auto=200 -Wl,-q -Wl,-Map=link.map,--cref
-L /opt/at6.0/lib -L /opt/ibmcmp/xlmass/7.1/lib
-Wl,-rpath,/opt/at6.0/lib -Wl,-rpath,/opt/ibmcmp/xlmass/7.1/lib
-lhugetlbfs -lmassvp7 -lmass_simdp7 -lmass -ltcmalloc
-lstdc++ -lpthread
```

Peak Optimization Flags

C benchmarks:

Continued on next page

Peak Optimization Flags (Continued)

400.perlbench: `basepeak = yes`

401.bzip2: `basepeak = yes`

403.gcc: `basepeak = yes`

429.mcf: `basepeak = yes`

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 file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/IBM-Linux-AT.20130813.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/IBM-Linux-AT.20130813.xml`

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For other inquiries, please contact webmaster@spec.org.

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