SPEC® CINT2006 Result

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IBM Corporation

IBM Power 740 Express (4.2 GHz, 16 core, SLES, GCC)

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SPECint_rate_base2006 = 589

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

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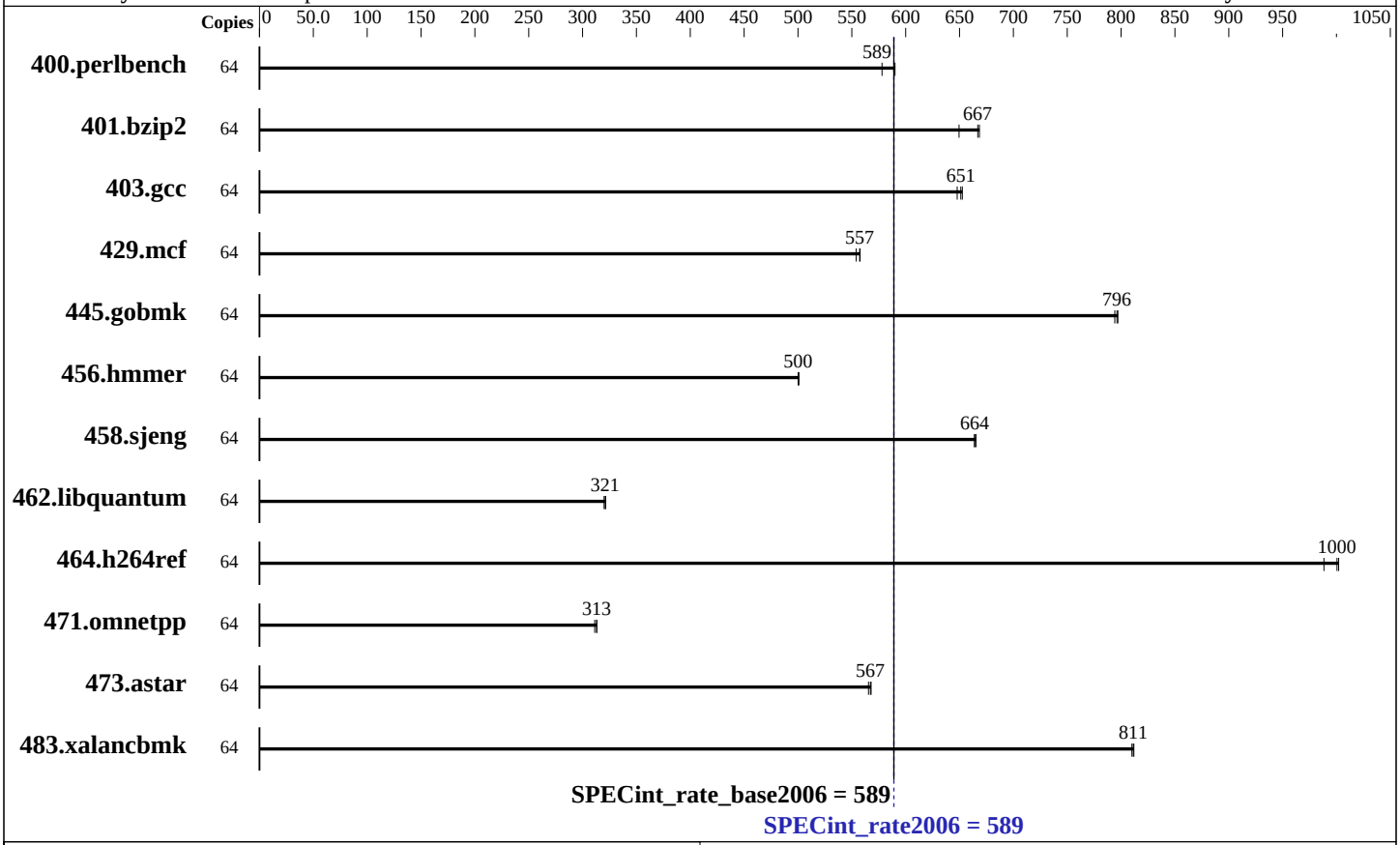
Hardware Availability: Feb-2013
Software Availability: Nov-2012



Hardware

CPU Name:	POWER7+
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 4.540 GHz
CPU MHz:	4228
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable:	8, 16 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:	128 GB (32 x 4 GB) DDR3 1066 MHz
Disk Subsystem:	1 x 146.8 GB SAS SFF 15K RPM
Other Hardware:	None

Software

Operating System:	SUSE Linux Enterprise Server 11 SP2 (ppc64) kernel 3.0.42-0.7-ppc64
Compiler:	C/C++: Version 4.7.3 of IBM Advance Toolchain 6.0-1 gcc/g++ compiler
Auto Parallel:	No
File System:	ext3
System State:	Run level 3 (multi-user)
Base Pointers:	32-bit
Peak Pointers:	32-bit
Other Software:	-IBM Advance Toolchain 6.0-1

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	64	1060	590	1082	578	**1062**	**589**	64	1060	590	1082	578	**1062**	**589**
401.bzip2	64	**926**	**667**	951	650	924	668	64	**926**	**667**	951	650	924	668
403.gcc	64	789	653	795	648	**791**	**651**	64	789	653	795	648	**791**	**651**
429.mcf	64	1053	554	**1047**	**557**	1047	558	64	1053	554	**1047**	**557**	1047	558
445.gobmk	64	842	797	**843**	**796**	845	794	64	842	797	**843**	**796**	845	794
456.hmmer	64	1192	501	**1194**	**500**	1194	500	64	1192	501	**1194**	**500**	1194	500
458.sjeng	64	1164	665	**1166**	**664**	1166	664	64	1164	665	**1166**	**664**	1166	664
462.libquantum	64	4144	320	**4131**	**321**	4126	321	64	4144	320	**4131**	**321**	4126	321
464.h264ref	64	**1416**	**1000**	1433	988	1413	1000	64	**1416**	**1000**	1433	988	1413	1000
471.omnetpp	64	1285	311	1277	313	**1278**	**313**	64	1285	311	1277	313	**1278**	**313**
473.astar	64	**792**	**567**	791	568	795	565	64	**792**	**567**	791	568	795	565
483.xalancbmk	64	544	812	**544**	**811**	545	810	64	544	812	**544**	**811**	545	810

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/suse/SLES_11/at6.0/release_notes.at6.0-6.0-1.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 4224 > /proc/sys/vm/nr_hugepages

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

Base Compiler Invocation

C benchmarks:

```
/opt/at6.0/bin/gcc
```

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Base Compiler Invocation (Continued)

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 -ffast-math -fpeel-loops
-funroll-loops -mvsx -maltivec -ftree-vectorize -mpopcntd
-mrecip=rsqrt -flto -fwhole-program -fuse-linker-plugin -lhugetlbfs

C++ benchmarks:
-O3 -mcpu=power7 -mtune=power7 -m32 -ffast-math -fpeel-loops
-funroll-loops -mvsx -maltivec -ftree-vectorize -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
445.gobmk: basepeak = yes
456.hmmer: basepeak = yes
458.sjeng: basepeak = yes
462.libquantum: basepeak = yes
464.h264ref: basepeak = yes

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Peak Optimization Flags (Continued)

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.20130226.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.20130226.xml`
`http://www.spec.org/cpu2006/flags/IBM-Linux-AT.xml`

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