SPEC® CINT2006 Result

IBM Corporation

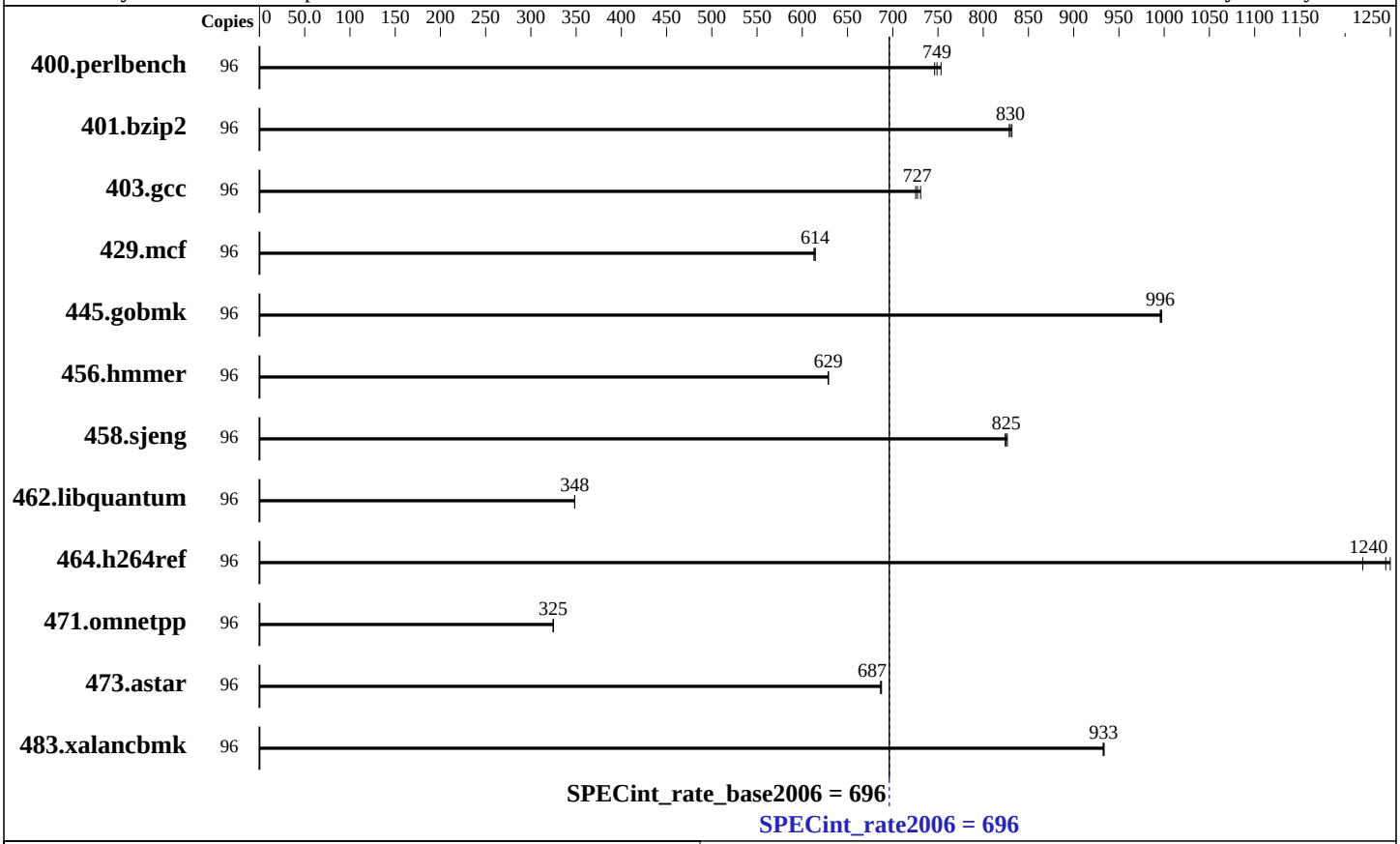
IBM Flex System p270 (3.4 GHz, 24 core, RHEL, GCC)

SPECint®_rate2006 = 696

SPECint_rate_base2006 = 696

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

Test date: Jun-2013
Hardware Availability: Sep-2013
Software Availability: May-2013



Hardware

CPU Name:	POWER7+
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 3.787 GHz
CPU MHz:	3416
FPU:	Integrated
CPU(s) enabled:	24 cores, 4 chips, 6 cores/chip, 4 threads/core
CPU(s) orderable:	24 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 (16 x 16 GB) DDR3 1066 MHz
Disk Subsystem:	2 x 177 GB Raid0 SATA SSD 1.8"
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 6.4 (ppc64) kernel 2.6.32-358.6.2.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

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	96	1245	753	**1252**	**749**	1257	746	96	1245	753	**1252**	**749**	1257	746
401.bzip2	96	**1116**	**830**	1118	829	1114	832	96	**1116**	**830**	1118	829	1114	832
403.gcc	96	1058	731	**1063**	**727**	1065	725	96	1058	731	**1063**	**727**	1065	725
429.mcf	96	1425	614	**1426**	**614**	1429	613	96	1425	614	**1426**	**614**	1429	613
445.gobmk	96	**1011**	**996**	1010	997	1011	996	96	**1011**	**996**	1010	997	1011	996
456.hmmer	96	1425	628	**1424**	**629**	1424	629	96	1425	628	**1424**	**629**	1424	629
458.sjeng	96	**1407**	**825**	1409	824	1405	827	96	**1407**	**825**	1409	824	1405	827
462.libquantum	96	5708	348	5708	348	**5708**	**348**	96	5708	348	5708	348	**5708**	**348**
464.h264ref	96	1700	1250	1742	1220	**1707**	**1240**	96	1700	1250	1742	1220	**1707**	**1240**
471.omnetpp	96	1848	325	**1847**	**325**	1847	325	96	1848	325	**1847**	**325**	1847	325
473.astar	96	981	687	**981**	**687**	980	688	96	981	687	**981**	**687**	980	688
483.xalancbmk	96	709	934	**710**	**933**	710	933	96	709	934	**710**	**933**	710	933

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 6336 > /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.

Platform Notes

This Compute Node is housed in an "IBM Flex System Enterprise Chassis"

The Maximum Power Limit for this Compute Node was set according to

Continued on next page

Platform Notes (Continued)

```
    recommendation on "IBM Chassis Management Module"
```

General Notes

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

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 files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/IBM-Power.20130828.html
http://www.spec.org/cpu2006/flags/IBM-Linux-AT.20130813.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-Power.20130828.xml
http://www.spec.org/cpu2006/flags/IBM-Linux-AT.20130813.xml

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

Tested with SPEC CPU2006 v1.2.
Report generated on Thu Jul 24 16:43:26 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 27 August 2013.