



SPEC[®] CINT2006 Result

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IBM Corporation

SPECint[®]_rate2006 = 484

IBM System p 570 (4.7 GHz, 16 core, RHEL)

SPECint_rate_base2006 = 420

CPU2006 license: 11

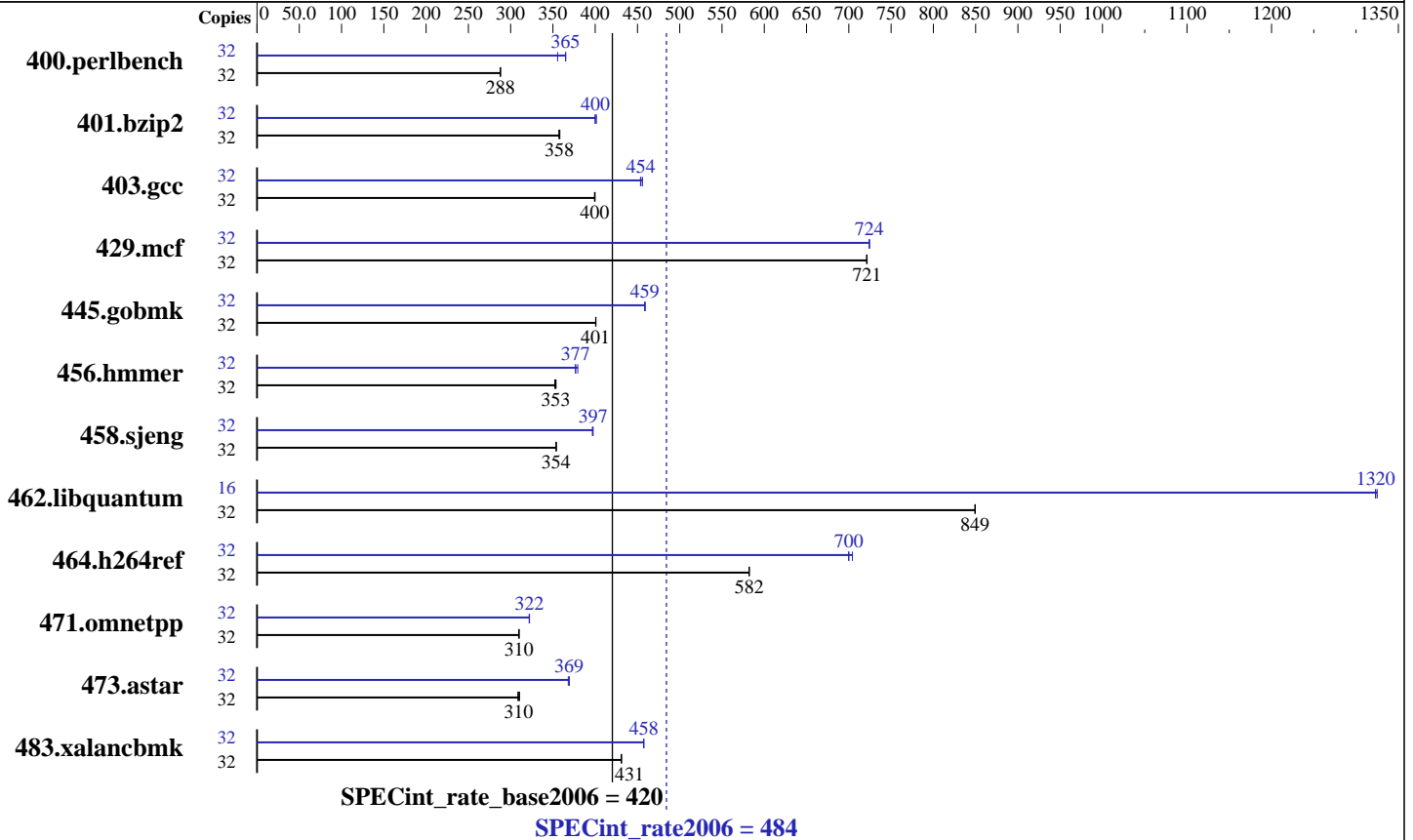
Test date: Oct-2007

Test sponsor: IBM Corporation

Hardware Availability: Jun-2007

Tested by: IBM Corporation

Software Availability: Oct-2007



Hardware

CPU Name: POWER6
 CPU Characteristics:
 CPU MHz: 4700
 FPU: Integrated
 CPU(s) enabled: 16 cores, 8 chips, 2 cores/chip, 2 threads/core
 CPU(s) orderable: 2,4,8,12,16 cores
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 4 MB I+D on chip per core
 L3 Cache: 32 MB I+D off chip per chip
 Other Cache: None
 Memory: 128 GB (64x2 GB) DDR2 667 MHz
 Disk Subsystem: 2x73 GB SAS 15K RPM
 Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Advanced Platform 5.1 for IBM POWER
 Compiler: IBM XL C/C++ Advanced Edition for Linux, V9.0
 Auto Parallel: No
 File System: ext3
 System State: Multi-User
 Base Pointers: 32-bit
 Peak Pointers: 32/64-bit
 Other Software: -IBM Post-Link Optimization for Linux on POWER, Version 5.4.0-10
 -MicroQuill SmartHeap 8.1



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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	32	<u>1086</u>	<u>288</u>	1086	288	1086	288	32	879	356	856	365	<u>857</u>	<u>365</u>
401.bzip2	32	<u>864</u>	<u>358</u>	862	358	865	357	32	<u>771</u>	<u>400</u>	769	401	772	400
403.gcc	32	644	400	<u>645</u>	<u>400</u>	645	399	32	565	456	568	454	<u>567</u>	<u>454</u>
429.mcf	32	405	721	404	722	<u>404</u>	<u>721</u>	32	403	724	403	724	<u>403</u>	<u>724</u>
445.gobmk	32	838	401	837	401	<u>838</u>	<u>401</u>	32	732	459	731	459	<u>732</u>	<u>459</u>
456.hmmmer	32	848	352	<u>845</u>	<u>353</u>	844	354	32	<u>792</u>	<u>377</u>	787	379	793	377
458.sjeng	32	1094	354	<u>1094</u>	<u>354</u>	1094	354	32	974	397	976	397	<u>974</u>	<u>397</u>
462.libquantum	32	781	849	780	850	<u>781</u>	<u>849</u>	16	<u>251</u>	<u>1320</u>	250	1320	251	1320
464.h264ref	32	<u>1216</u>	<u>582</u>	1217	582	1216	582	32	1005	704	<u>1012</u>	<u>700</u>	1012	700
471.omnetpp	32	<u>645</u>	<u>310</u>	645	310	646	310	32	621	322	<u>621</u>	<u>322</u>	621	322
473.astar	32	723	311	728	309	<u>726</u>	<u>310</u>	32	<u>609</u>	<u>369</u>	608	369	610	368
483.xalancbmk	32	512	431	<u>512</u>	<u>431</u>	513	431	32	483	457	483	458	<u>483</u>	<u>458</u>

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

General Notes

kernel release 2.6.18-52.el5.

See flags file for details on following settings.

ulimit -s (stack) set to 262144.

System set to Enhanced mode when defining partition on HMC

Large pages reserved as follows by root user:

```
echo 3200 > /proc/sys/vm/nr_hugepages
```

System configured with libhugetlbfs library for application access to large pages

Environment variables set before executing benchmarks.

```
export HUGETLB_VERBOSE=0
export HUGETLB_MORECORE=yes
export XLFRTIOPTS=intrinthds=1
```

fdpr binary optimization tool used for

```
400.perlbench 401.bzip2 403.gcc 429.mcf 456.hmmmer 458.sjeng
462.libquantum 464.h264ref 473.astar 483.xalancbmk
```

Benchmarks bound to a processor using numactl on the submit command.



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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

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



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Peak Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_PPC
 403.gcc: -DSPEC_CPU_LP64
 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
 -lsmartheap

401.bzip2: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -lhugetlbfs

403.gcc: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qalloca -q64
 -lhugetlbfs

429.mcf: -Wl,-q -O5 -qnoenablevmx -lhugetlbfs

445.gobmk: -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qnoenablevmx
 -lhugetlbfs

456.hmmmer: Same as 401.bzip2

458.sjeng: Same as 401.bzip2

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

464.h264ref: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -q64
 -lhugetlbfs

C++ benchmarks:

471.omnetpp: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qrtti -lsmartheap

473.astar: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qnoenablevmx
 -lsmartheap

483.xalancbmk: -Wl,-q -O4 -lsmartheap

Peak Other Flags

C benchmarks:

-qipa=noobject -qipa=threads

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Peak Other Flags (Continued)

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/lop-xl-flags.20090714.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/lop-xl-flags.20090714.xml>

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

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