



SPEC[®] CINT2006 Result

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IBM Corporation

SPECint[®]_rate2006 = **852**

IBM PowerLinux 7R2 (4.2 GHz, 16 core, SLES)

SPECint_rate_base2006 = 617

CPU2006 license: 11

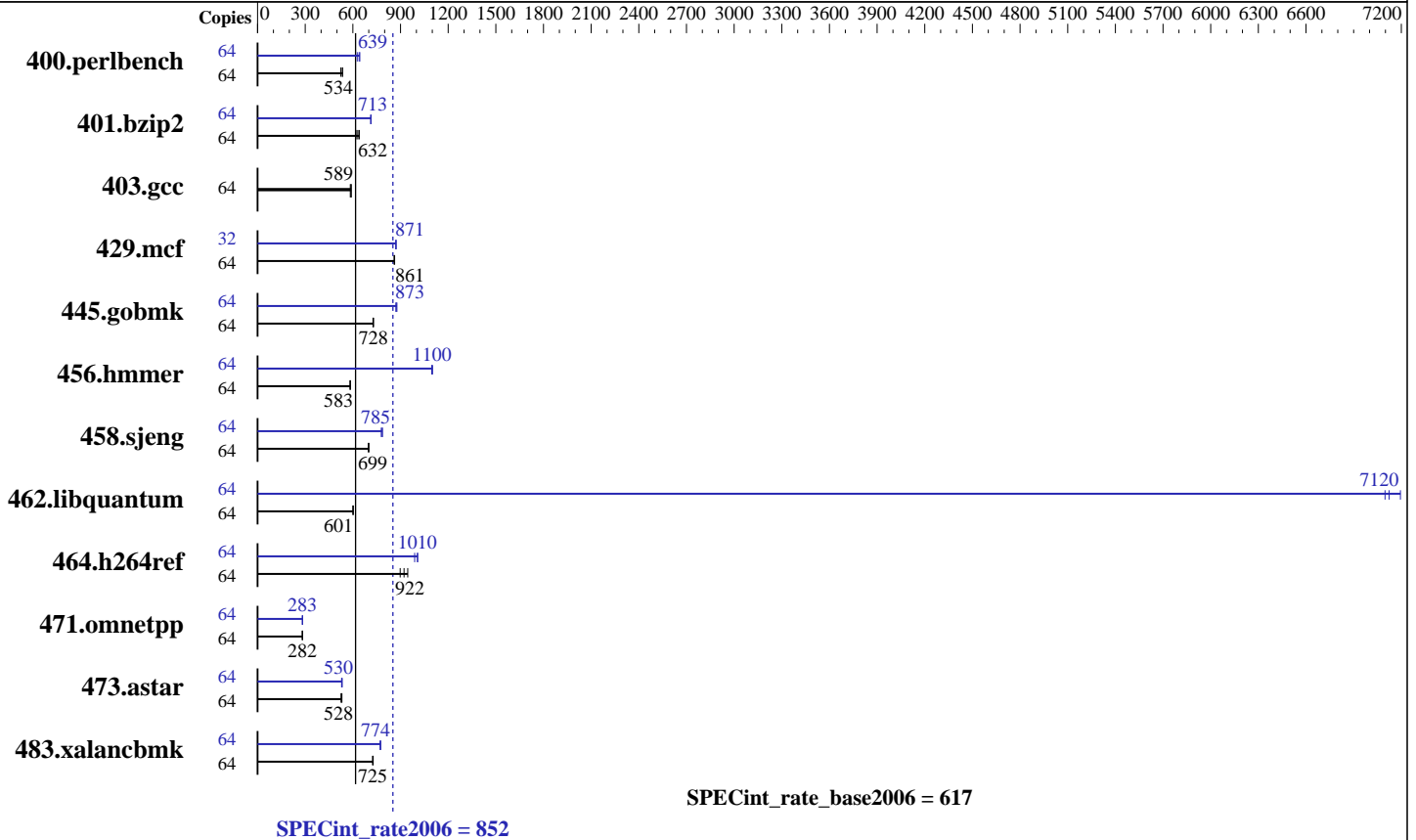
Test date: Jan-2013

Test sponsor: IBM Corporation

Hardware Availability: Feb-2013

Tested by: IBM Corporation

Software Availability: Dec-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: 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 (16 x 8 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 12.1 of IBM XL C/C++ for Linux
 Auto Parallel: No
 File System: ext3
 System State: Run level 3 (multi-user)
 Base Pointers: 32-bit
 Peak Pointers: 32/64-bit
 Other Software: -Post-Link Optimization for Linux on POWER, version 5.6.1-7
 -MicroQuill SmartHeap 9



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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	64	1193	524	1170	534	1169	535	64	997	627	978	639	971	644
401.bzip2	64	988	625	977	632	964	640	64	866	713	866	713	865	714
403.gcc	64	875	589	874	589	883	584	64	875	589	874	589	883	584
429.mcf	64	676	863	678	861	679	860	32	335	871	335	871	335	871
445.gobmk	64	920	730	924	727	922	728	64	765	877	769	873	771	871
456.hammer	64	1024	583	1023	584	1024	583	64	544	1100	544	1100	542	1100
458.sjeng	64	1108	699	1109	698	1106	700	64	986	785	995	779	986	785
462.libquantum	64	2205	601	2205	602	2206	601	64	186	7120	184	7190	187	7100
464.h264ref	64	1498	945	1536	922	1578	898	64	1405	1010	1408	1010	1432	989
471.omnetpp	64	1416	282	1420	282	1416	283	64	1416	283	1414	283	1416	283
473.astar	64	846	531	852	528	854	526	64	843	533	847	530	849	529
483.xalancbmk	64	609	725	607	728	609	725	64	570	774	572	772	571	774

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

Compiler Invocation Notes

C/C++ compiler updated to December 2012 PTF
Version: 12.01.0000.0002

Peak Tuning Notes

Post-Link optimization tool used for:

400.perlbench
with options -O4 -omullX for optimization phase,
and -imullX for instrumentation phase

401.bzip2
with options -O4 -vrox

403.gcc
with options -O4 -nodp -rtb

429.mcf 445.gobmk 458.sjeng 473.astar
with options -O3

462.libquantum
with options -O4 -vrox -nodp

464.h264ref
with options -O4 -vrox -nodp -rtb

471.omnetpp
with options -O3 -lu -l -nodp -sdp 9

483.xalancbmk
with options -O3 -m power7



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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 variables were set before the runspec command:
export HUGETLB_VERBOSE=0
export HUGETLB_MORECORE=yes

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 -qarch=pwr7 -qtune=pwr7 -q32 -qipa=threads -qalias=noansi
-qalloca -lhugetlbfs

C++ benchmarks:

-O5 -qarch=pwr7 -qtune=pwr7 -q32 -qipa=threads -qrtti -lsmartheap

Base Other Flags

C benchmarks:

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Base Other Flags (Continued)

C++ benchmarks:

Peak Compiler Invocation

C benchmarks:

```
xlc -qlanglvl=extc99
```

C++ benchmarks:

```
x1C
```

Peak Portability Flags

```
400.perlbench: -DSPEC_CPU_LINUX_PPC
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 -qarch=pwr7
               -qtune=pwr7 -qipa=threads -qalias=noansi -qipa=level=2
               -lsmartheap

401.bzip2: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=pwr7
            -qtune=pwr7 -lhugetlbfs

403.gcc: basepeak = yes

429.mcf: -Wl,-q -O5 -qarch=pwr7 -qtune=pwr7 -qipa=threads
         -lhugetlbfs

445.gobmk: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr7
           -qtune=pwr7 -qipa=threads -lhugetlbfs

456.hmmer: -Wl,-q -O5 -qarch=pwr7 -qtune=pwr7 -qipa=threads -qsimd
           -qassert=refalign -qipa=inline=threshold=2888
           -qipa=inline=limit=11880 -lhugetlbfs

458.sjeng: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr7
           -qtune=pwr7 -qipa=threads -lhugetlbfs
```

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Peak Optimization Flags (Continued)

462.libquantum: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr7
-qtune=pwr7 -qipa=threads -q64 -lhugetlbfs

464.h264ref: Same as 458.sjeng

C++ benchmarks:

471.omnetpp: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr7
-qtune=pwr7 -qipa=threads -qrtti -lsmartheap

473.astar: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr7
-qtune=pwr7 -qipa=threads -lhugetlbfs -lsmartheap

483.xalancbmk: -Wl,-q -O4 -qarch=pwr7 -qtune=pwr7 -qipa=threads
-qipa=partition=large -lsmartheap

Peak Other Flags

C benchmarks:

C++ benchmarks:

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-XL.20121024.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-XL.20121024.xml>

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

Tested with SPEC CPU2006 v1.2.

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