SPEC® CINT2006 Result
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IBM Corporation

IBM Power 795 (4.0 GHz, 256 core, RedHat)

$SPECint^®\_rate2006 =$ 11300
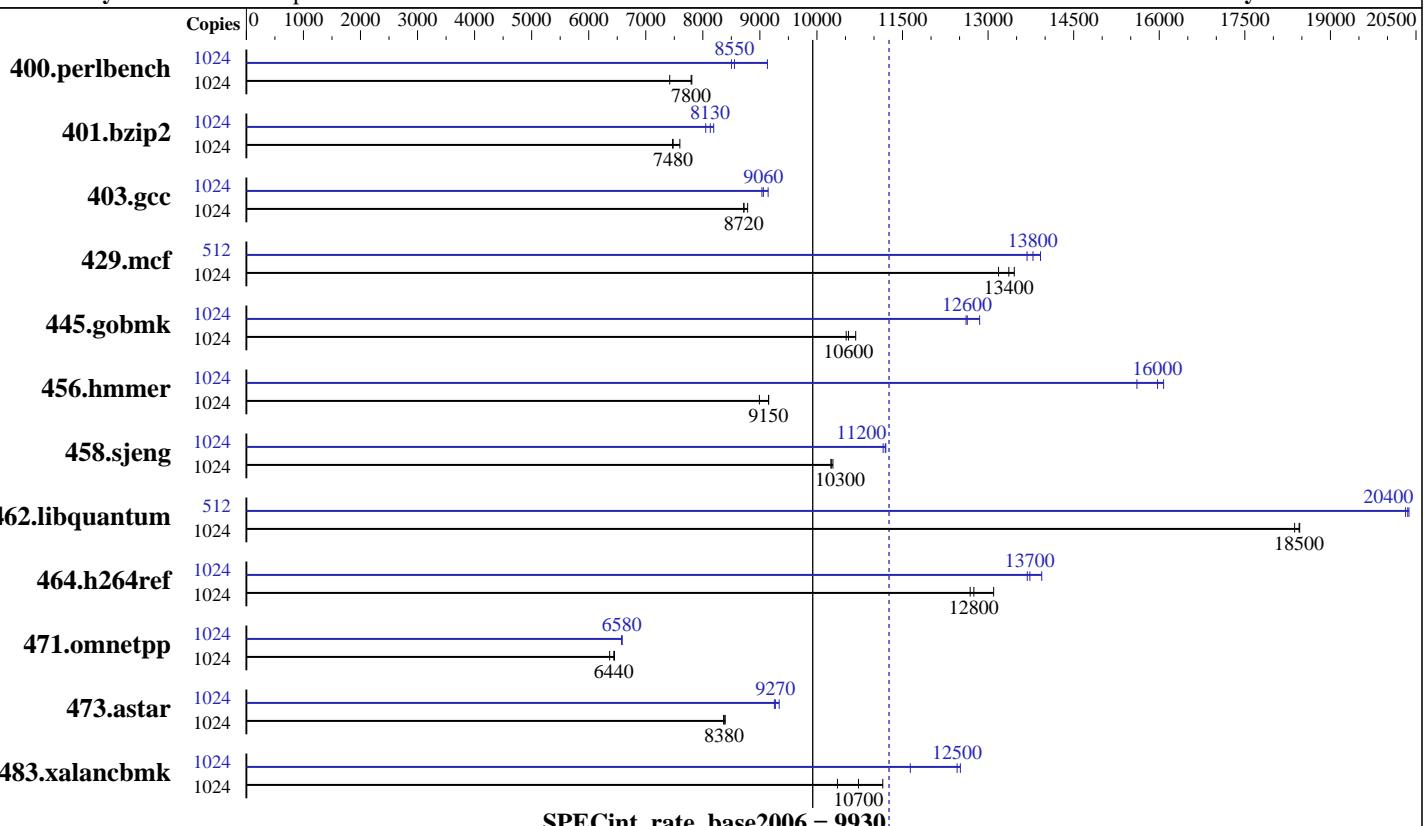
SPECint_rate_base2006 = 9930

CPU2006 license: 11	**Test date:** Oct-2010
Test sponsor: IBM Corporation	**Hardware Availability:** Sep-2010
Tested by: IBM Corporation	**Software Availability:** Nov-2010

Copies

Benchmark	Copies	Value	Copies	Value
400.perlbench	1024	8550	1024	7800
401.bzip2	1024	8130	1024	7480
403.gcc	1024	9060	1024	8720
429.mcf	512	13800	1024	13400
445.gobmk	1024	12600	1024	10600
456.hmmer	1024	16000	1024	9150
458.sjeng	1024	11200	1024	10300
462.libquantum	512	20400	1024	18500
464.h264ref	1024	13700	1024	12800
471.omnetpp	1024	6580	1024	6440
473.astar	1024	9270	1024	8380
483.xalancbmk	1024	12500	1024	10700

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Hardware

CPU Name:	POWER7
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 4.14 GHz
CPU MHz:	4004
FPU:	Integrated
CPU(s) enabled:	256 cores, 32 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable:	32,64,96,128,160,192,224,256 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:	4 MB I+D on chip per core
Other Cache:	None
Memory:	2 TB (256x8 GB) DDR3 1066 MHz
Disk Subsystem:	17x146.8 GB Raid0 SAS SFF 15K RPM
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 6.0 (ppc64), Kernel 2.6.32-71.el6.ppc64
Compiler:	IBM XL C/C++ for Linux, V11.1 Updated with the Nov2010 PTF
Auto Parallel:	No
File System:	ext2
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 5.5.0-3 -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	1024	**1283**	**7800**	1348	7420	1281	7810	1024	1177	8500	1096	9130	**1170**	**8550**
401.bzip2	1024	1323	7470	1301	7600	**1321**	**7480**	1024	1227	8050	**1215**	**8130**	1206	8190
403.gcc	1024	946	8720	**945**	**8720**	938	8790	1024	901	9140	**910**	**9060**	912	9040
429.mcf	1024	694	13500	708	13200	**699**	**13400**	512	**339**	**13800**	335	13900	341	13700
445.gobmk	1024	1006	10700	1022	10500	**1018**	**10600**	1024	836	12900	**850**	**12600**	852	12600
456.hmmer	1024	1063	8990	**1044**	**9150**	1044	9150	1024	612	15600	**598**	**16000**	594	16100
458.sjeng	1024	1209	10200	1205	10300	**1209**	**10300**	1024	1105	11200	**1106**	**11200**	1110	11200
462.libquantum	1024	1149	18500	**1150**	**18500**	1155	18400	512	522	20300	**521**	**20400**	521	20400
464.h264ref	1024	1730	13100	**1777**	**12800**	1786	12700	1024	1626	13900	**1650**	**13700**	1656	13700
471.omnetpp	1024	992	6450	**994**	**6440**	1005	6370	1024	972	6580	973	6580	**973**	**6580**
473.astar	1024	859	8360	857	8390	**858**	**8380**	1024	777	9250	770	9340	**775**	**9270**
483.xalancbmk	1024	682	10400	633	11200	**659**	**10700**	1024	607	11600	565	12500	**567**	**12500**

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

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
    456.hmmer
        with options -O4 -nodp -m power7
    462.libquantum
        with options -O4 -vrox -nodp
    464.h264ref
        with options -O4 -vrox -nodp -rtb
    471.omnetpp
        with options -O3 -lu -1 -nodp -sdp 9
    483.xalancbmk
        with options -O3 -m power7
```

Submit Notes

```
    The config file option 'submit' was used.
    Benchmarks bound to a processor using numactl on the submit command.
```

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Operating System Notes

```
 ulimit -s (stack) set to 1048576.
 ulimit -n (open files) set to 20480.
 ulimit -u (user processes) set to unlimited.
 Large pages reserved as follows by root user:
     echo 56320 > /proc/sys/vm/nr_overcommit_hugepages
 The following environment varibles were set before the runspec command:
     export HUGETLB_VERBOSE=0
     export HUGETLB_MORECORE=yes
     export XLFRTEOPTS=intrinthds=1
```

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 -lhugetlbfs
```

Base Other Flags

C benchmarks:
```
    -qipa=noobject -qipa=threads
```

C++ benchmarks:
```
    -qipa=noobject -qipa=threads
```

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Peak Compiler Invocation

C benchmarks:
    xlc -qlanglvl=extc99

C++ benchmarks:
    xlC

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 -qalias=noansi
                   -qipa=level=2 -lsmartheap

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

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

       429.mcf: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -lhugetlbfs

     445.gobmk: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -lhugetlbfs

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

     458.sjeng: Same as 429.mcf

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

    464.h264ref: Same as 429.mcf

C++ benchmarks:

    471.omnetpp: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qrtti
                 -lhugetlbfs -lsmartheap

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Peak Optimization Flags (Continued)

```
473.astar: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4
           -qipa=inline=threshold=2468 -qipa=inline=limit=11060
           -qipa=partition=large -lhugetlbfs -lsmartheap

483.xalancbmk: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr5
           -qtune=pwr5 -qipa=inline=threshold=2468
           -qipa=inline=limit=11060 -qipa=partition=large -lhugetlbfs
           -lsmartheap
```

Peak Other Flags

C benchmarks:
```
-qipa=noobject -qipa=threads
```

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/IBM-Linux-XL.20101123.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20101123.xml

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Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 14:23:57 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 23 November 2010.