IBM Corporation

IBM Power 760 (3.4 GHz, 48 core, SLES)

<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
<th>2130</th>
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<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>1480</td>
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</table>

**CPU2006 license:** 11  |  **Test date:** | Jan-2013  
**Test sponsor:** IBM Corporation |  **Hardware Availability:** | Mar-2013  
**Tested by:** IBM Corporation |  **Software Availability:** | Dec-2012  

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### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>POWER7+</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics:</td>
<td>Intelligent Energy Optimization enabled, up to 3.787 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>3416</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>48 cores, 8 chips, 6 cores/chip, 4 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>12, 24, 36, 48 cores</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>256 KB I+D on chip per core</td>
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<td>L3 Cache:</td>
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<tr>
<td>Other Cache:</td>
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<td>Memory:</td>
<td>512 GB (64 x 8 GB) DDR3 1066 MHz</td>
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<td>Disk Subsystem:</td>
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### Software

<table>
<thead>
<tr>
<th>Operating System:</th>
<th>SUSE Linux Enterprise Server 11 SP2 (ppc64) kernel 3.0.42-0.7-ppc64</th>
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<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 12.1 of IBM XL C/C++ for Linux</td>
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<tr>
<td>Auto Parallel:</td>
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<tr>
<td>File System:</td>
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<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
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<tr>
<td>Base Pointers:</td>
<td>32-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>32/64-bit</td>
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| Other Software: | -Post-Link Optimization for Linux on POWER, version 5.6.1-7  
- MicroQuill SmartHeap 9 |
IBM Corporation
IBM Power 760 (3.4 GHz, 48 core, SLES)

SPEC CINT2006 Result

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IBM Corporation
IBM Power 760 (3.4 GHz, 48 core, SLES)

SPECint_rate2006 = 2130
SPECint_rate_base2006 = 1480

Results Table

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</table>

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 -nodoc -rtb
429.mcf 445.gobmk 458.sjeng 473.astar
with options -O3
462.libquantum
with options -O4 -vrox -nodoc
464.h264ref
with options -O4 -vrox -nodoc -rtb
471.omnetpp
with options -O3 -lu -1 -nodoc -sdp 9
483.xalancbmk
with options -O3 -m power7
IBM Corporation

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\[ \text{SPECint}_{\text{rate2006}} = 2130 \]
\[ \text{SPECint}_{\text{rate\_base2006}} = 1480 \]

CPU2006 license: 11
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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 12672 > /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:
-05 -qarch=pwr7 -qtune=pwr7 -q32 -qipa=threads -qalias=noansi
-qalloca -lhugel1bfs

C++ benchmarks:
-05 -qarch=pwr7 -qtune=pwr7 -q32 -qipa=threads -qrtti -lsmartheap

Base Other Flags
C benchmarks:
Continued on next page
**IBM Corporation**  
IBM Power 760 (3.4 GHz, 48 core, SLES)  

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### Base Other Flags (Continued)

C++ benchmarks:

**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) -04 -qarch=pwr7 -qtune=pwr7 -qipa=threads -qalias=noansi -qipa=level=2 -lsmartheap

**401.bzip2:** `-Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -03 -qarch=pwr7 -qtune=pwr7 -lhugetlbfs

**403.gcc:** `-Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -04 -qarch=pwr7 -qtune=pwr7 -qipa=threads -qalloca -lhugetlbfs

**429.mcf:** `-Wl,-q -05 -qarch=pwr7 -qtune=pwr7 -qipa=threads -lhugetlbfs

**445.gobmk:** `-Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -04 -qarch=pwr7 -qtune=pwr7 -qipa=threads -lhugetlbfs

**456.hmmer:** `-Wl,-q -05 -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) -05 -qarch=pwr7 -qtune=pwr7 -qipa=threads -lhugetlbfs

Continued on next page
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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

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.

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