SPEC® CINT2006 Result

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IBM Corporation

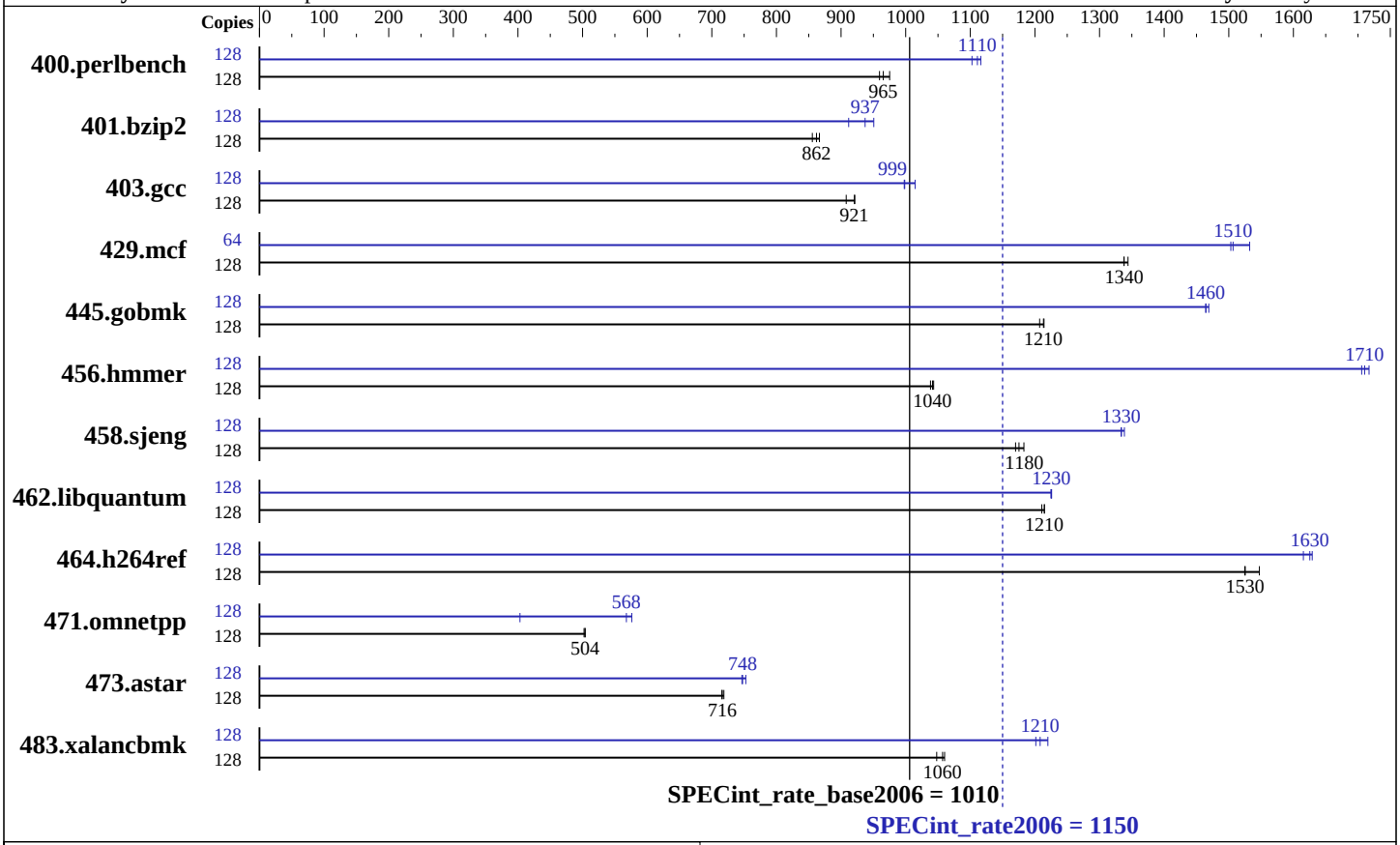
IBM Power 750 Express (3.61 GHz, 32 core)

SPECint®_rate2006 = 1150

SPECint_rate_base2006 = 1010

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

Test date: Mar-2011
Hardware Availability: May-2011
Software Availability: May-2011



Hardware

CPU Name:	POWER7
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 3.86 GHz
CPU MHz:	3612
FPU:	Integrated
CPU(s) enabled:	32 cores, 4 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable:	8 - 32 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:	256 GB (32 x 8 GB) DDR3 1066 MHz
Disk Subsystem:	6 x 146.8 GB Raid0 SAS SFF 15K RPM
Other Hardware:	None

Software

Operating System:	IBM AIX V7.1 with Service Pack 3
Compiler:	IBM XL C/C++ for AIX, V11.1 Version: 11.01.0000.0005
Auto Parallel:	No
File System:	AIX/JFS2
System State:	Multi-user
Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other Software:	None

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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	128	1303	959	**1296**	**965**	1282	975	128	**1126**	**1110**	1120	1120	1134	1100
401.bzip2	128	1444	856	**1433**	**862**	1426	866	128	1299	951	**1318**	**937**	1355	912
403.gcc	128	1135	908	**1119**	**921**	1118	921	128	**1032**	**999**	1033	998	1016	1010
429.mcf	128	873	1340	869	1340	**872**	**1340**	64	388	1500	381	1530	**387**	**1510**
445.gobmk	128	**1107**	**1210**	1106	1210	1112	1210	128	**917**	**1460**	917	1460	914	1470
456.hmmer	128	**1147**	**1040**	1145	1040	1150	1040	128	**698**	**1710**	700	1710	696	1720
458.sjeng	128	**1318**	**1180**	1309	1180	1324	1170	128	**1161**	**1330**	1157	1340	1162	1330
462.libquantum	128	2191	1210	2183	1210	**2184**	**1210**	128	**2164**	**1230**	2166	1220	2164	1230
464.h264ref	128	1831	1550	**1857**	**1530**	1858	1520	128	1739	1630	**1743**	**1630**	1753	1620
471.omnetpp	128	1593	502	**1588**	**504**	1587	504	128	**1409**	**568**	1985	403	1388	576
473.astar	128	**1255**	**716**	1250	719	1256	716	128	**1202**	**748**	1204	747	1194	753
483.xalancbmk	128	833	1060	843	1050	**835**	**1060**	128	735	1200	**731**	**1210**	724	1220

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

Peak Tuning Notes

```
fdpr binary optimization tool used for:
 401.bzip2 473.astar with options:
  -O4 -vrox -m power7
 403.gcc 445.gobmk 458.sjeng with options:
  -O3 -m power7
 429.mcf 483.xalancbmk with options:
  -O4 -nobp -m power7
 456.hmmer 462.libquantum with options:
  -O3 -lu -1 -nodp -sdp 9 -m power7
 464.h264ref with options:
  -O4 -vrox -RD -m power7
```

Submit Notes

```
The config file option 'submit' was used
 to assign benchmark copy to specific kernel thread using
 the "bindprocessor" command (see flags file for details).
```

Operating System Notes

```
All ulimits set to unlimited.

12800 16M large pages defined with vmo command
```

General Notes

```
Environment variables set by runspec before the start of the run:
 MALLOCOPTIONS = "pool"
 MEMORY_AFFINITY = "MCM"
 XLFRTEOPTS = "intrinthds=1"

 The "IBM Power 750 Express (3.61 GHz)" and the "IBM Power 755 (3.61 GHz)"
 are electronically equivalent. The results have been measured on the
 "IBM Power Express 750 (3.61 GHz)".
```

Base Compiler Invocation

C benchmarks:
```
/usr/vac/bin/xlc -qlanglvl=extc99
```

C++ benchmarks:
```
/usr/vacpp/bin/xlC
```

Base Portability Flags

400.perlbench: `-DSPEC_CPU_AIX`
462.libquantum: `-DSPEC_CPU_AIX`
464.h264ref: `-DSPEC_CPU_AIX -qchars=signed`
483.xalancbmk: `-DSPEC_CPU_AIX`

Base Optimization Flags

C benchmarks:
```
-qipa=threads -bmaxdata:0x50000000 -qlargepage -O5 -D_ILS_MACROS
-qalias=noansi -qalloca -blpdata
```

C++ benchmarks:
```
-qipa=threads -bmaxdata:0x20000000 -qlargepage -O4 -qsimd -qvecnvol
-D_ILS_MACROS -qrtti=all -D__IBM_FAST_SET_MAP_ITERATOR -blpdata
```

Base Other Flags

C benchmarks:
```
-qipa=noobject -qsuppress=1500-036
```

C++ benchmarks:
```
-qipa=noobject -qsuppress=1500-036
```

Peak Compiler Invocation

C benchmarks:
/usr/vac/bin/xlc -qlanglvl=extc99

C++ benchmarks:
/usr/vacpp/bin/xlC

Peak Portability Flags

400.perlbench: -DSPEC_CPU_AIX
462.libquantum: -DSPEC_CPU_AIX
464.h264ref: -DSPEC_CPU_AIX -qchars=signed
483.xalancbmk: -DSPEC_CPU_AIX

Peak Optimization Flags

C benchmarks:

400.perlbench: -bmaxdata:0x50000000 -qpdf1(pass 1) -qpdf2(pass 2) -O2
-qarch=auto -qtune=auto -D_ILS_MACROS -qalias=noansi
-blpdata -btextpsize:64K

401.bzip2: -qipa=threads -bmaxdata:0x50000000 -qpdf1(pass 1)
-qpdf2(pass 2) -O5 -qlargepage -D_ILS_MACROS -blpdata
-btextpsize:64K

403.gcc: -qipa=threads -bmaxdata:0x50000000 -qpdf1(pass 1)
-qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -qlargepage
-D_ILS_MACROS -qalloca -blpdata -btextpsize:64K

429.mcf: -qipa=threads -bmaxdata:0x50000000 -qpdf1(pass 1)
-qpdf2(pass 2) -O5 -qsimd -qvecnvol -qlargepage
-D_ILS_MACROS -blpdata -btextpsize:64K

445.gobmk: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O4
-qlargepage -D_ILS_MACROS -blpdata -btextpsize:64K

456.hmmer: -qipa=threads -O5 -qsimd -qvecnvol -qassert=refalign
-D_ILS_MACROS -blpdata -btextpsize:64K

458.sjeng: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5
-D_ILS_MACROS -blpdata -btextpsize:64K

462.libquantum: -O5 -q64 -qlargepage -D_ILS_MACROS -blpdata
-btextpsize:64K

Continued on next page

Peak Optimization Flags (Continued)

464.h264ref: Same as 458.sjeng

C++ benchmarks:

471.omnetpp: -qipa=threads -bmaxdata:0x20000000 -qpdf1(pass 1) -qpdf2(pass 2) -O4 -D_ILS_MACROS -qalign=natural -qrtti=all -qinlglue -D__IBM_FAST_SET_MAP_ITERATOR -blpdata -btextpsize:64K

473.astar: -qipa=threads -bmaxdata:0x20000000 -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qsimd -qvecnvol -qlargepage -D_ILS_MACROS -qinlglue -qalign=natural -blpdata -btextpsize:64K

483.xalancbmk: -qipa=threads -bmaxdata:0x20000000 -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qsimd -qvecnvol -qarch=pwr5 -qtune=pwr5 -qlargepage -D_ILS_MACROS -qinlglue -D__IBM_FAST_VECTOR -blpdata -btextpsize:64K

Peak Other Flags

C benchmarks (except as noted below):
-qipa=noobject -qsuppress=1500-036

400.perlbench: -qsuppress=1500-036

462.libquantum: -qsuppress=1500-036

C++ benchmarks:
-qipa=noobject -qsuppress=1500-036

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/IBM-XL.20100901.html
http://www.spec.org/cpu2006/flags/IBM-AIX.20100303.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-XL.20100901.xml
http://www.spec.org/cpu2006/flags/IBM-AIX.20100303.xml

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