SPEC® CINT2006 Result

IBM Corporation

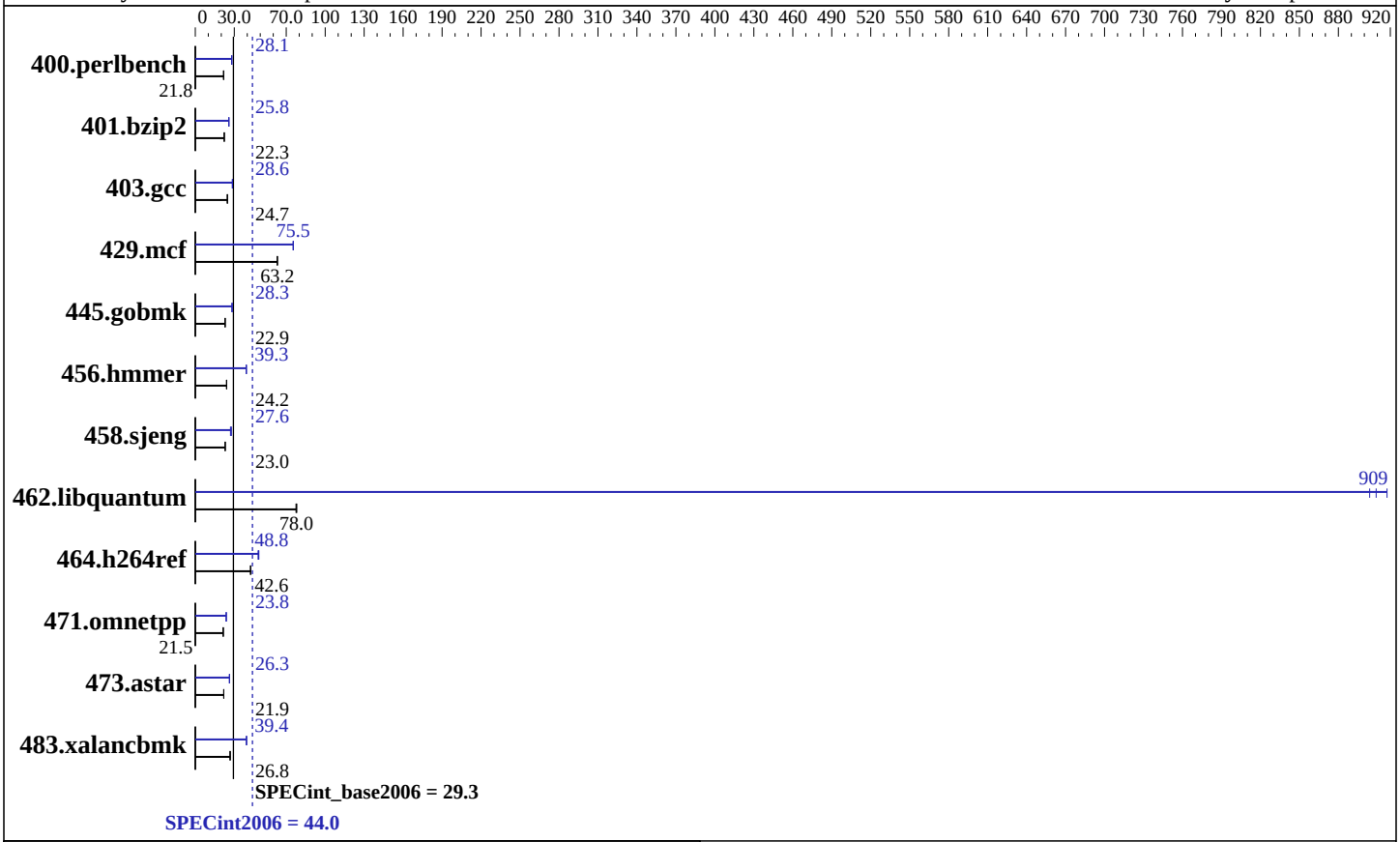
IBM Power 780 Server (4.14 GHz, 16 core)

SPECint®2006 = 44.0

SPECint_base2006 = 29.3

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

Test date: Apr-2010
Hardware Availability: Mar-2010
Software Availability: Apr-2010



Hardware

CPU Name:	POWER7
CPU Characteristics:	TurboCore mode
CPU MHz:	4140
FPU:	Integrated
CPU(s) enabled:	16 cores, 4 chips, 4 cores/chip
CPU(s) orderable:	8,16,24,32 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:	16 MB I+D on chip per chip
Memory:	256 GB (32x8 GB) DDR3 1066 MHz
Disk Subsystem:	2x146.8 GB SAS SFF 15K RPM
Other Hardware:	--

Software

Operating System:	IBM AIX V6.1 with the 6100-05 Technology Level SP1
Compiler:	XL C/C++ Enterprise Edition V11.1.0.1 for AIX
Auto Parallel:	Yes
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					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	449	21.8	447	21.9	**448**	**21.8**	348	28.1	348	28.1	**348**	**28.1**
401.bzip2	433	22.3	433	22.3	**433**	**22.3**	**373**	**25.8**	374	25.8	373	25.9
403.gcc	**326**	**24.7**	326	24.7	326	24.7	**282**	**28.6**	282	28.6	281	28.6
429.mcf	144	63.2	144	63.1	**144**	**63.2**	121	75.3	121	75.5	**121**	**75.5**
445.gobmk	456	23.0	**457**	**22.9**	457	22.9	371	28.3	**370**	**28.3**	370	28.4
456.hmmer	386	24.2	389	24.0	**386**	**24.2**	238	39.3	238	39.3	**238**	**39.3**
458.sjeng	526	23.0	**526**	**23.0**	526	23.0	447	27.1	437	27.7	**438**	**27.6**
462.libquantum	265	78.0	**266**	**78.0**	267	77.5	22.6	917	22.9	904	**22.8**	**909**
464.h264ref	519	42.6	**519**	**42.6**	520	42.6	**454**	**48.8**	458	48.3	452	48.9
471.omnetpp	290	21.5	**290**	**21.5**	292	21.4	**262**	**23.8**	263	23.8	262	23.8
473.astar	321	21.9	**320**	**21.9**	320	21.9	267	26.3	**267**	**26.3**	267	26.3
483.xalancbmk	258	26.8	**258**	**26.8**	256	26.9	175	39.4	**175**	**39.4**	176	39.3

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:
  400.perlbench 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
```

Operating System Notes

```
 all ulimits set to unlimited.
 2000 16M large pages defined with vmo command
System set to single thread mode with the OS command:
 smtctl -m off -w boot
```

General Notes

```
Environment variables set by runspec before the start of the run:
MALLOCMULTIHEAP = "1"
MALLOCOPTIONS = "pool"
MEMORY_AFFINITY = "MCM"
XLFRTEOPTS = "intrinthds=1"
XLSMPOPTS = "spins=0:yields=0"

 See the flags file for details on settings.
```

Base Compiler Invocation

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

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

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 -O5 -qlargepage -D_ILS_MACROS
-qalias=noansi -qalloca -blpdata
```

C++ benchmarks:
```
-qipa=threads -bmaxdata:0x20000000 -O5 -qlargepage -D_ILS_MACROS
-qsmp=auto -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 (except as noted below):
/usr/vac/bin/xlc -qlanglvl=extc99

458.sjeng: /usr/vac/bin/xlc_r -qlanglvl=extc99

462.libquantum: /usr/vac/bin/xlc_r -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: -qipa=threads -bmaxdata:0x50000000 -qpdf1(pass 1)
-qpdf2(pass 2) -O2 -qarch=auto -qtune=auto -qipa=level=2
-qipa=inline=threshold=2048 -qipa=inline=limit=10240
-D_ILS_MACROS -qalias=noansi -blpdata -btextpsize:64K

401.bzip2: -qipa=threads -bmaxdata:0x4fffffc -qpdf1(pass 1)
-qpdf2(pass 2) -O5 -qlargepage -qipa=inline=threshold=2888
-qipa=inline=limit=11880 -qipa=partition=large
-D_ILS_MACROS -blpdata

403.gcc: -qipa=threads -bmaxdata:0x50000000 -qpdf1(pass 1)
-qpdf2(pass 2) -O5 -qsimd -qvecnvol -qlargepage
-qipa=inline=threshold=630 -qipa=inline=limit=4920
-qipa=partition=large -D_ILS_MACROS -qalloca -blpdata

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

445.gobmk: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qsimd
-qvecnvol -qlargepage -D_ILS_MACROS -blpdata

456.hmmer: -qipa=threads -O5 -qsimd -qvecnvol -qassert=refalign
-qipa=inline=threshold=2888 -qipa=inline=limit=11880
-D_ILS_MACROS -blpdata -btextpsize:64K

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Peak Optimization Flags (Continued)

458.sjeng: `-qipa=threads -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qsmp=auto -D_ILS_MACROS -blpdata`

462.libquantum: `-qipa=threads -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qsmp=auto -q64 -qlargepage -D_ILS_MACROS -blpdata`

464.h264ref: `-qipa=threads -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qsmp=auto -qsimd -qvecnvol -qipa=inline=threshold=1864 -qipa=inline=limit=9830 -D_ILS_MACROS -blpdata -btextpsize:64K`

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) `-O5 -qlargepage -qipa=inline=threshold=2468 -qipa=inline=limit=11060 -qipa=partition=large -D_ILS_MACROS -qinlglue -qalign=natural -blpdata`

483.xalancbmk: `-qipa=threads -bmaxdata:0x20000000 -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O4 -qarch=pwr5 -qtune=pwr5 -qlargepage -qipa=inline=threshold=2468 -qipa=inline=limit=11060 -D_ILS_MACROS -qinlglue -D__IBM_FAST_VECTOR -blpdata -btextpsize:64K`

Peak Other Flags

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

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

471.omnetpp: `-qsuppress=1500-036`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/IBM-AIX.20100511.html
http://www.spec.org/cpu2006/flags/IBM-XL.20100511.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-AIX.20100511.xml
http://www.spec.org/cpu2006/flags/IBM-XL.20100511.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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