SPEC® CINT2006 Result
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IBM Corporation

IBM System x3455 (AMD Opteron 2222 SE)

$SPECint®_rate2006 = $ 50.0

$SPECint_rate_base2006 = $ 44.6

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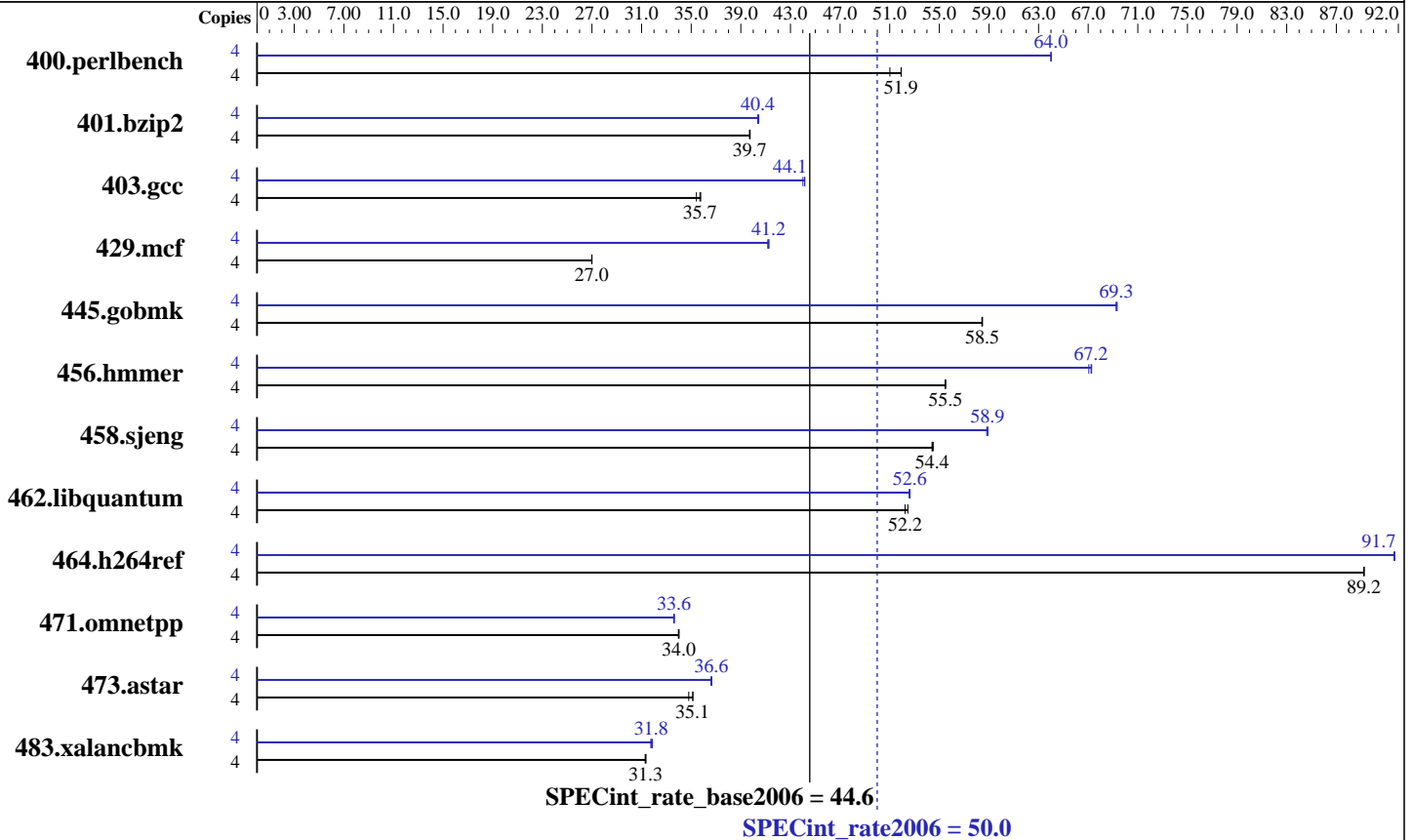**Test sponsor:** IBM Corporation
Tested by: IBM Corporation

Test date: Feb-2007
Hardware Availability: Apr-2007
Software Availability: Aug-2006

Copies

Benchmark	Copies	Result (peak)	Result (base)
400.perlbench	4 / 4	64.0	51.9
401.bzip2	4 / 4	40.4	39.7
403.gcc	4 / 4	44.1	35.7
429.mcf	4 / 4	41.2	27.0
445.gobmk	4 / 4	69.3	58.5
456.hmmer	4 / 4	67.2	55.5
458.sjeng	4 / 4	58.9	54.4
462.libquantum	4 / 4	52.6	52.2
464.h264ref	4 / 4	91.7	89.2
471.omnetpp	4 / 4	33.6	34.0
473.astar	4 / 4	36.6	35.1
483.xalancbmk	4 / 4	31.8	31.3

SPECint_rate_base2006 = 44.6

SPECint_rate2006 = 50.0

Hardware

CPU Name: AMD Opteron 2222 SE
CPU Characteristics:
CPU MHz: 3000
FPU: Integrated
CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip
CPU(s) orderable: 1, 2 chips
Primary Cache: 64 KB I + 64 KB D on chip per core
Secondary Cache: 1 MB I+D on chip per core
L3 Cache: None
Other Cache: None
Memory: 16 GB (8 x 2GB DDR2-5300 ECC)
Disk Subsystem: 1 x 80 GB SATA, 7200 RPM
Other Hardware: None

Software

Operating System: SLES9 SP3 for AMD64/EM64T
Compiler: QLogic PathScale Compiler Suite 2.5
Auto Parallel: No
File System: ext3
System State: Multi-user, run level 3
Base Pointers: 64-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	4	766	51.0	753	51.9	**753**	**51.9**	4	611	64.0	611	64.0	**611**	**64.0**
401.bzip2	4	971	39.7	972	39.7	**972**	**39.7**	4	**956**	**40.4**	954	40.4	956	40.4
403.gcc	4	900	35.8	909	35.4	**902**	**35.7**	4	732	44.0	**729**	**44.1**	729	44.2
429.mcf	4	**1352**	**27.0**	1352	27.0	1351	27.0	4	886	41.2	884	41.3	**885**	**41.2**
445.gobmk	4	**718**	**58.5**	718	58.5	718	58.4	4	605	69.3	606	69.3	**606**	**69.3**
456.hmmer	4	673	55.5	**672**	**55.5**	672	55.5	4	555	67.3	**555**	**67.2**	557	67.1
458.sjeng	4	**889**	**54.4**	889	54.4	888	54.5	4	823	58.8	**822**	**58.9**	822	58.9
462.libquantum	4	1587	52.2	**1586**	**52.2**	1580	52.5	4	**1575**	**52.6**	1577	52.6	1575	52.6
464.h264ref	4	992	89.2	**992**	**89.2**	992	89.2	4	965	91.7	966	91.7	**966**	**91.7**
471.omnetpp	4	736	34.0	735	34.0	**735**	**34.0**	4	**744**	**33.6**	743	33.6	744	33.6
473.astar	4	807	34.8	**800**	**35.1**	799	35.1	4	767	36.6	**767**	**36.6**	766	36.7
483.xalancbmk	4	**881**	**31.3**	882	31.3	880	31.3	4	866	31.9	**869**	**31.8**	869	31.8

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

Operating System Notes

    taskset utility used to bind CPU(s) to processes

Base Compiler Invocation

C benchmarks:
    pathcc

C++ benchmarks:
    pathCC

Base Portability Flags

    400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
        401.bzip2: -DSPEC_CPU_LP64
          403.gcc: -DSPEC_CPU_LP64
          429.mcf: -DSPEC_CPU_LP64
       445.gobmk: -DSPEC_CPU_LP64
       456.hmmer: -DSPEC_CPU_LP64
        458.sjeng: -DSPEC_CPU_LP64
    462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
      464.h264ref: -DSPEC_CPU_LP64
    483.xalancbmk: -DSPEC_CPU_LINUX

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Base Optimization Flags

C benchmarks:
```
-march=auto -Ofast
```

C++ benchmarks:
```
-march=auto -Ofast -m32
```

Base Other Flags

C benchmarks:
```
-IPA:max_jobs=2
```

C++ benchmarks:
```
-IPA:max_jobs=2
```

Peak Compiler Invocation

C benchmarks:
```
pathcc
```

C++ benchmarks:
```
pathCC
```

Peak Portability Flags

```
    400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
       401.bzip2: -DSPEC_CPU_LP64
         429.mcf: -DSPEC_CPU_LP64
       445.gobmk: -DSPEC_CPU_LP64
       456.hmmer: -DSPEC_CPU_LP64
       458.sjeng: -DSPEC_CPU_LP64
   462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
      464.h264ref: -DSPEC_CPU_LP64
    483.xalancbmk: -DSPEC_CPU_LINUX
```

Peak Optimization Flags

C benchmarks:

```
    400.perlbench: -march=auto -fb_create fbdata(pass 1)
                   -fb_opt fbdata(pass 2) -Ofast
```

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Peak Optimization Flags (Continued)

```
   401.bzip2: -march=auto -O3 -LNO:ou_prod_max=10 -OPT:Ofast
              -OPT:alias=disjoint

     403.gcc: -march=auto -fb_create fbdata(pass 1)
              -fb_opt fbdata(pass 2) -m32 -O3 -OPT:Ofast

     429.mcf: -march=auto -fb_create fbdata(pass 1)
              -fb_opt fbdata(pass 2) -m32 -O2 -ipa

   445.gobmk: -march=auto -fb_create fbdata(pass 1)
              -fb_opt fbdata(pass 2) -O3 -OPT:alias=disjoint -LNO:simd=0
              -LNO:minvariant=off -WOPT:retype_expr=on

   456.hmmer: -march=auto -O2 -OPT:alias=disjoint -WOPT:aggstr=0
              -CG:cflow=0

   458.sjeng: -march=auto -fb_create fbdata(pass 1)
              -fb_opt fbdata(pass 2) -O3 -IPA:plimit=50000
              -IPA:pu_reorder=2

462.libquantum: -march=auto -O3 -ipa -CG:local_fwd_sched=on
              -IPA:space=1000

  464.h264ref: -march=auto -fb_create fbdata(pass 1)
              -fb_opt fbdata(pass 2) -O3 -IPA:plimit=20000
              -OPT:alias=disjoint -LNO:prefetch=0
```

C++ benchmarks:

```
   471.omnetpp: -march=auto -Ofast -IPA:pu_reorder=2 -CG:gcm=off -m32

     473.astar: -march=auto -fb_create fbdata(pass 1)
              -fb_opt fbdata(pass 2) -Ofast

  483.xalancbmk: -march=auto -Ofast -m32 -OPT:unroll_times_max=8
```

Peak Other Flags

C benchmarks:
```
      -IPA:max_jobs=2
```

C++ benchmarks:
```
      -IPA:max_jobs=2
```

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.29.html

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You can also download the XML flags source by saving the following link:

http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.29.xml

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

Tested with SPEC CPU2006 v1.0.
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