SPEC® CINT2006 Result
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ACTION S.A.

ASERVER 442 S3 (Opteron 8356)

SPECint®_rate2006 =   101

SPECint_rate_base2006 = 87.8

CPU2006 license: 3388	**Test date:** Aug-2008
Test sponsor: ACTION S.A.	**Hardware Availability:** Jul-2008
Tested by: Piotr Nowicki	**Software Availability:** May-2008

Copies

Benchmark	Copies	Peak	Base
400.perlbench	8 / 8	127	93.6
401.bzip2	8 / 8	71.3	68.5
403.gcc	8 / 8	76.4	64.5
429.mcf	8 / 8	85.2	64.1
445.gobmk	8 / 8	114	93.5
456.hmmer	8 / 8	173	118
458.sjeng	8 / 8	107	97.2
462.libquantum	8 / 8	136	137
464.h264ref	8 / 8	154	150
471.omnetpp	8		63.4
473.astar	8 / 8	66.5	63.7
483.xalancbmk	8 / 8	101	88.3

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Hardware

CPU Name:	AMD Opteron 8356
CPU Characteristics:	
CPU MHz:	2300
FPU:	Integrated
CPU(s) enabled:	8 cores, 2 chips, 4 cores/chip
CPU(s) orderable:	1,2,4 chips
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	512 KB I+D on chip per core
L3 Cache:	2 MB I+D on chip per chip
Other Cache:	None
Memory:	16 GB (4x4GB, DDR2-667 CL5 ECC Reg Single Rank)
Disk Subsystem:	1x250GB SATA, 7200 RPM
Other Hardware:	None

Software

Operating System:	SuSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp
Compiler:	PGI Server Complete Version 7.2 PathScale Compiler Suite Version 3.1
Auto Parallel:	No
File System:	ReiserFS
System State:	Runlevel 3 (Full multiuser with network)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	SmartHeap 8.0 32-bit Library for Linux

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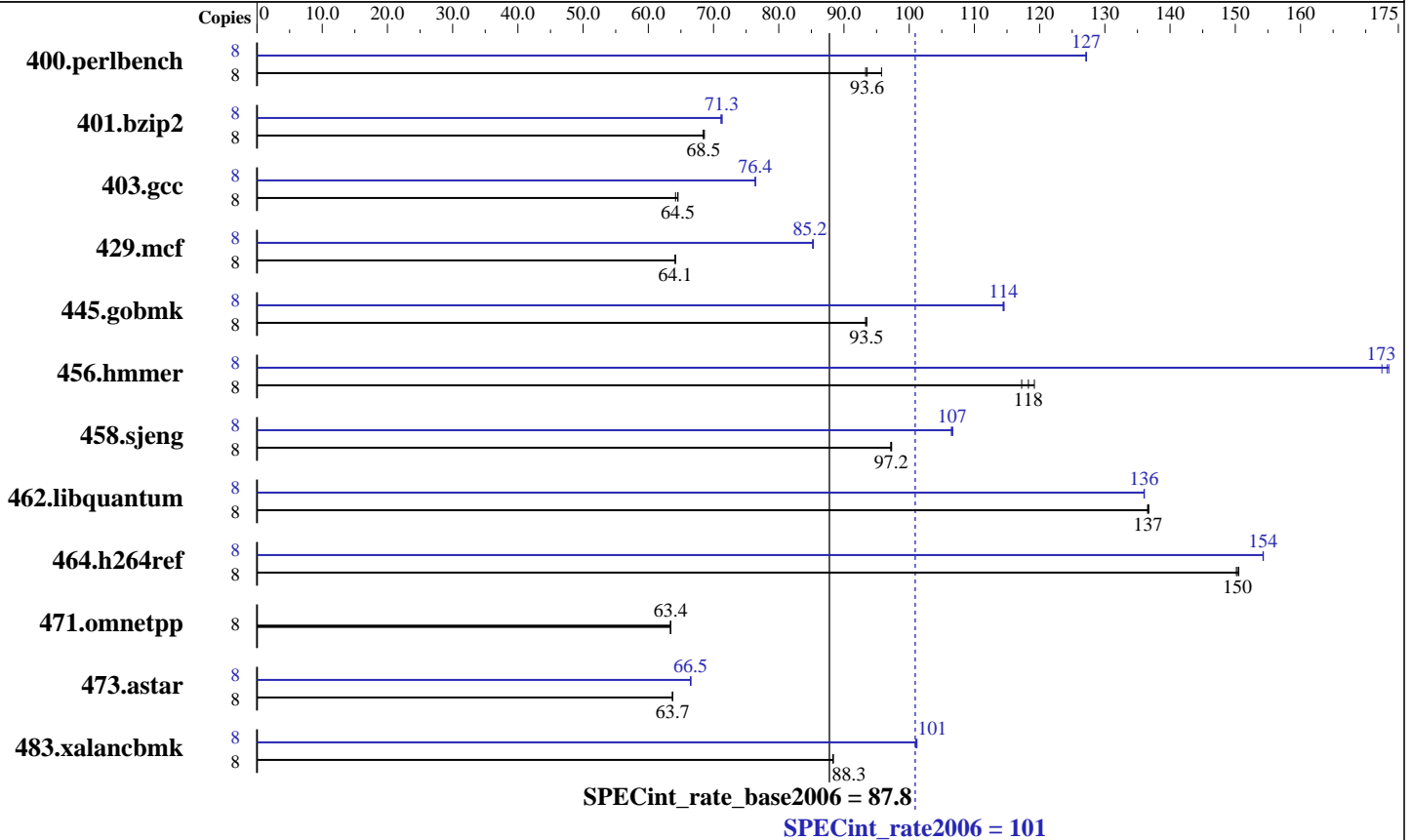
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Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	8	**835**	**93.6**	816	95.8	838	93.3	8	615	127	**615**	**127**	615	127
401.bzip2	8	1125	68.6	1128	68.4	**1128**	**68.5**	8	**1083**	**71.3**	1085	71.1	1083	71.3
403.gcc	8	**998**	**64.5**	998	64.5	1004	64.2	8	843	76.4	**843**	**76.4**	843	76.4
429.mcf	8	**1138**	**64.1**	1138	64.1	1137	64.2	8	856	85.2	855	85.3	**856**	**85.2**
445.gobmk	8	**898**	**93.5**	898	93.5	899	93.3	8	**733**	**114**	733	115	734	114
456.hmmer	8	637	117	626	119	**631**	**118**	8	433	172	**431**	**173**	430	174
458.sjeng	8	995	97.3	**995**	**97.2**	996	97.2	8	909	106	907	107	**908**	**107**
462.libquantum	8	1214	137	1212	137	**1213**	**137**	8	**1219**	**136**	1218	136	1219	136
464.h264ref	8	1176	151	**1178**	**150**	1179	150	8	**1147**	**154**	1147	154	1148	154
471.omnetpp	8	**788**	**63.4**	789	63.4	788	63.4	8	**788**	**63.4**	789	63.4	788	63.4
473.astar	8	**882**	**63.7**	881	63.7	882	63.7	8	845	66.4	**845**	**66.5**	844	66.5
483.xalancbmk	8	625	88.4	**625**	**88.3**	625	88.3	8	545	101	**546**	**101**	547	101

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

Operating System Notes

```
'numactl' was used to bind copies to the cores
Environment variable PGI_HUGE_PAGES set to 150
'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2457600'  was used to set environment locked pages in memory limit
Set 'vm/nr_hugepages = 1200' in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

Base Compiler Invocation

C benchmarks:
    pgcc

C++ benchmarks:
    pgcpp

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

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Base Portability Flags (Continued)

```
    458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
   464.h264ref: -DSPEC_CPU_LP64
 483.xalancbmk: -DSPEC_CPU_LINUX
```

Base Optimization Flags

C benchmarks:
```
    -fast -Mipa=jobs:4 -Mipa=fast -Mipa=inline -Mfprelaxed
    -Msmartalloc=huge:150 -tp barcelona-64 -Bstatic_pgi
```

C++ benchmarks:
```
    -fastsse -Mipa=jobs:4 -Mipa=fast -Mipa=inline -Mfprelaxed
    -Msmartalloc=huge:150 --zc_eh -tp barcelona -Bstatic_pgi
```

Base Other Flags

C benchmarks:
```
    -w
```

C++ benchmarks:
```
    -w
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```
    pgcc
```

```
    400.perlbench: pathcc
```

```
       403.gcc: pathcc
```

```
    445.gobmk: pathcc
```

C++ benchmarks (except as noted below):
```
    pathCC
```

```
    471.omnetpp: pgcpp
```

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Peak Portability Flags

```
400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
    401.bzip2: -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=barcelona -fb_create fbdata(pass 1)
               -fb_opt fbdata(pass 2) -Ofast -IPA:plimit=20000 -LNO:opt=0
               -WOPT:if_conv=0 -CG:local_sched_alg=1

    401.bzip2: -Mpfi(pass 1) -Mpfo(pass 2) -fast -O4
               -Msmartalloc=huge:150 -Mnounroll -tp barcelona-64
               -Bstatic_pgi

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

      429.mcf: -fastsse -Mipa=jobs:4 -Mipa=fast -Mipa=inline:1
               -Msmartalloc=huge:150 -tp barcelona -Bstatic_pgi

    445.gobmk: -march=barcelona -fb_create fbdata(pass 1)
               -fb_opt fbdata(pass 2) -O3 -OPT:alias=restrict -LNO:opt=0
               -CG:p2align=on

    456.hmmer: -fastsse -Munroll=n:8 -Msmartalloc=huge:150 -Mfprelaxed
               -Mvect=partial -Msafeptr -Mipa=jobs:4 -Mipa=const
               -Mipa=ptr -Mipa=arg -Mipa=inline -tp barcelona-64
               -Bstatic_pgi

    458.sjeng: -Mpfi(pass 1) -Mipa=jobs:4(pass 2) -Mipa=fast(pass 2)
               -Mipa=inline:1(pass 2) -Mipa=noarg(pass 2) -Mpfo(pass 2)
               -fastsse -Msmartalloc=huge:150 -Mfprelaxed
               -tp barcelona-64 -Bstatic_pgi

462.libquantum: -fastsse -Mfprelaxed -Msmartalloc=huge:150 -Munroll=m:8
               -Mipa=jobs:4 -Mipa=fast -Mipa=inline -Mipa=noarg
               -tp barcelona-64 -Bstatic_pgi

    464.h264ref: -Mpfi=indirect(pass 1) -Mipa=jobs:4(pass 2)
               -Mipa=fast(pass 2) -Mipa=inline(pass 2)
               -Mpfo=indirect(pass 2) -fastsse -Msmartalloc=huge:150
               -Mfprelaxed -tp barcelona-64 -Bstatic_pgi
```

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Peak Optimization Flags (Continued)

C++ benchmarks:

    471.omnetpp: `basepeak = yes`

      473.astar: `-march=barcelona -Ofast -TENV:frame_pointer=off`
            `-WOPT:if_conv=0 -GRA:optimize_boundary=on -IPA:plimit=525`
            `-m32 -lsmartheap`

    483.xalancbmk: `-march=barcelona -Ofast -m32 -OPT:unroll_times_max=8`
            `-CG:push_pop_int_saved_regs=off -CG:ptr_load_use=0`
            `-lsmartheap`

Peak Other Flags

C benchmarks (except as noted below):
    `-w`

    400.perlbench: `No flags used`

        403.gcc: `No flags used`

    445.gobmk: `No flags used`

C++ benchmarks (except as noted below):
    `-L/root/work/cpu2006/amd123GH.libs/32`

    471.omnetpp: `-w`

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/amd123GH-flags.20090713.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/amd123GH-flags.20090713.xml

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

Tested with SPEC CPU2006 v1.0.1.
Report generated on Tue Jul 22 19:40:03 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 16 September 2008.