SPEC® CINT2006 Result
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Dell Inc.

PowerEdge 6950 (AMD Opteron 8220, 2.80 GHz)

SPECint®_rate2006 = 102

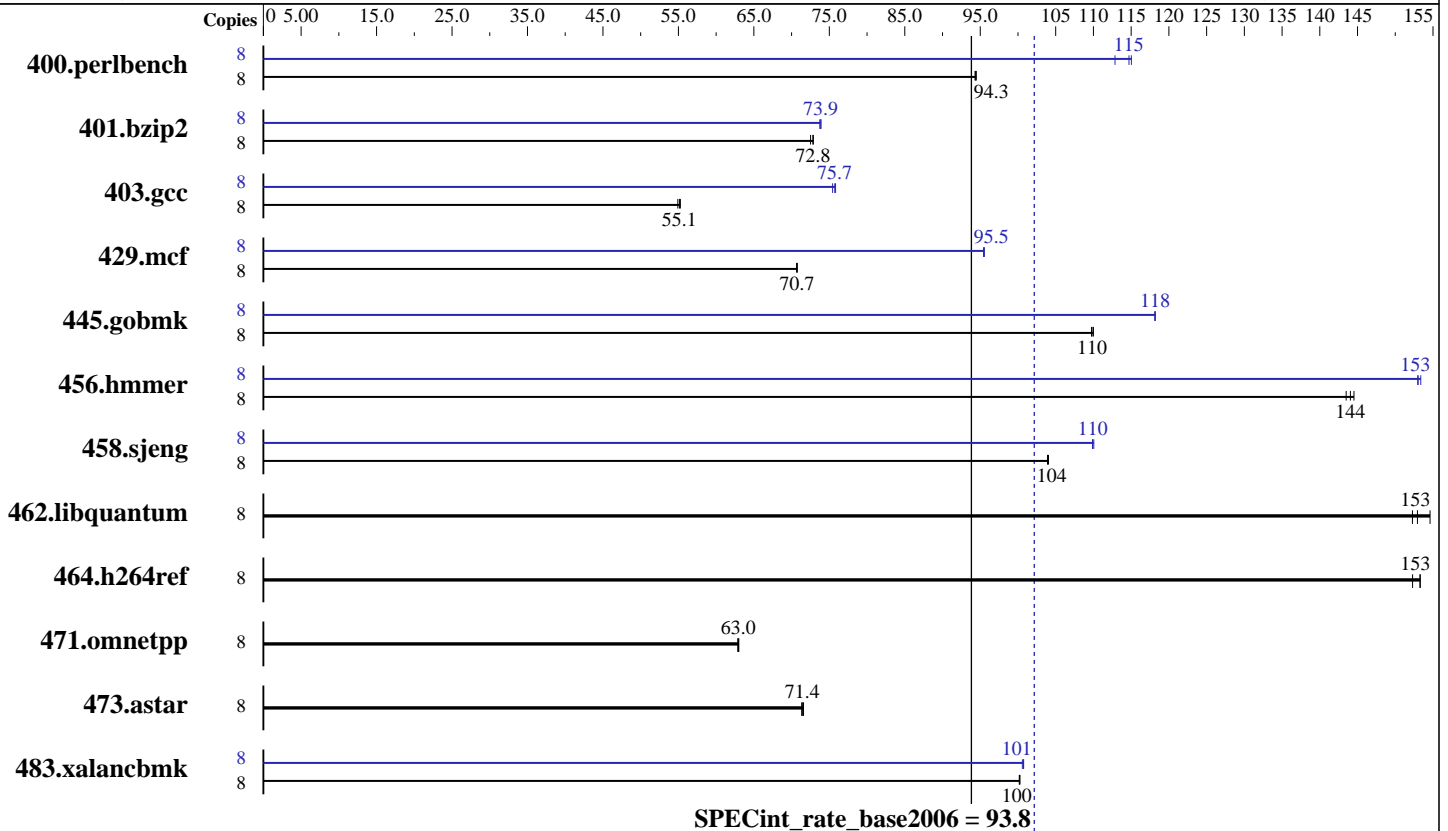SPECint_rate_base2006 = 93.8

CPU2006 license: 55

Test sponsor: Dell Inc.

Tested by: Dell Inc.

Test date: Sep-2007

Hardware Availability: Dec-2006

Software Availability: Oct-2007

Copies

Benchmark	Copies	Result
400.perlbench	8	115
	8	94.3
401.bzip2	8	73.9
	8	72.8
403.gcc	8	75.7
	8	55.1
429.mcf	8	95.5
	8	70.7
445.gobmk	8	118
	8	110
456.hmmer	8	153
	8	144
458.sjeng	8	110
	8	104
462.libquantum	8	153
464.h264ref	8	153
471.omnetpp	8	63.0
473.astar	8	71.4
483.xalancbmk	8	101
	8	100

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Hardware

CPU Name: AMD Opteron 8220

CPU Characteristics:

CPU MHz: 2800

FPU: Integrated

CPU(s) enabled: 8 cores, 4 chips, 2 cores/chip

CPU(s) orderable: 2,4 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: 32 GB (16x2GB, DDR2-667 CL5 ECC Dual Rank)

Disk Subsystem: 1 x 250 GB SATA 7200 RPM

Other Hardware: None

Software

Operating System: 64-Bit SUSE LINUX Enterprise Server 10

Compiler: The Portland Group (PGI)
PGI pgcc 7.1-0 C Compiler
PGI pgCC 7.1-0 C++ Compiler

Auto Parallel: No

File System: ReiserFS

System State: Multi-user, run level 3

Base Pointers: 32/64-bit

Peak Pointers: 32/64-bit

Other Software: SmartHeap 8.0 32-bit Library for Linux

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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	**828**	**94.3**	829	94.3	827	94.5	8	693	113	**681**	**115**	679	115
401.bzip2	8	1059	72.9	**1060**	**72.8**	1065	72.5	8	1047	73.7	**1045**	**73.9**	1045	73.9
403.gcc	8	1165	55.3	**1168**	**55.1**	1172	54.9	8	849	75.8	854	75.4	**850**	**75.7**
429.mcf	8	**1031**	**70.7**	1031	70.7	1033	70.7	8	764	95.5	**764**	**95.5**	764	95.5
445.gobmk	8	763	110	765	110	**764**	**110**	8	**710**	**118**	710	118	710	118
456.hmmer	8	**518**	**144**	516	145	520	143	8	487	153	488	153	**488**	**153**
458.sjeng	8	**931**	**104**	930	104	932	104	8	880	110	**881**	**110**	881	110
462.libquantum	8	1089	152	**1084**	**153**	1072	155	8	1089	152	**1084**	**153**	1072	155
464.h264ref	8	1162	152	1155	153	**1155**	**153**	8	1162	152	1155	153	**1155**	**153**
471.omnetpp	8	794	63.0	**794**	**63.0**	795	62.9	8	794	63.0	**794**	**63.0**	795	62.9
473.astar	8	785	71.6	**786**	**71.4**	787	71.3	8	785	71.6	**786**	**71.4**	787	71.3
483.xalancbmk	8	551	100	551	100	**551**	**100**	8	548	101	**548**	**101**	549	101

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

General Notes

```
'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2457600' was used to set environment locked pages in memory quantity
'numactl' was used to bind one copy per core, and memory to a local NUMA node
Set vm/nr_hugepages=1200 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
Environment variable PGI_HUGE_PAGES set to 150
```

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=fast -Mipa=inline -Mipa=noarg -Mfprelaxed
-Msmartalloc=huge:64 -tp k8-64 -Bstatic_pgi
```

C++ benchmarks:
```
-fastsse -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc --zc_eh
-tp k8-32 -Bstatic_pgi -lsmartheap
```

Base Other Flags

C benchmarks:
```
-w
```

C++ benchmarks:
```
-w -L/proj/qa/smartheap/SmartHeap_8/lib
```

Peak Compiler Invocation

C benchmarks:
```
pgcc
```

C++ benchmarks:
```
pgcpp
```

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
```

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Peak Optimization Flags

C benchmarks:

```
     400.perlbench: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=inline(pass 2) -fast
                    -O4 -Mfprelaxed -Msmartalloc=huge:8 -Mnounroll -tp k8-64
                    -Bstatic_pgi

         401.bzip2: -Mpfi(pass 1) -Mpfo(pass 2) -fast -O4
                    -Msmartalloc=huge:64 -tp k8-64 -Bstatic_pgi

           403.gcc: -fastsse -Mfprelaxed -Msmartalloc=huge:32 -Mipa=fast
                    -Mipa=inline -tp k8-32 -Bstatic_pgi

           429.mcf: -fastsse -Mipa=fast -Mipa=inline -Msmartalloc=huge:16
                    -tp k8-32 -Bstatic_pgi

         445.gobmk: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2) -fast -O4
                    -Msmartalloc=huge:32 -Mfprelaxed -Mnovect -tp k8-64
                    -Bstatic_pgi

         456.hmmer: -fast -Msmartalloc=huge:32 -Mfprelaxed -Msafeptr
                    -Mipa=const -Mipa=ptr -Mipa=arg -tp k8-64 -Bstatic_pgi

         458.sjeng: -Mpfi(pass 1) -Mipa=fast(pass 2) -Mipa=inline(pass 2)
                    -Mipa=noarg(pass 2) -Mpfo(pass 2) -fast
                    -Msmartalloc=huge:32 -Mfprelaxed -tp k8-64 -Bstatic_pgi

    462.libquantum: basepeak = yes

        464.h264ref: basepeak = yes
```

C++ benchmarks:

```
       471.omnetpp: basepeak = yes

          473.astar: basepeak = yes

     483.xalancbmk: -fastsse -O4 -Mipa=fast -Mipa=inline -Mfprelaxed
                    -Msmartalloc --zc_eh -tp k8-32 -Bstatic_pgi -lsmartheap
```

Peak Other Flags

C benchmarks:
```
     -w
```

C++ benchmarks:
```
     -w -L/proj/qa/smartheap/SmartHeap_8/lib
```

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The flags file that was used to format this result can be browsed at

`http://www.spec.org/cpu2006/flags/pgi710_flags.html`

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

`http://www.spec.org/cpu2006/flags/pgi710_flags.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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