SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

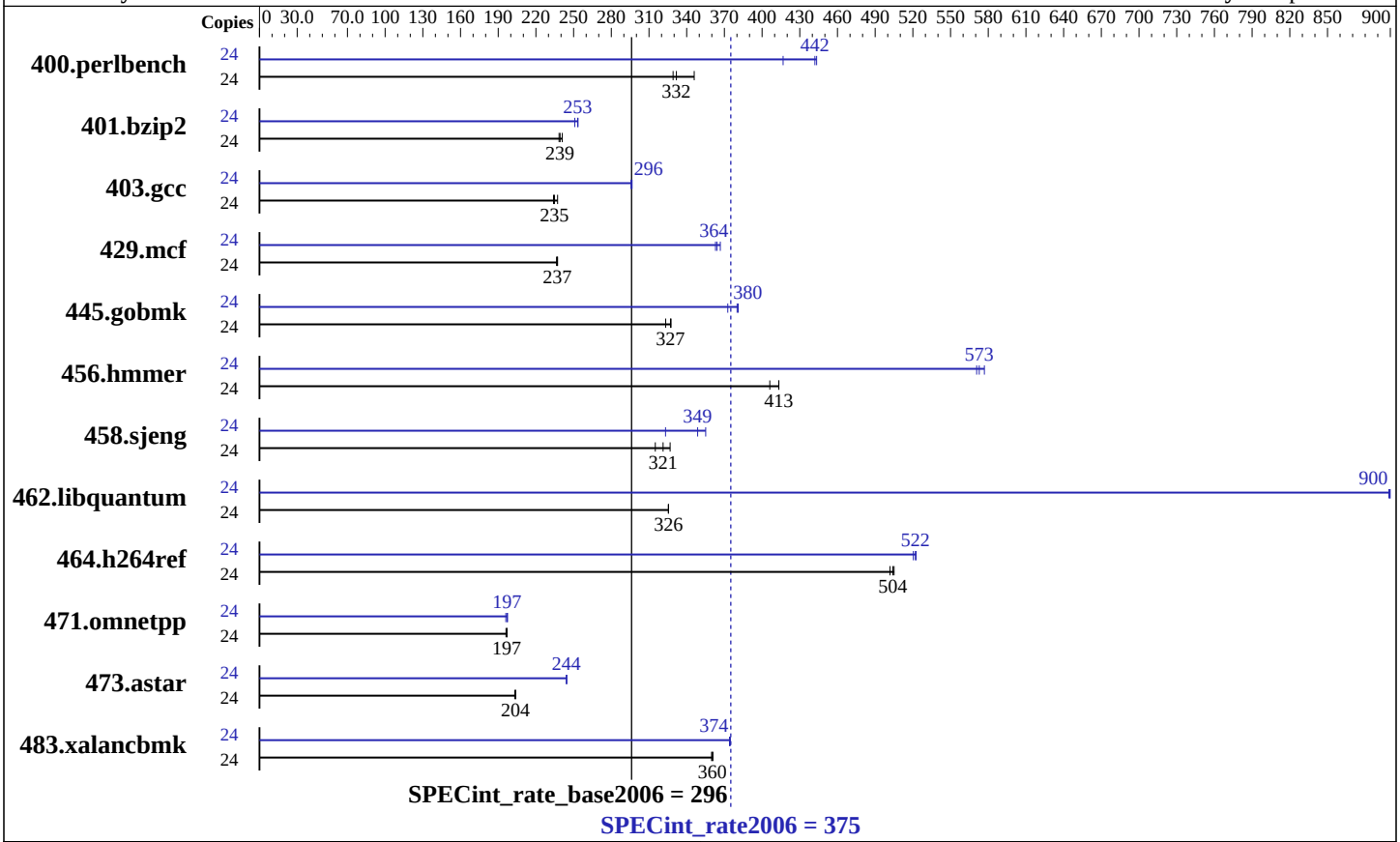
PowerEdge R905 (AMD Opteron 8431, 2.40 GHz)

SPECint®_rate2006 = 375

SPECint_rate_base2006 = 296

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Jun-2009
Hardware Availability: Jul-2009
Software Availability: Apr-2009



Hardware

CPU Name:	AMD Opteron 8431
CPU Characteristics:	
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	24 cores, 4 chips, 6 cores/chip
CPU(s) orderable:	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:	6 MB I+D on chip per chip
Other Cache:	None
Memory:	64 GB (16 x 4 GB DDR2-800)
Disk Subsystem:	1 x 73 GB 15000 RPM SAS
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 5.3, Kernel 2.6.18-128.el5
Compiler:	PGI Server Complete Version 8.0 x86 Open64 4.2.2 Compiler Suite (from AMD)
Auto Parallel:	No
File System:	ext3
System State:	Run level 3 (Full multiuser with network)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	binutils 2.18 SmartHeap 8.1 32-bit Library for Linux

SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R905 (AMD Opteron 8431, 2.40 GHz)

SPECint_rate2006 = 375

SPECint_rate_base2006 = 296

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Jun-2009
Hardware Availability: Jul-2009
Software Availability: Apr-2009

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	24	678	346	712	329	**707**	**332**	24	563	417	**530**	**442**	529	443
401.bzip2	24	961	241	971	238	**968**	**239**	24	923	251	**915**	**253**	913	254
403.gcc	24	826	234	**823**	**235**	814	237	24	652	297	**652**	**296**	653	296
429.mcf	24	**924**	**237**	923	237	926	236	24	597	367	603	363	**601**	**364**
445.gobmk	24	769	328	779	323	**770**	**327**	24	675	373	**662**	**380**	661	381
456.hmmer	24	542	413	551	406	**542**	**413**	24	**391**	**573**	392	571	388	577
458.sjeng	24	922	315	**904**	**321**	889	327	24	**833**	**349**	899	323	818	355
462.libquantum	24	1528	325	**1528**	**326**	1528	326	24	**553**	**900**	553	899	553	900
464.h264ref	24	1058	502	1052	505	**1054**	**504**	24	1016	523	1021	520	**1018**	**522**
471.omnetpp	24	765	196	**762**	**197**	762	197	24	760	197	765	196	**761**	**197**
473.astar	24	**827**	**204**	829	203	826	204	24	690	244	**690**	**244**	689	245
483.xalancbmk	24	459	361	**460**	**360**	460	360	24	442	375	443	374	**443**	**374**

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

Submit Notes

```
The config file option 'submit' was used.
'numactl' was used to bind copies to the cores.
See the configuration file for details.
```

Operating System Notes

```
'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2097152'  was used to set environment locked pages in memory limit

Set vm/nr_hugepages=10800 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

General Notes

```
Environment variables set by runspec before the start of the run:
HUGETLB_LIMIT = "450"
LD_LIBRARY_PATH = "/root/cpu2006-1.1/amd0905is-libs/64:/root/cpu2006-1.1/amd0905is-libs/32"
PGI_HUGE_PAGES = "450"

The x86 Open64 Compiler Suite is only available from (and supported by) AMD at
http://developer.amd.com/cpu/open64
```

Base Compiler Invocation

C benchmarks:
`opencc`

C++ benchmarks:
`openCC`

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`

Base Optimization Flags

C benchmarks:
`-march=barcelona -Ofast -CG:local_sched_alg=1 -HP:bdt=2m:heap=2m`

C++ benchmarks:
`-march=barcelona -Ofast -m32 -INLINE:aggressive=on`
`-L/root/work/libraries/SmartHeap-8.1/lib -lsmartheap`

Peak Compiler Invocation

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

456.hmmer: `pgcc`

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

473.astar: `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

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
-OPT:unroll_times_max=8 -OPT:unroll_size=256
-OPT:unroll_level=2 -OPT:keep_ext=on -WOPT:if_conv=0
-CG:local_sched_alg=1 -CG:unroll_fb_req=on
-HP:bdt=2m:heap=2m

401.bzip2: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O3 -OPT:alias=disjoint
-OPT:unroll_size=0 -OPT:Ofast -OPT:goto=off
-INLINE:aggressive=on -CG:local_sched_alg=1 -m3dnow
-HP:bdt=2m:heap=2m

403.gcc: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -LNO:trip_count=256
-LNO:prefetch_ahead=10 -CG:cmp_peep=on -m32
-HP:bdt=2m:heap=2m -GRA:unspill=on

429.mcf: -march=barcelona -O3 -ipa -INLINE:aggressive=on
-CG:gcm=off -GRA:prioritize_by_density=on -m32
-HP:bdt=2m:heap=2m

445.gobmk: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O3 -OPT:alias=restrict
-OPT:unroll_times_max=8 -OPT:unroll_size=256
-OPT:unroll_level=2 -OPT:keep_ext=on -ipa -IPA:plimit=750
-IPA:min_hotness=300 -IPA:pu_reorder=1 -LNO:prefetch=1
-LNO:ignore_feedback=off -CG:p2align=on
-CG:unroll_fb_req=on -HP:bdt=2m:heap=2m

456.hmmer: -fastsse -Mvect=partial -Munroll=n:8 -Msmartalloc=huge
-Msafeptr -Mprefetch=t0 -Mfprelaxed -Mipa=const -Mipa=ptr
-Mipa=arg -Mipa=inline -tp shanghai-64 -Bstatic_pgi

Continued on next page

Peak Optimization Flags (Continued)

458.sjeng: `-march=barcelona -fb_create fbdata`(pass 1)
`-fb_opt fbdata`(pass 2) `-O3 -ipa -LNO:ignore_feedback=off`
`-LNO:full_unroll=10 -LNO:fusion=0 -LNO:fission=2`
`-IPA:pu_reorder=2 -CG:ptr_load_use=0`
`-OPT:unroll_times_max=8 -INLINE:aggressive=on`
`-HP:bdt=2m:heap=2m`

462.libquantum: `-march=barcelona -Ofast -LNO:pf2=0 -CG:gcm=off`
`-CG:use_prefetchnta=on -CG:cmp_peep=on -WOPT:aggstr=0`
`-HP:bdt=2m:heap=2m -OPT:alias=disjoint`
`-INLINE:aggressive=on -IPA:space=1000 -IPA:plimit=20000`

464.h264ref: `-march=barcelona -fb_create fbdata`(pass 1)
`-fb_opt fbdata`(pass 2) `-O3 -IPA:plimit=20000`
`-OPT:alias=disjoint -LNO:prefetch=0 -CG:ptr_load_use=0`
`-CG:push_pop_int_saved_regs=off -HP:bdt=2m:heap=2m`

C++ benchmarks:

471.omnetpp: `-march=barcelona -Ofast -CG:gcm=off -INLINE:aggressive=on`
`-OPT:alias=disjoint -WOPT:if_conv=0 -m32`
`-L/root/work/libraries/SmartHeap-8.1/lib -lsmartheap`

473.astar: `-Mpfi`(pass 1) `-Mpfo`(pass 2) `-Mipa=fast`(pass 2)
`-Mipa=inline:6`(pass 2) `-fastsse -O4 -Msmartalloc=huge`
`-Msafeptr=global -Mfprelaxed --zc_eh -tp shanghai-32`
`-Bstatic_pgi`

483.xalancbmk: `-march=barcelona -Ofast -INLINE:aggressive=on -m32`
`-CG:cmp_peep=on -GRA:unspill=on -TENV:frame_pointer=off`
`-L/root/work/libraries/SmartHeap-8.1/lib -lsmartheap`

Peak Other Flags

C benchmarks:

456.hmmer: `-Mipa=jobs:4`

C++ benchmarks:

473.astar: `-Mipa=jobs:4`(pass 2)

The flags files that were used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090710.html`
`http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags-revA.20090710.html`
`http://www.spec.org/cpu2006/flags/amd-platform.html`

You can also download the XML flags sources by saving the following links:

```
http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090710.xml
http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags-revA.20090710.xml
http://www.spec.org/cpu2006/flags/amd-platform.xml
```


SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 02:23:26 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 7 July 2009.