



SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECint®2006 = 29.6

PowerEdge R715 (AMD Opteron 6284 SE, 2.70 GHz)

SPECint_base2006 = 24.1

CPU2006 license: 55

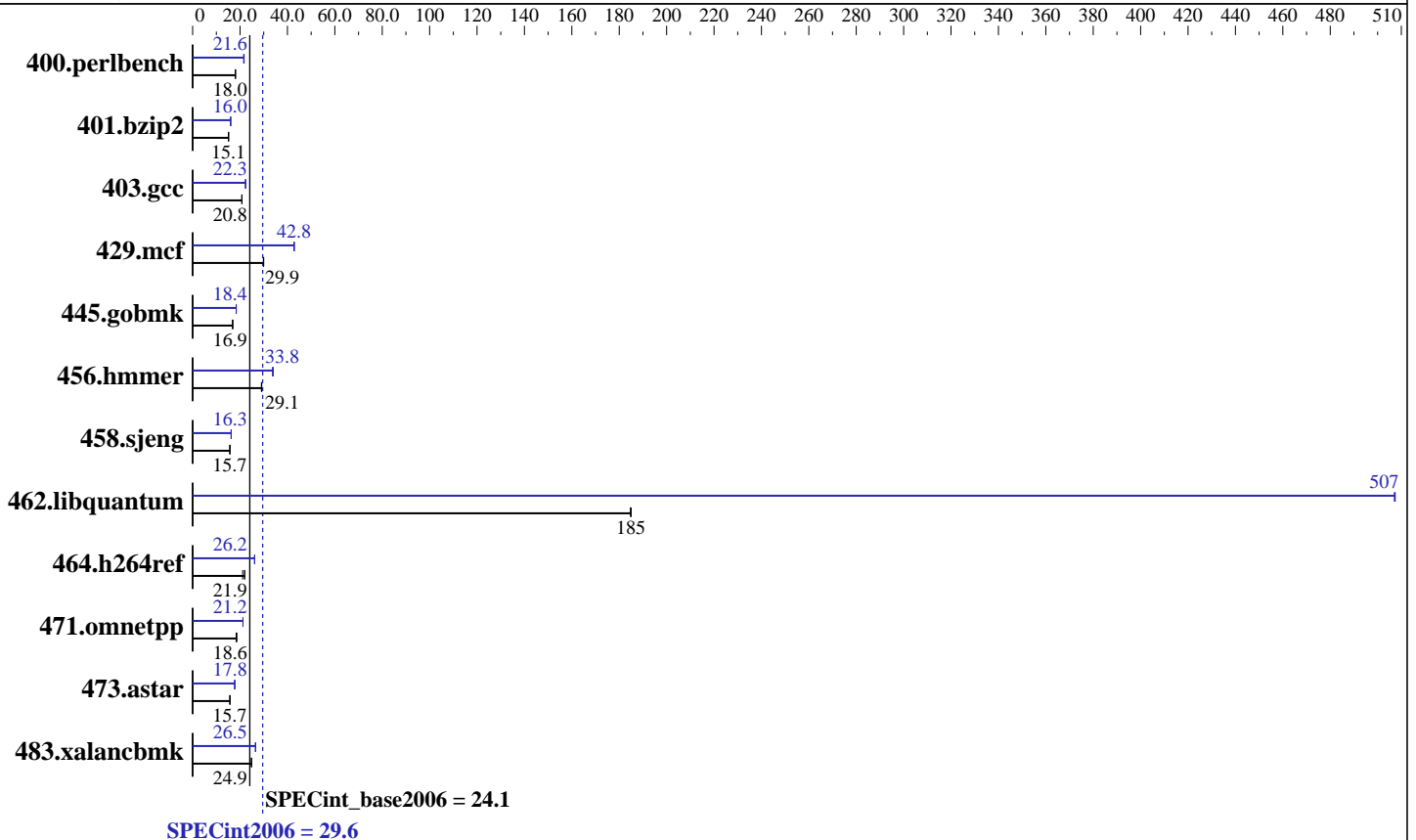
Test date: Jul-2012

Test sponsor: Dell Inc.

Hardware Availability: Nov-2011

Tested by: Dell Inc.

Software Availability: Jul-2011



Hardware

CPU Name: AMD Opteron 6284 SE
 CPU Characteristics: AMD Turbo CORE technology up to 3.40 GHz
 CPU MHz: 2700
 FPU: Integrated
 CPU(s) enabled: 32 cores, 2 chips, 16 cores/chip
 CPU(s) orderable: 1,2 chips
 Primary Cache: 512 KB I on chip per chip,
 64 KB I shared / 2 cores;
 16 KB D on chip per core
 Secondary Cache: 16 MB I+D on chip per chip, 2 MB shared / 2 cores
 L3 Cache: 16 MB I+D on chip per chip, 8 MB shared / 8 cores
 Other Cache: None
 Memory: 64 GB (8 x 8 GB 2Rx4 PC3-12800R-11, ECC)
 Disk Subsystem: 3 x 146 GB SAS, 15000 RPM
 Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 11 SP2 (x86_64)
 3.0.13-0.27-default
 Compiler: C/C++: Version 4.2.5.2 of x86 Open64 Compiler Suite (from AMD)
 Auto Parallel: Yes
 File System: ext3
 System State: Run level 3 (Full multiuser with network)
 Base Pointers: 32/64-bit
 Peak Pointers: 32/64-bit
 Other Software: SmartHeap 10.0 32-bit Library for Linux



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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	543	18.0	540	18.1	542	18.0	453	21.6	450	21.7	452	21.6
401.bzip2	638	15.1	637	15.1	637	15.2	601	16.0	602	16.0	602	16.0
403.gcc	387	20.8	387	20.8	387	20.8	360	22.4	361	22.3	361	22.3
429.mcf	304	30.0	305	29.9	306	29.8	213	42.9	213	42.8	213	42.8
445.gobmk	621	16.9	621	16.9	621	16.9	570	18.4	571	18.4	571	18.4
456.hammer	321	29.1	320	29.2	321	29.0	276	33.8	276	33.8	274	34.0
458.sjeng	770	15.7	770	15.7	770	15.7	744	16.3	744	16.3	744	16.3
462.libquantum	112	185	112	185	112	185	40.8	507	40.9	507	40.8	507
464.h264ref	1009	21.9	1049	21.1	1008	22.0	847	26.1	846	26.2	845	26.2
471.omnetpp	337	18.6	336	18.6	341	18.3	295	21.2	294	21.3	294	21.2
473.astar	446	15.7	446	15.7	446	15.7	394	17.8	396	17.7	395	17.8
483.xalancbmk	278	24.8	277	24.9	278	24.9	260	26.5	260	26.6	260	26.5

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 transparent_hugepage=never as a boot parameter in /boot/grub/menu.lst
Set kernel/randomize_va_space=0 in /etc/sysctl.conf
cpuspeed stop was used to set the CPU frequency to its maximum.

Set vm/nr_hugepages=4000 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 = "4000"
LD_LIBRARY_PATH = "/root/cpu2006/amd1104-speed-libs-revA/32:/root/cpu2006/amd1104-speed-libs-revA/64"
O64_OMP_AFFINITY_MAP = "0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31"
O64_OMP_SPIN_COUNT = "800000"
O64_OMP_SPIN_USER_LOCK = "true"
```

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

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General Notes (Continued)

Binaries were compiled on a system with 2x AMD Opteron 6220 chips + 64GB Memory using RHEL 6.1

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.hmmmer: -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=bdver1 -Ofast -CG:local_sched_alg=1 -CG:p2align=0
-INLINE:aggressive=on -IPA:plimit=8000 -IPA:small_pu=100
-HP:bdt=2m:heap=2m -LNO:prefetch=2

C++ benchmarks:
-march=bdver1 -Ofast -m32 -INLINE:aggressive=on -CG:cmp_peep=on
-D__OPEN64_FAST_SET -L/root/work/libraries/SmartHeap-10/lib -lsmartheap

Peak Compiler Invocation

C benchmarks:
opencc

C++ benchmarks:
openCC



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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.xalanbmk: -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -march=bdver1 -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -Ofast -LNO:prefetch=2 -LNO:opt=0
 -IPA:plimit=20000 -OPT:unroll_times_max=8
 -OPT:unroll_size=256 -OPT:unroll_level=2 -OPT:keep_ext=on
 -WOPT:if_conv=0 -WOPT:sib=on -CG:local_sched_alg=1
 -CG:load_exe=0 -CG:unroll_fb_req=on -CG:movext_icmp=off
 -HP:bdt=2m:heap=2m

401.bzip2: -march=bdver1 -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -O3 -LNO:prefetch=2 -LNO:pf2=0
 -OPT:alias=disjoint -OPT:goto=off -CG:local_sched_alg=1
 -HP:bdt=2m:heap=2m

403.gcc: -march=bdver1 -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -Ofast -LNO:trip_count=256
 -CG:cmp_peep=on -CG:pre_minreg_level=2 -m32
 -HP:bdt=2m:heap=2m -GRA:unspill=on -IPA:small_pu=200
 -WOPT:sib=on

429.mcf: -march=bdver1 -O3 -OPT:unroll_times_max=5 -ipa
 -INLINE:aggressive=on -CG:gcm=off
 -GRA:prioritize_by_density=on -m32 -HP:bdt=2m:heap=2m

445.gobmk: -march=bdver1 -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -Ofast -OPT:unroll_size=256
 -OPT:unroll_times_max=8 -OPT:keep_ext=on -IPA:plimit=750
 -IPA:min_hotness=300 -IPA:pu_reorder=1
 -LNO:ignore_feedback=off -WOPT:if_conv=2 -HP:bdt=2m:heap=2m

456.hmmer: -march=bdver1 -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -Ofast -LNO:prefetch=2
 -OPT:alias=disjoint -OPT:unroll_times_max=16
 -OPT:unroll_size=512 -OPT:unroll_level=2 -OPT:keep_ext=on
 -CG:cflow=0 -CG:cmp_peep=on -CG:pre_local_sched=off
 -HP:bdt=2m:heap=2m

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Peak Optimization Flags (Continued)

458.sjeng: -march=bdver1 -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -Ofast -CG:ptr_load_use=0
 -CG:divrem_opt=on -CG:movext_icmp=off -CG:locs_best=on
 -CG:p2align=1 -LNO:full_unroll=10 -IPA:pu_reorder=2
 -HP:bdt=2m:heap=2m -WOPT:sib=on

462.libquantum: -march=bdver1 -Ofast -OPT:unroll_size=512
 -OPT:unroll_times_max=8 -LNO:prefetch=2 -LNO:pf2=0
 -CG:local_sched_alg=1 -INLINE:aggressive=on
 -IPA:plimit=8000 -IPA:small_pu=100
 -HP:bdt=2m:heap=2m,limit=450 -apo

464.h264ref: -march=bdver1 -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -O3 -OPT:unroll_size=256
 -OPT:unroll_times_max=2 -IPA:plimit=20000
 -OPT:alias=disjoint -CG:ptr_load_use=0
 -CG:local_sched_alg=1 -HP:bdt=2m:heap=2m

C++ benchmarks:

471.omnetpp: -march=bdver1 -Ofast -D__OPEN64_FAST_SET -CG:gcm=off
 -INLINE:aggressive=on -WOPT:if_conv=0 -WOPT:sib=on -m32
 -HP:bdt=2m:heap=2m

473.astar: -march=bdver1 -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -Ofast -TENV:frame_pointer=off
 -WOPT:if_conv=0 -WOPT:sib=on -CG:divrem_opt=on
 -CG:p2align=0 -GRA:optimize_boundary=on -OPT:alias=disjoint
 -INLINE:aggressive=on -IPA:small_pu=3000 -IPA:plimit=3000
 -m32 -HP:bdt=2m:heap=2m

483.xalancbmk: -march=bdver1 -Ofast -LNO:prefetch=2 -OPT:unroll_size=512
 -OPT:unroll_times_max=8 -D__OPEN64_FAST_SET
 -INLINE:aggressive=on -m32 -CG:cmp_peep=on
 -CG:local_sched=off -CG:p2align=0 -GRA:unspill=on
 -TENV:frame_pointer=off -fno-emit-exceptions
 -L/root/work/libraries/SmartHeap-10/lib -lsmartheap

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/x86-open64-425-flags-speed-revA-I.html>
<http://www.spec.org/cpu2006/flags/amd-platform-speed-revA-I.html>

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

<http://www.spec.org/cpu2006/flags/x86-open64-425-flags-speed-revA-I.xml>
<http://www.spec.org/cpu2006/flags/amd-platform-speed-revA-I.xml>



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For other inquiries, please contact webmaster@spec.org.

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