



SPEC® CINT2006 Result

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IBM Corporation

SPECint®_rate2006 = 1040

IBM System x3755 M3
(AMD Opteron 6282 SE)

SPECint_rate_base2006 = 908

CPU2006 license: 11

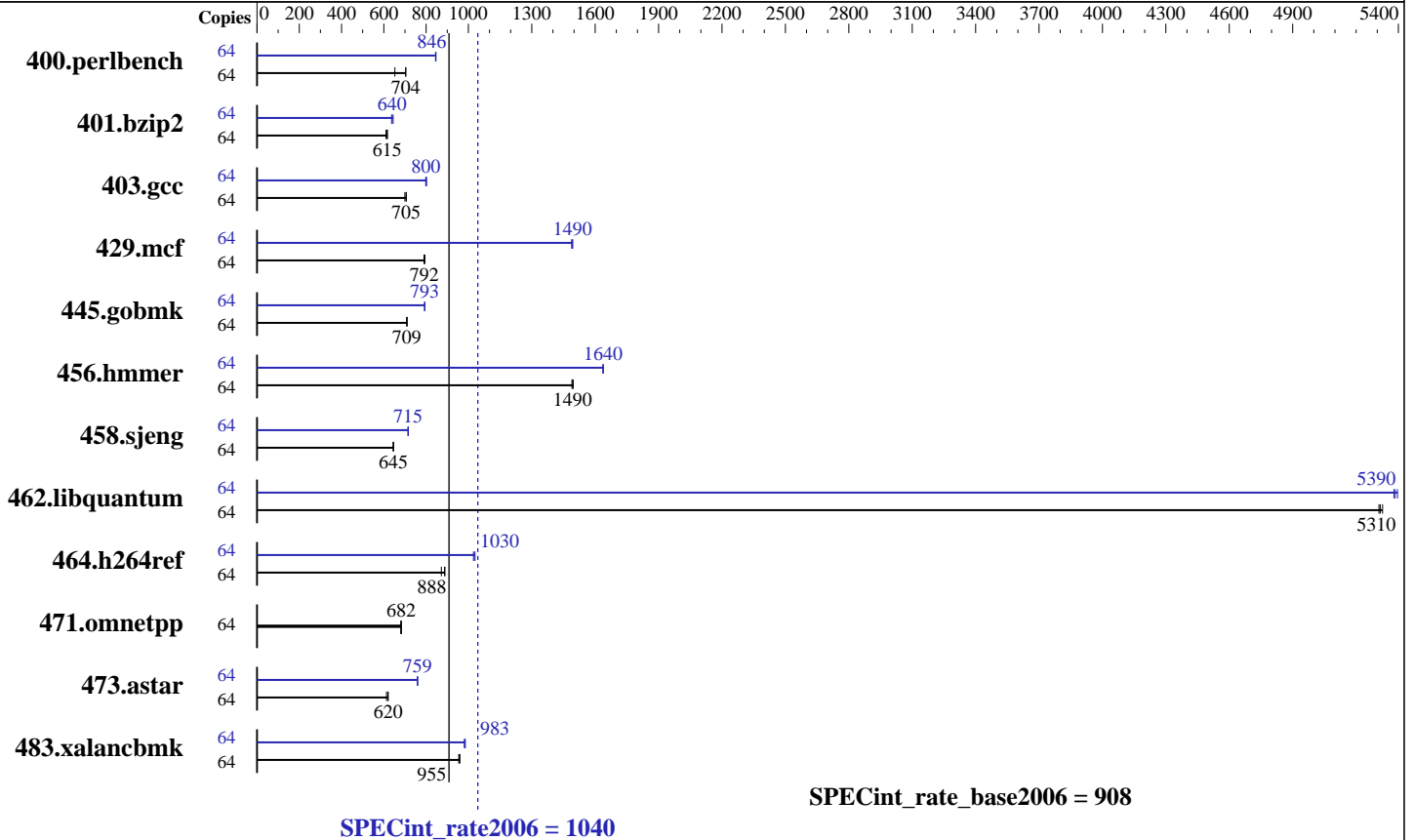
Test date: Nov-2011

Test sponsor: IBM Corporation

Hardware Availability: Dec-2011

Tested by: IBM Corporation

Software Availability: Jul-2011



Hardware

CPU Name: AMD Opteron 6282 SE
 CPU Characteristics: AMD Turbo CORE technology up to 3.30 GHz
 CPU MHz: 2600
 FPU: Integrated
 CPU(s) enabled: 64 cores, 4 chips, 16 cores/chip
 CPU(s) orderable: 2,4 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: 256 GB (32 x 8 GB 2Rx4 PC3L-10600R-09, ECC)
 Disk Subsystem: 1 x 600 GB SAS, 15000 RPM
 Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 6.1,
 Kernel 2.6.32-131.0.15.el6.x86_64
 Compiler: C/C++/Fortran: Version 4.2.5.2 of
 x86 Open64 Compiler Suite (from AMD)
 Auto Parallel: No
 File System: ext4
 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						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	64	958	652	889	704	889	704	64	738	847	740	844	739	846
401.bzip2	64	1003	615	1012	610	1001	617	64	959	644	970	637	965	640
403.gcc	64	730	705	730	706	736	700	64	644	800	645	798	642	802
429.mcf	64	735	794	739	790	737	792	64	391	1490	391	1490	392	1490
445.gobmk	64	948	708	947	709	946	710	64	845	794	847	793	847	793
456.hammer	64	400	1490	399	1500	401	1490	64	364	1640	365	1640	365	1640
458.sjeng	64	1201	645	1202	644	1198	647	64	1083	715	1083	715	1083	715
462.libquantum	64	250	5310	249	5330	250	5310	64	246	5400	246	5390	247	5380
464.h264ref	64	1595	888	1624	872	1594	888	64	1383	1020	1373	1030	1377	1030
471.omnetpp	64	586	683	588	681	586	682	64	586	683	588	681	586	682
473.astar	64	733	613	725	620	724	620	64	592	759	591	760	592	759
483.xalancbmk	64	462	955	462	955	460	960	64	450	981	449	983	448	985

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

Set vm/nr_hugepages=57344 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages

Platform Notes

BIOS settings:
Operating Mode set to Performance Mode

General Notes

Environment variables set by runspec before the start of the run:
HUGETLB_LIMIT = "896"
LD_LIBRARY_PATH = "/root/speccpu-rate-rev1104A4/amd1104-rate-libs-revA/32:/root/speccpu-rate-rev1104A4/amd1104-rate-libs-revA/64"

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General Notes (Continued)

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

Binaries were compiled on a system with 2x AMD Opteron 6276 chips + 128GB Memory using RHEL 6.1

Submitted_by: Alex CP Lee <cplee@tw.ibm.com>

Submitted: Fri Nov 11 04:42:07 EST 2011

Submission: cpu2006-20111111-18801.sub

Base Compiler Invocation

C benchmarks:

openc

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 -INLINE:aggressive=on
-IPA:plimit=8000 -IPA:small_pu=100 -HP:bd=2m:heap=2m -mso
-LNO:prefetch=2

C++ benchmarks:

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



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Peak Compiler Invocation

C benchmarks:
opencc

C++ benchmarks:
openCC

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=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:unroll_fb_req=on -CG:movext_icmp=off -HP:bd=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:bd=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:bd=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:bd=2m:heap=2m -mso

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

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Peak Optimization Flags (Continued)

445.gobmk (continued):

-LNO:ignore_feedback=off -WOPT:if_conv=2 -HP:bd=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:bd=2m:heap=2m

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

-LNO:full_unroll=10 -IPA:pu_reorder=2 -HP:bd=2m:heap=2m

-WOPT:sib=on

462.libquantum: -march=bdver1 -Ofast -mso -OPT:unroll_size=512

-OPT:unroll_times_max=16 -LNO:prefetch=2

-LNO:prefetch_ahead=4 -LNO:pf2=0 -CG:local_sched_alg=1

-INLINE:aggressive=on -IPA:plimit=15000 -IPA:small_pu=100

-HP:bd=2m:heap=2m,limit=300

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:bd=2m:heap=2m

C++ benchmarks:

471.omnetpp: basepeak = yes

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

-GRA:optimize_boundary=on -OPT:alias=disjoint

-INLINE:aggressive=on -IPA:small_pu=3000 -IPA:plimit=3000

-m32 -HP:bd=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 -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-rate-revA.html>

<http://www.spec.org/cpu2006/flags/amd1104-platform-rate-revA.html>



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

<http://www.spec.org/cpu2006/flags/x86-open64-425-flags-rate-revA.xml>
<http://www.spec.org/cpu2006/flags/amd1104-platform-rate-revA.xml>

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

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