



SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECint®_rate2006 = 1670

PowerEdge C6145 (AMD Opteron 6180 SE, 2.50 GHz)

SPECint_rate_base2006 = 1440

CPU2006 license: 55

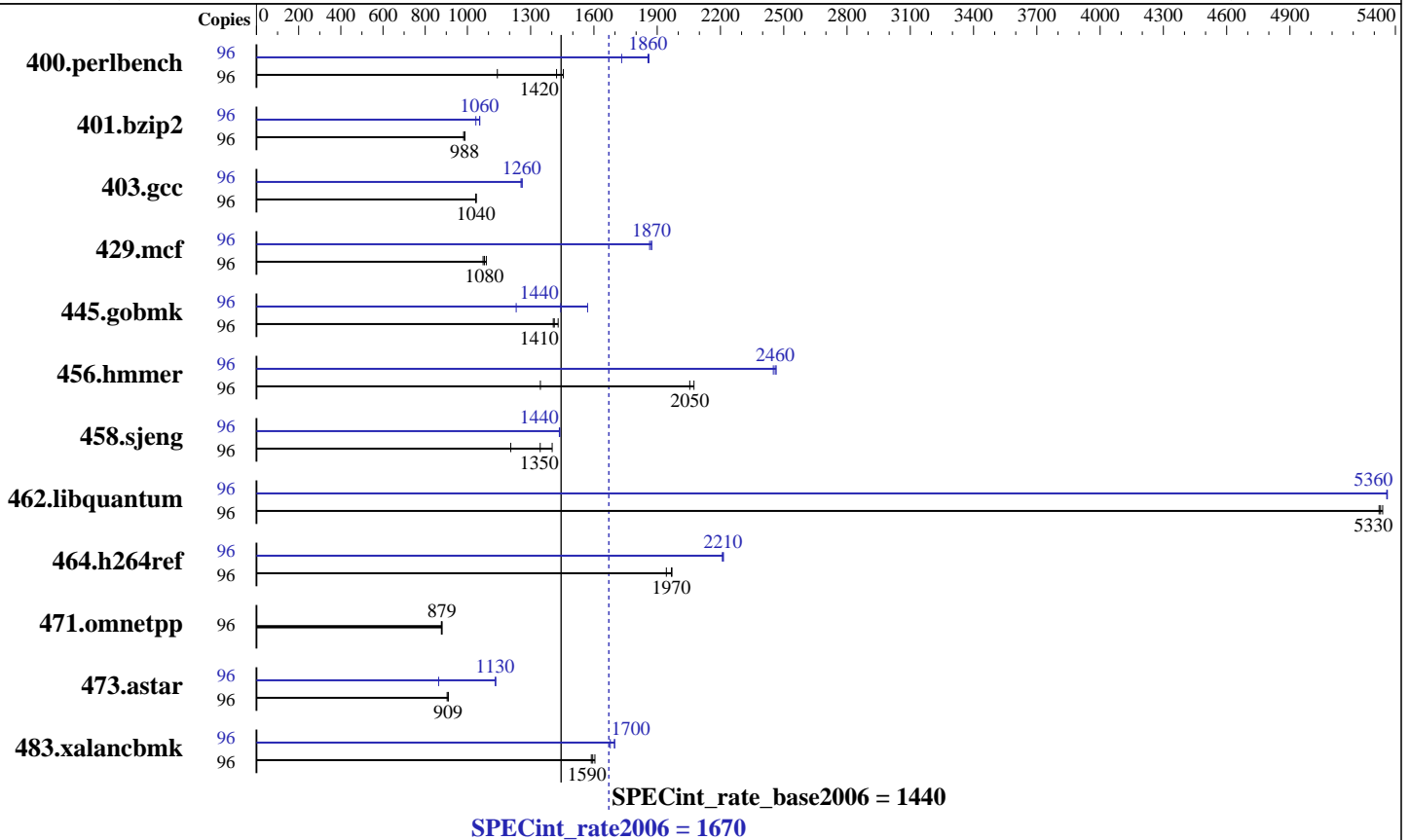
Test date: Feb-2011

Test sponsor: Dell Inc.

Hardware Availability: Feb-2011

Tested by: Dell Inc.

Software Availability: Jul-2010



Hardware

CPU Name: AMD Opteron 6180 SE
 CPU Characteristics:
 CPU MHz: 2500
 FPU: Integrated
 CPU(s) enabled: 96 cores, 8 chips, 12 cores/chip
 CPU(s) orderable: 2,4 chips per node
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 512 KB I+D on chip per core
 L3 Cache: 12 MB I+D on chip per chip, 6 MB shared / 6 cores
 Other Cache: None
 Memory: 128 GB (16 x 8 GB 2Rx4 PC3L-10600R-9, ECC, per node)
 Disk Subsystem: 1 x 500 GB 7200 RPM SATA local; PowerEdge C2100 via NFS (See additional details below)
 Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 11 SP1 (x86_64)
 Kernel 2.6.32.12-0.7-default
 Compiler: x86 Open64 4.2.4 Compiler Suite (from AMD)
 Auto Parallel: No
 File System: NFSv3
 System State: Run level 3 (Full multiuser with network)
 Base Pointers: 32/64-bit
 Peak Pointers: 32/64-bit
 Other Software: SmartHeap 8.1 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	96	821	1140	659	1420	645	1450	96	542	1730	505	1860	504	1860
401.bzip2	96	943	982	938	988	938	988	96	891	1040	875	1060	875	1060
403.gcc	96	742	1040	743	1040	742	1040	96	613	1260	614	1260	616	1250
429.mcf	96	810	1080	815	1070	803	1090	96	470	1860	468	1870	467	1870
445.gobmk	96	716	1410	713	1410	704	1430	96	698	1440	818	1230	641	1570
456.hammer	96	432	2070	436	2050	665	1350	96	364	2460	366	2450	363	2460
458.sjeng	96	963	1210	863	1350	829	1400	96	809	1440	808	1440	808	1440
462.libquantum	96	373	5330	374	5320	373	5340	96	371	5360	371	5360	371	5360
464.h264ref	96	1080	1970	1093	1940	1078	1970	96	962	2210	961	2210	959	2210
471.omnetpp	96	684	877	682	880	683	879	96	684	877	682	880	683	879
473.astar	96	741	909	746	904	741	909	96	780	864	594	1130	595	1130
483.xalancbmk	96	417	1590	415	1590	413	1600	96	395	1680	390	1700	390	1700

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, along with submit.pl to distribute jobs to the two nodes of the PowerEdge C6145. See the configuration file and flags file for details.

Operating System Notes

The following environment settings were set in the test user's .bashrc on each system
ulimit -s unlimited
ulimit -l 2097152
LD_LIBRARY_PATH=/cpu2006/amd1002-rate-libs-revC/64:/cpu2006/amd1002-rate-libs-revC/32
HUGETLB_LIMIT=450

SLES 11 SP1 was installed on the local drive of each of the two nodes of the PowerEdge C6145
Set vm/nr_hugepages=21600 in /etc/sysctl.conf on each system node
mount -t hugetlbfs nodev /mnt/hugepages on each system node
MaxSessions = 1000 set in /etc/ssh/sshd_config on each system node
ClientAliveCountMax = 100 set in /etc/ssh/sshd_config on each system node
MaxStartups = 1000 set in /etc/ssh/sshd_config on each system node

Platform Notes

Storage Configuration for Disk Subsystem:
PowerEdge C2100 has 24 x 600 GB
10000 RPM SAS 6Gb disks under RAID-1 configuration
mounted over 1GbE network interface with these options
"rw,noacl,hard,intr,rsiz=65536,wsiz=65536" in the /etc/fstab.



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General Notes

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

Binaries were compiled on SLES10 SP2 with binutils 2.18

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.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 -mso -Ofast -CG:local_sched_alg=1
-INLINE:aggressive=on -IPA:plimit=8000 -IPA:small_pu=100
-HP:bdt=2m:heap=2m

C++ benchmarks:
-march=barcelona -mso -Ofast -m32 -INLINE:aggressive=on
-CG:cmp_peep=on -L/root/work/libraries/SmartHeap-8.1/lib -lsmarheap

Peak Compiler Invocation

C benchmarks:
openc

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=barcelona -mso -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 -mso -fb_create fbdata(pass 1)
            -fb_opt fbdata(pass 2) -O3 -OPT:alias=disjoint
            -OPT:goto=off -CG:local_sched_alg=1 -HP:bdt=2m:heap=2m

403.gcc: -march=barcelona -mso -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 -IPA:small_pu=200

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

445.gobmk: -march=barcelona -mso -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: -march=barcelona -mso -fb_create fbdata(pass 1)
            -fb_opt fbdata(pass 2) -Ofast -LNO:prefetch=0
            -OPT:alias=disjoint -OPT:unroll_times_max=8
            -OPT:unroll_size=256 -OPT:unroll_level=2 -OPT:keep_ext=on
            -CG:local_sched_alg=1 -CG:cflow=0
            -CG:push_pop_int_saved_regs=off -CG:cmp_peep=on
            -HP:bdt=2m:heap=2m

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Peak Optimization Flags (Continued)

458.sjeng: -march=barcelona -mso -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

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

464.h264ref: -march=barcelona -mso -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

C++ benchmarks:

471.omnetpp: basepeak = yes

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

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

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

<http://www.spec.org/cpu2006/flags/amd-6100-rate-cluster-revA.html>
<http://www.spec.org/cpu2006/flags/amd-platform-rate-revC.20110119.html>
<http://www.spec.org/cpu2006/flags/x86-open64-424-flags-rate-revC.20101109.html>

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

<http://www.spec.org/cpu2006/flags/amd-6100-rate-cluster-revA.xml>
<http://www.spec.org/cpu2006/flags/amd-platform-rate-revC.20110119.xml>
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For other inquiries, please contact webmaster@spec.org.

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