SPEC® CINT2006 Result
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Dell Inc.

PowerEdge R715
(AMD Opteron 6274, 2.20 GHz)

$SPECint^{®}_rate2006 = $ 472

$SPECint_rate_base2006 = $ 413

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SPECint_rate2006 = 472

Hardware

CPU Name:	AMD Opteron 6274
CPU Characteristics:	AMD Turbo CORE technology up to 3.10 GHz
CPU MHz:	2200
FPU:	Integrated
CPU(s) enabled:	32 cores, 2 chips, 16 cores/chip
CPU(s) orderable:	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:	128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem:	2 x 160 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++: 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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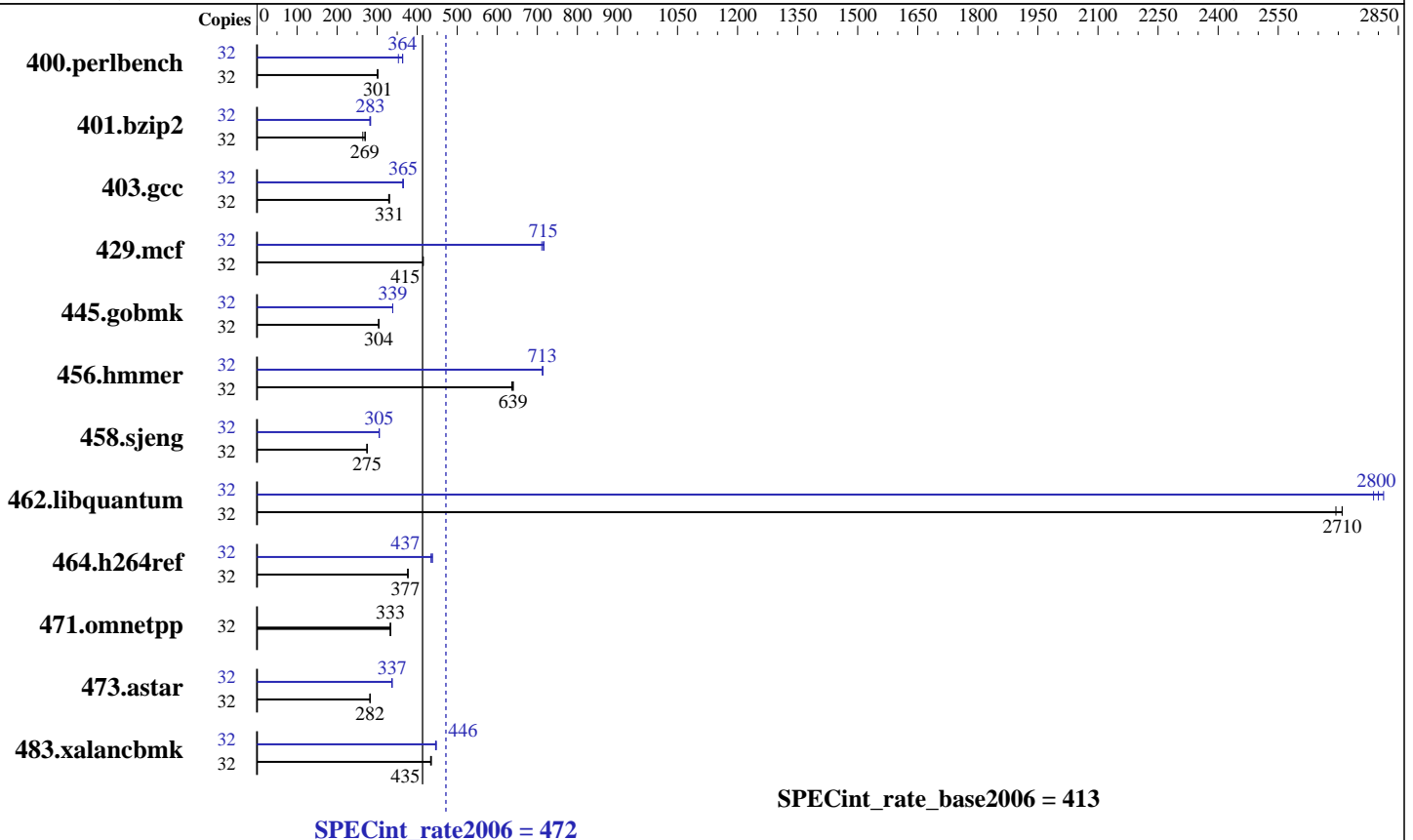
CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Nov-2011
Hardware Availability: Nov-2011
Software Availability: Jul-2011

Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	32	**1038**	**301**	1037	302	1040	301	32	**860**	**364**	885	353	859	364
401.bzip2	32	**1146**	**269**	1169	264	1142	270	32	1088	284	1095	282	**1092**	**283**
403.gcc	32	**779**	**331**	779	331	783	329	32	705	366	**707**	**365**	707	364
429.mcf	32	704	415	**704**	**415**	703	415	32	**408**	**715**	407	717	410	711
445.gobmk	32	**1104**	**304**	1104	304	1105	304	32	991	339	990	339	**990**	**339**
456.hmmer	32	467	640	469	636	**467**	**639**	32	419	713	418	714	**419**	**713**
458.sjeng	32	1407	275	1412	274	**1407**	**275**	32	1269	305	1268	305	**1269**	**305**
462.libquantum	32	245	2710	246	2690	**245**	**2710**	32	236	2810	238	2790	**237**	**2800**
464.h264ref	32	**1879**	**377**	1882	376	1877	377	32	1630	434	**1619**	**437**	1617	438
471.omnetpp	32	**600**	**333**	601	333	600	333	32	**600**	**333**	601	333	600	333
473.astar	32	797	282	795	283	**795**	**282**	32	**666**	**337**	666	337	666	337
483.xalancbmk	32	508	435	**508**	**435**	509	433	32	493	448	495	446	**495**	**446**

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

    Binaries were compiled on a system with 2x AMD Opteron 6276 chips + 128GB Memory using RHEL 6.1
    Huge pages, transparent Huge pages, and space randomization is controlled with the following settings:
    echo 57344 > /proc/sys/vm/nr_hugepages
    mount -t hugetlbfs nodev /mnt/hugepages
    echo never > /sys/kernel/mm/redhat_transparent_hugepage/enabled
    echo 0 > /proc/sys/kernel/randomize_va_space=0

Platform Notes

    'Power Management' set to 'Maximum Performance' in BIOS

General Notes

    Environment variables set by runspec before the start of the run:
    HUGETLB_LIMIT = "896"
    LD_LIBRARY_PATH = "/root/cpu2006-1.1/amd1104-rate-libs-revA/32:/root/cpu2006-1.1/amd1104-rate-libs-revA/64"
    The x86 Open64 Compiler Suite is only available from (and supported by) AMD at

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General Notes (Continued)

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=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_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.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: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 -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
              -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: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
              -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:bdt=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:bdt=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: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 -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/amd1104-platform-rate-revA.20111122.html
http://www.spec.org/cpu2006/flags/x86-open64-425-flags-rate-revA.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/amd1104-platform-rate-revA.20111122.xml
http://www.spec.org/cpu2006/flags/x86-open64-425-flags-rate-revA.xml

spec

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Tested with SPEC CPU2006 v1.1.
Report generated on Thu Jul 24 01:13:10 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 6 December 2011.