



# SPEC<sup>®</sup> CINT2006 Result

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## Acer Incorporated

SPECint<sup>®</sup>\_rate2006 = 463

## Acer AR385 F1 (AMD Opteron 6274)

SPECint\_rate\_base2006 = 403

CPU2006 license: 97

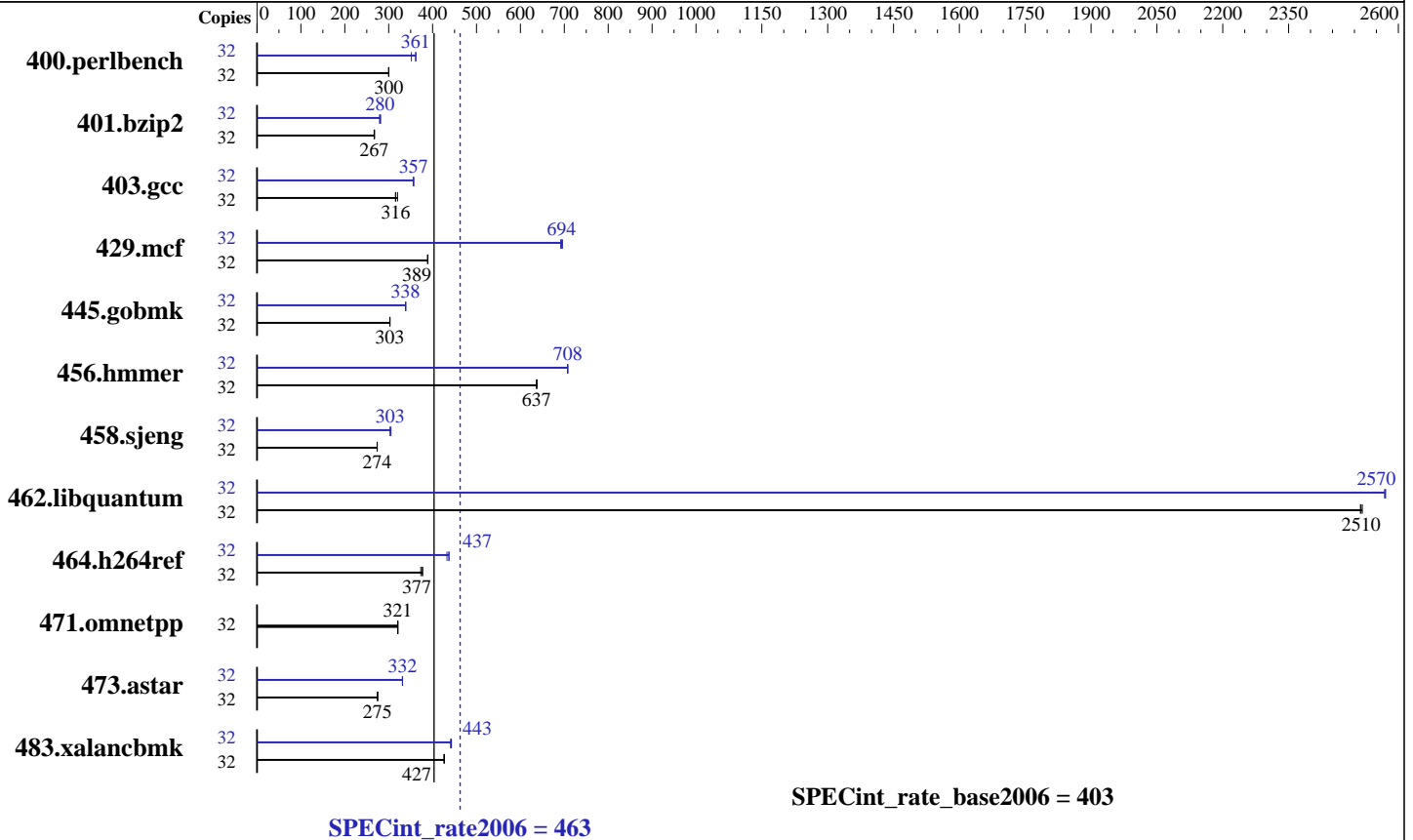
Test date: Nov-2011

Test sponsor: Acer Incorporated

Hardware Availability: Nov-2011

Tested by: Acer Incorporated

Software Availability: Jul-2011



### 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: 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: 128 GB (16 x 8 GB 2Rx4 PC3-10600R-9, ECC)  
 Disk Subsystem: 1 x 300 GB SATA, 10000 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  | 32     | 1042               | 300               | <b><u>1042</u></b> | <b><u>300</u></b> | 1042               | 300                | 32     | 889                | 352                | <b><u>866</u></b>  | <b><u>361</u></b> | 864                | 362               |
| 401.bzip2      | 32     | <b><u>1155</u></b> | <b><u>267</u></b> | 1154               | 268               | 1157               | 267                | 32     | 1106               | 279                | <b><u>1101</u></b> | <b><u>280</u></b> | 1096               | 282               |
| 403.gcc        | 32     | 817                | 315               | <b><u>815</u></b>  | <b><u>316</u></b> | 805                | 320                | 32     | 724                | 356                | 721                | 357               | <b><u>723</u></b>  | <b><u>357</u></b> |
| 429.mcf        | 32     | <b><u>750</u></b>  | <b><u>389</u></b> | 751                | 388               | 750                | 389                | 32     | 419                | 696                | 422                | 692               | <b><u>421</u></b>  | <b><u>694</u></b> |
| 445.gobmk      | 32     | <b><u>1108</u></b> | <b><u>303</u></b> | 1110               | 303               | 1108               | 303                | 32     | 990                | 339                | 992                | 338               | <b><u>992</u></b>  | <b><u>338</u></b> |
| 456.hammer     | 32     | <b><u>469</u></b>  | <b><u>637</u></b> | 469                | 637               | 468                | 638                | 32     | 422                | 708                | <b><u>422</u></b>  | <b><u>708</u></b> | 422                | 708               |
| 458.sjeng      | 32     | 1413               | 274               | 1416               | 274               | <b><u>1415</u></b> | <b><u>274</u></b>  | 32     | 1276               | 303                | 1269               | 305               | <b><u>1276</u></b> | <b><u>303</u></b> |
| 462.libquantum | 32     | 264                | 2510              | 263                | 2520              | <b><u>264</u></b>  | <b><u>2510</u></b> | 32     | <b><u>258</u></b>  | <b><u>2570</u></b> | 258                | 2570              | 258                | 2570              |
| 464.h264ref    | 32     | <b><u>1880</u></b> | <b><u>377</u></b> | 1877               | 377               | 1898               | 373                | 32     | <b><u>1620</u></b> | <b><u>437</u></b>  | 1619               | 437               | 1636               | 433               |
| 471.omnetpp    | 32     | 623                | 321               | 624                | 321               | <b><u>624</u></b>  | <b><u>321</u></b>  | 32     | 623                | 321                | 624                | 321               | <b><u>624</u></b>  | <b><u>321</u></b> |
| 473.astar      | 32     | <b><u>818</u></b>  | <b><u>275</u></b> | 818                | 275               | 818                | 275                | 32     | 678                | 331                | <b><u>678</u></b>  | <b><u>332</u></b> | 678                | 332               |
| 483.xalancbmk  | 32     | 519                | 426               | 517                | 427               | <b><u>517</u></b>  | <b><u>427</u></b>  | 32     | 501                | 441                | 498                | 443               | <b><u>499</u></b>  | <b><u>443</u></b> |

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=28672 in /etc/sysctl.conf  
mount -t hugetlbfs nodev /mnt/hugepages

## Platform Notes

BIOS Settings:  
PowerNow = Disabled  
Fan Speed Control Modes = Full Speed

## General Notes

Environment variables set by runspec before the start of the run:  
HUGETLB\_LIMIT = "896"  
LD\_LIBRARY\_PATH = "/usr/cpu2006/amd1104-rate-libs-revA/32:/usr/cpu2006/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

## 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=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 -lsmarheap

## Peak Compiler Invocation

C benchmarks:  
openc

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## Peak Compiler Invocation (Continued)

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

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## Peak Optimization Flags (Continued)

456.hmmcr: -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 -lsmarheap

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>

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](mailto:webmaster@spec.org).

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