



# SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Tyan

(Test Sponsor: Advanced Micro Devices)

Tyan YR190-B8228,  
AMD Opteron 4280

**SPECint®2006 = 32.1**

**SPECint\_base2006 = 26.8**

**CPU2006 license:** 49

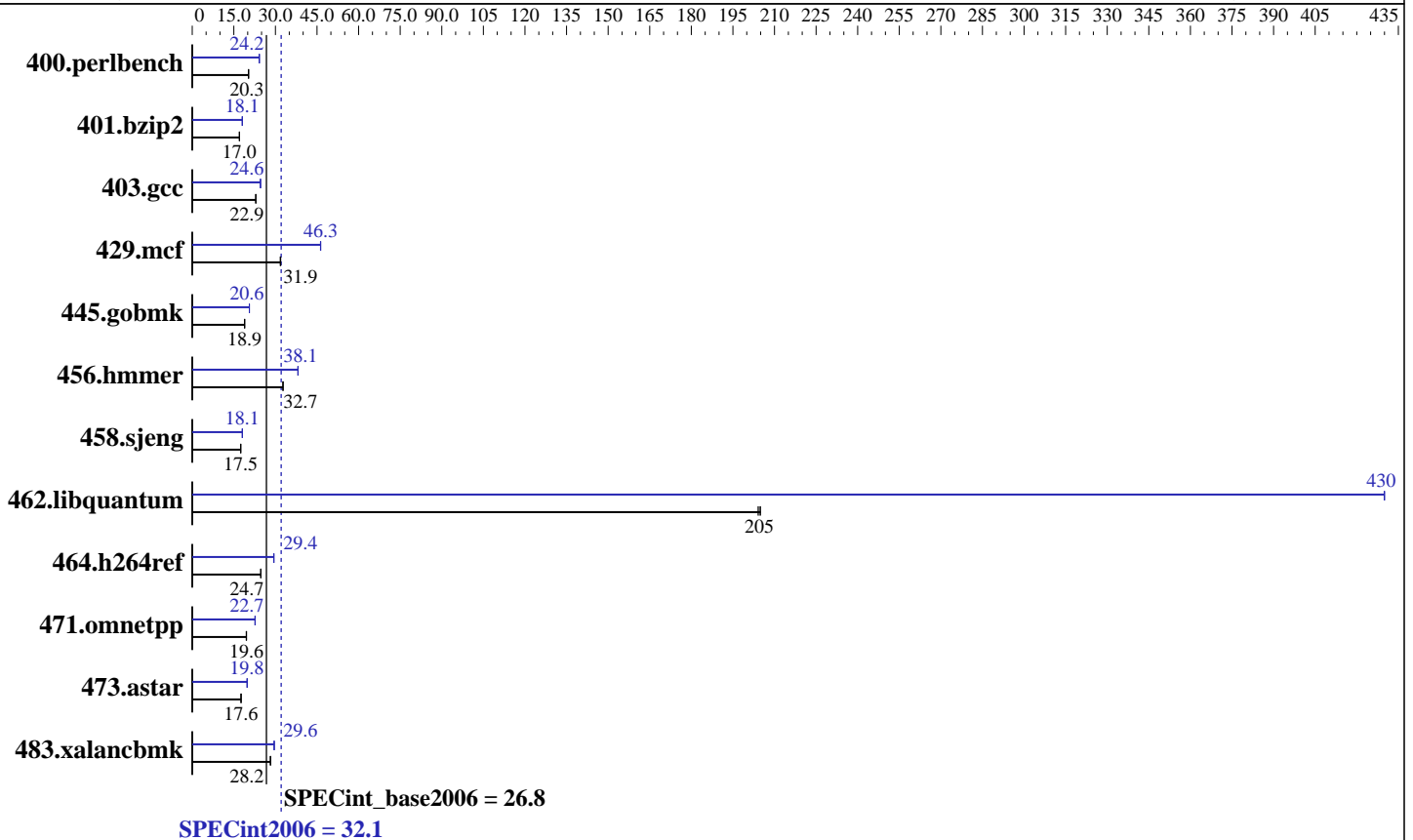
**Test sponsor:** Advanced Micro Devices

**Tested by:** Advanced Micro Devices

**Test date:** Jan-2012

**Hardware Availability:** Nov-2011

**Software Availability:** Jul-2011



### Hardware

CPU Name: AMD Opteron 4280  
 CPU Characteristics: AMD Turbo CORE technology up to 3.50 GHz  
 CPU MHz: 2800  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip  
 CPU(s) orderable: 1,2 chips  
 Primary Cache: 256 KB I on chip per chip,  
 64 KB I shared / 2 cores;  
 16 KB D on chip per core  
 Secondary Cache: 8 MB I+D on chip per chip, 2 MB shared / 2 cores  
 L3 Cache: 8 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 32 GB (4 x 8 GB 2Rx4 PC3-12800R-11, ECC)  
 Disk Subsystem: 1 x 128 GB SATA, 7200 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: 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



# SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Tyan

(Test Sponsor: Advanced Micro Devices)

Tyan YR190-B8228,  
AMD Opteron 4280

SPECint2006 = 32.1

SPECint\_base2006 = 26.8

CPU2006 license: 49

Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Jan-2012

Hardware Availability: Nov-2011

Software Availability: Jul-2011

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	481	20.3	<b>481</b>	<b>20.3</b>	481	20.3	404	24.2	404	24.2	<b>404</b>	<b>24.2</b>
401.bzip2	567	17.0	<b>567</b>	<b>17.0</b>	567	17.0	535	18.1	534	18.1	<b>534</b>	<b>18.1</b>
403.gcc	351	22.9	<b>351</b>	<b>22.9</b>	351	22.9	327	24.6	<b>327</b>	<b>24.6</b>	327	24.6
429.mcf	286	31.9	<b>286</b>	<b>31.9</b>	287	31.7	197	46.3	<b>197</b>	<b>46.3</b>	197	46.3
445.gobmk	555	18.9	555	18.9	<b>555</b>	<b>18.9</b>	<b>509</b>	<b>20.6</b>	509	20.6	509	20.6
456.hammer	285	32.7	<b>285</b>	<b>32.7</b>	285	32.7	245	38.1	<b>245</b>	<b>38.1</b>	245	38.1
458.sjeng	<b>692</b>	<b>17.5</b>	692	17.5	692	17.5	670	18.1	<b>670</b>	<b>18.1</b>	669	18.1
462.libquantum	<b>101</b>	<b>205</b>	101	205	102	204	48.2	430	<b>48.2</b>	<b>430</b>	48.2	430
464.h264ref	<b>895</b>	<b>24.7</b>	895	24.7	895	24.7	752	29.4	<b>752</b>	<b>29.4</b>	752	29.4
471.omnetpp	319	19.6	321	19.5	<b>320</b>	<b>19.6</b>	<b>276</b>	<b>22.7</b>	276	22.6	275	22.7
473.astar	<b>399</b>	<b>17.6</b>	399	17.6	399	17.6	355	19.8	354	19.8	<b>354</b>	<b>19.8</b>
483.xalancbmk	<b>245</b>	<b>28.2</b>	244	28.3	245	28.2	233	29.6	<b>233</b>	<b>29.6</b>	234	29.5

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=2000 in /etc/sysctl.conf  
mount -t hugetlbfs nodev /mnt/hugepages

## General Notes

Environment variables set by runspec before the start of the run:  
LD\_LIBRARY\_PATH = "/root/work/cpu2006v1.2/amd1104-speed-libs-revA/32:/root/work/cpu2006v1.2/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"  
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>

Continued on next page



# SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Tyan**

(Test Sponsor: Advanced Micro Devices)

Tyan YR190-B8228,  
AMD Opteron 4280

**SPECint2006 = 32.1**

**SPECint\_base2006 = 26.8**

**CPU2006 license:** 49

**Test sponsor:** Advanced Micro Devices

**Tested by:** Advanced Micro Devices

**Test date:** Jan-2012

**Hardware Availability:** Nov-2011

**Software Availability:** Jul-2011

## 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:bdtdt=2m:heap=2m -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

## Peak Compiler Invocation

C benchmarks:

opencc

C++ benchmarks:

openCC



# SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Tyan**

(Test Sponsor: Advanced Micro Devices)

Tyan YR190-B8228,  
AMD Opteron 4280

**SPECint2006 = 32.1**

**SPECint\_base2006 = 26.8**

**CPU2006 license:** 49

**Test sponsor:** Advanced Micro Devices

**Tested by:** Advanced Micro Devices

**Test date:** Jan-2012

**Hardware Availability:** Nov-2011

**Software Availability:** Jul-2011

## 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

Continued on next page



# SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Tyan**

(Test Sponsor: Advanced Micro Devices)

Tyan YR190-B8228,  
AMD Opteron 4280

**SPECint2006 = 32.1**

**SPECint\_base2006 = 26.8**

**CPU2006 license:** 49

**Test sponsor:** Advanced Micro Devices

**Tested by:** Advanced Micro Devices

**Test date:** Jan-2012

**Hardware Availability:** Nov-2011

**Software Availability:** Jul-2011

## 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 file that was used to format this result can be browsed at

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

You can also download the XML flags source by saving the following link:

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



# SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Tyan**

(Test Sponsor: Advanced Micro Devices)

Tyan YR190-B8228,  
AMD Opteron 4280

**SPECint2006 = 32.1**

**SPECint\_base2006 = 26.8**

**CPU2006 license:** 49

**Test sponsor:** Advanced Micro Devices

**Tested by:** Advanced Micro Devices

**Test date:** Jan-2012

**Hardware Availability:** Nov-2011

**Software Availability:** Jul-2011

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.2.  
Report generated on Thu Jul 24 02:04:19 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 24 February 2012.