



# SPEC® CINT2006 Result

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## Supermicro

Supermicro A+ Server 1012A-MTF  
(H8SML-iF, AMD Opteron 3380)

SPECint®\_rate2006 = 144

SPECint\_rate\_base2006 = 125

CPU2006 license: 001176

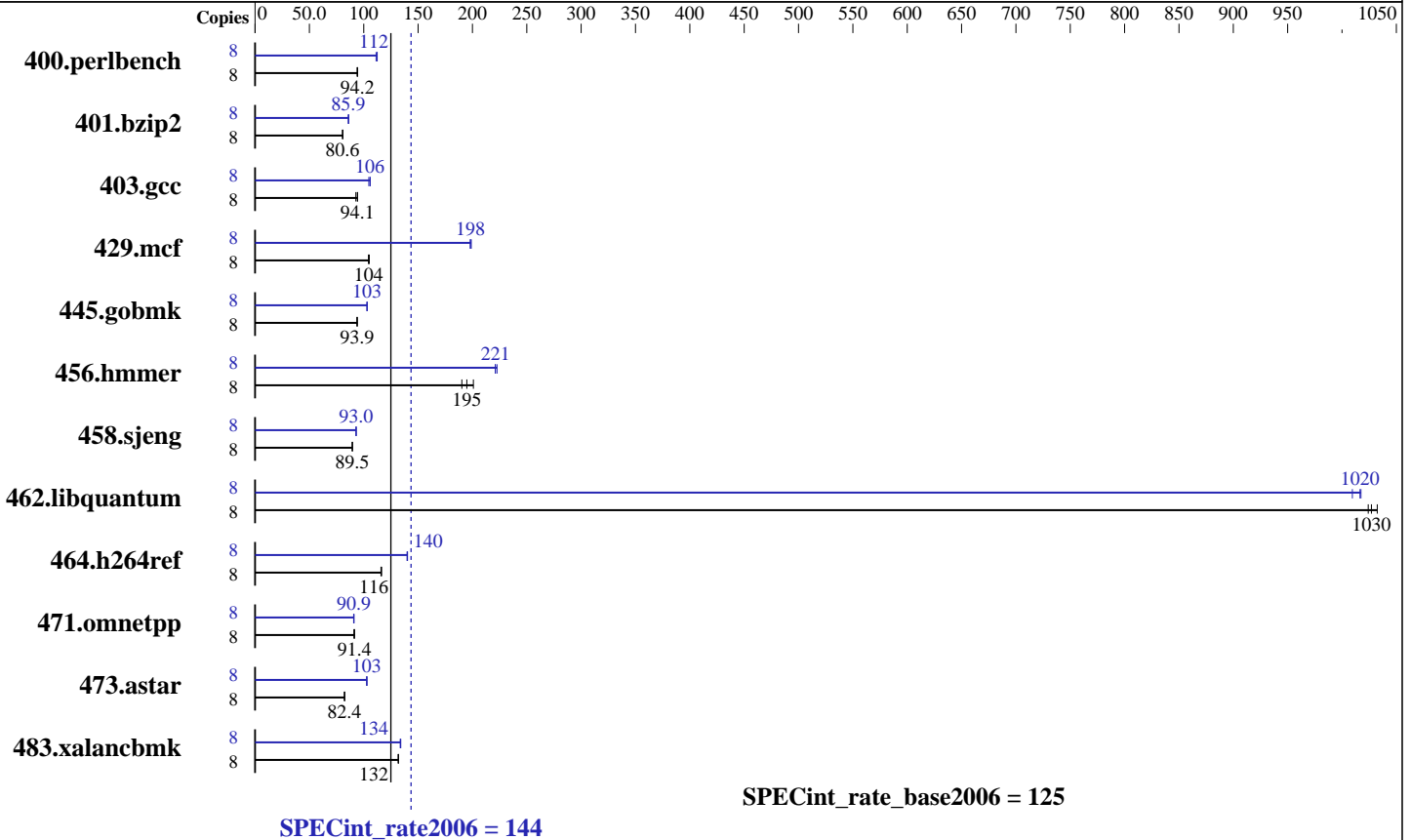
Test sponsor: Supermicro

Tested by: Supermicro

Test date: Jan-2013

Hardware Availability: Dec-2012

Software Availability: Aug-2012



### Hardware

CPU Name: AMD Opteron 3380  
 CPU Characteristics: AMD Turbo CORE technology up to 3.60 GHz  
 CPU MHz: 2600  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 1 chip, 8 cores/chip  
 CPU(s) orderable: 1 chip  
 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 2Rx8 PC3-12800E-11, ECC, running  
at 1333 MHz and CL9)  
 Disk Subsystem: 1 x 2048 GB SATA, 7200 RPM  
 Other Hardware: None

### Software

Operating System: Red Hat Enterprise Linux Server release 6.3,  
Kernel 2.6.32-279.el6.x86\_64  
 Compiler: C/C++: Version 4.5.2 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	8	<b>830</b>	<b>94.2</b>	832	93.9	828	94.4	8	<b>696</b>	<b>112</b>	702	111	696	112
401.bzip2	8	<b>958</b>	<b>80.6</b>	956	80.7	959	80.5	8	899	85.9	<b>899</b>	<b>85.9</b>	896	86.2
403.gcc	8	694	92.7	683	94.3	<b>684</b>	<b>94.1</b>	8	<b>609</b>	<b>106</b>	615	105	608	106
429.mcf	8	698	104	695	105	<b>698</b>	<b>104</b>	8	369	198	<b>368</b>	<b>198</b>	367	199
445.gobmk	8	892	94.1	894	93.8	<b>894</b>	<b>93.9</b>	8	815	103	<b>814</b>	<b>103</b>	814	103
456.hammer	8	<b>383</b>	<b>195</b>	392	190	372	201	8	338	221	335	223	<b>338</b>	<b>221</b>
458.sjeng	8	<b>1081</b>	<b>89.5</b>	1081	89.5	1081	89.5	8	<b>1041</b>	<b>93.0</b>	1042	92.9	1041	93.0
462.libquantum	8	<b>161</b>	<b>1030</b>	161	1030	162	1020	8	<b>163</b>	<b>1020</b>	164	1010	163	1020
464.h264ref	8	1528	116	1522	116	<b>1524</b>	<b>116</b>	8	1266	140	<b>1264</b>	<b>140</b>	1262	140
471.omnetpp	8	547	91.4	<b>547</b>	<b>91.4</b>	549	91.0	8	549	91.0	551	90.7	<b>550</b>	<b>90.9</b>
473.astar	8	<b>682</b>	<b>82.4</b>	682	82.3	682	82.4	8	<b>546</b>	<b>103</b>	546	103	547	103
483.xalancbmk	8	418	132	419	132	<b>418</b>	<b>132</b>	8	412	134	<b>413</b>	<b>134</b>	413	134

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 vm/nr\_hugepages=3840 in /etc/sysctl.conf  
mount -t hugetlbfs nodev /mnt/hugepages

## General Notes

Environment variables set by runspec before the start of the run:

HUGETLB\_LIMIT = "480"

LD\_LIBRARY\_PATH = "/usr/cpu2006/amd1206-rate-libs-revA/32:/usr/cpu2006/amd1206-rate-libs-revA/64"

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 6386SE chips + 128GB Memory using RHEL 6.3



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## 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:  
-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  
-march=bdver1

C++ benchmarks:  
-Ofast -m32 -INLINE:aggressive=on -CG:cmp\_peep=on -D\_\_OPEN64\_FAST\_SET  
-march=bdver1 -L/root/work/libraries/SmartHeap-10/lib -lsmartheap

## Peak Compiler Invocation

C benchmarks:  
opencc

C++ benchmarks:  
openCC

## Peak Portability Flags

400.perlbench: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX\_X64

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## Peak Portability Flags (Continued)

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  
 473.astar: -DSPEC\_CPU\_LP64  
 483.xalancbmk: -DSPEC\_CPU\_LINUX

## Peak Optimization Flags

C benchmarks:

400.perlbench: -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 -march=bdver1  
 -GRA:aggr\_loop\_splitting=off -GRA:loop\_splitting=off

401.bzip2: -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  
 -march=bdver2

403.gcc: -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 -march=bdver2 -mno-fma4

429.mcf: -O3 -OPT:unroll\_times\_max=5 -ipa -INLINE:aggressive=on  
 -CG:gcm=off -CG:dsched=on -GRA:prioritize\_by\_density=on  
 -m32 -HP:bd=2m:heap=2m -mso -march=bdver1

445.gobmk: -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 -march=bdver1

456.hmmer: -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  
 -CG:p2align=0 -CG:load\_exe=3 -CG:dsched=on -march=bdver1

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## Peak Optimization Flags (Continued)

458.sjeng: -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:heap=2m:bd=2m -WOPT:sib=on -march=bdver1

462.libquantum: -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 -CG:p2align=0 -INLINE:aggressive=ON  
-IPA:plimit=15000 -IPA:small\_pu=100  
-HP:bd=2m:heap=2m,limit=300 -march=bdver2

464.h264ref: -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 -march=bdver1

C++ benchmarks:

471.omnetpp: -Ofast -m32 -INLINE:aggressive=on -CG:cmp\_peep=on  
-WOPT:sib=on -D\_\_OPEN64\_FAST\_SET -march=bdver2 -mno-fma4  
-L/root/work/libraries/SmartHeap-10/lib -lsmarheap

473.astar: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast  
-WOPT:if\_conv=0 -WOPT:sib=on -CG:divrem\_opt=on  
-CG:p2align=1 -CG:dsched=on -GRA:optimize\_boundary=on  
-OPT:alias=disjoint -INLINE:aggressive=on  
-IPA:small\_pu=3000 -IPA:plimit=3000 -HP:bd=2m:heap=2m  
-march=bdver1

483.xalancbmk: -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=1 -GRA:unspill=on  
-TENV:frame\_pointer=off -fno-emit-exceptions -march=bdver2  
-mno-fma4  
-L/root/work/libraries/SmartHeap-10/lib -lsmarheap

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

<http://www.spec.org/cpu2006/flags/x86-open64-452-flags-rate-revA-I.html>

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

<http://www.spec.org/cpu2006/flags/x86-open64-452-flags-rate-revA-I.xml>



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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.2.  
Report generated on Thu Jul 24 14:50:57 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 29 January 2013.