



# SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Supermicro

Supermicro A+ Server AS-2022G-URF4+,  
AMD Opteron 6140

SPECint®2006 = 24.7

SPECint\_base2006 = 20.4

CPU2006 license: 001176

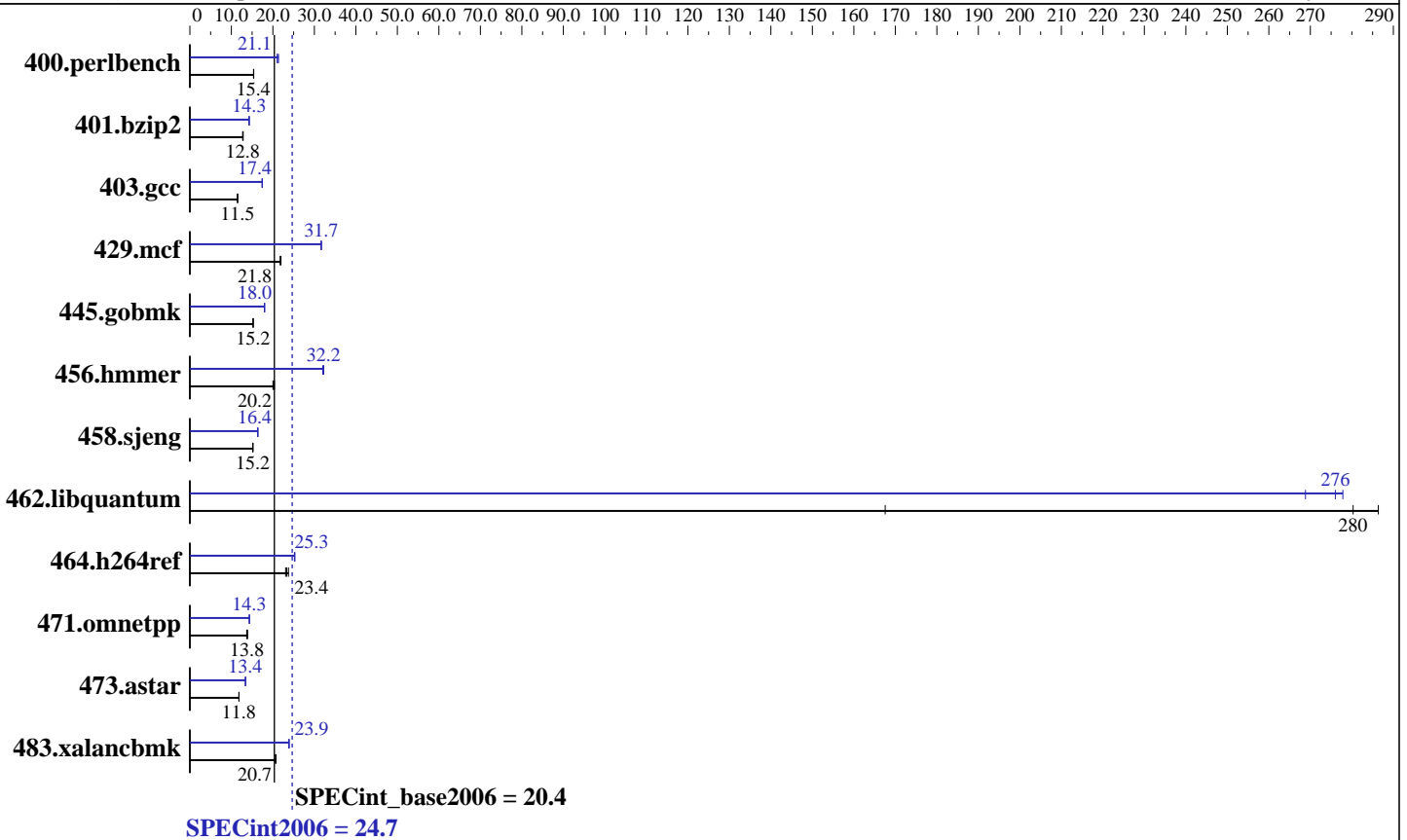
Test sponsor: Supermicro

Tested by: Supermicro

Test date: Dec-2010

Hardware Availability: Feb-2011

Software Availability: May-2010



### Hardware

CPU Name: AMD Opteron 6140  
 CPU Characteristics:  
 CPU MHz: 2600  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip  
 CPU(s) orderable: 1,2 chips  
 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 / 4 cores  
 Other Cache: None  
 Memory: 64 GB (16 x 4 GB 2Rx4 PC3-10600R-9, ECC)  
 Disk Subsystem: 1 x 500 GB SATA, 7200 RPM  
 Other Hardware: None

### Software

Operating System: Red Hat Enterprise Linux Server release 5.5, Kernel 2.6.18-194.el5  
 Compiler: x86 Open64 4.2.3.2 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: binutils 2.18, SmartHeap 8.1 32-bit Library for Linux



# SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Supermicro

Supermicro A+ Server AS-2022G-URF4+,  
AMD Opteron 6140

SPECint2006 = 24.7

SPECint\_base2006 = 20.4

CPU2006 license: 001176  
Test sponsor: Supermicro  
Tested by: Supermicro

Test date: Dec-2010  
Hardware Availability: Feb-2011  
Software Availability: May-2010

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	637	15.3	<b><u>636</u></b>	<b><u>15.4</u></b>	635	15.4	<b><u>463</u></b>	<b><u>21.1</u></b>	464	21.1	457	21.4
401.bzip2	758	12.7	<b><u>755</u></b>	<b><u>12.8</u></b>	751	12.9	<b><u>676</u></b>	<b><u>14.3</u></b>	<b><u>675</u></b>	<b><u>14.3</u></b>	675	14.3
403.gcc	702	11.5	<b><u>701</u></b>	<b><u>11.5</u></b>	699	11.5	<b><u>462</u></b>	<b><u>17.4</u></b>	461	17.5	462	17.4
429.mcf	419	21.8	<b><u>418</u></b>	<b><u>21.8</u></b>	415	22.0	<b><u>288</u></b>	<b><u>31.7</u></b>	288	31.7	288	31.7
445.gobmk	<b><u>688</u></b>	<b><u>15.2</u></b>	689	15.2	687	15.3	<b><u>583</u></b>	<b><u>18.0</u></b>	584	18.0	582	18.0
456.hammer	<b><u>462</u></b>	<b><u>20.2</u></b>	466	20.0	458	20.4	<b><u>291</u></b>	<b><u>32.0</u></b>	289	32.3	<b><u>290</u></b>	<b><u>32.2</u></b>
458.sjeng	795	15.2	<b><u>798</u></b>	<b><u>15.2</u></b>	799	15.1	<b><u>741</u></b>	<b><u>16.3</u></b>	738	16.4	<b><u>738</u></b>	<b><u>16.4</u></b>
462.libquantum	<b><u>73.9</u></b>	<b><u>280</u></b>	72.4	286	124	168	<b><u>74.6</u></b>	<b><u>278</u></b>	<b><u>75.1</u></b>	<b><u>276</u></b>	77.1	269
464.h264ref	931	23.8	959	23.1	<b><u>948</u></b>	<b><u>23.4</u></b>	<b><u>875</u></b>	<b><u>25.3</u></b>	<b><u>876</u></b>	<b><u>25.3</u></b>	878	25.2
471.omnetpp	450	13.9	<b><u>453</u></b>	<b><u>13.8</u></b>	456	13.7	<b><u>436</u></b>	<b><u>14.3</u></b>	<b><u>436</u></b>	<b><u>14.3</u></b>	435	14.4
473.astar	594	11.8	593	11.8	<b><u>593</u></b>	<b><u>11.8</u></b>	<b><u>523</u></b>	<b><u>13.4</u></b>	<b><u>524</u></b>	<b><u>13.4</u></b>	524	13.4
483.xalancbmk	<b><u>334</u></b>	<b><u>20.7</u></b>	335	20.6	332	20.8	<b><u>289</u></b>	<b><u>23.9</u></b>	290	23.8	288	23.9

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 vm/nr\_hugepages=4000 in /etc/sysctl.conf  
mount -t hugetlbfs nodev /mnt/hugepages

cpuspeed stop was used to set the CPU frequency to its maximum.

## Platform Notes

Fan speed set to Full Speed in BIOS Setup.  
The system uses a Supermicro H8DGU-LN4F+ motherboard.

## General Notes

Environment variables set by runspec before the start of the run:  
LD\_LIBRARY\_PATH = "/usr/cpu2006/amd1002-speed-libs-revA/64:/usr/cpu2006/amd1002-speed-libs-revA/32"  
O64\_OMP\_AFFINITY\_MAP = "0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15"  
O64\_OMP\_SPIN\_USER\_LOCK = "true"

Continued on next page



# SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Supermicro

Supermicro A+ Server AS-2022G-URF4+,  
AMD Opteron 6140

SPECint2006 = 24.7

SPECint\_base2006 = 20.4

CPU2006 license: 001176

Test sponsor: Supermicro

Tested by: Supermicro

Test date: Dec-2010

Hardware Availability: Feb-2011

Software Availability: May-2010

## General Notes (Continued)

The x86 Open64 Compiler Suite is only available from (and supported by) AMD at <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.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=barcelona -Ofast -apo -CG:local\_sched\_alg=1  
-HP:bdt=2m:heap=2m,limit=450 -LNO:parallel\_overhead=10000

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

## Peak Compiler Invocation

C benchmarks:  
opencc

C++ benchmarks:  
openCC



# SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Supermicro

Supermicro A+ Server AS-2022G-URF4+,  
AMD Opteron 6140

SPECint2006 = 24.7

SPECint\_base2006 = 20.4

CPU2006 license: 001176

Test sponsor: Supermicro

Tested by: Supermicro

Test date: Dec-2010

Hardware Availability: Feb-2011

Software Availability: May-2010

## 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 -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 -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 -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 -O3 -ipa -INLINE:aggressive=on
         -CG:gcm=off -GRA:prioritize_by_density=on -m32
         -HP:bdt=2m:heap=2m

445.gobmk: -march=barcelona -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 -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

```

Continued on next page



# SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Supermicro

Supermicro A+ Server AS-2022G-URF4+,  
AMD Opteron 6140

SPECint2006 = 24.7

SPECint\_base2006 = 20.4

CPU2006 license: 001176

Test sponsor: Supermicro

Tested by: Supermicro

Test date: Dec-2010

Hardware Availability: Feb-2011

Software Availability: May-2010

## Peak Optimization Flags (Continued)

458.sjeng: -march=barcelona -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 -IPA:min\_hotness=32 -CG:ptr\_load\_use=0  
-OPT:unroll\_times\_max=8 -INLINE:aggressive=on  
-HP:bdt=2m:heap=2m

462.libquantum: -march=barcelona -Ofast -apo -LNO:pf2=0 -CG:gcm=off  
-CG:use\_prefetchnta=on -CG:cmp\_peep=on -WOPT:aggstr=0  
-OPT:alias=disjoint -INLINE:aggressive=on -IPA:space=1000  
-IPA:plimit=20000 -mso

464.h264ref: -march=barcelona -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 -HP:bdt=2m:heap=2m

C++ benchmarks:

471.omnetpp: -march=barcelona -Ofast -CG:gcm=off -INLINE:aggressive=on  
-WOPT:if\_conv=0 -m32 -HP:bdt=2m:heap=2m

473.astar: -march=barcelona -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:bdt=2m:heap=2m

483.xalancbmk: -march=barcelona -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/x86-open64-423-flags-speed-revA.20101207.html>

<http://www.spec.org/cpu2006/flags/amd-platform-speed-revA.20101207.html>

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

<http://www.spec.org/cpu2006/flags/x86-open64-423-flags-speed-revA.20101207.xml>

<http://www.spec.org/cpu2006/flags/amd-platform-speed-revA.20101207.xml>



# SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Supermicro

Supermicro A+ Server AS-2022G-URF4+,  
AMD Opteron 6140

SPECint2006 = 24.7

SPECint\_base2006 = 20.4

**CPU2006 license:** 001176

**Test sponsor:** Supermicro

**Tested by:** Supermicro

**Test date:** Dec-2010

**Hardware Availability:** Feb-2011

**Software Availability:** May-2010

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 v1.1.  
Report generated on Wed Jul 23 15:17:08 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 14 February 2011.