

# AMD Opteron™ 6100 Series Processors (“Magny-Cours”)

## AMD Opteron™ 4100 Series Processors (“Lisbon”)

### Compiler Options Quick Reference Guide

#### Open64

Latest release: 4.5.1, December 2011

<http://developer.amd.com/open64>

Architecture	
Generate instructions specific to Magny-Cours	<code>-march=barcelona</code>
Generate instructions for the local machine	<code>-march=auto</code>
Optimization Levels	
Disable all optimizations	<code>-O0</code>
Local optimizations	<code>-O1</code>
Global optimizations (default)	<code>-O2</code>
Additional aggressive optimizations	<code>-O3</code>
Maximize performance	<code>-Ofast</code>
Additional Optimizations	
Autoparallelization	<code>-apo</code>
Feedback directed optimization	<code>-fb-create</code> <code>-fb-opt</code>
Huge pages	<code>-HP</code>
Interprocedural Analysis and Optimizations	<code>-ipa</code>
Link to ACML	<code>-L/opt/acml5.0.0/open64_64/lib -lacml</code>
Loop nest optimizations, vectorization, prefetch, fission, fusion	<code>-LNO:fission=n</code> <code>-LNO:fusion=n</code>
Multicore scalability	<code>-mso</code>
OpenMP	<code>-mp</code>
Floating point accuracy	
Floating point accuracy	<code>-fp-accuracy</code>

#### gcc

Latest release: 4.6.2, October 2011

<http://gcc.gnu.org>

Architecture	
Generate instructions specific to Magny-Cours	<code>-march=barcelona</code>
Generate instructions for the local machine	<code>-march=native</code>
Optimization Levels	
Disable all optimizations (default)	<code>-O0</code>
Local optimizations	<code>-O1</code>
Global optimizations	<code>-O2</code>
Additional aggressive optimizations	<code>-O3</code>
Maximize performance	<code>-Ofast</code>
Additional Optimizations	
Adjust register scheduling	<code>-fschedule-insns</code> <code>-fschedule-insns2</code> <code>-fsched-pressure</code>
Enable unrolling	<code>-funroll-all-loops</code>
Generate prefetch instructions for loops	<code>-fprefetch-loop-arrays</code> <code>--param prefetch-latency=300 (300-700)</code>
Inline string operations	<code>-minline-all-stringops</code>
Link to ACML	<code>-L/opt/acml5.0.0/gfortran64/lib -lacml</code>
OpenMP	<code>-fopenmp</code>
Profile guided optimization	<code>-fprofile-generate</code> <code>-fprofile-use</code>
Turn off partial redundancy elimination	<code>-fno-tree-pre</code>
Floating point accuracy	
Enable generation of code that follows IEEE arithmetic	<code>-mieee-fp</code>
Enable faster, less precise math operations	<code>-ffast-math</code>

For more information, visit <http://developer.amd.com/Magny-Cours>

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#### ICC

Latest release: 12.0 update3, March 2011

<http://software.intel.com>

Architecture	
Generate instructions specific to Magny-Cours	-msse3 (avoid -ax)
Optimization Levels	
Disable all optimizations	-O0
Speed optimization without code growth	-O1
Enable optimization including vectorization	-O2
Aggressive optimization	-O3
Maximize performance	-fast
Additional Optimizations	
Aggressive unrolling	-unroll-aggressive
Disable improved precision floating divides	-no-prec-div
Enable vectorization	-simd
Interprocedural Optimization	-ipo
Link to ACML	-L/opt/acml5.0.0/fort64/lib -lacml
OpenMP	-openmp
Prefetch optimization	-opt-prefetch
Profile generated optimization	-prof-gen -prof-use
Use optimized header definitions	-use-intel-optimized-headers
Floating point accuracy	
Floating point accuracy	-fp-model
Use faster, less precise transcendental	-fast-transcendentals

#### PGI

Latest release: 11.4, April 2011

<http://www.pgroup.com>

Architecture	
Generate instructions specific to Magny-Cours	-tp istanbul
Optimization Levels	
Disable all optimizations	-O0
Local optimization	-O1
Global optimization	-O2
Aggressive global optimization	-O3
Hoist guarded invariant floating point expressions	-O4
Maximize performance	-fast
Additional Optimizations	
Huge pages	-Msmartalloc=huge
Autoparallelize loops	-Mconcur
Enable vectorization	-Mvect
Interprocedural Optimization	-Mipa=fast,inline
Link to ACML	-L/opt/acml5.0.0/pgi64/lib -lacml
OpenMP	-mp
Prefetch instructions	-Mvect=prefetch
Profile guided optimization	-Mpfi -Mpfo
Unroll loops	-Munroll
Floating point accuracy	
Generate relaxed precision code	-Mfprelaxed
Perform floating point operations in conformance with IEEE standard	-Kieee

For more information, visit <http://developer.amd.com/Magny-Cours>