

# Recommended Compilers, Tools, and Options for x86/x64/ARM

## Unmanaged Code

Compiler/ Tool	Minimum Recommended Version and Switches/Options	Optimal Recommended Version and Switches/Options
C/C++ Compiler	Microsoft Visual Studio 2012	Microsoft Visual Studio 2013 or newer
cl.exe	Use default switches/options - all previously-recommended security options are enabled by default	Use default switches/options - all previously-recommended security options are enabled by default Add <u>/GUARD:CF</u> ( <b>off</b> by default) Add <u>/SDL</u>
Link.exe	Use default switches/options - all previously-recommended security options are enabled by default	Use default switches/options - all previously-recommended security options are enabled by default  Additional steps may be taken to ensure dependencies do not disable options such as /SAFESEH, /NXCOMPAT, /DYNAMICBASE, and /HIGHENTROPYVA
MIDL.exe	Use /robust	Use /robust
Source code analysis	Visual Studio 2012 Code Analysis Options (“/analyze”) For Visual Studio 2012 code analysis, all warning IDs from the following list should be fixed: 4532 6029 6053 6057 6059 6063 6067 6200 6201 6202 6203 6204 6248 6259 6260 6268 6276 6277 6281 6282 6287 6288 6289 6290 6291 6296 6298 6299 6305 6306 6308 6334 6383	Visual Studio 2012 Code Analysis Options (“/analyze”). For Visual Studio 2012 code analysis, all warning IDs from the following list should be fixed: 4532 6029 6053 6057 6059 6063 6067 6200 6201 6202 6203 6204 6248 6259 6260 6268 6276 6277 6281 6282 6287 6288 6289 6290 6291 6296 6298 6299 6305 6306 6308 6334 6383 Standard Annotation Language (SAL): Code annotated with SAL should correct additional warnings in addition

		<p>to those listed above. See <a href="#">SDL Standard Annotation Language (SAL) Recommendations for Native Win32 Code</a> for more information. The warnings are summarized as follows:</p> <p><b>SAL Compliance</b>  Visual Studio 2012: 26020 - 26023  <b>/analyze</b>  Visual Studio 2012: 6029 6053 6057  6059 6063 6067- 6201-6202 6248 6260  6276 6277 6305</p>
Protecting Against Heap Corruption	n/a	<p>All executable programs written using unmanaged code (.EXE) should call the HeapSetInformation interface. See <a href="#">Heap Manager Fail Fast Setting</a> for more information.</p>
C4700 and C4701 Compiler Warnings	n/a	<p>Compile code with C4700 and C4701 compiler warnings enabled and fix all instances of these warnings.</p>

## Managed Code

Compiler/ Tool	Minimum Recommended Version and Switches/Options	Optimal Recommended Version and Switches/Options
C# Compiler	Microsoft Visual Studio 2012	Microsoft Visual Studio 2013 or newer
.NET Framework	Version 4.5.2 with the <a href="#">SchUseStrongCrypto</a> regkey set (needed for TLS 1.2 in .Net framework < 4.6)	Version 4.6.2 or newer
FxCop	Version 10	Most recent version