EXHIBIT 15

ActionScript code protection

From Wikipedia, the free encyclopedia

ActionScript code protection. ActionScript is the main language for developing flash products. Code obfuscation is the process of transforming code into a form that is unintelligible to human readers while preserving the functionality and structure for computers. Flash developers use a variety of code encryption and obfuscation methods in order to but most obfuscation methods are kept secret because they are used in popular ActionScript obfuscators.

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Overview

Obfuscation is the process of modifying ActionScript code. Obfuscation engineering makes it impossible to use the original code for programming by mixing up functions, arguments and variables names; however the SWF file with obfuscated code stays readable for Flash players.

ActionScript obfuscation algorithms are aimed to resist Flash decompilation and protect development's work from stealing. Nowadays, there are many different freeware and shareware tools that provides different obfuscation options. Some SWF Protectors implement lexical transformations - such as identifiers renaming, control flow transformation, and data abstraction transformation - that make it harder for decompilers to generate correct and usable output. Others - insert certain traps based on decompilers imperfections. Some decompilers manage to open protected files and maybe extract some of its resources (sounds, images, etc.), but they cannot read the ActionScript code correctly. It often happens that when protected SWF file is added to decompilation software, the latter may crash or quit unexpectedly.

Examples

The easiest way to understand the benefit of SWF obfuscation is to compare a non-protected SWF ActionScript code with protected one.

ActionScript 2.0

Code before obfuscation: