



Library for Static Analysis of PE Malware

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VM Virtual Machine

Chapter 1

Introduction

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Chapter 2

Malware Taxonomy

2.1 Behavioural Malware Types

Usually malware analysts make guesses about the malware's behaviour and shape their further analysis to confirm (or refute) these guesses. This approach helps to speed up the analysis. [1, p. 3] Hereafter is an overview to the different types of malware depending on its behaviour.

Definition 1 (Downloader) *A downloader is a piece of software that downloads other malicious programs. (cf. [1, p. 3])*

Definition 2 (Rootkit) *A rootkit is a software that has the purpose of hiding the presence of other malicious programs or activities. (cf. [1, p. 4])*

A rootkit may conceal login activities, log files and processes. Rootkits are often coupled with backdoor functionality (see definition 3).

Definition 3 (Backdoor) *A backdoor allows access to the system by circumventing the usual access protection mechanisms. (cf. [1, p. 3])*

The backdoor is used by the attacker or other malicious programs to get access to the system later on.

Definition 4 (Launcher) *A launcher is a software that executes other malicious programs. (cf. [1, p. 4])*

A launcher mostly uses unusual techniques for running the malicious program in the hopes of providing stealth.

Definition 5 (Spam-sending malware) *Spam-sending malware uses the victim's machine to send spam. (cf. [1, p. 4])*

Attackers use this kind of malware to sell their spam-sending services.

Definition 6 (Information stealer) *An information stealer is a malicious program that reads confidential data from the victim's computer and sends it to the attacker. (cf. [1, p. 4])*

Examples for information stealers are: keyloggers, sniffers, password hash grabbers [1, p. 3] and also some kinds of deceptive malware. The latter makes the user input confidential data by convincing the user that it provides an advantage. An example for a deceptive information stealer is a program that claims to add more money to the user's Paypal account; actually it sends the Paypal credentials the user puts into the program to the attacker's e-mail server.

Definition 7 (Botnet) *A botnet is a collection computer programs on different machines that receive and execute instructions from a single server.*

While some botnets are used legally, malicious botnets are installed without consent of the computer's owners and may be used to perform distributed denial of service attacks or for spam-sending (see definition 5).

Definition 8 *Scareware tries to trick a user into buying something by frightening him. (cf. [1, p. 4])*

A typical scareware example is a program that looks like an antivirus scanner and shows the user fake warnings about malicious code found on the system. It tells the user to buy a certain software in order to remove the malicious code.

Definition 9 (Virus) *A virus recursively replicates itself by infecting or replacing other programs or modifying references to these programs to point to the virus code instead. A virus possibly mutates itself with new generations. (cf. [2, p. 27, 36])*

A typical virus is executed if the user executes an infected host file.

Definition 10 (Worm) *"Worms are network viruses, primarily replicating on networks." [2, p. 36]*

Typically worms don't need a host file and execute themselves without the need of user interaction. ([2, p. 36]) But there are exceptions from that: e.g. worms that spread by mailing themselves need user interaction. A worm is a subclass of a virus by definition 10.

2.2 Mass Malware and Targeted Malware

Malware is not only classified by behaviour, but also by the attacker's goals. If the malware was designed to infect as many machines as possible, it is a *mass malware*. A *targeted malware* on the other hand was written to infect a certain machine, organization or company.

Chapter 3

Detection by Antivirus Software

Chapter 4

Malware Hiding Techniques

Chapter 5

Malware Analysis

Definition 11 “Malware analysis *is the art of dissecting malware to understand how it works, how to identify it, and how to defeat or eliminate it.*” [1, p. xxviii]

5.1 Malware Analysis Techniques

Static Analysis

Definition 12 Static analysis *is the examination of a program without running it.* [1, p. 2]

Static analysis includes e.g. viewing the file format information, finding strings or patterns of byte sequences, disassembling the program and subsequent examination of the instructions.

Dynamic Analysis

Definition 13 Dynamic analysis *is the examination of a program while running it.* [1, p. 2]

Dynamic analysis includes e.g. observing the program’s behaviour in a Virtual Machine (VM) or a dedicated testing machine or examining the program in a debugger.

Chapter 6

Static Analysis Library

Chapter 7

Evaluation

Chapter 8

Das Competence Information Portal

soll mit Hilfe eines Berichtssystems erleichtert werden. Dazu gehört die Möglichkeit ■
Mitarbeiter inklusive ihrer Fähigkeiten, Standorte und Lebensläufe zu suchen.
Führungskräfte können so geeignete Kandidaten finden, um interne Stellen zu
besetzen. *Arbeitsnahe und -integrierte Maßnahmen zur Kompetenzentwicklung*
werden indirekt unterstützt, indem der Bedarf ermittelt und die Planung realisiert
werden kann.

remove



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- [1] MICHAEL SIKORSKI, ANDREW HONIG: *Practical Malware Analysis*. No Starch Press, Inc., 2012.
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