Malware analysis project report template download pdf download

The series will contain 3 partsStatic Malware Analysis (You are here)Dynamic Malware AnalysisMemory Malware AnalysisMalware analysis labWhen performing malware analysis, you ensure that you are testing in a dedicated and isolated environment. Typexxd The first 2 bytes are “MZ”. Let’s enter the md5 of Zeus malware which is 3848a99f2efb923a79e7d47577ae9599Voila! VirusTotal will generate a detailed report about the malware. References and Credits:Authored byChiheb Chebbi According to safetydetectives.com, the total cost of malware attacks with reach $6 trillion by 2021.In this series, we are going to learn how to perform malware analysis. Since we have found out that almost all versions of malware are very hard to come by in a way which will allow analysis, we have decided to gather all of them for you in an accessible and safe way. The following note summarizes my recommendations for what to include in the report that describes the results of the malware analysis process. A typical malware analysis report covers the following areas:Summary of the analysis: Key takeaways should the reader get from the report regarding the specimen's nature, origin, capabilities, and other relevant characteristics.Identification: The type of the file, its name, size, hashes (such as SHA256 and imphash), malware names (if known), current anti-virus detection capabilities.Characteristics: The specimen's capabilities for infecting files, self-preservation, spreading, leaking data, interacting with the attacker, and so on. Every day, we hear news about data breaches and cyber attacks with malware. The imports are also mapped to the MITRE Framework.   You can download themfrom here: FlareVMMalware analysis approachesIn most cases, as a malware analyst you need to perform the following analysis techniques: Static Analysis: It is collecting information about the malicious application without running itDynamic Analysis: It is analyzing how the malware behave after running it in a sandboxMemory Analysis: It is collecting and analyzing memory artifacts to learn more about the malware.Malware samples and datasetsIn your malware analysis learning journey, it is essential to acquire some malware samples so you can start to practice what you are learning using them. For a good reference of what characteristics you may need to capture take a look at the MAEC Malware Capabilities project or the alternative effort Malware Behavior Catalog (MBC).Dependencies: Files and network resources related to the specimen's functionality, such as supported OS versions and required initialization files, custom DLLs, executables, URLs, and scripts.Behavioral and code analysis findings: Overview of the analyst's behavioral, as well as static and dynamic code analysis observations.Supporting figures: Logs, screenshots, string excerpts, function listings, and other exhibits that support the investigators analysis.Incident recommendations: Indicators for detecting the specimen on other systems and networks (a.k.a. indicators of compromise or IOCs), and possible for eradication steps.Malware analysis should be performed according to a repeatable process. You can download my mind map template for such a report as an XMind file or a PDF file.For Anuj Soni's perspective on this topic, see his article How to Track Your Malware Analysis Findings.To learn more about malware analysis, take a look at the FOR610 course, which explains how to reverse-engineer malicious software. It is always a bad idea to testand analyze malware in production systems. It was detected by 56 AV solutions. It is an indicator that the file is a PE. To make things easier for analysts VirusTotal provides an online platform to help you scan files using different AV solutions at the same time. theZoo was born by Yuval tisf Nativ and is now maintained by Shahak Shalev.”Please remember that these are live and dangerous malware! They come encrypted and locked for a reason! The zip password is “infected”Clone the project by typing: sudo git clone actual malware sample can be found in theZoo/malwares/BinariesLet’s start our analysis.FiletypeThe first thing you need to do is to know the filetype of the malicious file because it will help you identify the targeted operating system. If you are running Linux (in my case i am using Ubuntu 18.04), youcan simply type: file For example, the filetype of “CryptoLocker_22Jan2014” sample is: PE32 executable. For the demonstration we are going to use some sample from “theZoo”According to its Github Repository:“theZoo is a project created to make the possibility of malware analysis open and available to the public. Its official website is download yara, you can simply type: sudo apt-get install yaraYou can download a collection of Yara rules from here: is an example of a yara rule to detect TROJAN_Notepad_shell_crewAs you notice a yara rule contains the following sections: MetadataIdentifiersStrings identificationConditionsTo use yara rule to detect a malware you can simply type: Yara For example, we detected Petya Ransomware using this command: yara RANSOM_Petya.yar/home/azureuser/theZoo/malwares/Binaries/Ransomware.PetyaSummaryIn this article, we explored the fundamentals of malware analysis and how to perform static malware analysis using a collection of powerful tools. Cryptors use encryption to obfuscate the malware. In the 2nd part of this series, we will explore how to analyze malware dynamically by running it in a secure environment. The most basic technique is deploying some isolated virtual machines (Linux and Windows) or you can deploy some ready-to-use malware analysis sandboxes such as Cuckoo sandbox or FLARE VM. Attackers are enhancing their development skills and building new malware that can bypass company safeguards and AV-products. To accomplish this, the analyst should save logs, take screen shots, and maintain notes during the examination. “The Portable Executable (PE) format is a file format for executables, object code, DLLs and others used in 32-bitand 64-bit versions of Windows operating systems.”Also, you can use a hex dumper called “xxd”. Inspecting PE headers will help us get more information about the malware including where the binary needs to be loaded into memory and so on. Thus, it is recommended to scan the file using different AV products. Obfuscators are also known as packers obfuscate the content of a malware using compression. This data will allow the person to create an analysis report with sufficient detail that will allow a similarly-skilled analyst to arrive at equivalent results.A convenient way of keeping track of your observations during the reverse-engineering process is to use a mind map, which organizes your notes, links, and screenshots on a single easy-to-see canvas. PE headersWe already took a look at PE files. To learn more aboutit you can read our article: How MITRE ATT&CK can help you to defend against Advanced Persistent Threats (APTs)TimestampsTime stamp is very important in malware analysis; it gives us an indication about the compile time of the executable. StringsExtracting strings from malicious software will give us many additional pieces of information about it and about its functionalities. To analyse a file go to: your file or simply you can provide the file hash. Some useful pieces of information are: IP Addresses, Bitcoin wallet addresses, Error messages, comments and so on.To extract strings type: strings HashesA hash function is a mathematical function that takes a string, and generates a fixed-size output called a hash value or a message digest.There are many used hashes in the wild including: md5, sha256 and sha1.To identify the hashes type: Md5sum Sha1sum Sha256sum VirusTotalWhen performing static analysis, analysts usually tend to scan the malicious files using anti-virus scanners but as you know there is no AV solution that can detect all malware pieces. UPX is a free, portable, extendable, high-performance executable packer for several executable formats.Yara rulesYara is a powerful classification and detection tool. Many analysts, researchers, and institutions are sharing some malware samples and machine learning data sets with the community for educational purposes some of them are the following: Static Malware AnalysisNow, let’s learn how to perform Static Malware Analysis. PackersMalware developers use many techniques to avoid detection and stay hidden as long as possible. You can find the full structure of PE 32 files here: Structure (High Resolution)To extract these pieces of information we are going to use a powerful tool called “PE Studio”“The goal of pe studio is to spot suspicious artifacts within executable files in order to ease and accelerate Malware Initial Assessment and is used by Computer Emergency Response Teams and Labs worldwide.”You can download it from here: you download it you can load your malicious file and it will give youmany helpful details including the previously discussed techniques.Imports and ExportsImports and exports are very valuable pieces of information because it will help us get an idea about the functionalities and capabilities of the malware since it uses internal APIs to perform some tasks. For To detect packers you can use an utility called “ExeInfo PE”For example this malware is packed with UPX. Those bytes are the initials of Mark Zbikowski, one of the leading developers of MS-DOS. Malware analysis is the art of determining the functionality, origin, and potential impact of a given malicious software. Lenny Zeltser June 25, 2020IntroductionSome of the most annoying threats in information security are malicious programs. That is why you need to build your own malware analysis lab and sandbox. Some of these techniques are obfuscation and encryption. Also you can find some additional details about it: Virus Total also provides an API to help you use the platform capabilities inyour projects. It uses a rule-based approach to detect malware.

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