The Wars in Your Machine: New Developments in Trojan Virus Engineering

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INTRODUCTION

Definition:
The Trojan Virus is a malicious computer program that is used to compromise a computer by fooling users about its real intent.

- Unlike computer viruses, or worms, the Trojan does not directly attack operating systems
- Modern forms act as a backdoor to grant access without authorization.
- Help attackers to break the confidentiality, integrity and availability of data
- Can cause a huge impact to both, private users and public organizations, such as exposing the user's credit card information, or other personal identity information (PII).

Method:
- In this study, we are reviewing and analyzing the actual code of three famous modern Trojans in order to learn their most common functions and goals.
- We use hackers' actual code stubs, obtained from public sources such as GitHub.

HISTORY OF TROJAN FUNCTIONALITY

Most common functionalities of old Trojan viruses:
- Large number of pop-ups to make users download software programs containing multiple harmful viruses.
- Upload and download software and data sharing.
- Reinstall the Trojan virus itself from the hidden infected files after removal.

Other typical functionalities:
- Modification or deletion of files.
- Data corruption.
- Spreading malware across the network.
- Infecting other connected devices on the network.

EXAMPLE: Spy Sheriff (1980)
- Ca. one million computer systems worldwide
- Appearance of a huge number of pop-ups, which warned users about the risks of their computer systems and the necessity to install the applications for solving the problem.
- Reinstalled itself from the hidden infected files.

EXAMPLE: Vundo (2010)
- Occupied a large number of memory of computer, so that it could generate lots of pop-ups to warn users the necessity of installing software programs which contained multiple harmful computer viruses.

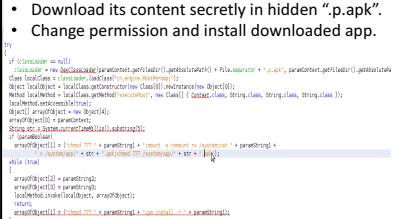
THREE NEW TROJANS

Shedun: Android Trojan

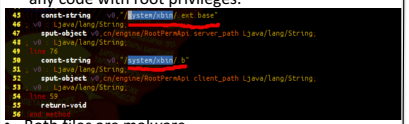
- Runs on Android mobile devices; has been seen pre-installed on cellphones and tablets from China.
- Downloads and installs adware; launches popup advertisements
- Roughly 20,000 popular Android applications infected (Twitter, Facebook, Snapchat, etc.)

Analysis

com.qq package:
- Download its content secretly in hidden ".p.apk".
- Change permission and install downloaded app.



- Change the permissions of application to grant whole authorizations to allow attackers to execute any code with root privileges.



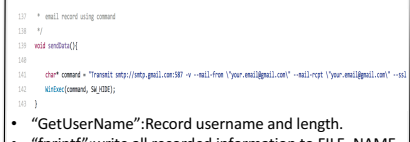
- Both files are malware.
- The .ext.base files require root permissions.

Cockroach Trojan

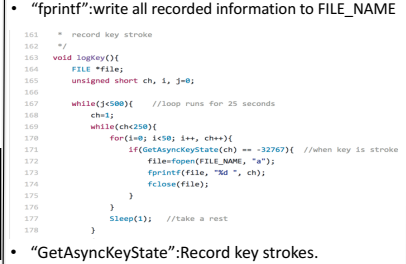
- Steals the sensitive data, such as user name, password, time, date, email, and every key stroke and emails the data back to the host.
- Spread among Windows PCs through USB drives.
- Very hard to detect with anti-virus software.

Analysis

- Transmit target email with Transmit.exe file.
- your.email@gmail.com is the attack email.
- Use SSL protocol to encrypt traffic.



- "GetUserName":Record username and length.
- "fprintf":write all recorded information to FILE_NAME

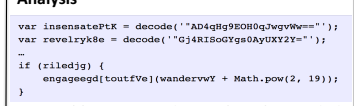


- "GetAsyncKeyState":Record key strokes.
- Attacker can get the password when user is typing.

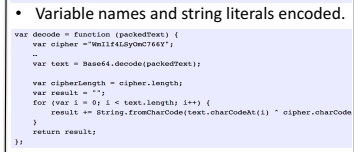
Polymorphic JavaScript Trojan

- Spread as email attachments
- In different emails, the cipher, string literals and variable names are different which makes itself less detectable.
- Meant to be run from disk, which gives it permissions to attack system globally.

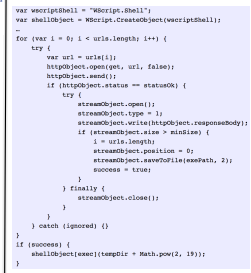
Analysis



- Variable names and string literals encoded.



- "decode" function defined.



- EXE file is malicious & will attack user system secretly.

CONCLUSION

- Compared to the old Trojan viruses, the new Trojan viruses are more armored, undetectable and sophisticated.
- Also, the new Trojan viruses can change the permission of the application and execute as the root to cause more damage than old Trojan viruses.
- Finally, the new Trojan virus can spy on the user's computer systems, and record sensitive data, such as user name, password, and email contents, to break the confidentiality of sensitive data.

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