So Long, and Thanks for All the Fish

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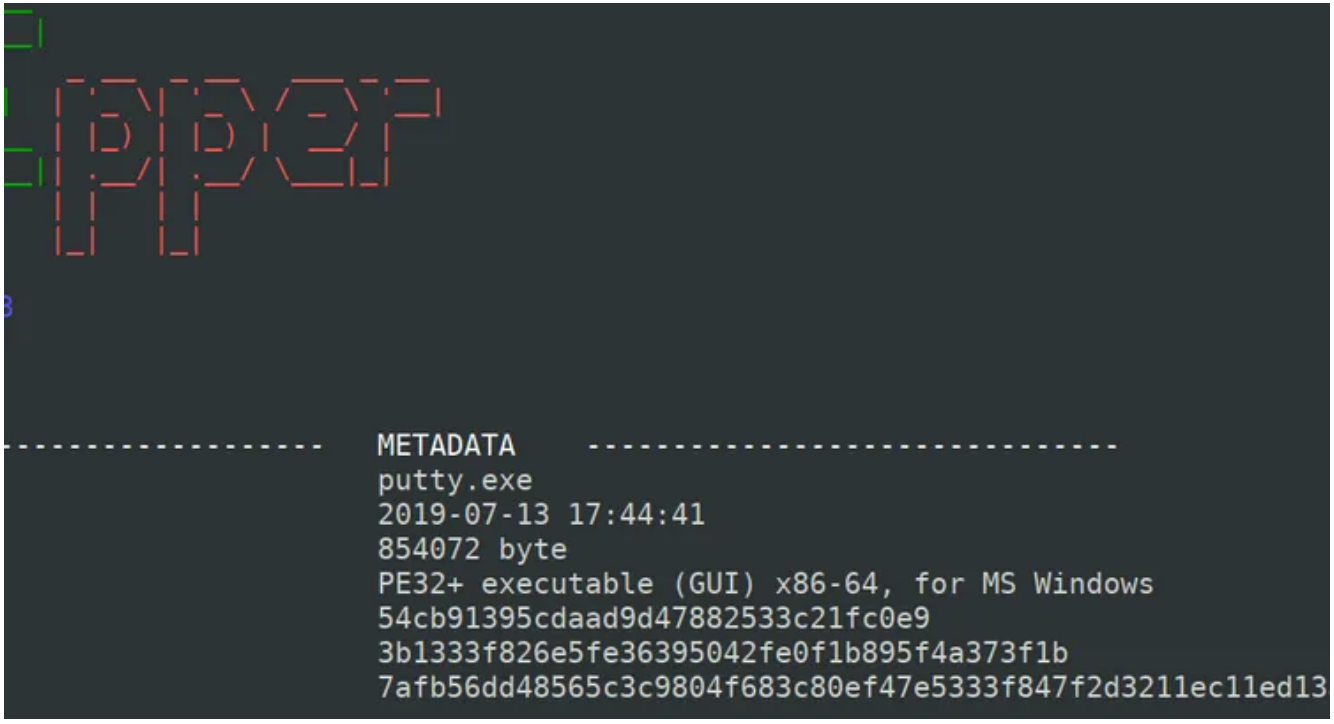

PEpper: a python script to perform malware static analysis on Portable Executable format

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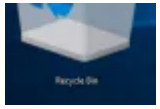

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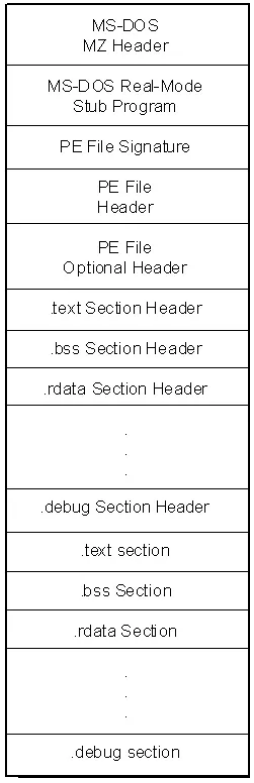
Written by Andrea Fortuna • on September 25, 2019 • in Cybersecurity, Malware Analysis

A useful tool: fast and easy to use.

What is Portable Executable

The **P**ortable **E**xecutable format is the standard file format for executables, object code and DLLs used in 32- and 64-bit versions of Windows operating systems.

The PE file format is organized as a linear stream of data.
It begins with an MS-DOS header, a real-mode program stub, and a PE file signature.
Following is a PE file header and optional header. Beyond that, all the section headers appear, followed by all of the section bodies.
Closing out the file are a few other regions of miscellaneous information, including relocation information, symbol table information, line number information, and string table data.



PEpper

PEpper is a python script, developed to perform *malware static analysis* on **P**ortable **E**xecutable.

Static analysis checks for malware without inspecting the actual code or instructions. It applies various techniques and tools to swiftly decide whether the file is malicious or not.
The indicators collected using static analysis may comprise the file name, file type, file size, and MD5 checksums or hashes recognized by antivirus detection tools.
PEpper is able to extract this set of information:

- **Suspicious entropy** ratio
- **Suspicious name** ratio
- Suspicious **code size**
- Suspicious **debugging time-stamp**
- Number of **export**
- Number of **anti-debugging** calls
- Number of **virtual-machine detection** calls
- Number of **suspicious API** calls
- Number of **suspicious strings**
- Number of **YARA** rules matches
- Number of **URL** found
- Number of **IP** found
- *Cookie on the stack* (**GS**) support
- *Control Flow Guard* (**CFG**) support
- *Data Execution Prevention* (**DEP**) support
- *Address Space Layout Randomization* (**ASLR**) support
- *Structured Exception Handling* (**SEH**) support

exploited by surveillance companies for espionage operation

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- *Thread Local Storage* (**TLS**) support
- Presence of **manifest**
- Presence of **version**
- Presence of **digital certificate**
- **Packer** detection
- **VirusTotal** database detection
- **Import hash**

The installation is fast and simple: just clone the git repository, resolve the dependencies and install the tool using PIP:

```
$ git clone https://github.com/Th3Hurrican3/PEpper/
$ cd PEpper
$ pip3 install -r requirements.txt
$ python3 pepper.py ./malware_dir
```

References and downloads

- https://github.com/Th3Hurrican3/PEpper

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