Reversing Malware Functionalities

Downloader

- Downloader downloads additional malware and executes it

- Downloader uses ***UrlDownloadToFile()*** api to download the file from an URL and saves it onto the disk.

- It then calls ***ShellExecute()*** or ***WinExec() or CreateProcess()*** to execute the downloaded file.

Lab 7 - The case of Joon malware

Analyze the sample ***blob.exe*** and answer the following questions:

- Does the malware have references to the downloader API calls?
- What is the API call used by the malware to download the file?
- What is the name of the domain from where malware downloads malicious component?
- What is the name of the executable that it downloads from the domain?
- What is the full path on the disk where downloaded malware is dropped?
- How does it execute the downloaded file?
- Based on your analysis, what is the functionality of the malware?

Dropper

- Dropper comes with additional malware embedded in it and it then drops that piece of malware and executes it.
- Dropper normally embeds executable in the resource section, it can extract the embedded executable using below API's

  - FindResource
  - LoadResource
  - SizeOfResource
  - LockResource

Demo 8 - Reversing the JOON Malware

Keyloggers

Designed to log keystrokes

Two most common methods:

- Install hook for the keyboard events - In this case, the malware can install a filter function for the keyboard event using ***SetWindowsHookEx()*** and malware can also monitor the mouse event.

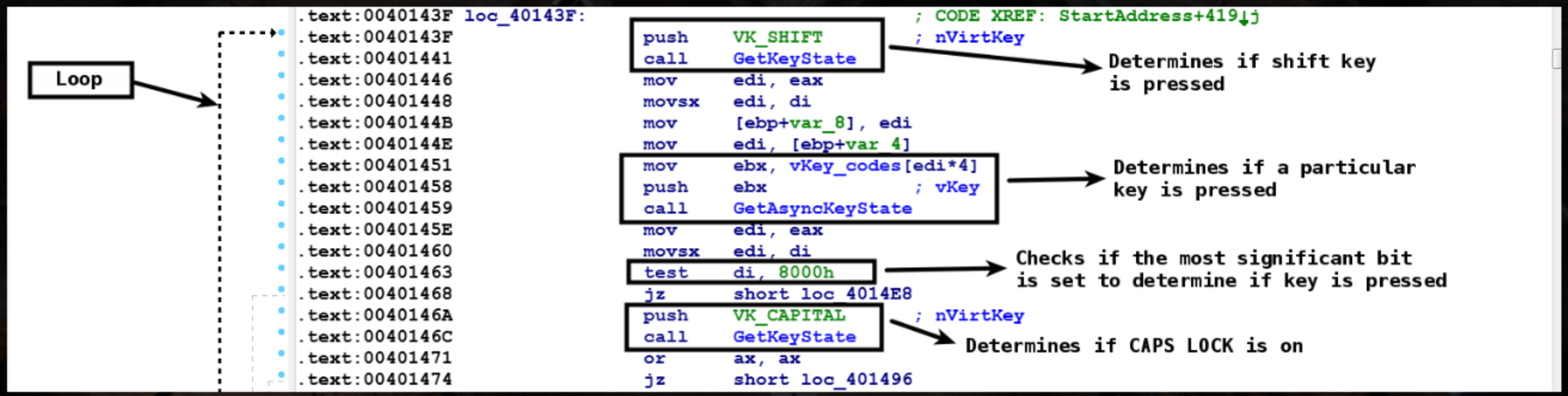
- Polls keyboard state with ***GetAsyncKeyState()*** - In this method, the malware can check if the key is pressed by calling the ***GetAsyncKeyState()*** function, the malware will run this function in a loop and periodically monitors for all possible keystrokes.

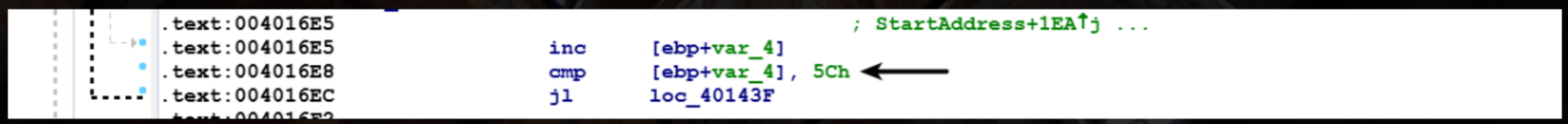
Keylogger using SetWindowsHookEx

```
.text:00401516          push    0                   ; lpModuleName
.text:00401518          call    GetModuleHandleA
.text:0040151D          push    0                   ; dwThreadId
.text:0040151F          push    eax                 ; hmod
.text:00401520          push    offset hook_proc    ; lpfn
.text:00401525          push    WH_KEYBOARD_LL      ; idHook
.text:00401527          call    SetWindowsHookExA
.text:0040152C          mov     ds:hhk, eax
.text:00401531          test    eax, eax
.text:00401533          jnz     short loc_40156A
```

→ Montiors the Keyboard events

Keylogger using GetAsyncKeyState()





Demo 9 - Analysis of Keylogger

HTTP backdoor

Takes command via http or https

Use of http or https bypasses the firewall rules and easy to blend in with normal user traffic

Steps:

- Creates http connection using I***nternetOpen()*** or ***InternetConnect()***
- Build http request using ***HttpOpenRequest()***, ***HttpAddRequestHeader()***
- Send http request using ***HttpSendRequest()***
- Read response using ***InternetReadFile()***

Demo 10 - Reverse Engineering APT1 Malware