IcedID Banking Trojan Shares Code with Pony 2.0 Trojan

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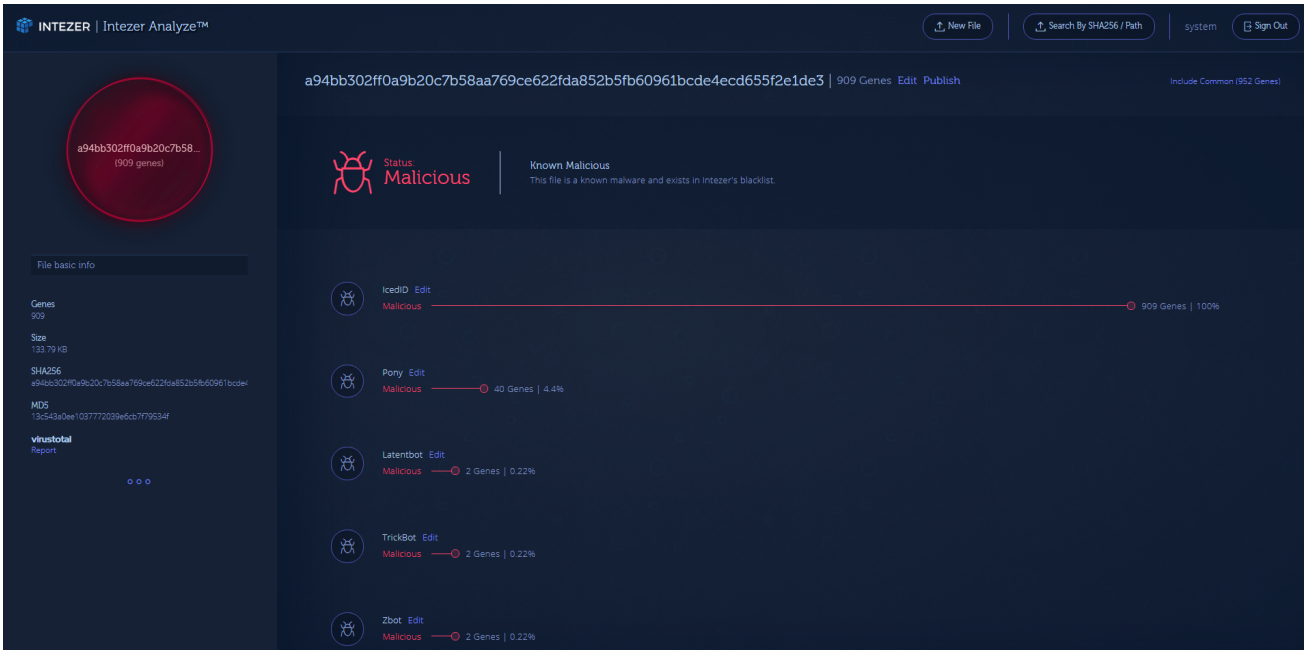
IBM X-Force recently released an excellent report on a new banking trojan named IcedID that is being distributed using computers already infected with Emotet. We took the MD5 of one of the droppers from the IBM report and extracted the payload. After extracting the payload from one of the droppers listed in the report, using Intezer Analyze™, we have found code reuse from another malware named Pony, written about in a report by Proofpoint.

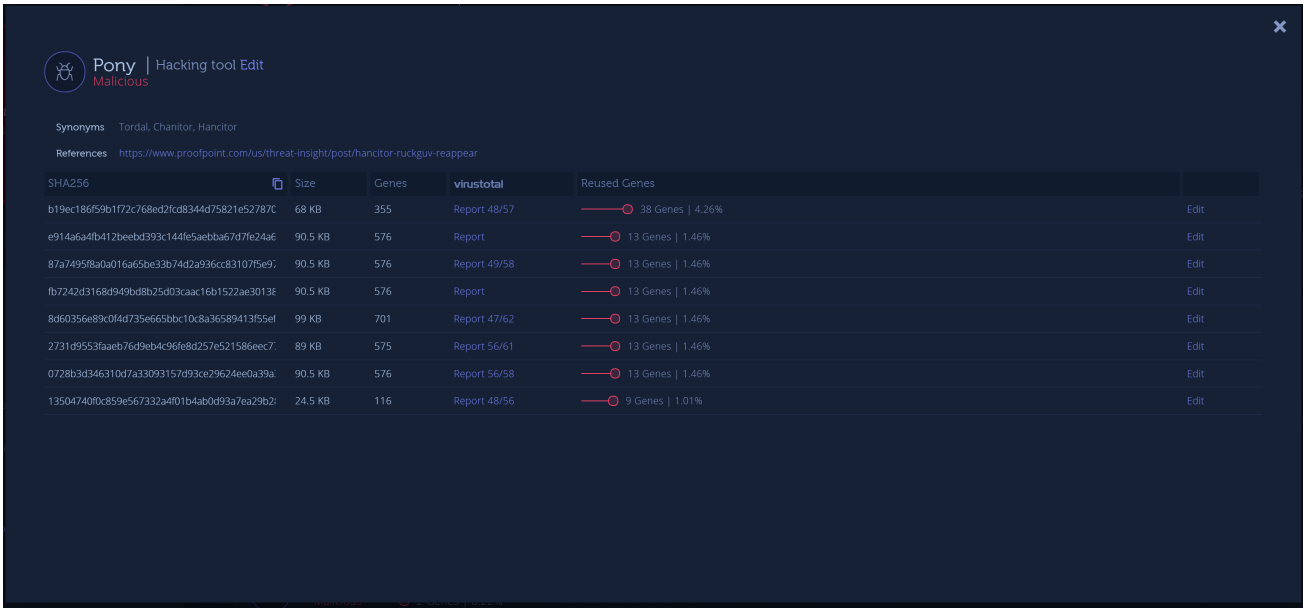
> #IcedID banking trojan payload – code overlap with #pony more details soonhttps://t.co/baS1fciJHX@malwrhunterteam @campuscodi
>
> — Jay Rosenberg (@jaytezer) November 13, 2017

Pony is a trojan that was being distributed via the Hancitor downloader, distributed through Microsoft Word documents. The version of Pony used in the reports is believed to be the same threat actor as Vawtrak. It was also sold via underground forums until the source code was leaked online.



(Intezer Analyze ™ report)

Using the dive-in feature with the related Pony samples, we can see the following:



(Dive-in feature of Intezer Analyze™)

With this information alone, it will be hard to attribute this sample to a certain threat actor due to the public availability of the source code of Pony.

Let’s take a look at some of the matching functions.

As we can see here, the function in these two samples is a 1:1 match. The function above is called GrabOutlook in the Pony source code and is responsible for stealing passwords from Outlook. (You may notice a difference because the strings appear decrypted in the sample on the left as it looks like Proofpoint dumped the sample with the strings already decrypted before uploading to VirusTotal.)

```
GrabOutlook proc stream
    LOCAL   hdr_ofs: DWORD

    invoke  StreamWriteModuleHeader, stream, MODULE_OUTLOOK, 0
    mov hdr_ofs, eax

    invoke  DecipherList, offset COutlookRegValues
    invoke  DecipherList, offset COutlookBinaryValues
    invoke  DecipherList, offset COutlookPassValues
    invoke  DecipherList, offset COutlookPassValues2

    invoke  OutlookScanPS, stream

    ; Express 1: HKEY_CURRENT_USER\Software\Microsoft\Internet Account Manager\Accounts\00000001
    invoke  OutlookScanPasswords, stream, dwCurrentUserKey, offset CExpressBasePath1

    ; Express 2: HKEY_CURRENT_USER\Identities\{GUID}\Software\Microsoft\Internet Account Manager\Accounts\00000001
    invoke  PonyStrCat, offset szSlash, offset CExpressBasePath1
    push    eax
    invoke  OutlookScanProfiles, stream, dwCurrentUserKey, offset CExpressBasePath2, eax
    call    MemFree

    ; Outlook 2000: custom reg. path
    invoke  RegReadValueStr, HKEY_LOCAL_MACHINE, offset COutlookExtraPath, offset COutlookValue, NULL
    .IF eax
        invoke  PonyStrCatFreeArg1, eax, offset COutlookAccounts
        push    eax
        invoke  OutlookScanPasswords, stream, dwCurrentUserKey, eax
        call    MemFree
    .ENDIF

    ; Outlook 2000: HKEY_CURRENT_USER\Software\Microsoft\Office\Outlook\OMI Account Manager\Accounts
    invoke  OutlookScanPasswords, stream, dwCurrentUserKey, offset COutlook2000BasePath

    ; Outlook 2002: HKEY_CURRENT_USER\Software\Microsoft\Windows NT\CurrentVersion\Windows Messaging Subsystem\Profiles\Microsoft Outlook Internet
    Settings
    invoke  OutlookScanProfiles, stream, dwCurrentUserKey, offset COutlook2002BasePath, NULL

    ; Outlook 2003+: HKEY_CURRENT_USER\Software\Microsoft\Windows NT\CurrentVersion\Windows Messaging Subsystem\Profiles\Outlook
    invoke  OutlookScanProfiles, stream, dwCurrentUserKey, offset COutlook2003BasePath, NULL

    invoke  StreamUpdateModuleLen, stream, hdr_ofs
    ret
GrabOutlook endp

ENDIF
```

(GrabOutlook function from Pony 2.0 source code)

More specifically, we can tell the threat actor used code from version 2.0 of Pony because in the Pony 1.9 source code, we do not see calls to DecipherList which is responsible for decrypting the strings.

```
GrabOutlook proc stream
    LOCAL   hdr_ofs: DWORD

    invoke  StreamWriteModuleHeader, stream, MODULE_OUTLOOK, 0
    mov hdr_ofs, eax

    invoke  OutlookScanPS, stream

    ; Express 1: HKEY_CURRENT_USER\Software\Microsoft\Internet Account Manager\Accounts\00000001
    invoke  OutlookScanPasswords, stream, dwCurrentUserKey, offset CExpressBasePath1

    ; Express 2: HKEY_CURRENT_USER\Identities\{GUID}\Software\Microsoft\Internet Account Manager\Accounts\00000001
    invoke  PonyStrCat, offset szSlash, offset CExpressBasePath1
    push    eax
    invoke  OutlookScanProfiles, stream, dwCurrentUserKey, offset CExpressBasePath2, eax
    call    MemFree

    ; Outlook 2000: custom reg. path
    invoke  RegReadValueStr, HKEY_LOCAL_MACHINE, offset COutlookExtraPath, offset COutlookValue, NULL
    .IF eax
        invoke  PonyStrCatFreeArg1, eax, offset COutlookAccounts
        push    eax
        invoke  OutlookScanPasswords, stream, dwCurrentUserKey, eax
        call    MemFree
    .ENDIF

    ; Outlook 2000: HKEY_CURRENT_USER\Software\Microsoft\Office\Outlook\OMI Account Manager\Accounts
    invoke  OutlookScanPasswords, stream, dwCurrentUserKey, offset COutlook2000BasePath

    ; Outlook 2002: HKEY_CURRENT_USER\Software\Microsoft\Windows NT\CurrentVersion\Windows Messaging Subsystem\Profiles\Microsoft Outlook Internet
    Settings
    invoke  OutlookScanProfiles, stream, dwCurrentUserKey, offset COutlook2002BasePath, NULL

    ; Outlook 2003+: HKEY_CURRENT_USER\Software\Microsoft\Windows NT\CurrentVersion\Windows Messaging Subsystem\Profiles\Outlook
    invoke  OutlookScanProfiles, stream, dwCurrentUserKey, offset COutlook2003BasePath, NULL

    invoke  StreamUpdateModuleLen, stream, hdr_ofs
    ret
GrabOutlook endp

ENDIF
```

(GrabOutlook function from Pony 1.9 source code)

Other shared functions from Pony:

- OutlookExport
- OutlookReadPSItemValue
- OutlookScanPasswords
- OutlookScanProfiles
- PocomailScanReg
- IncrediMailScanReg
- CRC32Update
- CommonCryptUnprotectData
- MapFile
- PonyStrCat
- PonyStrCatFreeArg1
- DecipherList
- UnicodeToAnsiLen
- FileExists
- StreamUpdateModuleLen
- StreamWriteModuleHeader

There may be other functions from Pony, but we can see that the shared code is mostly related to stealing e-mail credentials.

Time and time again, we see threat actors reusing the same code. If we look at reused code, it makes it easier to detect malware. Such small code reuse makes it very difficult to get these kinds of conclusions by manually reverse engineering a file. The ability to automate the finding of code reuse makes our job as malware analysts easier.

Report Samples:

- IcedID Dropper: 29f7469f8dc88820f72a9bdcb02badc1a40aa41b3f4b7f8caaa30409b3842aea
- IcedID Payload: a6531184ea84bb5388d7c76557ff618d59f951c393a797950b2eb3e1d6307013
- Pony: b19ec186f59b1f72c768ed2fcd8344d75821e527870b71e8123db96f683f1b68

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