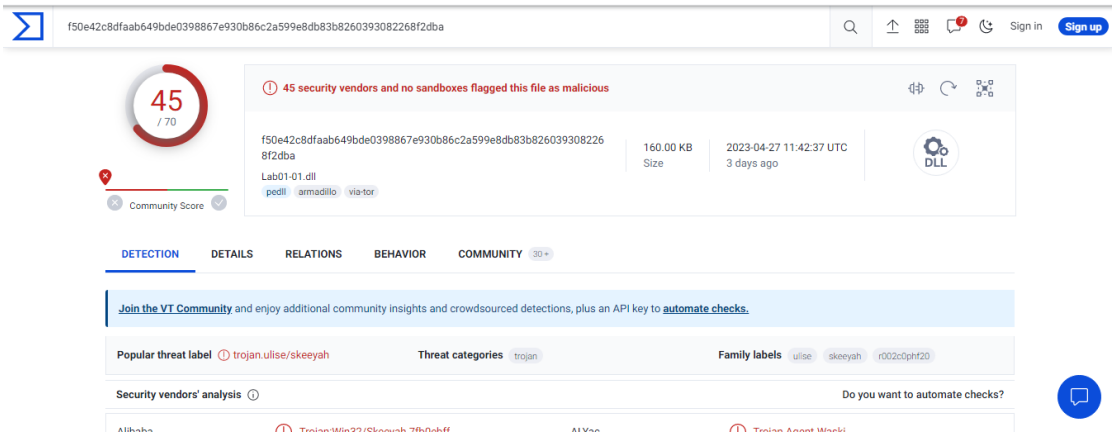
Practical Malware Analysis Chapter 1

Lab 1-1

Lap 1 : lab01-01.exe , lab01-01.dll

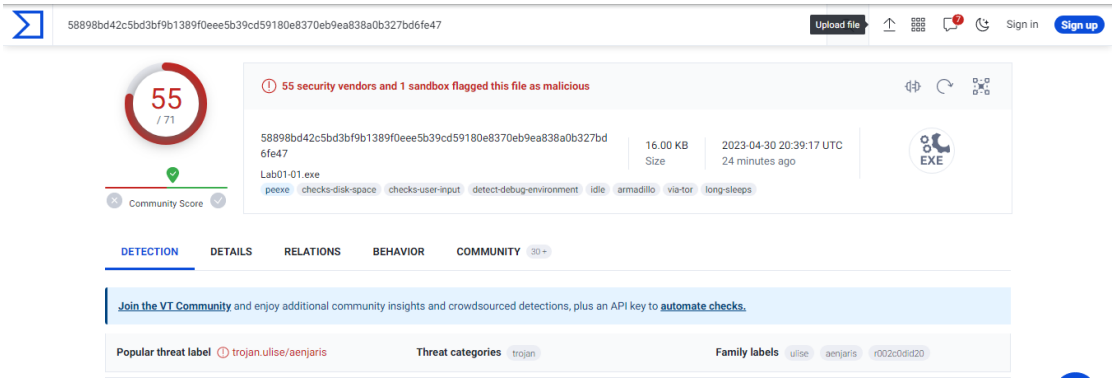
->Upload the files to http://www.VirusTotal.com/ and view the reports. Does either file match any existing antivirus signatures?

Lab01-01.dll :



Alibaba	Trojan:Win32/Skeeyah.7fb0ebff	ALYac	Trojan.Agent.Waski
Antiy-AVL	Trojan/Win32.BTSGeneric	Arcabit	Trojan.Ulise.D19D44
Avast	Win32:Malware-gen	AVG	Win32:Malware-gen
BitDefender	Gen:Variant.Ulise.105796	BitDefenderTheta	Gen:NN.ZedlaF.36164.kq4@aGkQVtp
ClamAV	Win.Malware.Agent-6369668-0	CrowdStrike Falcon	Win/malicious_confidence_100% (W)
Cylance	Unsafe	Cynet	Malicious (score: 100)
Cyren	W32/Skeeyah.AK.gen!Eldorado	DeepInstinct	MALICIOUS
Elastic	Malicious (high Confidence)	Emsisoft	Gen:Variant.Ulise.105796 (B)
eScan	Gen:Variant.Ulise.105796	ESET-NOD32	A Variant Of Generik.TGEWDD

Lab01-01.exe :



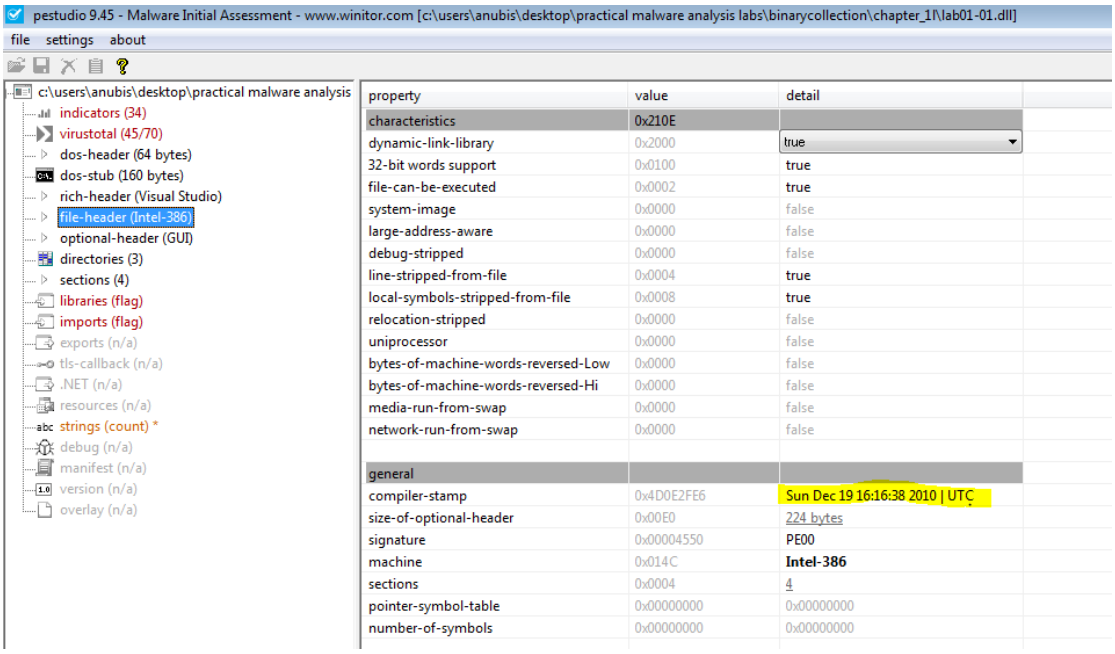
AhnLab-V3	Trojan/Win32.Agent.C957604	Alibaba	Trojan:Win32/Aenjaris.2be749b4
ALYac	Trojan.Agent.16384SS	Antiy-AVL	Trojan/Win32.TSGeneric
Arcabit	Trojan.Ulise.D1BC1E	Avast	Win32:Malware-gen
AVG	Win32:Malware-gen	Avira (no cloud)	HEUR/AGEN.1344261
BitDefender	Gen:Variant.Ulise.113694	ClamAV	Win.Malware.Agent-6342616-0
CrowdStrike Falcon	Win/malicious_confidence_100% (W)	Cybereason	Malicious.82141a
Cylance	Unsafe	Cynet	Malicious (score: 100)
Cyren	W32/Ulise.CK.gen!Eldorado	DeepInstinct	MALICIOUS
Elastic	Malicious (high Confidence)	Emsisoft	Gen:Variant.Ulise.113694 (B)

Similar antivirus programs are :

AVG – Avast – Bitdefender are and many of them.

-> When were these files compiled ?

Lab01-01.dll : Sun Dec 19 / 16:16:38 / 2010



Lab01-01.exe : Sun Dec 19 / 16:16:19 / 2010

pestudio 9.45 - Malware Initial Assessment - www.winitor.com [c:\users\anubis\desktop\practical malware analysis labs\binarycollection\chapter_1l\lab01-01.exe]

file settings about

c:\users\anubis\desktop\practical malware analy
- indicators (27)
- virustotal (error)
- dos-header (64 bytes)
- dos-stub (168 bytes)
- rich-header (Visual Studio)
- file-header (Intel-386)
- optional-header (console)
- directories (2)
- sections (3)
- libraries (2)
- imports (flag)
- exports (n/a)
- tls-callback (n/a)
- .NET (n/a)
- resources (n/a)
- strings (151) *
- debug (n/a)
- manifest (n/a)
- version (n/a)
- overlay (n/a)

property	value	detail
characteristics	0x010F	
dynamic-link-library	0x0000	false
32-bit words support	0x0100	true
file-can-be-executed	0x0002	true
system-image	0x0000	false
large-address-aware	0x0000	false
debug-stripped	0x0000	false
line-stripped-from-file	0x0004	true
local-symbols-stripped-from-file	0x0008	true
relocation-stripped	0x0001	true
uniprocessor	0x0000	false
bytes-of-machine-words-reversed-Low	0x0000	false
bytes-of-machine-words-reversed-Hi	0x0000	false
media-run-from-swap	0x0000	false
network-run-from-swap	0x0000	false
general		
compiler-stamp	0x4D0E2FD3	Sun Dec 19 16:16:19 2010 | UTC
size-of-optional-header	0x00E0	224 bytes
signature	0x00004550	PE00
machine	0x014C	Intel-386
sections	0x0003	3
pointer-symbol-table	0x00000000	0x00000000
number-of-symbols	0x00000000	0x00000000

-> Do any imports indicate what this malware does? If so, what are the imports?

Lab01-01.exe : libraries → Kernel32.dll , MSvcrt.dll

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- indicators (27)
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- dos-header (64 bytes)
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- optional-header (console)
- directories (2)
- sections (3)
- libraries (2)
- imports (flag)
- exports (n/a)
- tls-callback (n/a)
- .NET (n/a)
- resources (n/a)
- strings (151) *

imports (25)	flag (4)	first-thunk-original (INT)	first-thunk (IAT)	hint	group (2)	type (1)	ordinal (0)	library (2)
IsBadReadPtr	-	0x00002144	0x00002144	437 (0x01B5)	memory	implicit	-	KERNEL3;
malloc	-	0x000021D0	0x000021D0	657 (0x0291)	memory	implicit	-	MSVCRT.
UnmapViewOfFile	x	0x00002132	0x00002132	688 (0x02B0)	file	implicit	-	KERNEL3;
MapViewOfFile	x	0x00002154	0x00002154	470 (0x01D6)	file	implicit	-	KERNEL3;
CreateFileMappingA	-	0x00002164	0x00002164	53 (0x0035)	file	implicit	-	KERNEL3;
CreateFileA	-	0x0000217A	0x0000217A	52 (0x0034)	file	implicit	-	KERNEL3;
FindClose	-	0x00002188	0x00002188	144 (0x0090)	file	implicit	-	KERNEL3;
FindNextFileA	x	0x00002194	0x00002194	157 (0x009D)	file	implicit	-	KERNEL3;
FindFirstFileA	x	0x000021A4	0x000021A4	148 (0x0094)	file	implicit	-	KERNEL3;
CopyFileA	-	0x000021B6	0x000021B6	40 (0x0028)	file	implicit	-	KERNEL3;
CloseHandle	-	0x00002124	0x00002124	27 (0x001B)	-	implicit	-	KERNEL3;
exit	-	0x000021DA	0x000021DA	585 (0x0249)	-	implicit	-	MSVCRT.
_exit	-	0x000021EE	0x000021EE	211 (0x00D3)	-	implicit	-	MSVCRT.
_XcptFilter	-	0x000021F6	0x000021F6	72 (0x0048)	-	implicit	-	MSVCRT.
__p___initenv	-	0x00002204	0x00002204	100 (0x0064)	-	implicit	-	MSVCRT.

Lab01-01.dll : libraries → KERNEL.dll , MSVCRT.dll , WS2 32.dll

c:\users\anubis\desktop\practical malware analysis
- indicators (34)
- virustotal (error)
- dos-header (64 bytes)
- dos-stub (160 bytes)
- rich-header (Visual Studio)
- file-header (Intel-386)
- optional-header (GUI)
- directories (3)
- sections (4)
- libraries (flag)
- imports (flag)
- exports (n/a)
- tls-callback (n/a)
- .NET (n/a)
- resources (n/a)
- strings (count) *
- debug (n/a)
- manifest (n/a)
- version (n/a)
- overlay (n/a)

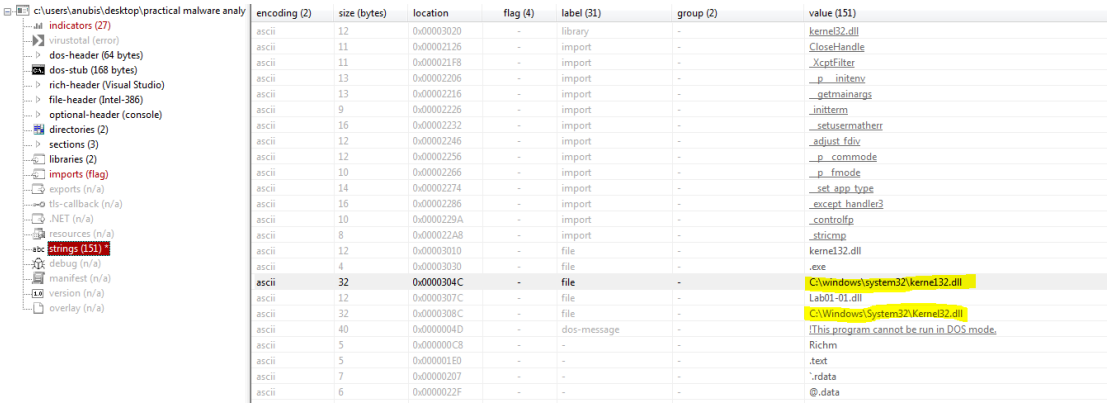
imports (20)	flag (11)	first-thunk-original (INT)	first-thunk (IAT)	hint	group (4)	type (1)	ordinal (10)	library (3)
CreateMutexA	-	0x00002130	0x00002130	63 (0x003F)	synchronization	implicit	-	KERNEL3;
OpenMutexA	-	0x00002140	0x00002140	493 (0x01ED)	synchronization	implicit	-	KERNEL3;
23 (socket)	x	0x80000017	0x80000017	0 (0x0000)	network	implicit	x	WS2_32.d
115 (WSAStartup)	x	0x80000073	0x80000073	0 (0x0000)	network	implicit	x	WS2_32.d
11 (inet_addr)	x	0x8000000B	0x8000000B	0 (0x0000)	network	implicit	x	WS2_32.d
4 (connect)	x	0x80000004	0x80000004	0 (0x0000)	network	implicit	x	WS2_32.d
19 (send)	x	0x80000013	0x80000013	0 (0x0000)	network	implicit	x	WS2_32.d
22 (shutdown)	x	0x80000016	0x80000016	0 (0x0000)	network	implicit	x	WS2_32.d
16 (recv)	x	0x80000010	0x80000010	0 (0x0000)	network	implicit	x	WS2_32.d
3 (closesocket)	x	0x80000003	0x80000003	0 (0x0000)	network	implicit	x	WS2_32.d
116 (WSACleanup)	x	0x80000074	0x80000074	0 (0x0000)	network	implicit	x	WS2_32.d
9 (htons)	x	0x80000009	0x80000009	0 (0x0000)	network	implicit	x	WS2_32.d
malloc	-	0x00002192	0x00002192	657 (0x0291)	memory	implicit	-	MSVCRT.
Sleep	-	0x00002116	0x00002116	662 (0x0296)	execution	implicit	-	KERNEL3;
CreateProcessA	x	0x000021E	0x000021E	68 (0x0044)	execution	implicit	-	KERNEL3;
CloseHandle	-	0x00002108	0x00002108	27 (0x001B)	-	implicit	-	KERNEL3;
_adjust_fdiv	-	0x000219C	0x000219C	157 (0x009D)	-	implicit	-	MSVCRT.
_initterm	-	0x00002186	0x00002186	271 (0x010F)	-	implicit	-	MSVCRT.
free	-	0x000217E	0x000217E	606 (0x025E)	-	implicit	-	MSVCRT.
strncmp	-	0x00002168	0x00002168	704 (0x02C0)	-	implicit	-	MSVCRT.

->Are there any other files or host-based indicators that you could look for on infected system?

Lab01-01.dll : not found

Lab01-01.exe : →C:\windows\system32\kerne132.dll

→C:\Windows\System\Kernel32.dll



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- indicators (27)
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- dos-header (64 bytes)
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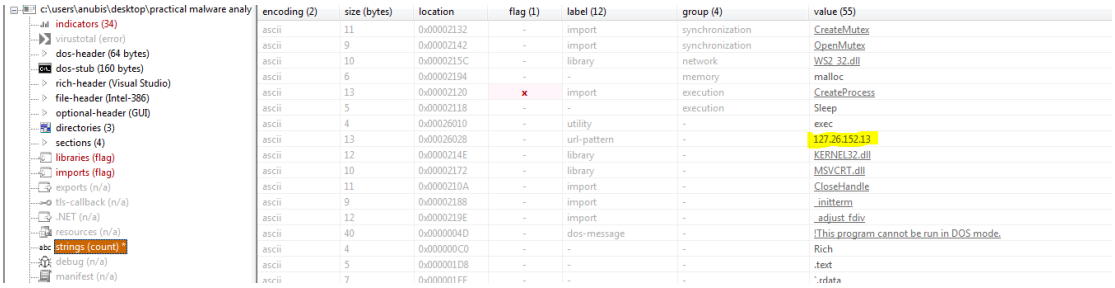
- tls-callback (n/a)
- .NET (n/a)
- resources (n/a)
- strings (151) *
- debug (n/a)
- manifest (n/a)
- version (n/a)
- overlay (n/a)

encoding (2)	size (bytes)	location	flag (4)	label (31)	group (2)	value (151)
ascii	12	0x00003020	-	library	-	kernel32.dll
ascii	11	0x00002126	-	import	-	CloseHandle
ascii	11	0x000021F8	-	import	-	_XcptFilter
ascii	13	0x00002206	-	import	-	__p___initenv
ascii	13	0x00002216	-	import	-	__getmainargs
ascii	9	0x00002226	-	import	-	_initterm
ascii	16	0x00002232	-	import	-	__setusermatherr
ascii	12	0x00002246	-	import	-	_adjust_fdiv
ascii	12	0x00002256	-	import	-	__p__commode
ascii	10	0x00002266	-	import	-	__p__fmode
ascii	14	0x00002274	-	import	-	__set_app_type
ascii	16	0x00002286	-	import	-	_except_handler3
ascii	10	0x0000229A	-	import	-	_controlfp
ascii	8	0x000022A8	-	import	-	_stricmp
ascii	12	0x00003010	-	file	-	kerne132.dll
ascii	4	0x00003030	-	file	-	.exe
ascii	32	0x0000304C	-	file	-	C:\windows\system32\kerne132.dll
ascii	12	0x0000307C	-	file	-	Lab01-01.dll
ascii	32	0x0000308C	-	file	-	C:\Windows\System32\Kernel32.dll
ascii	40	0x0000004D	-	dos-message	-	!This program cannot be run in DOS mode.
ascii	5	0x000000C8	-	-	-	Richm
ascii	5	0x000001E0	-	-	-	.text
ascii	7	0x00000207	-	-	-	`.rdata
ascii	6	0x0000022F	-	-	-	@.data

->What network-based indicators could be used to find this malware on infected machines?

lab01-01.exe : not found.

Lab01-01.dll : 127.26.152.13



c:\users\anubis\desktop\practical malware analy
- indicators (34)
- virustotal (error)
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- rich-header (Visual Studio)
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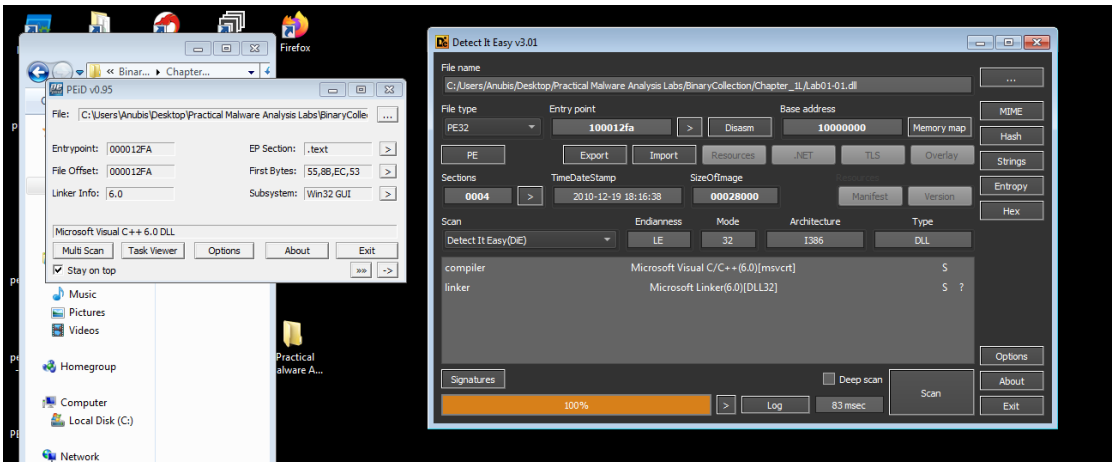
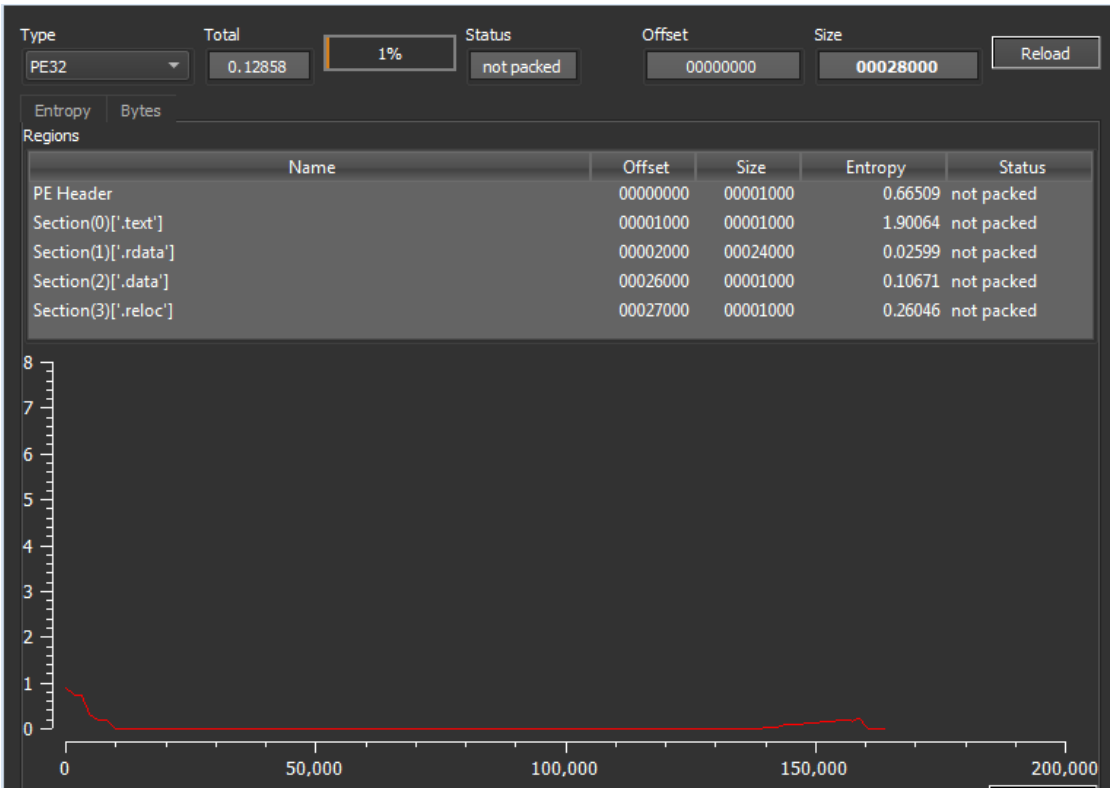
- optional-header (GUI)
- directories (3)
- sections (4)
- libraries (flag)
- imports (flag)
- exports (n/a)
- tls-callback (n/a)
- .NET (n/a)
- resources (n/a)
- strings (count) *
- debug (n/a)
- manifest (n/a)

encoding (2)	size (bytes)	location	flag (1)	label (12)	group (4)	value (55)
ascii	11	0x00002132	-	import	synchronization	CreateMutex
ascii	9	0x00002142	-	import	synchronization	OpenMutex
ascii	10	0x0000215C	-	library	network	WS2_32.dll
ascii	6	0x00002194	-	-	memory	malloc
ascii	13	0x00002120	x	import	execution	CreateProcess
ascii	5	0x00002118	-	-	execution	Sleep
ascii	4	0x00026010	-	utility	-	exec
ascii	13	0x00026028	-	url-pattern	-	127.26.152.13
ascii	12	0x0000214E	-	library	-	KERNEL32.dll
ascii	10	0x00002172	-	library	-	MSVCRT.dll
ascii	11	0x0000210A	-	import	-	CloseHandle
ascii	9	0x00002188	-	import	-	_initterm
ascii	12	0x0000219E	-	import	-	_adjust_fdiv
ascii	40	0x0000004D	-	dos-message	-	!This program cannot be run in DOS mode.
ascii	4	0x000000C0	-	-	-	Rich
ascii	5	0x000001D8	-	-	-	.text
ascii	7	0x000001FF	-	-	-	`.rdata

-> Are there any indications that either of these files is packed or obfuscated?

Lab01-01.dll : using PEID , DIE

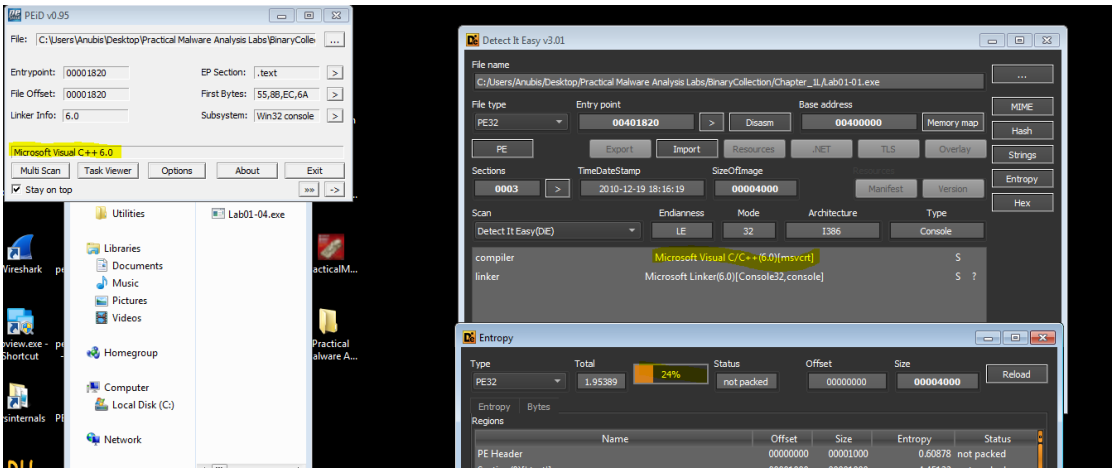




Entropy = 1%

Not Packed.

Lab01-01.exe : using PEID , DIE



Entropy = 24%

Not Packed.

->What would you guess is the purpose of these files?

Lab01-01.dll :

From my readings of functions it looks like Backdoor.

Lab01-01.exe :

The CreateFileMappingA function creates a memory-mapped file and allocates an area in system memory to store the allocated file. The file is stored in system memory and is represented as a temporary memory file, allowing for easy access and control.

The MapViewOfFile function maps a memory-mapped file created by the CreateFileMappingA function to an area in the working memory of a given application process. In other words, the function assigns part of the temporary file stored in memory to the application process that is making the binding.

When finished working with the custom region, the program should use the UnmapViewOfFile function to release the custom region and return the used resources to the system.

Lab 1-2

-> Upload the Lab01-02.exe file to http://www.VirusTotal.com/. Does it match any existing antivirus definitions?

- 54 security vendors and 1 sandbox flagged this as file malicious

Join the VT Community and enjoy additional community insights and crowdsourced detections, plus an API key to automate checks.

Popular threat label: trojan.ulise/trojanclicker | Threat categories: trojan, downloader | Family labels: ulise, trojanclicker, startpage

Security vendors' analysis — Do you want to automate checks?

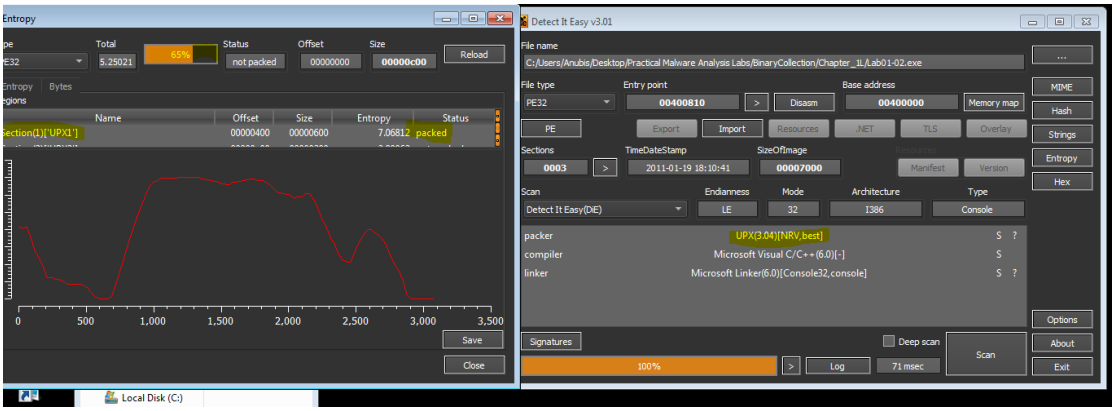
AhnLab-V3	Trojan/Win32.StartPage.C26214	Alibaba	TrojanClicker:Win32/Generic.1baf980f
ALYac	Trojan.Startpage.3072	Antiy-AVL	Trojan/Win32.SGeneric
Arcabit	Trojan.Ser.Ulise.216	Avast	Win32:Malware-gen
AVG	Win32:Malware-gen	Avira (no cloud)	TR/Downloader.Gen
Baidu	Win32.Trojan-Clicker.Agent.ad	BitDefender	Gen:Variant.Ser.Ulise.216
BitDefenderTheta	Gen:NN.ZexaF.36164.amGfaWi867f	ClamAV	Win.Malware.Agent-6350563-0
CrowdStrike Falcon	Win/malicious_confidence_100% (W)	Cylance	Unsafe
Cynet	Malicious (score: 100)	Cyren	W32/Agent.DJC.gen!Eldorado
DeepInstinct	MALICIOUS	DrWeb	Trojan.Click3.12740

-> Are there any indications that this file is packed or obfuscated? If so, what are these indicators? If the file is packed, unpack it if possible

Using PEID , DIE.

PEID : not detected

DIE :



Type of packed UPX

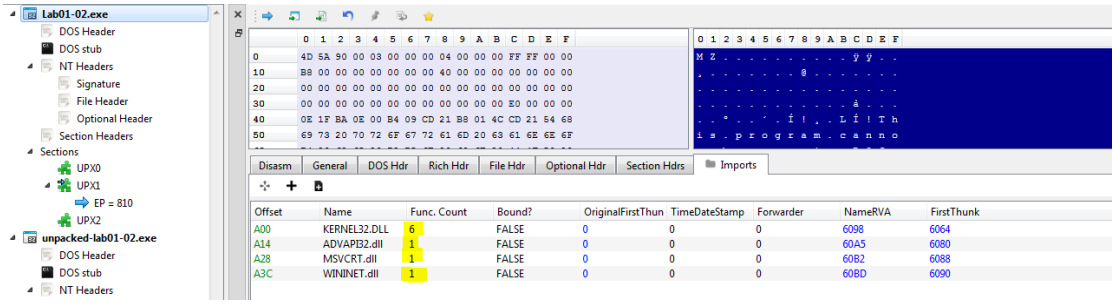
```
C:\Users\Anubis\Desktop\Practical Malware Analysis Labs\BinaryCollection\Chapter_1L>upx -d unpacked-lab01-02.exe
                       Ultimate Packer for eXecutables
                          Copyright (C) 1996 - 2020
UPX 3.96w       Markus Oberhumer, Laszlo Molnar & John Reiser    Jan 23rd 2020

        File size         Ratio      Format      Name
   --------------------   ------   -----------   -----------
     16384 <-      3072   18.75%    win32/pe     unpacked-lab01-02.exe

Unpacked 1 file.
```

We will notice a difference in space between the compressed file lab01-02.exe and the unpacked-lab01-02 file.exe

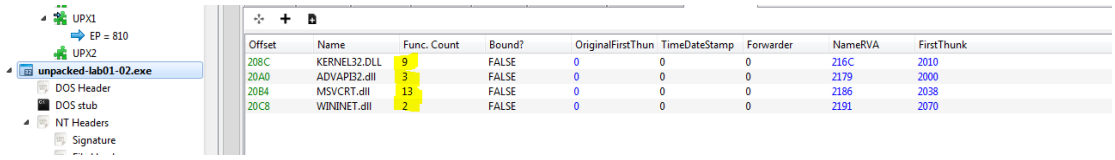
Lab01-01.dll	12/19/2010 11:16 ...	Application extens...	160 KB
Lab01-01.exe	1/8/2012 2:19 AM	Application	16 KB
Lab01-02.exe	1/19/2011 11:10 AM	Application	3 KB
Lab01-03.exe	3/26/2011 7:54 AM	Application	5 KB
Lab01-04.exe	7/5/2011 7:16 PM	Application	36 KB
unpacked-lab01-02.exe	1/19/2011 11:10 AM	Application	16 KB

We will also notice the difference in the number of imports

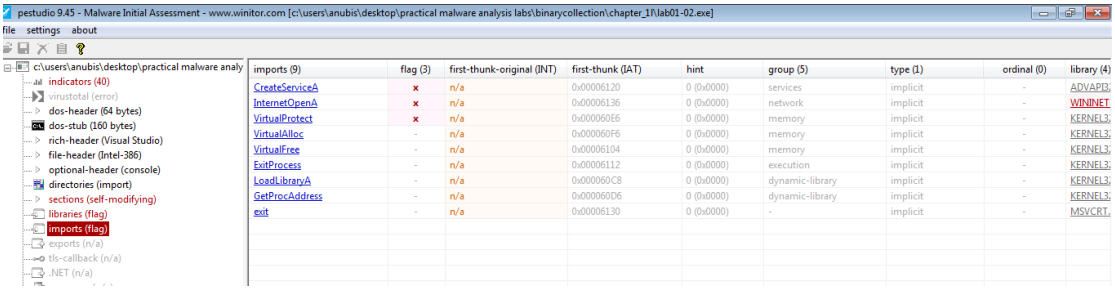
Packed :



Unpacked :



-> Do any imports hint at this program's functionality? If so, which imports are they and what do they tell you?



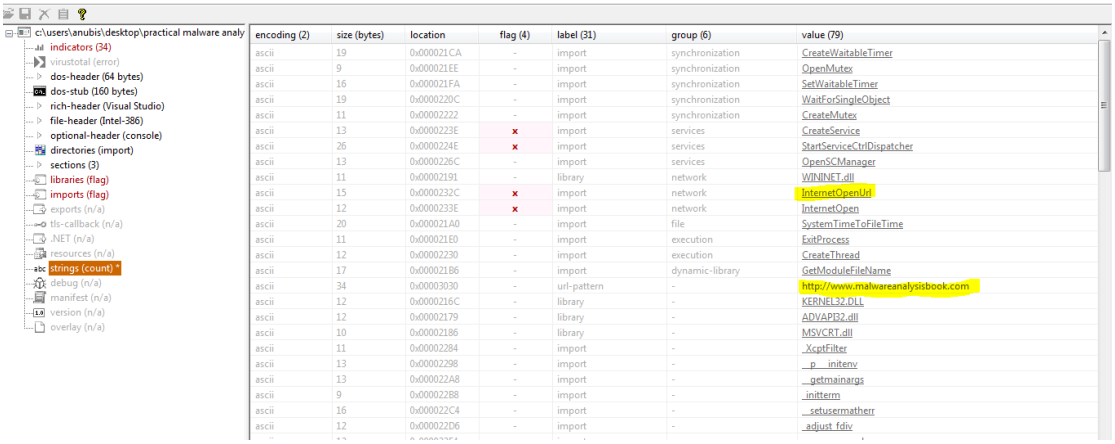
CreateServiceA – InternetOpenA – GetProcAddress – LoadLibraryA – ExitProcess – exit .

He runs the Internet and creates a service for him and loads the library and uses functions and operations in a malicious way and then closes the processes and functions and then closes the malicious file.

-> What host- or network-based indicators could be used to identify this malware on infected machines?

Host : not Detetct.

Network : http://www.malwareanalysisbook.com → is opened by function InternetOpenUrl



encoding (2)	size (bytes)	location	flag (4)	label (31)	group (6)	value (79)
ascii	19	0x000021CA	-	import	synchronization	CreateWaitableTimer
ascii	9	0x000021EE	-	import	synchronization	OpenMutex
ascii	16	0x000021FA	-	import	synchronization	SetWaitableTimer
ascii	19	0x0000220C	-	import	synchronization	WaitForSingleObject
ascii	11	0x00002222	-	import	synchronization	CreateMutex
ascii	13	0x0000223E	x	import	services	CreateService
ascii	26	0x0000224E	x	import	services	StartServiceCtrlDispatcher
ascii	13	0x0000226C	-	import	services	OpenSCManager
ascii	11	0x00002191	-	library	network	WININET.dll
ascii	15	0x0000232C	x	import	network	InternetOpenUrl
ascii	12	0x0000233E	x	import	network	InternetOpen
ascii	20	0x000021A0	-	import	file	SystemTimeToFileTime
ascii	11	0x000021E0	-	import	execution	ExitProcess
ascii	12	0x00002230	-	import	execution	CreateThread
ascii	17	0x000021B6	-	import	dynamic-library	GetModuleFileName
ascii	34	0x00003030	-	url-pattern	-	http://www.malwareanalysisbook.com
ascii	12	0x0000216C	-	library	-	KERNEL32.DLL
ascii	12	0x00002179	-	library	-	ADVAPI32.dll
ascii	10	0x00002186	-	library	-	MSVCRT.dll
ascii	11	0x00002284	-	import	-	_XcptFilter
ascii	13	0x00002298	-	import	-	__p___initenv
ascii	13	0x000022A8	-	import	-	__getmainargs
ascii	9	0x000022B8	-	import	-	_initterm
ascii	16	0x000022C4	-	import	-	__setusermatherr
ascii	12	0x000022D6	-	import	-	_adjust_fdiv

Lab 1-3

-> . Upload the Lab01-03.exe file to http://www.VirusTotal.com/. Does it match any existing antivirus definitions?

- 60 security vendors and no sandboxs flagged this file as malicious.

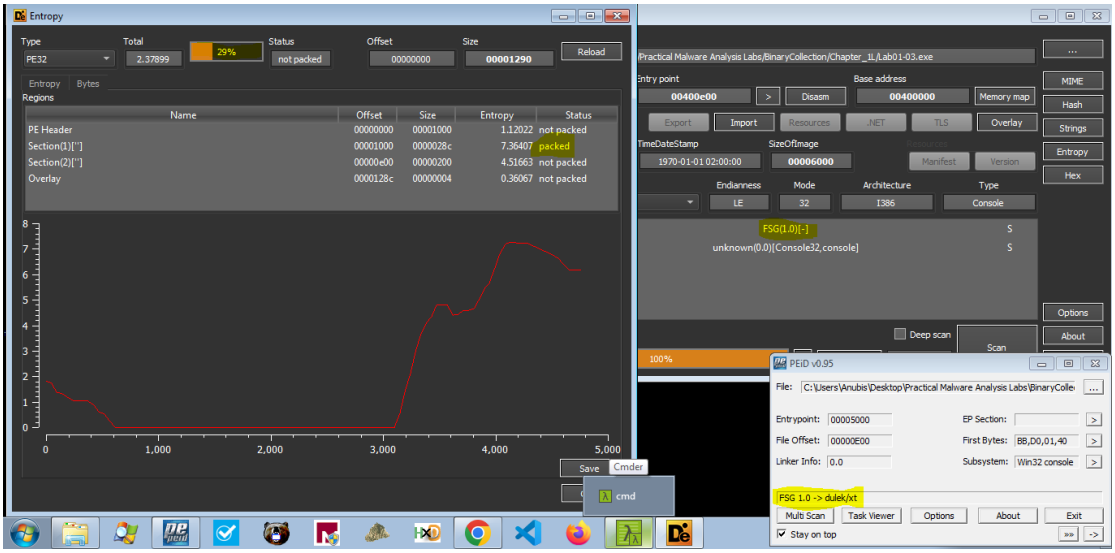
- type of malware : spyware

- rate of file 60/70

AhnLab-V3	Trojan/Win.Generic.R427327	Alibaba	TrojanClicker:Win32/Tnega.3bb840a6
ALYac	Gen:Variant.Graftor.968808	Antiy-AVL	Trojan/Win32.SGeneric
Arcabit	Trojan.Graftor.DEC868	Avast	Win32:Malware-gen
AVG	Win32:Malware-gen	Baidu	Win32.Trojan-Clicker.Agent.z
BitDefender	Gen:Variant.Graftor.968808	BitDefenderTheta	Gen:NN.ZexaF.36132.ambdaODfLcf
Bkav Pro	W32.AIDetectNet.01	ClamAV	Win.Malware.Emoneg-9937593-0
CrowdStrike Falcon	Win/malicious_confidence_100% (W)	Cylance	Unsafe
Cynet	Malicious (score: 100)	Cyren	W32/SuspPack.DH.gen!Eldorado
DeepInstinct	MALICIOUS	DrWeb	Trojan.Click2.16518
Elastic	Malicious (high Confidence)	Emsisoft	Gen:Variant.Graftor.968808 (B)
eScan	Gen:Variant.Graftor.968808	ESET-NOD32	Win32/TrojanClicker.Agent.NVN
Fortinet	W32/WebDown.E76A!tr	GData	Gen:Variant.Graftor.968808

-> Are there any indications that this file is packed or obfuscated? If so, what are these indicators? If the file is packed, unpack it if possible.

- using by PEID , DIE



- Entropy = 26 % .

- The part of file is packed .

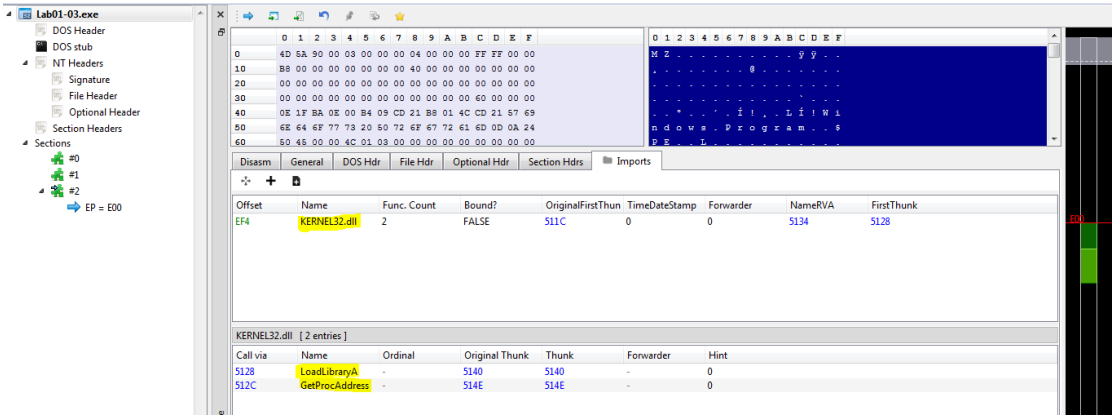
- Type of packed = FSG 1.0

- PEID , DIE is detected .

- I have not studied unpack FSG wait for chapter 8.

-> Do any imports hint at this program's functionality? If so, which imports are they and what do they tell you?

Using : PE-bear



Imports → LoadLibraryA , GetProcAdress

Libraries → KERNEL32.dll

The file is packed

Creates a process and loads a library.

I can't answer more than this because I don't have the file unpack.

-> What host- or network-based indicators could be used to identify this malware on infected machines?

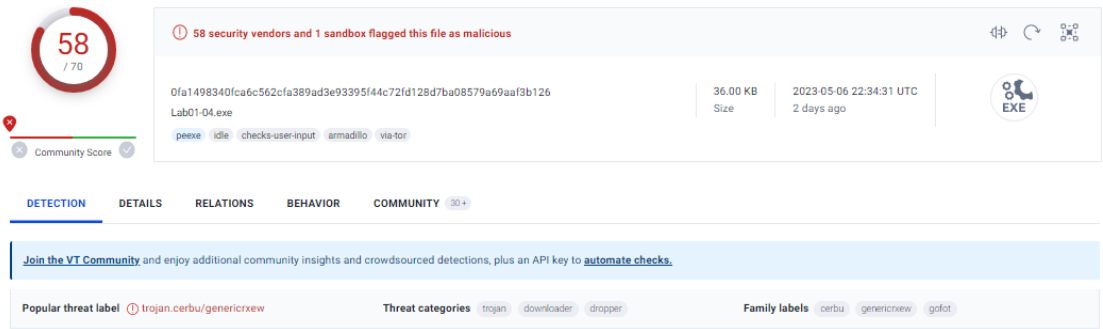
I can't find this information because I don't have the unpack file.

Lab 1-4

-> Upload the Lab01-04.exe file to http://www.VirusTotal.com/. Does it match any existing antivirus definitions?

- The rate in VirusTotal : 58 / 70

- Type of threat : Downloader , dropper

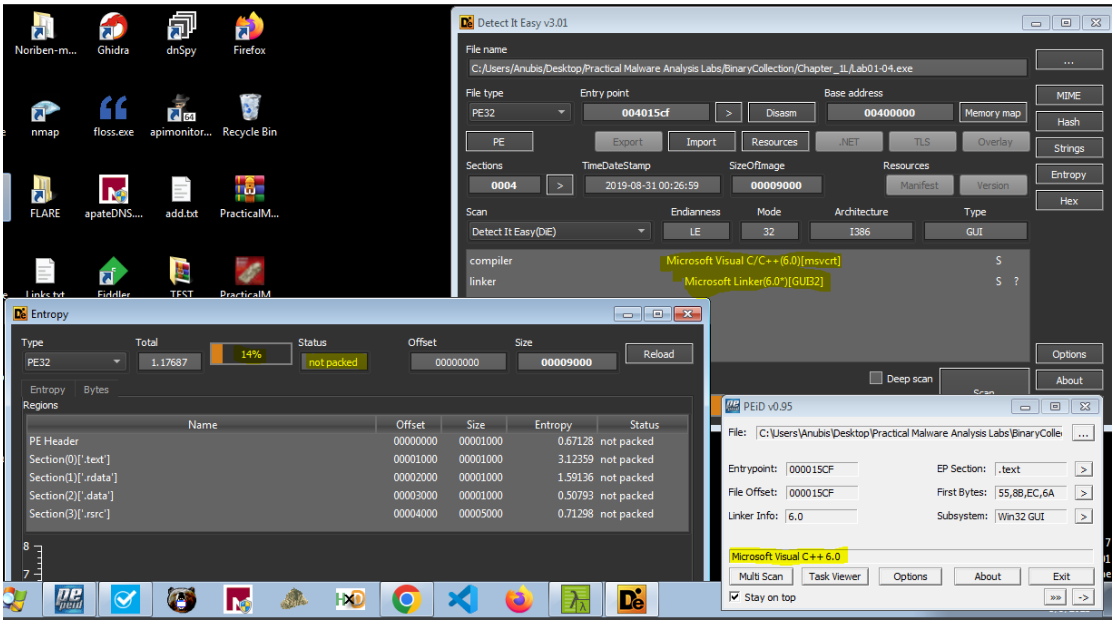


- AntiVirus detected :

Alibaba	TrojanDownloader:Win32/DownLdr.080f6...	ALYac	Gen:Variant.Cerbu.64782
Antiy-AVL	Trojan[Downloader]/Win32.AGeneric	Arcabit	Trojan.Cerbu.DFD0E
Avast	Win32:DropperX-gen [Drp]	AVG	Win32:DropperX-gen [Drp]
Avira (no cloud)	TR/Dldr.Small.romlh	BitDefender	Gen:Variant.Cerbu.64782
BitDefenderTheta	AI:Packer.6911D1B71F	Bkav Pro	W32.AIDetectMalware
ClamAV	Win.Trojan.Agent-375080	CrowdStrike Falcon	Win/malicious_confidence_100% (W)
Cybereason	Malicious.fd47ad	Cylance	Unsafe
Cynet	Malicious (score: 100)	Cyren	W32/Heuristic-217!Eldorado
DeepInstinct	MALICIOUS	DrWeb	Trojan.DownLoader5.60705
Elastic	Malicious (high Confidence)	Emsisoft	Gen:Variant.Cerbu.64782 (B)

-> Are there any indications that this file is packed or obfuscated? If so, what are these indicators? If the file is packed, unpack it if possible.

- using PEID , DIE :



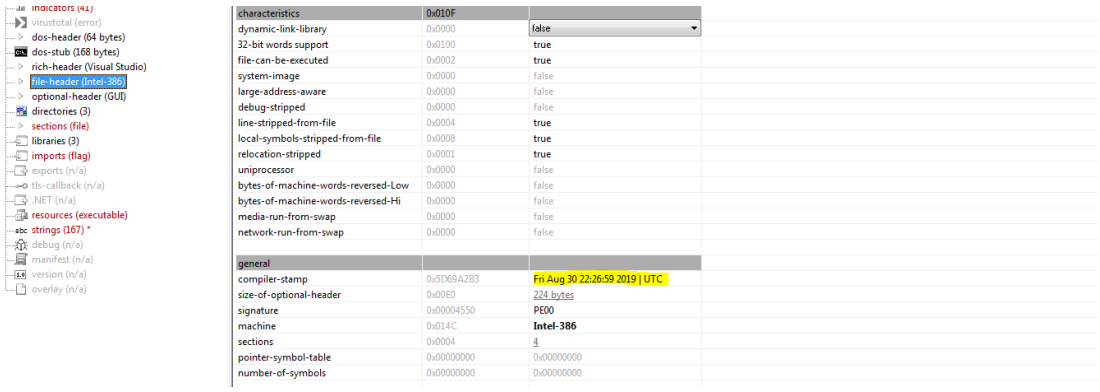
- Status : Not Packed

- signature : Microsoft Visual C/C++[5.0]

- Entropy in DIE : 14%

-> When was this program compiled?

- using pestudio : Fri Aug 22:26:59 | UTC



- open pestudio go to file-header found here.

-> Do any imports hint at this program's functionality? If so, which imports are they and what do they tell you?

- open pestudio go to imports.

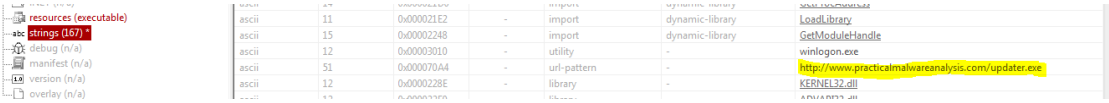
imports (34)	flag (8)	first-thunk-original (INT)	first-thunk (IAT)	hint	group (6)	type (1)	ordinal (0)	library
OpenProcessToken	x	0x000022CC	0x000022CC	322 (0x0142)	security	implicit	-	ADVA
LookupPrivilegeValueA	x	0x000022B4	0x000022B4	245 (0x00F5)	security	implicit	-	ADVA
AdjustTokenPrivileges	x	0x0000229C	0x0000229C	23 (0x0017)	security	implicit	-	ADVA
SizeofResource	-	0x00002214	0x00002214	661 (0x0295)	resource	implicit	-	KERN
FindResourceA	-	0x00002236	0x00002236	163 (0x00A3)	resource	implicit	-	KERN
LoadResource	-	0x00002226	0x00002226	455 (0x01C7)	resource	implicit	-	KERN
GetWindowsDirectoryA	-	0x0000225A	0x0000225A	381 (0x017D)	reckoning	implicit	-	KERN
WriteFile	x	0x000021FA	0x000021FA	735 (0x02DF)	file	implicit	-	KERN
CreateFileA	-	0x00002206	0x00002206	52 (0x0034)	file	implicit	-	KERN
MoveFileA	x	0x00002272	0x00002272	477 (0x01DD)	file	implicit	-	KERN
GetTempPathA	-	0x0000227E	0x0000227E	357 (0x0165)	file	implicit	-	KERN
WinExec	x	0x000021F0	0x000021F0	723 (0x02D3)	execution	implicit	-	KERN
CreateRemoteThread	x	0x000021B8	0x000021B8	70 (0x0046)	execution	implicit	-	KERN
GetCurrentProcess	-	0x000021A4	0x000021A4	247 (0x00F7)	execution	implicit	-	KERN
OpenProcess	x	0x00002196	0x00002196	495 (0x01EF)	execution	implicit	-	KERN
GetProcAddress	-	0x000021CE	0x000021CE	318 (0x013E)	dynamic-library	implicit	-	KERN
LoadLibraryA	-	0x000021E0	0x000021E0	450 (0x01C2)	dynamic-library	implicit	-	KERN
GetModuleHandleA	-	0x00002246	0x00002246	294 (0x0126)	dynamic-library	implicit	-	KERN
CloseHandle	-	0x00002188	0x00002188	27 (0x001B)	-	implicit	-	KERN
_snprintf	-	0x000022EE	0x000022EE	430 (0x01AE)	-	implicit	-	MSVC
_exit	-	0x00002306	0x00002306	211 (0x00D3)	-	implicit	-	MSVC
_XcptFilter	-	0x0000230E	0x0000230E	72 (0x0048)	-	implicit	-	MSVC
exit	-	0x0000231C	0x0000231C	585 (0x0249)	-	implicit	-	MSVC
__p__initenv	-	0x00002324	0x00002324	100 (0x0064)	-	implicit	-	MSVC
__getmainargs	-	0x00002334	0x00002334	88 (0x0058)	-	implicit	-	MSVC
_initterm	-	0x00002344	0x00002344	271 (0x010F)	-	implicit	-	MSVC
__setusermatherr	-	0x00002350	0x00002350	131 (0x0083)	-	implicit	-	MSVC

- he used libraries : ADVAPI32.dll , KERNEL32.dll , MSVCRT.dll

- It creates a process through the OpenProcessToken method, loads other libraries through the LoadLibraryA function, creates a file, writes it, moves it to hide it through the WriteFile, CreateFileA, MoveFileA function, and does many other harmful things.

-> What host- or network-based indicators could be used to identify this malware on infected machines?

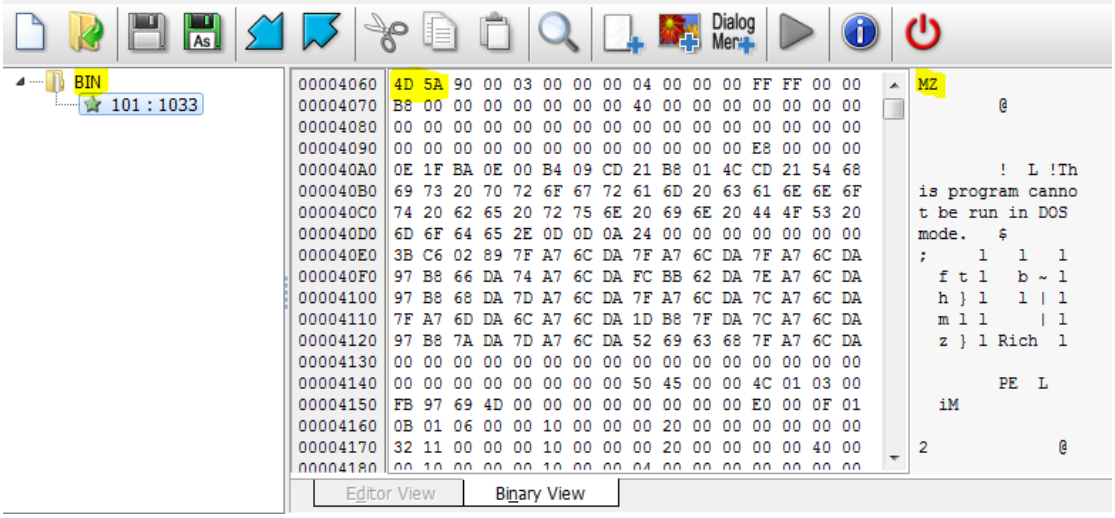
- open pestudio go to strings found here.



- URL : http://www.practicalmalwareanalysis.com/updater.exe

->This file has one resource in the resource section. Use Resource Hacker to examine that resource, and then use it to extract the resource. What can you learn from the resource?

- open Resource Hacker go to the folder Inside him file (source).



- using pestudio there the information about this file :

property	value
md5	A4C93CA41DC5E38EA92D6BB10DED4CD6
sha1	F60493D3311351F51A6D397908462618829C6548
sha256	BD9C56DE7C72E14A1A93B38F096B0766DA49A154B0BD3756F99B9F9AA8F42944
first-bytes-hex	4D 5A 90 00 03 00 00 00 04 00 00 00 FF FF 00 00 B8 00 00 00 00 00 00 00 40 00 00 00 00 00 00 00 00
first-bytes-text	M Z . . . . . @ . . . . .
file-size	36864 bytes
entropy	1.178
imphash	AADE0EA6FBDCD9B8E96FE999CAE6F603
signature	Microsoft Visual C++ v6.0
tooling	Visual Studio 6.0
entry-point	55 8B EC 6A FF 68 98 20 40 00 68 10 17 40 00 64 A1 00 00 00 00 50 64 89 25 00 00 00 00 83 EC 20 53
file-version	n/a
description	n/a
file-type	executable
cpu	32-bit
subsystem	GUI
compiler-stamp	Fri Aug 30 22:26:59 2019 | UTC
debugger-stamp	n/a
resources-stamp	0x00000000
import-stamp	0x00000000
exports-stamp	n/a

Finally Chapter 1