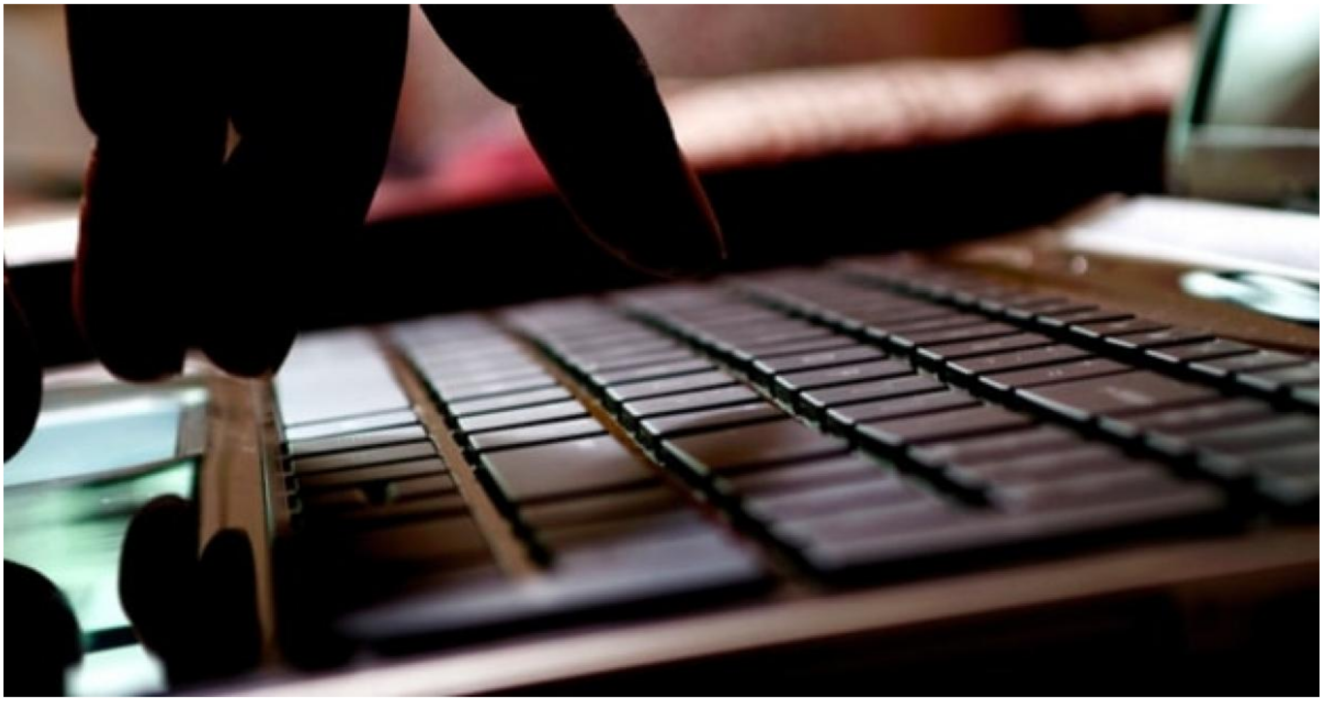
Ransoc Desktop Locking Ransomware Ransacks Local Files and Social Media Profiles

proofpoint.com/us/threat-insight/post/ransoc-desktop-locking-ransomware-ransacks-local-files-social-media-profiles

November 14, 2016



Blog
Threat Insight
Ransoc Desktop Locking Ransomware Ransacks Local Files and Social Media Profiles

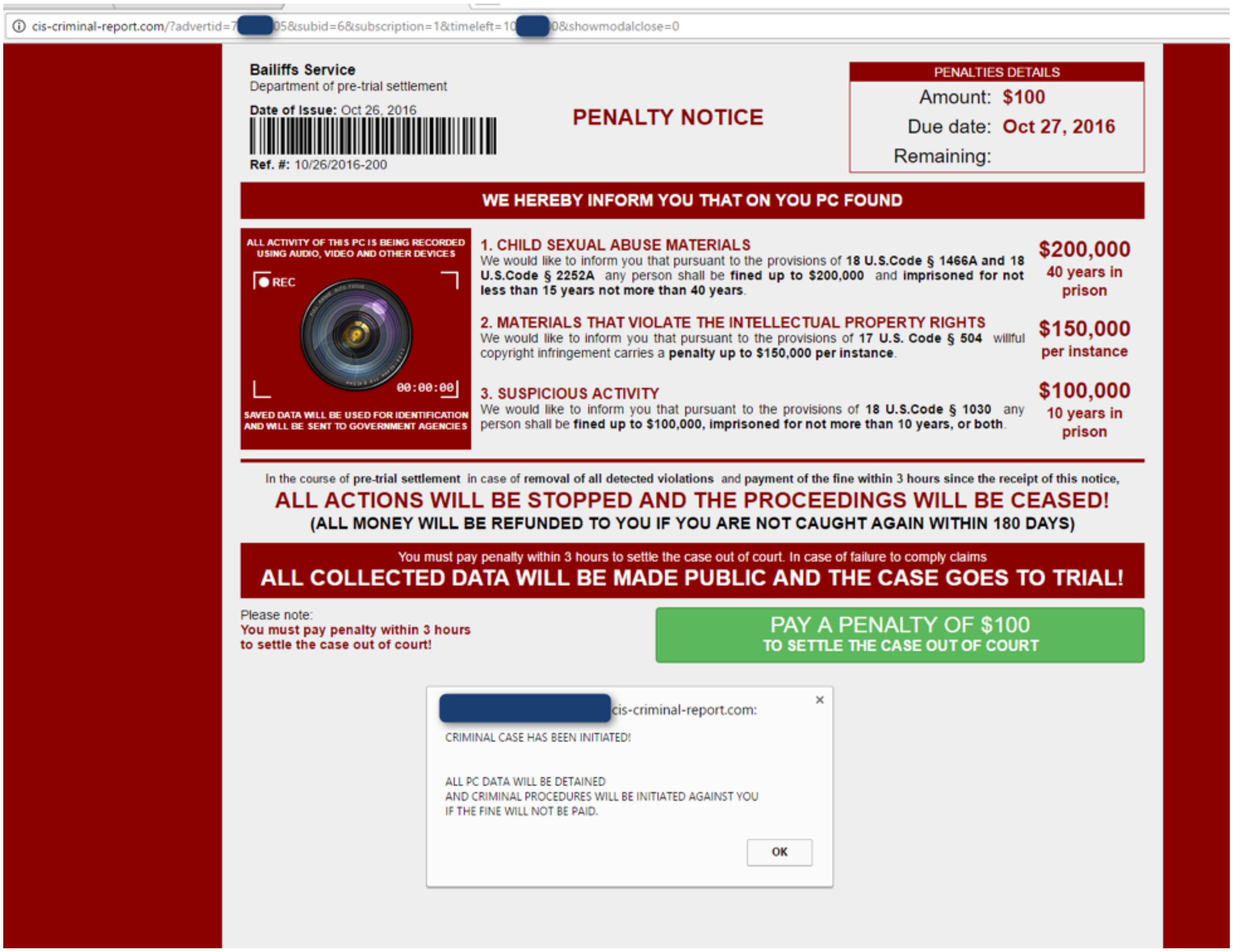
November 14, 2016 Proofpoint Staff

Overview

Ransomware has exploded in the last year, becoming the malware of choice for many threat actors because of its easy monetization and ease of distribution, whether via massive email campaigns or through a variety of exploit kits. Proofpoint research suggests that the number of ransomware variants has grown tenfold since December 2015. While most such malware encrypts a victim's files and demands that a ransom be paid in Bitcoins to decrypt them, Proofpoint researchers recently discovered a new variant that scrapes Skype and social media profiles for personal information while it scans files and torrents for potentially sensitive information. Instead of encrypting files, it threatens victims with fake legal proceedings if they fail to pay the ransom.

The Discovery

In the last week of October, our colleague at FoxIT InTELL, Frank Ruiz, pointed us to a new browser locker variant. Unlike traditional encrypting ransomware like Locky, browser lockers are full-screen web apps that prevent users from accessing their operating systems or closing the browser window. In this case, the browser locker displays a fake "Penalty Notice" offering to let the victim "settle [their] case out of court," avoiding the threat of legal actions and much larger penalties for objectionable content and suspicious activity purportedly discovered on the victim's computer (Figure 1).



cis-criminal-report.com/?advertid=7[redacted]05&subid=6&subscription=1&timeleft=10[redacted]0&showmodalclose=0

Bailiffs Service
Department of pre-trial settlement

Date of Issue: Oct 26, 2016

Ref. #: 10/26/2016-200

PENALTY NOTICE

PENALTIES DETAILS
Amount: $100
Due date: Oct 27, 2016
Remaining:

WE HEREBY INFORM YOU THAT ON YOU PC FOUND

ALL ACTIVITY OF THIS PC IS BEING RECORDED USING AUDIO, VIDEO AND OTHER DEVICES

SAVED DATA WILL BE USED FOR IDENTIFICATION AND WILL BE SENT TO GOVERNMENT AGENCIES

1. CHILD SEXUAL ABUSE MATERIALS
We would like to inform you that pursuant to the provisions of **18 U.S.Code § 1466A and 18 U.S.Code § 2252A** any person shall be **fined up to $200,000** and **imprisoned for not less than 15 years not more than 40 years**.

$200,000
40 years in prison

2. MATERIALS THAT VIOLATE THE INTELLECTUAL PROPERTY RIGHTS
We would like to inform you that pursuant to the provisions of **17 U.S. Code § 504** willful copyright infringement carries a **penalty up to $150,000 per instance**.

$150,000
per instance

3. SUSPICIOUS ACTIVITY
We would like to inform you that pursuant to the provisions of **18 U.S.Code § 1030** any person shall be **fined up to $100,000, imprisoned for not more than 10 years, or both**.

$100,000
10 years in prison

In the course of **pre-trial settlement** in case of **removal of all detected violations** and **payment of the fine within 3 hours since the receipt of this notice,**

ALL ACTIONS WILL BE STOPPED AND THE PROCEEDINGS WILL BE CEASED!

(ALL MONEY WILL BE REFUNDED TO YOU IF YOU ARE NOT CAUGHT AGAIN WITHIN 180 DAYS)

You must pay penalty within 3 hours to settle the case out of court. In case of failure to comply claims

ALL COLLECTED DATA WILL BE MADE PUBLIC AND THE CASE GOES TO TRIAL!

Please note:
You must pay penalty within 3 hours to settle the case out of court!

[redacted] cis-criminal-report.com:

CRIMINAL CASE HAS BEEN INITIATED!

ALL PC DATA WILL BE DETAINED
AND CRIMINAL PROCEDURES WILL BE INITIATED AGAINST YOU
IF THE FINE WILL NOT BE PAID.

Figure 1: Browser locker "Penalty Notice"

This browser locker was spread in United States via malvertising traffic (primarily fed by the Plugrush and Traffic Shop traffic exchanges on adult websites) aimed at Internet Explorer on Windows and Safari on OS X.

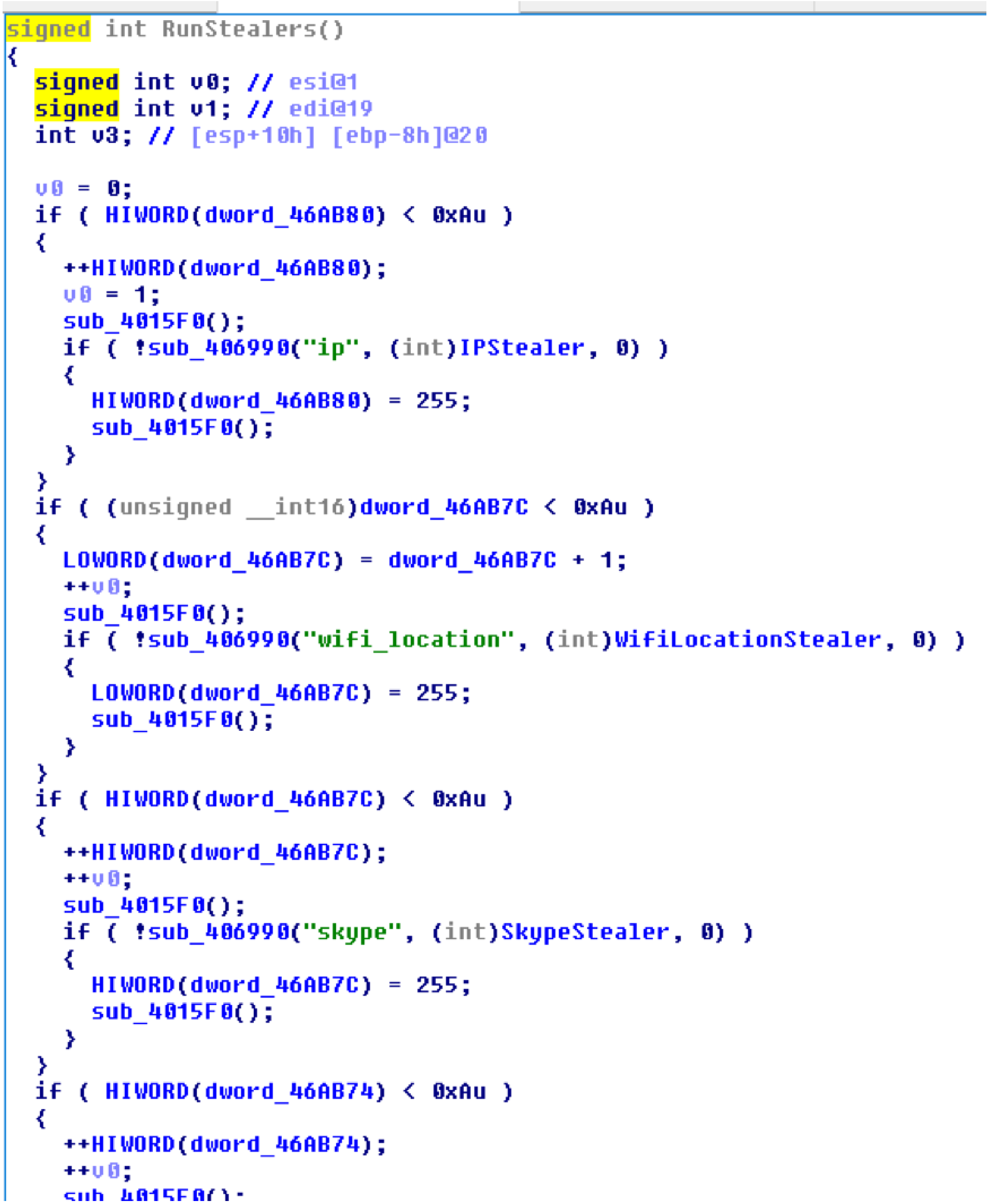
This type of threat was endemic between 2012 and 2014 and was frequently seen spreading concurrently via exploit kit with "Police Locker" malware [1]. Since then, the same kind of traffic has largely focused on exploit kit distribution of crypto ransomware and other malware as well as Tech Support scams in which victims are told to contact a fake tech support service to remove malware from their PCs, usually for a fee to be paid by credit card.

However, in the first week of November, we discovered an unusual malware variant that we believe is tied to the "Penalty Notice" browlock shown in Figure 1 based on visual and thematic similarities and distribution mechanisms. Note, however, that while the browser locker functions cross-platform, the related malware, dubbed Ransoc, is a Windows binary.

Ransoc

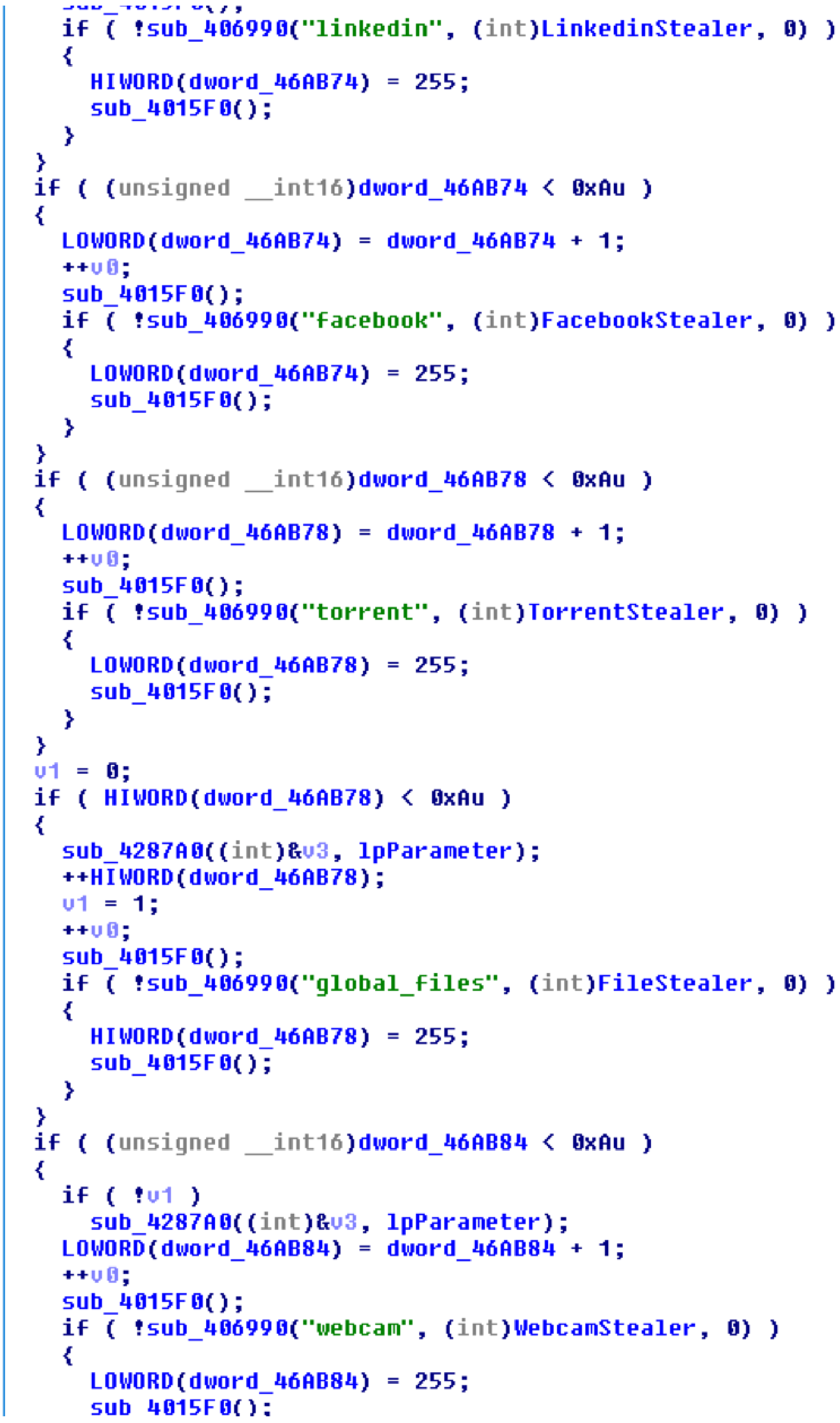
In a sandbox environment, we observed this new malware perform an IP check and send all of its traffic through the Tor network. Further examination revealed that the malware scanned local media filenames for strings associated with child pornography.

We also noticed that it was running several routines interacting with Skype, LinkedIn, and Facebook profiles (Figure 2).

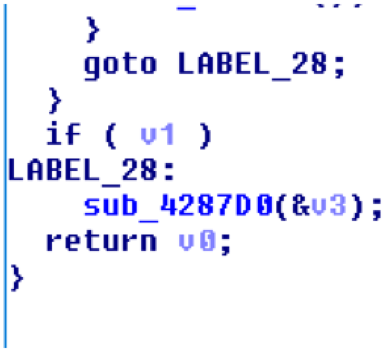


```
signed int RunStealers()
{
  signed int v0; // esi@1
  signed int v1; // edi@19
  int v3; // [esp+10h] [ebp-8h]@20

  v0 = 0;
  if ( HIWORD(dword_46AB80) < 0xAu )
  {
    ++HIWORD(dword_46AB80);
    v0 = 1;
    sub_4015F0();
    if ( !sub_406990("ip", (int)IPStealer, 0) )
    {
      HIWORD(dword_46AB80) = 255;
      sub_4015F0();
    }
  }
  if ( (unsigned __int16)dword_46AB7C < 0xAu )
  {
    LOWORD(dword_46AB7C) = dword_46AB7C + 1;
    ++v0;
    sub_4015F0();
    if ( !sub_406990("wifi_location", (int)WifiLocationStealer, 0) )
    {
      LOWORD(dword_46AB7C) = 255;
      sub_4015F0();
    }
  }
  if ( HIWORD(dword_46AB7C) < 0xAu )
  {
    ++HIWORD(dword_46AB7C);
    ++v0;
    sub_4015F0();
    if ( !sub_406990("skype", (int)SkypeStealer, 0) )
    {
      HIWORD(dword_46AB7C) = 255;
      sub_4015F0();
    }
  }
  if ( HIWORD(dword_46AB74) < 0xAu )
  {
    ++HIWORD(dword_46AB74);
    ++v0;
    sub_4015F0();
```



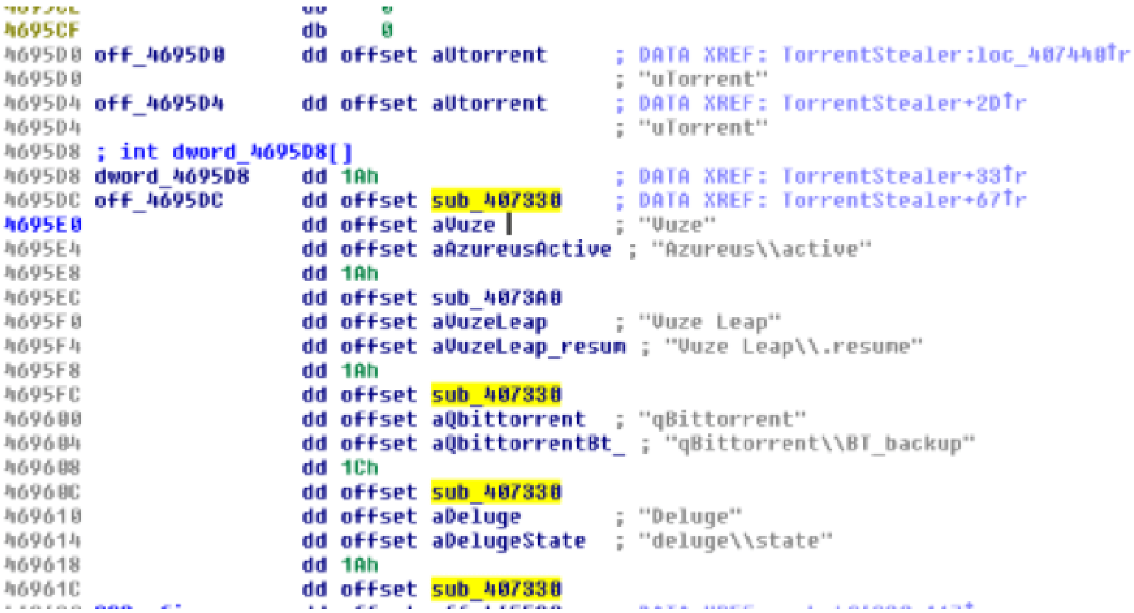
```
  sub_4015F0();
  if ( !sub_406990("linkedin", (int)LinkedinStealer, 0) )
  {
    HIWORD(dword_46AB74) = 255;
    sub_4015F0();
  }
}
if ( (unsigned __int16)dword_46AB74 < 0xAu )
{
  LOWORD(dword_46AB74) = dword_46AB74 + 1;
  ++v0;
  sub_4015F0();
  if ( !sub_406990("facebook", (int)FacebookStealer, 0) )
  {
    LOWORD(dword_46AB74) = 255;
    sub_4015F0();
  }
}
if ( (unsigned __int16)dword_46AB78 < 0xAu )
{
  LOWORD(dword_46AB78) = dword_46AB78 + 1;
  ++v0;
  sub_4015F0();
  if ( !sub_406990("torrent", (int)TorrentStealer, 0) )
  {
    LOWORD(dword_46AB78) = 255;
    sub_4015F0();
  }
}
v1 = 0;
if ( HIWORD(dword_46AB78) < 0xAu )
{
  sub_4287A0((int)&v3, lpParameter);
  ++HIWORD(dword_46AB78);
  v1 = 1;
  ++v0;
  sub_4015F0();
  if ( !sub_406990("global_files", (int)FileStealer, 0) )
  {
    HIWORD(dword_46AB78) = 255;
    sub_4015F0();
  }
}
if ( (unsigned __int16)dword_46AB84 < 0xAu )
{
  if ( !v1 )
    sub_4287A0((int)&v3, lpParameter);
  LOWORD(dword_46AB84) = dword_46AB84 + 1;
  ++v0;
  sub_4015F0();
  if ( !sub_406990("webcam", (int)WebcamStealer, 0) )
  {
    LOWORD(dword_46AB84) = 255;
    sub_4015F0();
```



```
    }
    goto LABEL_28;
  }
  if ( v1 )
LABEL_28:
    sub_4287D0(&v3);
  return v0;
}
```

Figure 2: Code examining Skype and social media profiles

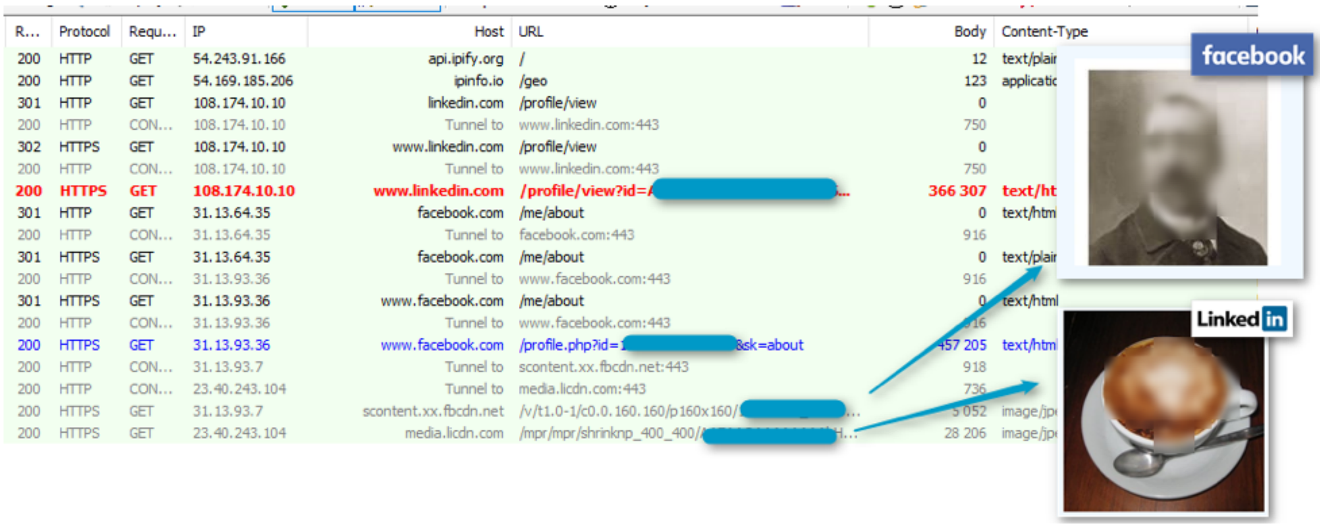
The code also examined folders from Torrent software (Figure 3).



```
4695CF                  db     0
4695D0 off_4695D0       dd offset aUtorrent      ; DATA XREF: TorrentStealer:loc_407440↑r
4695D0                                           ; "uTorrent"
4695D4 off_4695D4       dd offset aUtorrent      ; DATA XREF: TorrentStealer+2D↑r
4695D4                                           ; "uTorrent"
4695D8 ; int dword_4695D8[]
4695D8 dword_4695D8     dd 1Ah                   ; DATA XREF: TorrentStealer+33↑r
4695DC off_4695DC       dd offset sub_407330     ; DATA XREF: TorrentStealer+67↑r
4695E0                  dd offset aVuze          ; "Vuze"
4695E4                  dd offset aAzureusActive ; "Azureus\\active"
4695E8                  dd 1Ah
4695EC                  dd offset sub_4073A0
4695F0                  dd offset aVuzeLeap      ; "Vuze Leap"
4695F4                  dd offset aVuzeLeap_resum ; "Vuze Leap\\.resume"
4695F8                  dd 1Ah
4695FC                  dd offset sub_407330
469600                  dd offset aQbittorrent   ; "qBittorrent"
469604                  dd offset aQbittorrentBt_ ; "qBittorrent\\BT_backup"
469608                  dd 1Ch
46960C                  dd offset sub_407330
469610                  dd offset aDeluge        ; "Deluge"
469614                  dd offset aDelugeState   ; "deluge\\state"
469618                  dd 1Ah
46961C                  dd offset sub_407330
```

Figure 3: Code examining Torrent folder contents

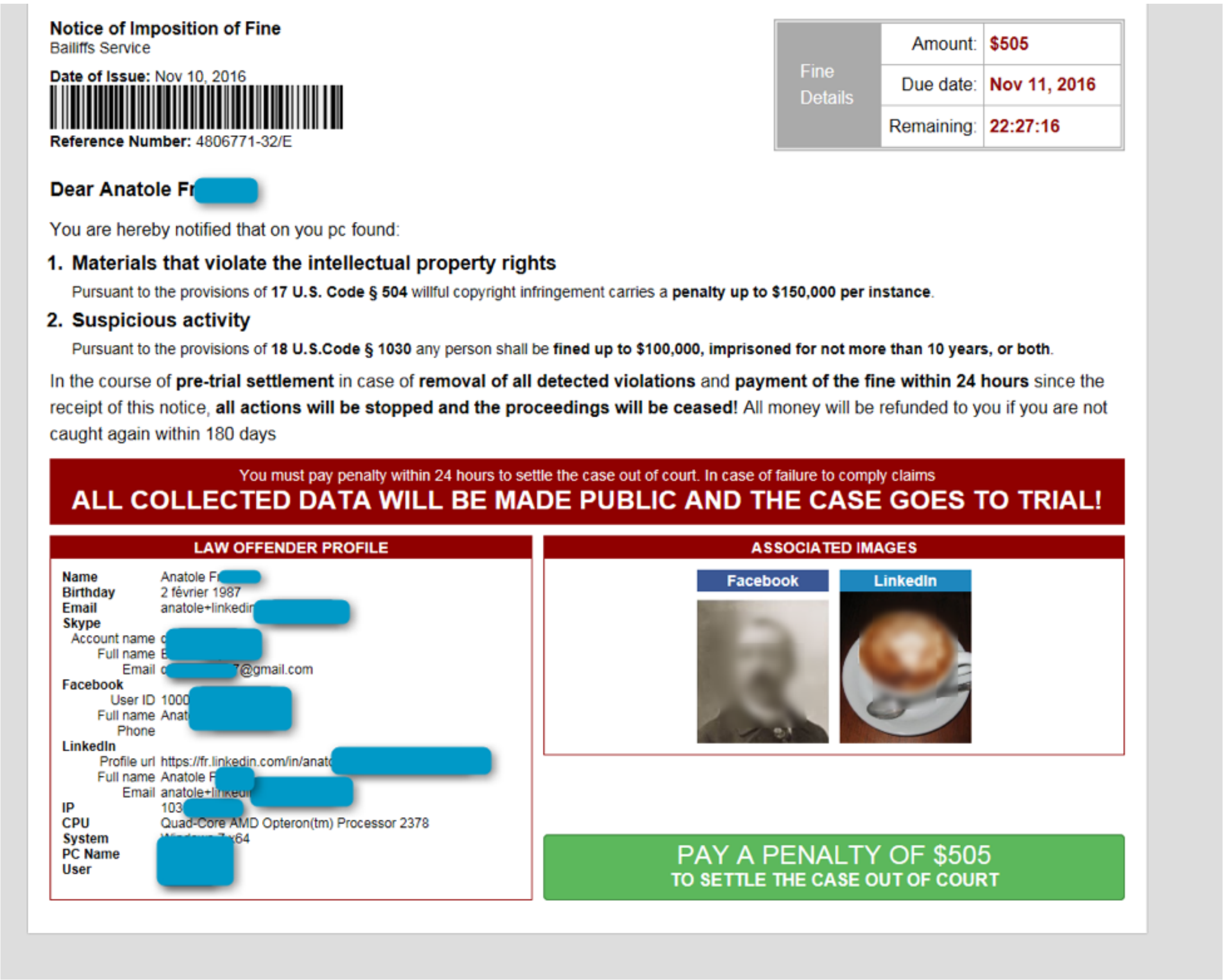
To determine the nature of the malware's interaction with these services, we ran it manually in our sandbox. We logged into fake social network accounts then closed the browser and launched the Skype desktop application. As suspected, after running the malware, we saw it connecting to the fake Facebook and LinkedIn profiles we created (Figure 4).



R...	Protocol	Requ...	IP	Host	URL	Body	Content-Type
200	HTTP	GET	54.243.91.166	api.ipify.org	/	12	text/plai
200	HTTP	GET	54.169.185.206	ipinfo.io	/geo	123	applicatio
301	HTTP	GET	108.174.10.10	linkedin.com	/profile/view	0	
200	HTTP	CON...	108.174.10.10	Tunnel to	www.linkedin.com:443	750	
302	HTTPS	GET	108.174.10.10	www.linkedin.com	/profile/view	0	
200	HTTP	CON...	108.174.10.10	Tunnel to	www.linkedin.com:443	750	
200	HTTPS	GET	108.174.10.10	www.linkedin.com	/profile/view?id=[redacted]...	366 307	text/ht
301	HTTP	GET	31.13.64.35	facebook.com	/me/about	0	text/htm
200	HTTP	CON...	31.13.64.35	Tunnel to	facebook.com:443	916	
301	HTTPS	GET	31.13.64.35	facebook.com	/me/about	0	text/plai
200	HTTP	CON...	31.13.93.36	Tunnel to	www.facebook.com:443	916	
301	HTTPS	GET	31.13.93.36	www.facebook.com	/me/about	0	text/html
200	HTTP	CON...	31.13.93.36	Tunnel to	www.facebook.com:443	916	
200	HTTPS	GET	31.13.93.36	www.facebook.com	/profile.php?id=[redacted]&sk=about	457 205	text/html
200	HTTP	CON...	31.13.93.7	Tunnel to	scontent.xx.fbcdn.net:443	918	
200	HTTP	CON...	23.40.243.104	Tunnel to	media.licdn.com:443	736	
200	HTTPS	GET	31.13.93.7	scontent.xx.fbcdn.net	/v/t1.0-1/c0.0.160.160/p160x160/[redacted]...	5 052	image/jp
200	HTTPS	GET	23.40.243.104	media.licdn.com	/mpr/mpr/shrinknp_400_400/[redacted]...	28 206	image/jp

Figure 4: Ransoc capturing photos from social media account profiles

The malware, which we call Ransoc because of its connections to social media, then displayed a Penalty Notice that was visually and functionally similar to the browser locker shown in Figure 1. The new Penalty Notice is shown in Figure 5. It appears that this penalty notice only appears if the malware finds potential evidence of child pornography or media files downloaded via Torrents and customizes the penalty notice based on what it finds. If we manually changed file names to match specific strings, we were able to trigger the penalty notice.



Notice of Imposition of Fine
Bailiffs Service

Date of Issue: Nov 10, 2016

Reference Number: 4806771-32/E

Fine Details	Amount:	$505
	Due date:	Nov 11, 2016
	Remaining:	22:27:16

Dear Anatole Fr[redacted]

You are hereby notified that on you pc found:

1. **Materials that violate the intellectual property rights**

   Pursuant to the provisions of **17 U.S. Code § 504** willful copyright infringement carries a **penalty up to $150,000 per instance**.

2. **Suspicious activity**

   Pursuant to the provisions of **18 U.S.Code § 1030** any person shall be **fined up to $100,000, imprisoned for not more than 10 years, or both**.

In the course of **pre-trial settlement** in case of **removal of all detected violations** and **payment of the fine within 24 hours** since the receipt of this notice, **all actions will be stopped and the proceedings will be ceased!** All money will be refunded to you if you are not caught again within 180 days

You must pay penalty within 24 hours to settle the case out of court. In case of failure to comply claims

ALL COLLECTED DATA WILL BE MADE PUBLIC AND THE CASE GOES TO TRIAL!

LAW OFFENDER PROFILE

Name	Anatole Fr[redacted]
Birthday	2 février 1987
Email	anatole+linkedin[redacted]
Skype	
Account name	c[redacted]
Full name	E
Email	c[redacted]7@gmail.com
Facebook	
User ID	1000[redacted]
Full name	Anat
Phone	
LinkedIn	
Profile url	https://fr.linkedin.com/in/anat[redacted]
Full name	Anatole F[redacted]
Email	anatole+l[redacted]
IP	103[redacted]
CPU	Quad-Core AMD Opteron(tm) Processor 2378
System	[redacted]x64
PC Name	
User	

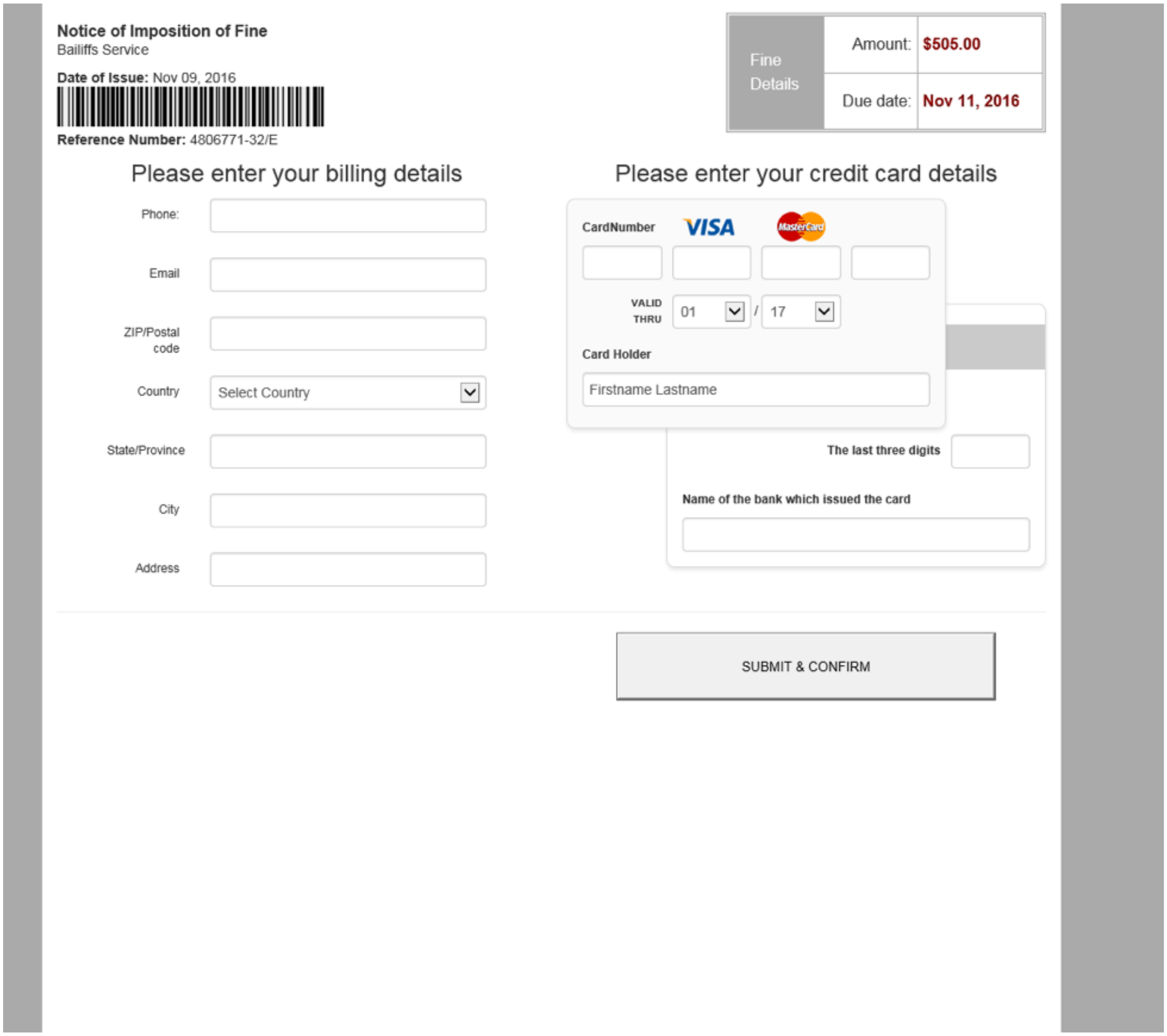
ASSOCIATED IMAGES

Figure 5: New penalty notice with social media profile information and a threat stating that "All Collected Data will be made public and the case goes to trial!"

The ransom message displays accurate personal data captured from Skype and social media profiles, including profile photos. It threatens to expose the collected "evidence" to the public, with legitimate social profile information being used as a social engineering lure to convince victims that sensitive information may actually be at risk of exposure. Unlike most ransomware variants, the target here is the victim's reputation rather than their files. Ransoc also includes code that may allow it to access a victim's webcam, although we did not verify this functionality.

The ransom message is actually a full-screen window that functions much like the browser locker application shown in Figure 1. However, Ransoc checks every 100ms for regedit, msconfig, and taskmgr, killing the processes before victims have a chance to remove or disable the malware. Ransoc only uses a registry autorun key to persist, though, so rebooting in Safe Mode should allow users to remove the malware. The sample we examined had an HKCU\Software\Microsoft\Windows\CurrentVersion\Run\JavaErrorHandler registry key with a value of a shortcut pathname ending in 'JavaErrorHandler.lnk', although future versions may use a different key.

The payment system (Figure 6) is also unusual.



Notice of Imposition of Fine
Bailiffs Service

Date of Issue: Nov 09, 2016

Reference Number: 4806771-32/E

Fine Details		
	Amount:	**$505.00**
	Due date:	**Nov 11, 2016**

Please enter your billing details

Please enter your credit card details

VALID THRU 01 / 17

Card Holder: Firstname Lastname

Figure 6: Ransoc payment page

Credit card payment is almost unheard of in ransomware schemes. While it removes the hassle and confusion for many victims associated with Bitcoin processing, it also potentially allows law enforcement to trace activity back to the cybercriminal more easily.

This fairly bold approach to ransom payments suggests the threat actors are quite confident that people paying the ransom have enough to hide that they will probably not seek support from law enforcement. In fact, while Ransoc may seem to be motivated by vigilantism against genuine criminals, the motives are likely less-than-altruistic, as the attackers target users who will be unlikely to resist or inform the authorities and thus increase the likelihood of payment. This theory is further bolstered by the fact that most victims encounter this malware via malvertising on adult websites and the penalty notice only appears when Ransoc encounters potential evidence of illegally downloaded media (via BitTorrent) and certain types of pornography. To encourage payment, the ransom note also claims that money will be sent back if the victim is not caught again in the 180 days.

Conclusion

Although exploit kit activity has dropped off precipitously over the past year, malvertising activity remains strong, with threat actors exploring new ways to infect victims and extort money through this vector. By incorporating data from social media accounts and Skype profiles Ransoc creates a coercive, socially engineered ransom note to convince its targets that they are in danger of prosecution for their browsing habits and the contents of their hard drives. With bold approaches to collecting payments, the threat actors appear confident in their targeting, introducing new levels of sophistication to ransomware distribution and monetization.

Indicators of Compromise (IOCs)

Date	Domain	IP	Comment
2016-10-27	cis-criminal-report[.]com	5.45.86.171	Browlock for IE Windows
2016-10-27	criminal-report[.]in	5.45.86.171	Browlock for Safari OSX
2016-11-03	violation-report[.]in	5.45.86.171	Browlock for IE and Safari
2016-11-02	latexfetishsex[.]com	78.47.134.204	Intermediate Redirector/TDS
2016-11-03	italy-girls[.]mobi	5.9.86.131	Intermediate Redirector/TDS
2016-11-10	N/A	5.45.86.148	IP found in the Ransoc

sha256	Comment
fee53dc4e165b2aa45c3e7bd100b49c367aa8b7f81757617114ff50a584a1566	Ransoc PenaltyNotice

References

[1] http://malware.dontneedcoffee.com/2014/05/police-locker-available-for-your.htm

Subscribe to the Proofpoint Blog