## Who Stole My '\$100K' worth of Bitcoin Wallets

Catch Them All with new deceptive bait

Tan Kean Siong
The Honeynet Project
twitter: @gento\_





Threat Level: GREEN

Hanc



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#### **BTC Pickpockets**





#### I observed requests to my webserver to retrieve Bitcoin wallet files:

The files they are looking for are:

**DidierStevens** 



**477 POSTS** 

ISC HANDLER

Nov 18th 2017

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'GET /wallet.dat HTTP/1.1" 404 275 "-" "Mozilla/5.0 (Macintosh: Intel Mac OS X 10.8:
                       [17/Oct/2017:07:57:09 -0400
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212, 92, 122, 186
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```





A tool that allows you to create 'bait archive' with any folders and files, notify you if someone access it.

Useful for data breach detection, deception defense mechanism, etc.

## **How Honeybag works**



#### 1. Honeybag client

Generate 'bait ZIP file', with any embedded folder / files / doc / PDF, etc

#### Alerting mechanisms:

- desktop.ini
- .url

## **How Honeybag works**



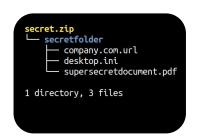
### 1. Honeybag client

Generate 'bait ZIP file', with any embedded folder / files / doc / PDF, etc



- desktop.ini
- .url







#### 2. Honeybag simple DNS server

Listening for incoming alert with DNS traffic, sqlite3 logging

#### 3. RESPONDER IP address

Listening on incoming alert with SMB traffic / NTLM hashes



# If we place '\$100,000' worth BTC wallets on the Internet for 90 days

What will happen next?







### What we have:

#### **10 Bitcoin Wallets**

- unprotected
- each contains 1 BTC Testnet

( In early 2020 Real 1 BTC = ~USD \$10,000 )







### What we have:

#### **10 Bitcoin Wallets**

- unprotected
- each contains 1 BTC Testnet

(In early 2020 Real 1 BTC = ~USD \$10,000)

### Where we put it:



: Open directory web servers

```
'GET /wallet.dat HTTP/1.1" 404 275 "-" "Mozilla/5.0 (Macintosh: Intel Mac OS X 10.8:
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                       [17/oct/2017:08:00:50 -0400
                                                          GET
                                                               /backups/wallet.zip HTTP/1.1" 404 283 "-" "Mozilla/5.0 (Macintosh; Intel Mac OS
                       [17/oct/2017:08:02:47
                                                          GET
                                                               /wallet_backup.zip HTTP/1.1" 404 282 "-" "Mozilla/5.0 (Macintosh; Intel Mac OS )
                       [17/oct/2017:08:02:49 -0400
                                                               /bitcoin_wallet.dat.1 HTTP/1.1" 404 285 "-" "Mozilla/5.0 (Macintosh; Intel Mac C
                       17/oct/2017:08:02:56
                                                               /didierstevens_wallet.dat HTTP/1.1" 404 289 "-" "Mozilla/5.0 (Macintosh; Intel M
                       [17/oct/2017:08:03:03 -0400
                                                          GET
                                                          GET /backup/wallet%20-%20copy.dat HTTP/1.1" 404 289 "-" "Mozilla/5.0 (Macintosh; Int
GET /wallet.tar.gz HTTP/1.1" 404 278 "-" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10.
                       [17/oct/2017:08:03:35
212.92.122.186
                       [17/oct/2017:08:04:39 -0400
                                                              /backup/bitcoin_wallet.dat HTTP/1.1" 404 290 "-" "Mozilla/5.0 (Macintosh; Intel
/backups/wallet.tar.gz HTTP/1.1" 404 286 "-" "Mozilla/5.0 (Macintosh; Intel Mac
                       [17/Oct/2017:08:05:25 -0400
                       [17/oct/2017:08:05:39
                                                -0400
                                                          GET.
                                                               /didierstevens.com_wallet.dat.zip HTTP/1.1" 404 297 "-" "Mozilla/5.0 (Macintosh;
                       [17/Oct/2017:08:05:44
                                                          GET
                                                         "GET /backup/wallet.tar HTTP/1.1" 404 282 "-" "Mozilla/5.0 (Macintosh; Intel Mac OS )
"GET /data/wallet.dat HTTP/1.1" 404 280 "-" "Mozilla/5.0 (Macintosh; Intel Mac OS X )
                       [17/oct/2017:08:05:51
                       [17/oct/2017:08:06:23
                                                               /Bitcoin/wallet.dat HTTP/1.1" 404 283 "-" "Mozilla/5.0 (Macintosh; Intel Mac O5
                       [17/oct/2017:08:06:43 -0400
                                                          'GET
                                                          'GET /wallet.dat.1 HTTP/1.1" 404 277 "-" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10.8
                       [17/Oct/2017:08:07:19 -0400
                                                          'GET /bitcoin/wallet.dat HTTP/1.1" 404 283 "-" "Mozilla/5.0 (Macintosh; Intel Mac OS
212.92.122.186
                       [17/oct/2017:08:07:28
                                                              /didierstevens.com_wallet.dat.1 HTTP/1.1" 404 295 "-" "Mozilla/5.0 (Macintosh; 1
                       [17/oct/2017:08:09:06
212.92.122.186
                                                          'GET /backups/wallet.tar HTTP/1.1" 404 283 "-" "Mozilla/5.0 (Macintosh; Intel Mac OS
                       17/oct/2017:08:09:16 -0400
                                                          'GET /didierstevens_wallet.zip HTTP/1.1" 404 289 "-" "Mozilla/5.0 (Macintosh; Intel M
                       17/oct/2017:08:10:24
212.92.122.186
                                                         "GET /BitcoinData/wallet.dat HTTP/1.1" 404 287 "-" "Mozilla/5.0 (Macintosh; Intel Mac
"GET /bitcoin%20datadir/wallet.dat HTTP/1.1" 404 291 "-" "Mozilla/5.0 (Macintosh; Int
                       [17/oct/2017:08:10:38
                       [17/oct/2017:08:11:08
                                                          'GET /bitcoin_datadir/wallet.dat HTTP/1.1" 404 291 "-" "Mozilla/5.0 (Macintosh; Inte
                       [17/oct/2017:08:11:20
                                                         "GET /_wallet.dat HTTP/1.1" 404 276 "-" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10.8:
                      [17/oct/2017:08:29:25 -0400]
212.92.122.186
```

```
118.237.14.248 - - [06/Mar/2020:19:38:49 +0000] "GET / HTTP/1.1" 400 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:19:38:51 +0000] "GET / HTTP/1.1" 400 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:19:39:06 +0000] "GET / HTTP/1.1" 400 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:19:40:54 +0000] "-" 408 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:19:41:52 +0000] "GET / HTTP/1.1" 400 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:19:43:51 +0000] "GET / HTTP/1.1" 400 0 "-" "-"
                                                "-" 408 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:19:43:57 +0000]
                                                "-" 408 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:19:44:16 +0000]
                                               "GET / HTTP/1.1" 400 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:19:47:00 +0000]
                                                "-" 408 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:19:47:18 +0000]
                                                "GET / HTTP/1.1" 400 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:19:52:54 +0000]
                                                "-" 408 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:19:53:03 +0000]
118.237.14.248 - - [06/Mar/2020:19:55:40 +0000] "GET / HTTP/1.1" 400 0 "-" "-"
139.162.170.47 - - [06/Mar/2020:20:04:13 +0000] "GET /.env HTTP/1.1" 404 341 "-" "curl/7.58.0"
118.237.14.248 - - [06/Mar/2020:20:05:02 +0000] "-" 408 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:20:06:42 +0000] "-" 408 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:20:15:50 +0000] "-" 408 0 "-" "-"
                                               "-" 408 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:20:16:49 +0000]
195.60.190.156 - - [06/Mar/2020:20:19:21 +0000] "GET / HTTP/1.1" 200 830 "-" "Mozilla/5.0 (Windows NT 10.0; WOW64) AppleWebKit/537.36 (K
118.237.14.248 - - [06/Mar/2020:20:23:09 +0000] "GET / HTTP/1.1" 400 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:20:23:26 +0000] "GET / HTTP/1.1" 400 0 "-" "-"
138.255.73.253 - - [06/Mar/2020:20:23:58 +0000] "GET / HTTP/1.1" 400 0 "-" "-"
190.94.149.174 - - [06/Mar/2020:20:28:25 +0000] "GET / HTTP/1.1" 200 830 "-" "Mozilla/5.0 (Windows NT 10.0; WOW64) AppleWebKit/537.36 (K
118.237.14.248 - - [06/Mar/2020:20:29:46 +0000] "-" 408 0 "-" "-"
110.77.227.173 - - [06/Mar/2020:20:36:33 +0000] "GET / HTTP/1.1" 200 830 "-" "Mozilla/5.0 (Windows NT 10.0; WOW64) AppleWebKit/537.36 (K
118.237.14.248 - - [06/Mar/2020:20:41:54 +0000] "GET / HTTP/1.1" 400 0 "-" "-"
118.237.14.248 - - [06/Mar/2020:20:44:09 +0000] "GET / HTTP/1.1" 400 0 "-" "-"
187.12.151.162 - - [06/Mar/2020:21:30:29 +0000] "GET / HTTP/1.1" 200 830 "-" "Mozilla/5.0 (Windows NT 6.1; WOW64) AppleWebKit/537.36 (KH
103.83.5.41 - - [06/Mar/2020:22:47:55 +0000] "GET / HTTP/1.0" 200 849 "-" "masscan/1.0 (https://github.com/robertdavidgraham/masscan)"
14.247.103.15 - - [07/Mar/2020:00:14:41 +0000] "GET / HTTP/1.1" 400 0 "-" "-"
201.95.169.199 - - [07/Mar/2020:00:35:04 +0000] "GET / HTTP/1.1" 200 830 "-" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10 11 6) AppleWebKi
54.36.49.151 - - [07/Mar/2020:01:30:31 +0000] "GET / HTTP/1.0" 200 849 "-" "masscan/1.0 (https://github.com/robertdavidgraham/masscan)"
91.121.157.178 - - [07/Mar/2020:02:25:52 +0000] "GET / HTTP/1.0" 200 849 "-" "masscan/1.0 (https://github.com/robertdavidgraham/masscan)
66.249.65.216 - - [07/Mar/2020:03:31:59 +0000] "GET /robots.txt HTTP/1.1" 404 397 "-" "Mozilla/5.0 (compatible; Googlebot/2.1; +http://w
66.249.65.218 - - [07/Mar/2020:03:31:59 +0000] "GET /backup/google579cbf79fa33b925.html HTTP/1.1" 404 397 "-" "Mozilla/5.0 (Linux; Andro
Gecko) Chrome/41.0.2272.96 Mobile Safari/537.36 (compatible; Googlebot/2.1; +http://www.google.com/bot.html)"
109.202.9.19 - - [07/Mar/2020:03:37:27 +0000] "GET / HTTP/1.1" 400 0 "-" "-"
139.162.106.181 - - [07/Mar/2020:03:56:09 +0000] "GFT / HTTP/1.1" 200 849 "-" "HTTP Banner Detection (https://security.ipip.net)"
```

118.237.14.248 - - [06/Mar/2020:19:37:56 +0000] "GET / HTTP/1.1" 400 0 "-" "-"

# What's happening in 90 days?

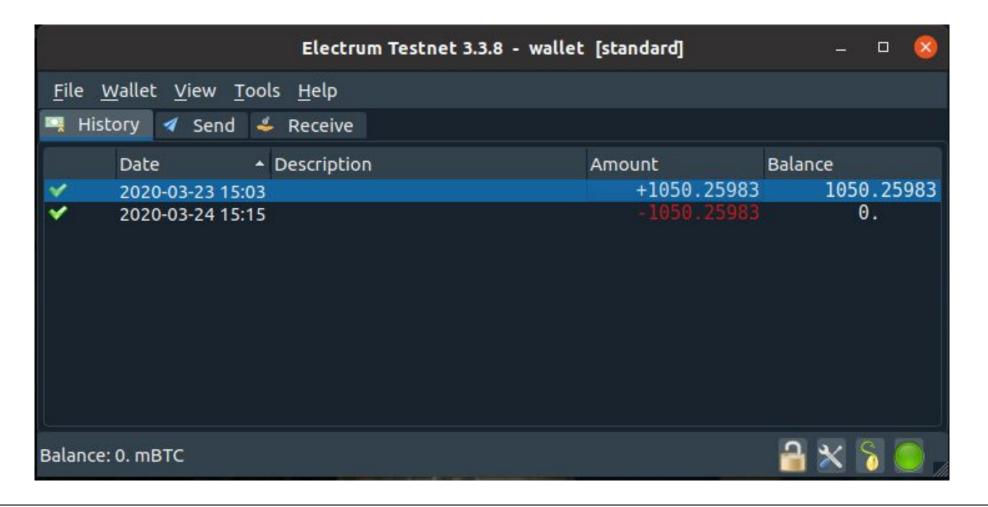
All 10 wallets (Honeybag) were stolen

9 / 10 wallets alerted us with 'thief' info. 1 missing

Fastest record of stolen wallet: < 1 minute (after posted on Pastebin)

### An Unexpected Scene

Someone just 'wipe out' one of our BTC Testnet wallets



## Timeline analysis - 2020-03-24

1. Web Server HTTP log

```
user@honeybag:/var/log/apache2$ cat access.log | grep wallet.zip
114.124.197.76 - - [24/Mar/2020:14:40:46 +0000] "GET /bitcoin/wallet.zip HTTP/1.1"
200 16072 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:74.0) Gecko/20100101
Firefox/74.0"
user@honeybag:/var/log/apache2$ [
```

### Timeline analysis - 2020-03-24

#### 2. Honeybag DNS Alert log

```
UDP request 2020-03-24 14:31:58.630249 (143.215.172.76 48431):
UDP request 2020-03-24 14:32:22.442098 (146.88.240.4 56699):
UDP request 2020-03-24 14:42:27.196795 (182.0.242.44 14834):
[Bingo!] DNS query for domain: BLUE.DESKTOP-AFMMB6K.DESKTOP-AFMMB6K.
[Bingo!] Domain matched with token!
[Bingo!] Opened database successfully
[Bingo!] Records created successfully
UDP request 2020-03-24 14:42:27.209691 (114.121.227.33 58909):
[Bingo!] DNS query for domain: BLUE.DESKTOP-AFMMB6K.DESKTOP-AFMMB6K.
[Bingo!] Domain matched with token!
[Bingo!] Opened database successfully
[Bingo!] Records created successfully
UDP request 2020-03-24 14:43:11.842988 (182.0.242.44 2418):
[Bingo!] DNS query for domain: BLUE.DESKTOP-AFMMB6K.DESKTOP-AFMMB6K.
[Bingo!] Domain matched with token!
[Bingo!] Opened database successfully
[Bingo!] Records created successfully
```

### Timeline analysis - 2020-03-24

#### 3. RESPONDER

```
user1@honeybag1:~/Responder/logs$ ls -lht
total 68M
-rw-r---- 1 root root 41M Mar 24 16:26 Responder-Session.log
-rw-r---- 1 root root 88K Mar 24 15:01 SMB-NTLMv2-SSP-114.124.246.253.txt
```

user1@honeybag1::~/Responder/logs\$ cat SMB-NTLMv2-SSP-114.124.246.253.txt

### Timeline overview - 2020-03-24

14:40:46 UTC - Wallet.zip was stolen from web server

14:42:27 UTC - First DNS alert, someone accessed Wallet.zip

15:01:00 UTC - SMB Alert in RESPONDER log

15:15:00 UTC - He/she 'wipe out' our BTC TESTNET wallet



## Do & Don't



- Be patient!
- Customise our own unique deceptive baits
- Put up warning message / banners
- Never underestimate the great impact of this



# Honeybag

A tool that allows you to create 'bait archive' with any folders and files, notify you if someone access it.

https://github.com/honeybag

# Thank you! VB2020 localhost

Tan Kean Siong
The Honeynet Project
twitter: @gento\_