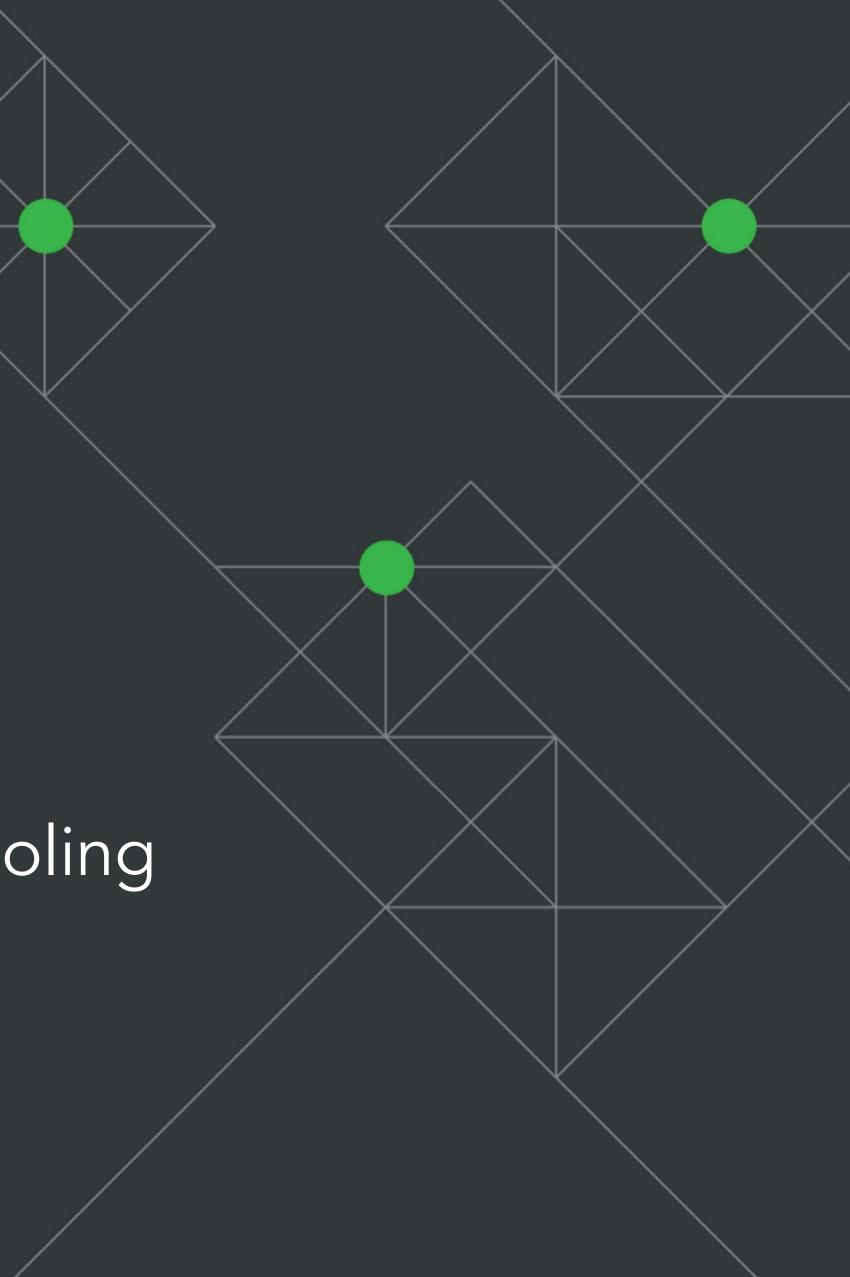


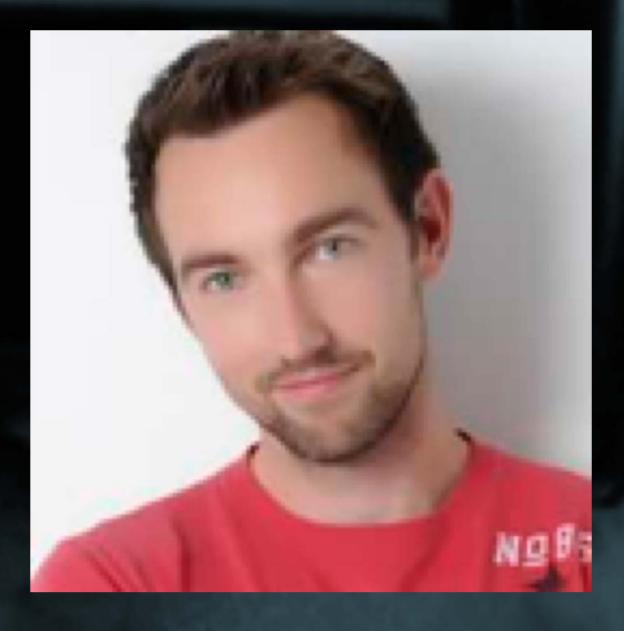
Under the SEA:

A Look at the Syrian Electronic Army's Mobile Tooling

BlackHat Europe 2018 London, England



Who are we?



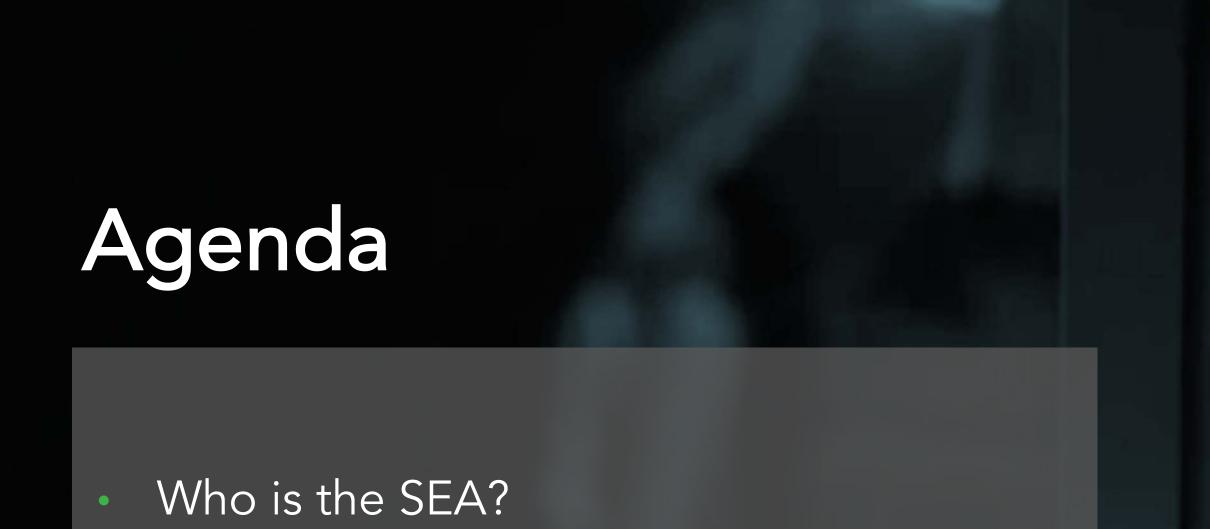


Discover, track, disrupt, and understand the context around targeted

Surveillanceware

Pegasus, ViperRAT, DarkCaracal, StealthMango, and many many more

Michael Flossman Head of Threat Intelligence @Lookout Kristin Del Rosso Security Intelligence Analyst @Lookout



- SilverHawk
- Attack Vectors
- Personas & Attribution



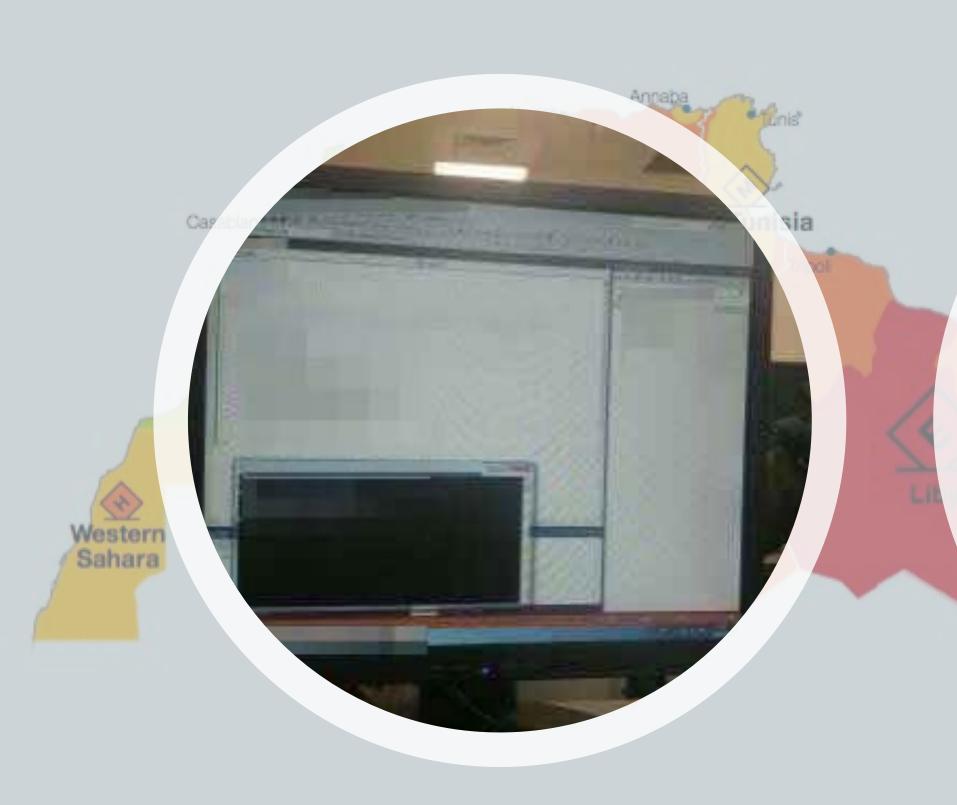
Upgrading Traditional Warfare

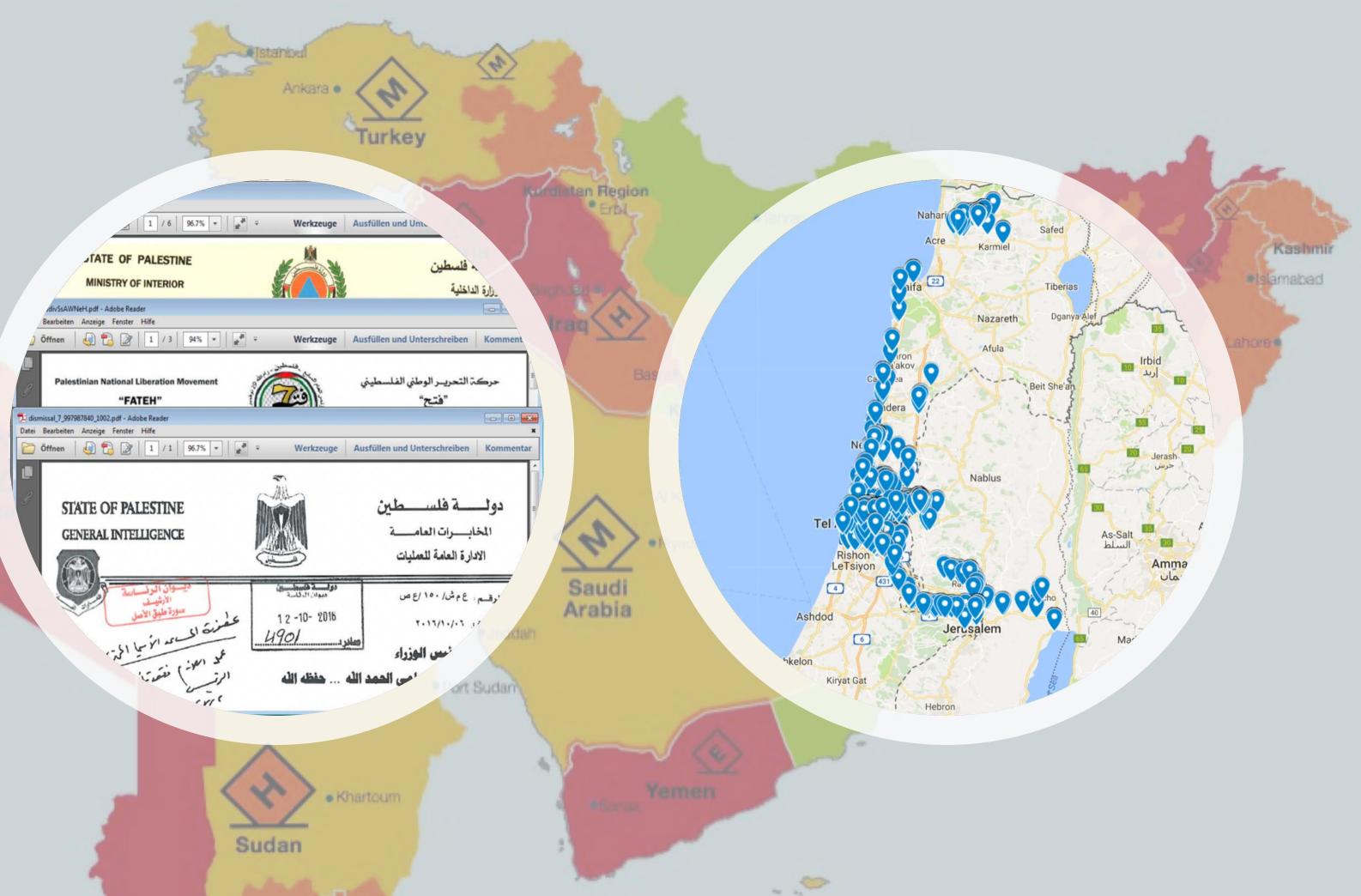
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The Risk Ratings are compiled from sources that Control Risks considers to be reliable or ans expressions of opinion. Control Risks has made reasonable commercial efforts to ensure the accuracy of the information on which the Risk Ratings are provided has all and include reasonable judgments in the circumstances pressing at the time. The Risk Ratings provided should not be construed as definitive or binding advice. Soundaries and names shown on this map do not imply endorsement or acceptance by Control Risks.

Security risk forecast

Political risk forecast







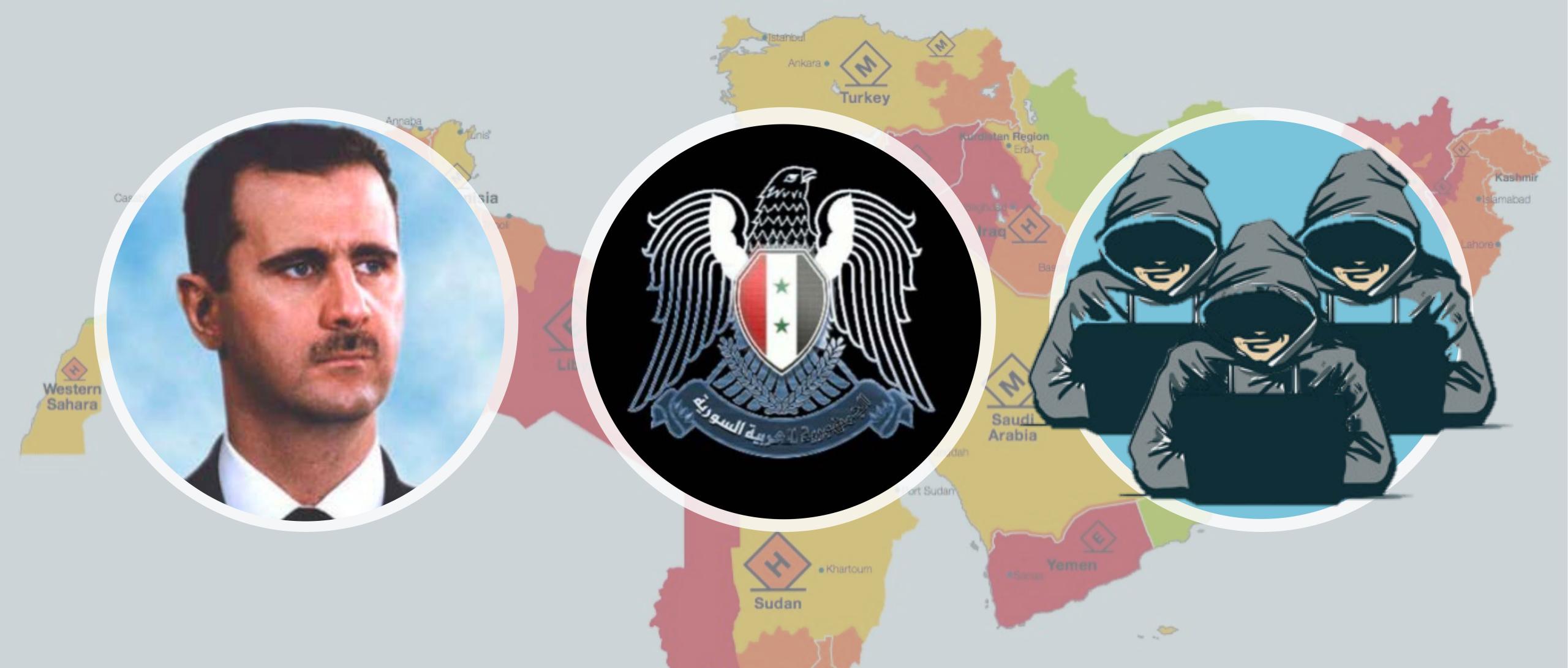
Upgrading Traditional Warfare

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The Risk Ratings are compiled from sources that Control Risks considers to be reliable or an expressions of opinion. Control Risks has made reasonable commercial efforts to ensure the accuracy of the information on which the Risks Ratings are provided has all and include reasonable judgments in the circumstances pressing at the time. The Risk Ratings provided should not be construed as definitive or binding solvice. Boundaries and names shown on this map do not imply endorsement or acceptance by Control Risks.



Political risk forecast



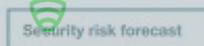


Enemies of the Internet 2014

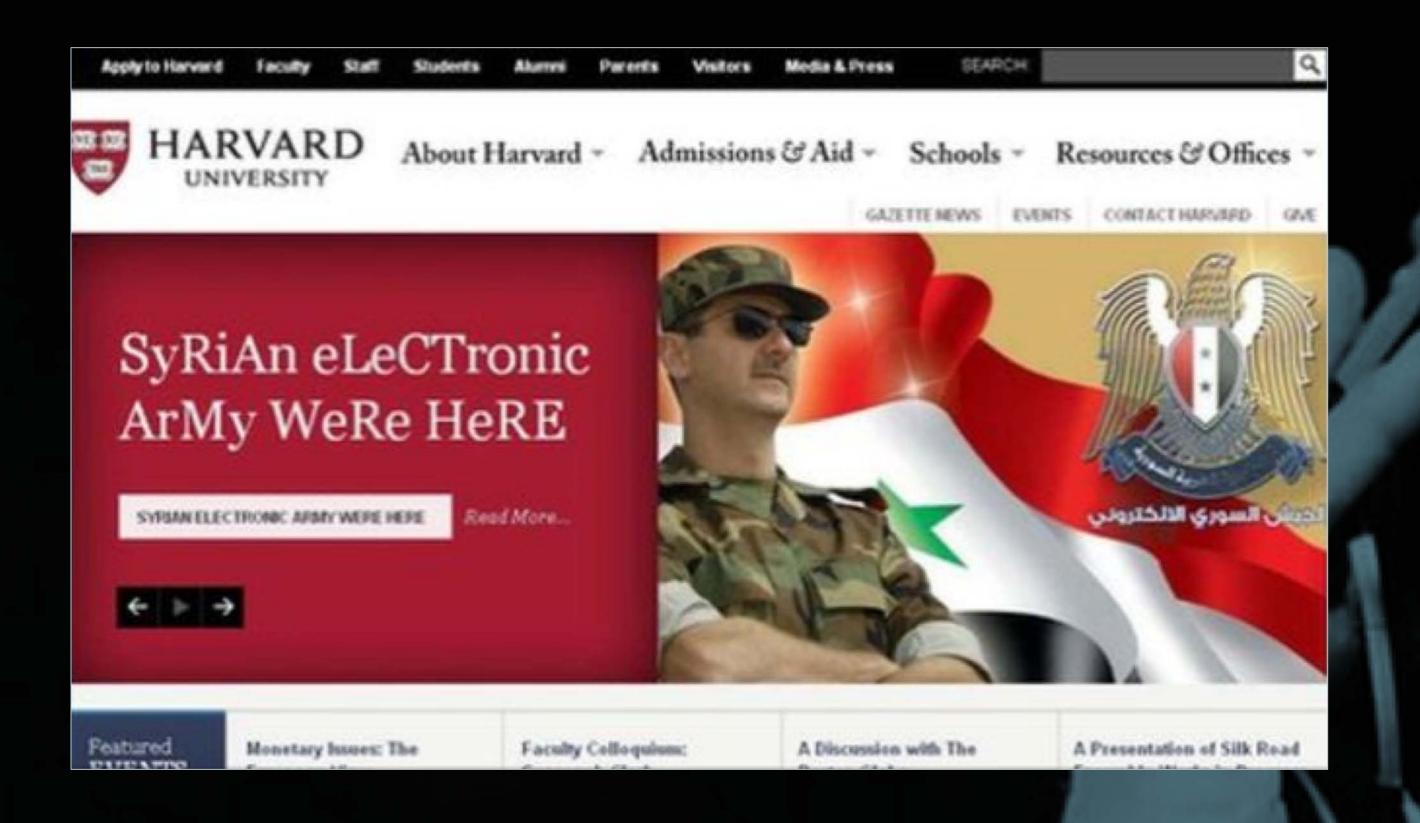
South Sudan

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The Risk Ratings are compiled from sources that Control Risks considers to be reliable or ans expressions of opinion. Control Risks has made reasonable commercial efforts to ensure the accuracy of the information on which the Risk Ratings are based, however, the Risks Ratings are provided has all and include reasonable judgments in the circumstances precalling at the time. The Risk Ratings provided should not be construed as definitive or binding advice. Soundaries and names shown on this map do not imply endorsement or acceptance by Control Risks.



Political risk forecast



Hacked

The Pro

we are sorry to destroy your sites, but your government's policies and the interfere in our Interior affairs forced us to hack your official sites so you will be able to listen to our voices live from Syria, we love our country and we love our President Bashar al Assad and we will not allow anyone to interfere in our Internal Affairs

PR0@Hotmail.NL









Syrian Electronic Army Was Here... Stop lying... All your reports are fake! via @Official_SEA16 #SEA





RETWEETS

FAVORITES



















BBC Weather @bbcweather

Earthquake warning for Qatar: Hamad Bin Khalifah about to exit

Expand



BBC Weather @bbcweather

Saudi weather station down due to head on-collision with camel



BBC Weather @bbcweather

Chaotic weather forecast for Lebanon as the government decides to distance itself from the Milky Way

Expand



BBC Weather @bbcweather

Tsunami alert for Haifa: Residents are advised to return to Poland.



BBC Weather @bbcweather

1h

Forecast for Tel Aviv on Saturday - 5000 degrees Kelvin with northern fog and eastern high pressure front

Expand



BBC Weather @bbcweather

1h

Long Live #Syria Al-Assad #SEA

Tweets All / No replies



FC Barcelona @FCBarcelona - 2m

Special Hi to @RealMadrid! via @Official_SEA16 #SEA

♣ Reply +3 Retweet ★ Favorite ··· More

Retweeted by FC Barcelona FC Barcelona @FCBarcelona cat - 7m



Dear FC Barcelona management, Don't let the Qatari money funds you, it's full of blood and kill via @Official SEA16 #SEA #FCB

◆ Reply €3 Retweet ★ Favorite ··· More

Retweeted by FC Barcelona



FC Barcelona @FCBarcelona es 7m

Dear FC Barcelona management, Don't let the Qatari money funds you, it's full of blood and kill via @Official_SEA16 #SEA #FCB

♣ Reply \$3 Retweet ★ Favorite ... More

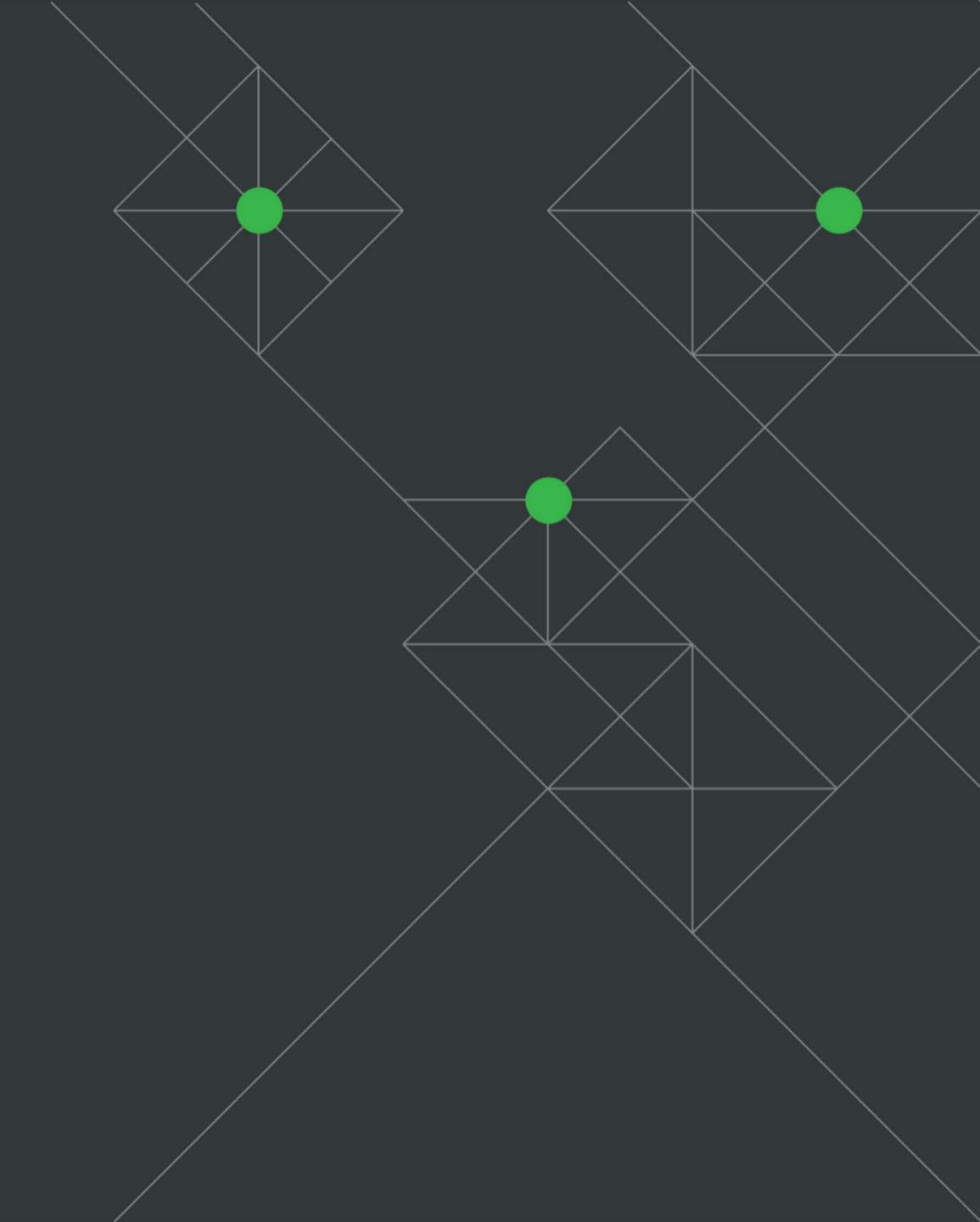


FC Barcelona @FCBarcelona - 7m

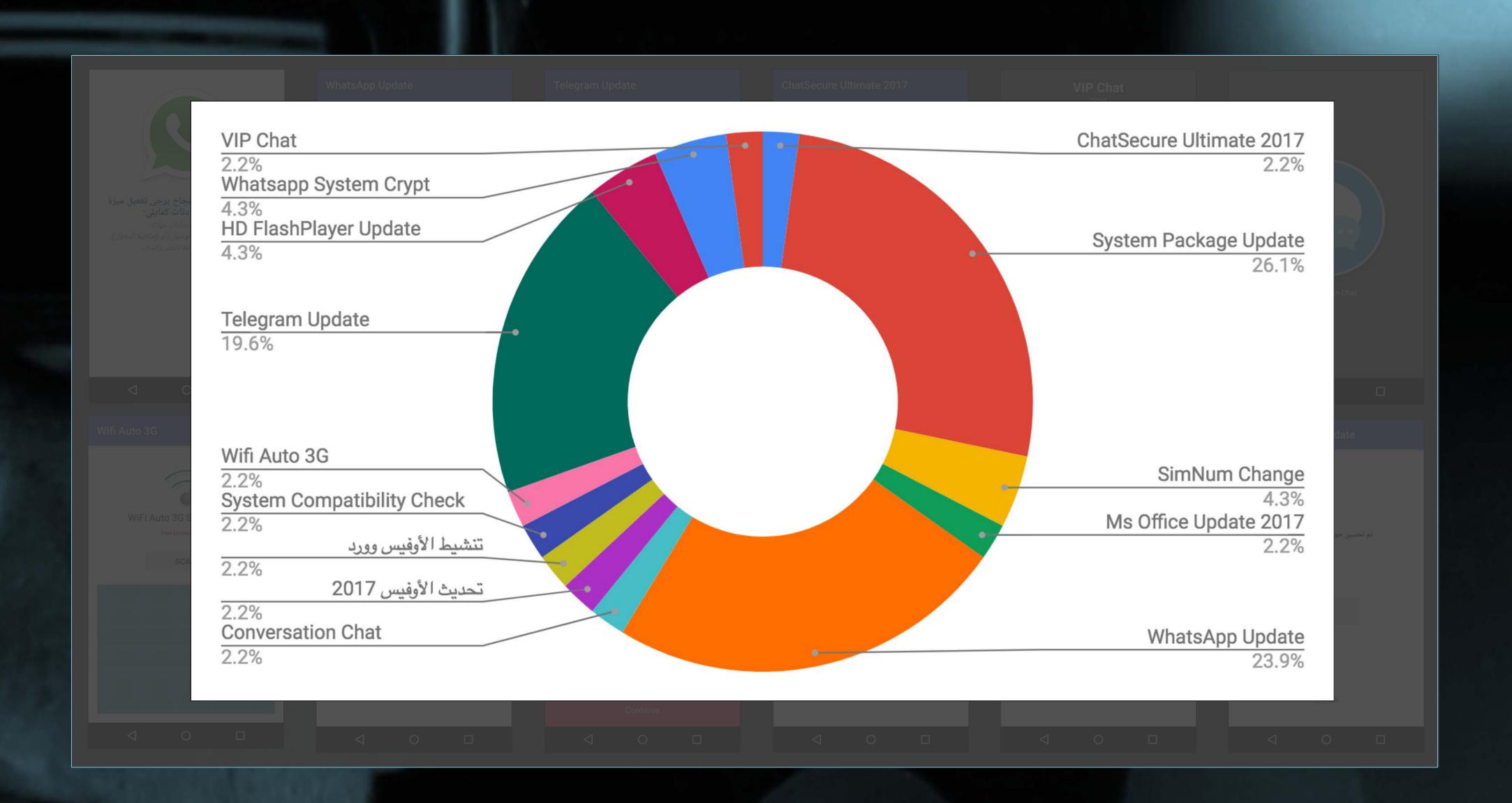
Dear FC Barcelona management, Don't let the Qatari money funds you, it's full of blood and kill via @Official SEA16 #SEA #FCB

◆Reply €3 Retweet ★ Favorite ··· More

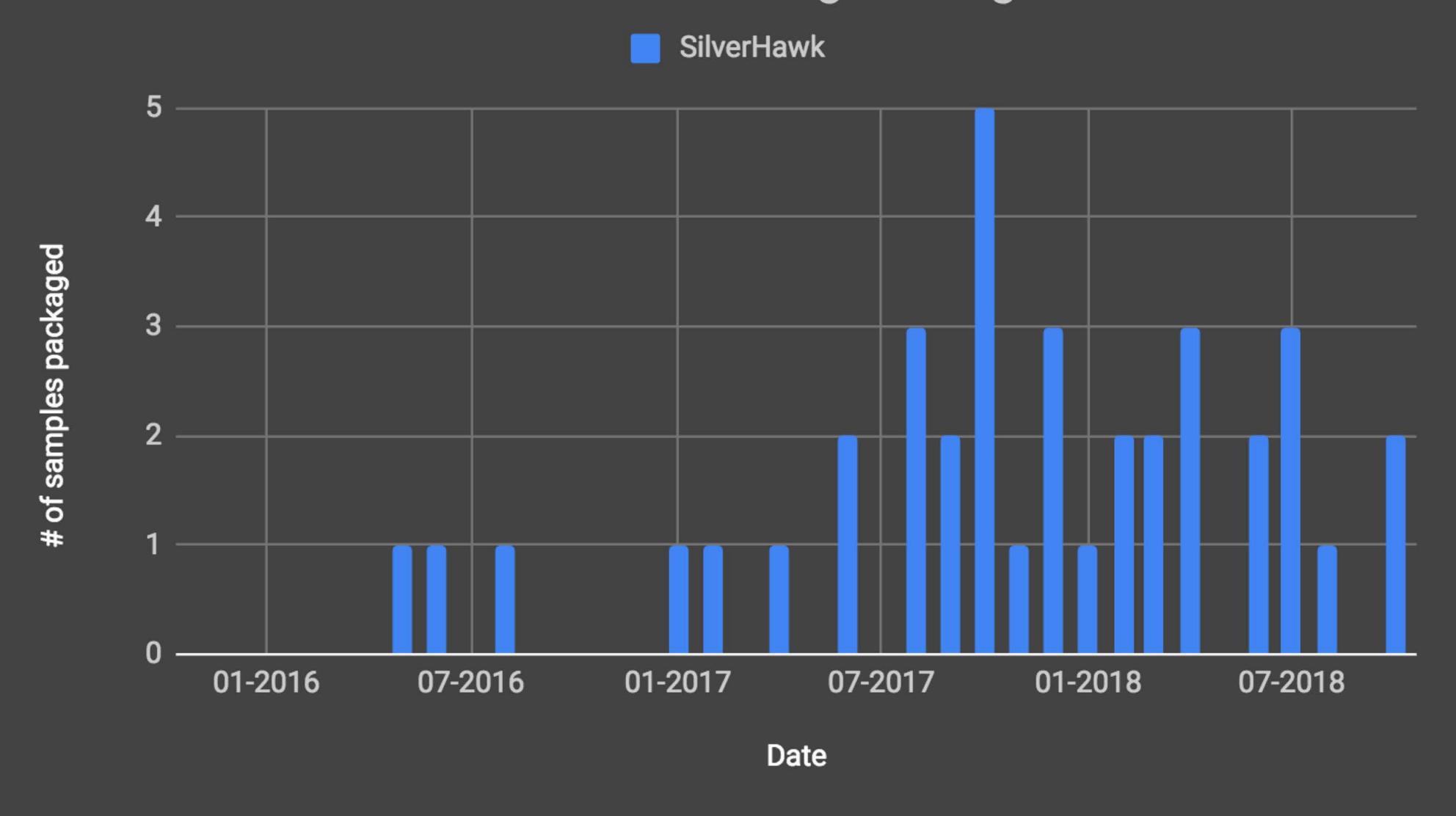
SilverHawk



SilverHawk



Dates Mobile Tooling Packaged



SilverHawk

Where on the phone did the malware touch you?

App Capabilities

- Record Audio
 - Stream environment audio over raw socket when instructed
- Take photos with device camera
- Survival counter failed server connections and it stops
- Retrieve files from external storage
 - Top directory
 - Downloads , Pictures, DCIM directories
 - WhatsApp, Telegram, Viber, Sharelt content
 - Files sent over Bluetooth*
- File utility to copy, move, rename, and delete files
- Download attacker specified files
- Enumerate installed apps incl. date & time installed

- Attempt to execute attacker specified commands or binary as root
- Retrieve contacts and related data:
 - Call logs
 - Contacts
 - Text Messages
- Location, direction, and acceleration of the device
- Remotely updateable C2 IP and port
- Hide Icon
- Device information
 - Retrieve battery levels, WiFi and GPS status, storage and cellular carrier info

```
ormittesquiteopenneuper->onopgrade(squitebatabase, connectionsource, i, i/v, p0, p1, v3, p2, p3
0000002E if-eqz
                          v0, :38
: 32
                          ConnectionSource->clearSpecialConnection(DatabaseConnection)V, v3, v1
00000032 invoke-interface
:38
00000038 return-void
                                                                   SilverHawk
:3A
0000003A move-exception
                          v1, IllegalStateException
0000003C
        new-instance
                           v2, "Could not save special connection"
        const-string
                          IllegalStateException-><init>(String, Throwable)V, v1, v2, v0
00000044
        invoke-direct
0000004A
        throw
:4C
0000004C
0000004E if-eqz
                                                      Custom Communication Protocol
:52
00000052 invoke
:58
00000058 throw
:5A
                                                                                        <hr/>HmzaPacket>
0000005A move
0000005C
        move-o
0000005E
        goto
                <HmzaPacket>
               <Command></Command>
                <XMLData></XMLData>
```

</HmzaPacket></HAMZA_DELIMITER_STOP>

```
<XMLData>&lt;SysInfo&gt;
 < APK&gt; Telgram_21_2_2017_SoundBuffer&lt; /APK&gt;
 <Android&gt;4.3&lt;/Android&gt;
 <WIFI&gt;3G&lt;/WIFI&gt;
 <DBName&gt;&lt;/DBName&gt;
 <DeviceName&gt;Unknown AOSP on ARM Emulator&lt;/DeviceName&gt;
 <IMEI&gt; &lt;/IMEI&gt;
 <Loc&gt;us&lt;/Loc&gt;
 <Oper&gt;
 <SimSer&gt; &lt;/SimSer&gt;
 <Root&gt;Rooted &lt;/Root&gt;
 <Sim&gt;T-Mobile&lt;/Sim&gt;
 <Rate&gt;0&lt;/Rate&gt;
 <Chanel&gt;O&lt;/Chanel&gt;
</SysInfo&gt;</XMLData>
 <MSG></MSG>
 <Success>true</Success>
 <Command>17</Command>
</HmzaPacket></HAMZA_DELIMITER_STOP><HmzaPacket>
 <XMLData></XMLData>
 <MSG>com.systemappsy.update.telegram</MSG>
 <Success>true</Success>
 <Command>30</Command>
</HmzaPacket></HAMZA_DELIMITER_STOP><HmzaPacket>
 <XMLData></XMLData>
 <MSG>com.systemappsy.update.telegram</MSG>
 <Success>true</Success>
 <Command>30</Command>
</HmzaPacket></HAMZA_DELIMITER_STOP><HmzaPacket>
 <XMLData></XMLData>
 <MSG>com.systemappsy.update.telegram</MSG>
 <Success>true</Success>
 <Command>30</Command>
</HmzaPacket></HAMZA DELIMITER STOP>
```

<MSG></MSG>

<Success></Success>

v0

000000000 new-in

00000018 move-r

00000036 invoke

0000003C move-r

0000003E invoke

00000044 move-r

00000046 invoke-0000004C move-r

00000004

A000000A

00000010

00000012

0000001A

00000020

00000022

00000026

0000002C

00000034

invoke

invoke

move-r

invoke

invoke

move-r

const-

invoke

move-r

invoke

move-r

0000004E return-object

0000002E :32	E if-eqz		v0, :38			
00000032 :38	38 return-void 3A move-exception 3C new-instance 40 const-string 44 invoke-direct		ConnectionSource->clearSpecialConnection(DatabaseConne			
00000038 :3A 0000003A 0000003C 00000040 00000044 0000004A :4C			v0 v1, IllegalStateException v2, "Could not save special connection" Capabilit IllegalStateException-> <init>(String, Throwable) V, v1, v1</init>	'erHa ties and E		n
0000004C 0000004E	m COMMAND	TYPE	DESCRIPTION		COMMAND	TYI
:52 00000052 :58	1 6	None	Sends an empty packet to the server and calls TryConnect() which updates all information on the server	ction)V, v3,	22	Bot
00000058	t 17	XML	Send all basic device information to the server including SIM Card	-	23	Bot
: 5A 0000005A	m		details, Network operator, IMEI, phone and device details, Android Build Version, date installed, connectivity, Admin and root privileges,		24	Bot
0000005C 0000005E	m g		Wifi details.		25	XM
	18	XML	If the Success value received from the server with this command is		28	XM
.end meth	ub		false or doesn't exist: Gets a list of mount points and then uploads a HmzaFile object which contains the following folders as its child, only if they exist on the		29	XM
.end meth			system:		30	MS
.method p	u b		 Phone SD Card Downloads Pictures DCIM 		31	ХМ
00000004	i		It also attempts to add the following folders on external storage, only if		32	XM
0000000A 00000010	m		they exist:		33	ХМ
00000012 00000018 0000001A	m i		 Whatsapp GBWhatsapp Telegram Viber Blutooth ShareIt 		34	Nor
00000020 00000022	m C		If the value of Success is true: the XMLData from the server contains		35	Nor
00000026 0000002C	i		the name of a specific file/directory whose details need to be uploaded to the command and control infrastructure. If the specified name is a		36	XM
0000002E 00000034 00000036	i m		directory, the file list of the directory is recursively built and sent as a HmzaFile object.		37	XM
0000003C 0000003E	19	Both	Tells the client to upload a specified file to the remote server		39	MS
00000044 00000046	20	None	Tells the client to receive a specified file from the remote server and	_	40	Bot
0000004C	m		store it at a specified location on the infected device.		41	XM
.end meth	21	XML	Delete a specified file from the device		101	XM

:2E

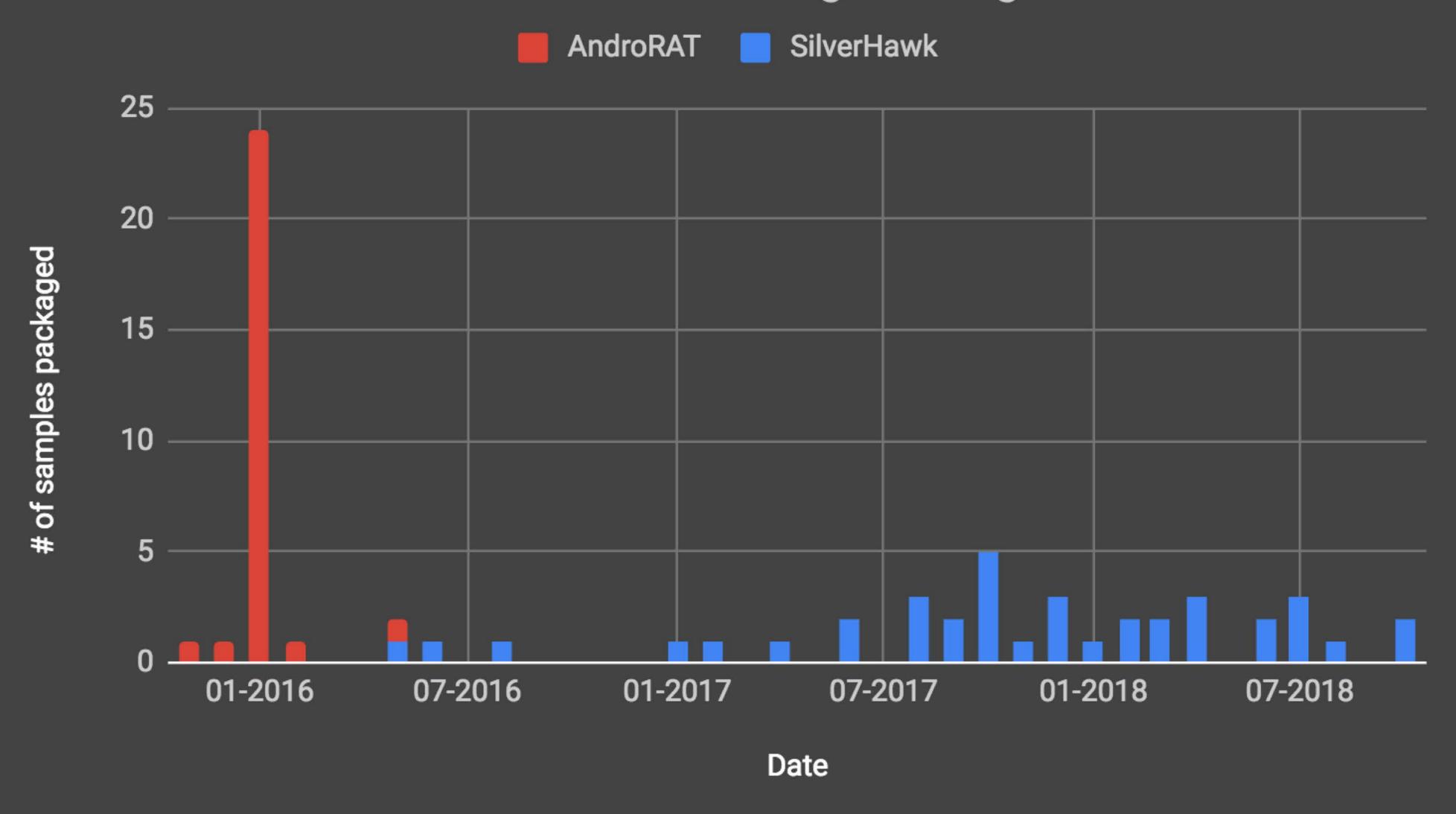
COMMAND	TYPE	DESCRIPTION
22	Both	Copy a specified file to another specified location on the device
23	Both	Move a specified file to another specified location on the device
24	Both	Rename a specified file to a specified name on the device
25	XML	Run a given file on the device
28	XML	Make a new specified directory on the device
29	XML	Root shell command executed and communicated back to server only if su binary exists on device.
30	MSG	Sends back the currently running application on the device
31	XML	Sends the list of all Contacts to the remote server
32	XML	Sends the contents of all SMSs to the remote server
33	XML	Sends the call logs to the server
34	None	Start recording audio and stream it back to the remote server
35	None	Stop recording audio and send an empty packet for confirmation
36	XML	Take a picture and send the data as Base64-encoded XML Data
37	XML	Sends location, direction and acceleration of the device to the server
39	MSG	Receive and update server IP and Port
40	Both	Send the IP and Port that is stored in the Settings to the remote server
41	XML	Sends a list of Installed apps to the server with icons
101	XML	Error reporting for commands 18-20

SilverHawk

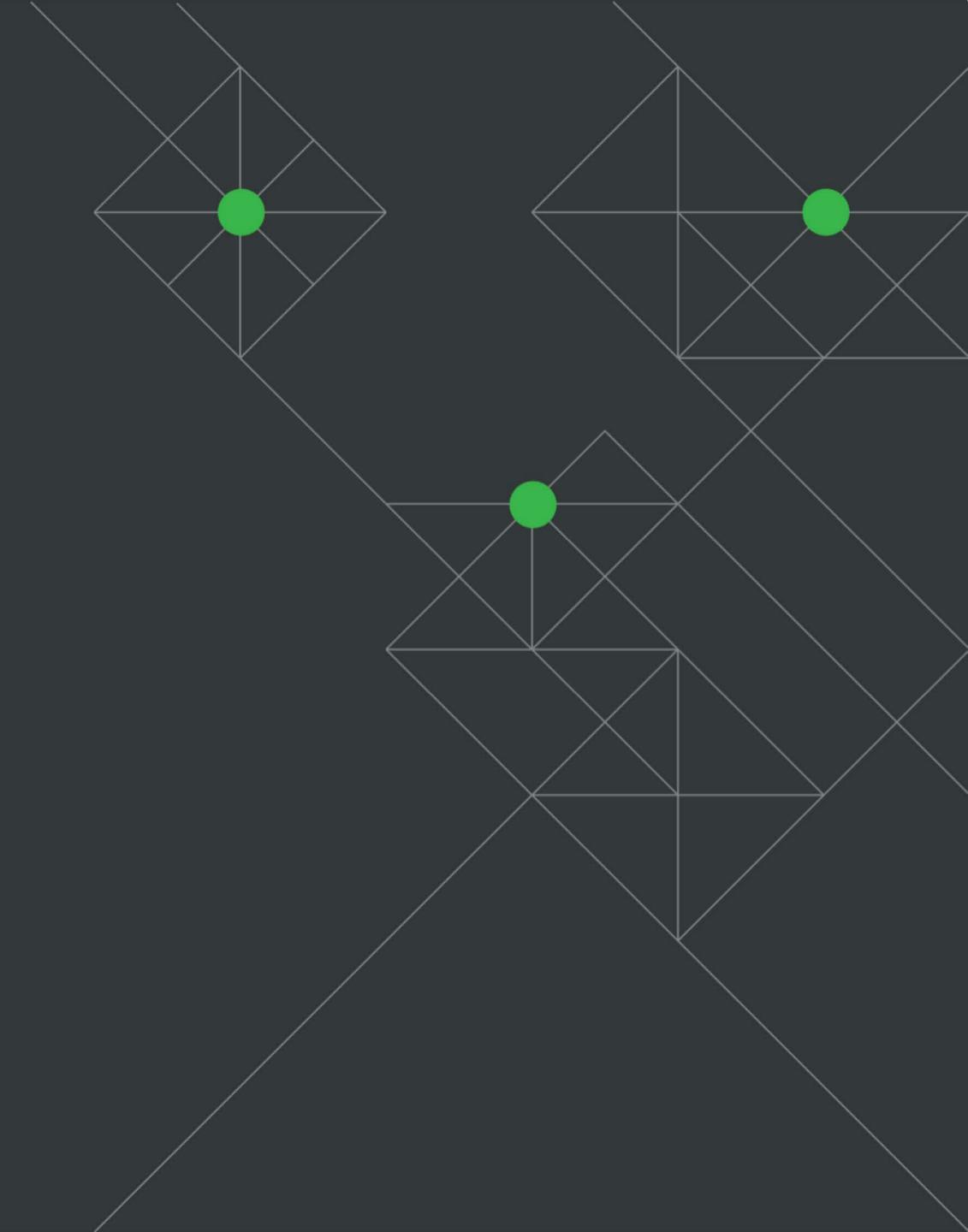
The AndroRAT Connection



Dates Mobile Tooling Packaged



Attack Vectors



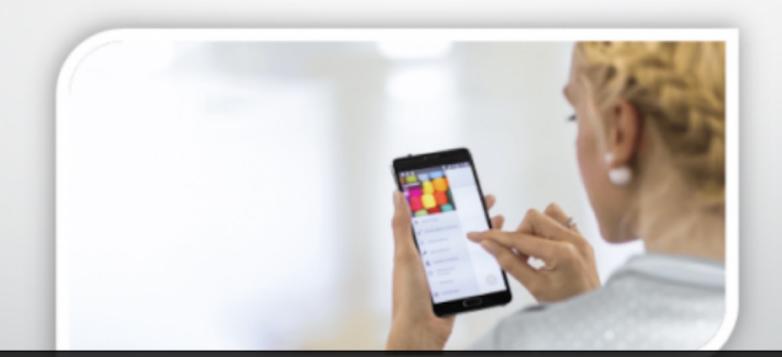


C Q Search

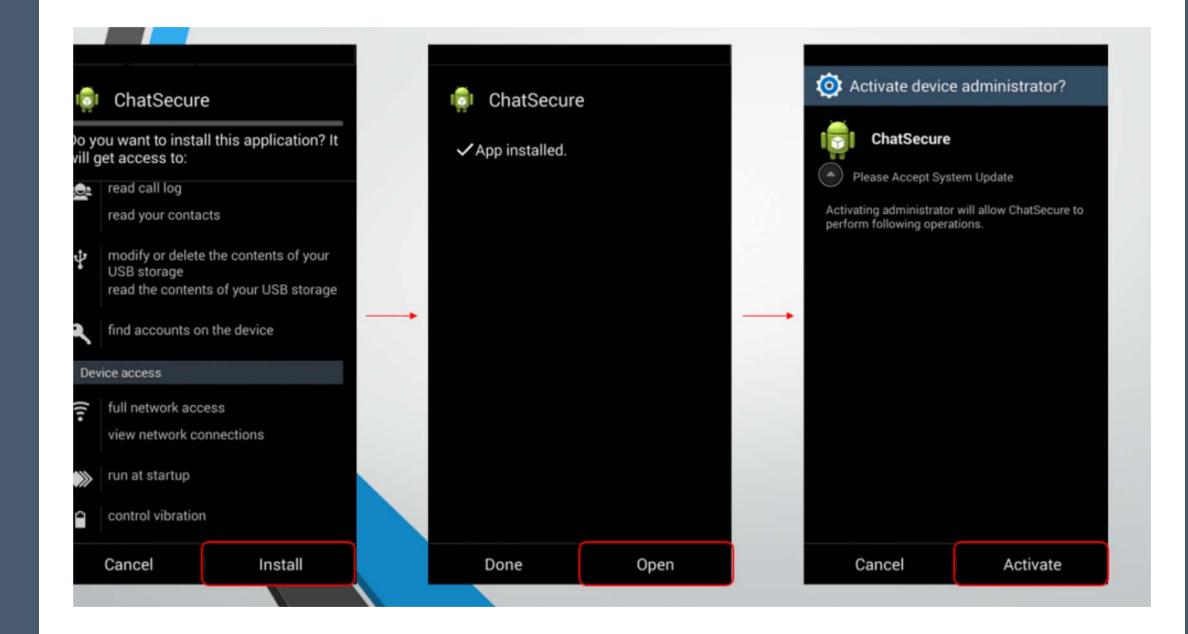
سئلة و أجوبة تحميل البرنامج حول المنتج

Chat Secure

ي مفتوح المصدر لحماية كافة المراسلات على برامج الدردشة الخاصة بأجهزة الأندرويد









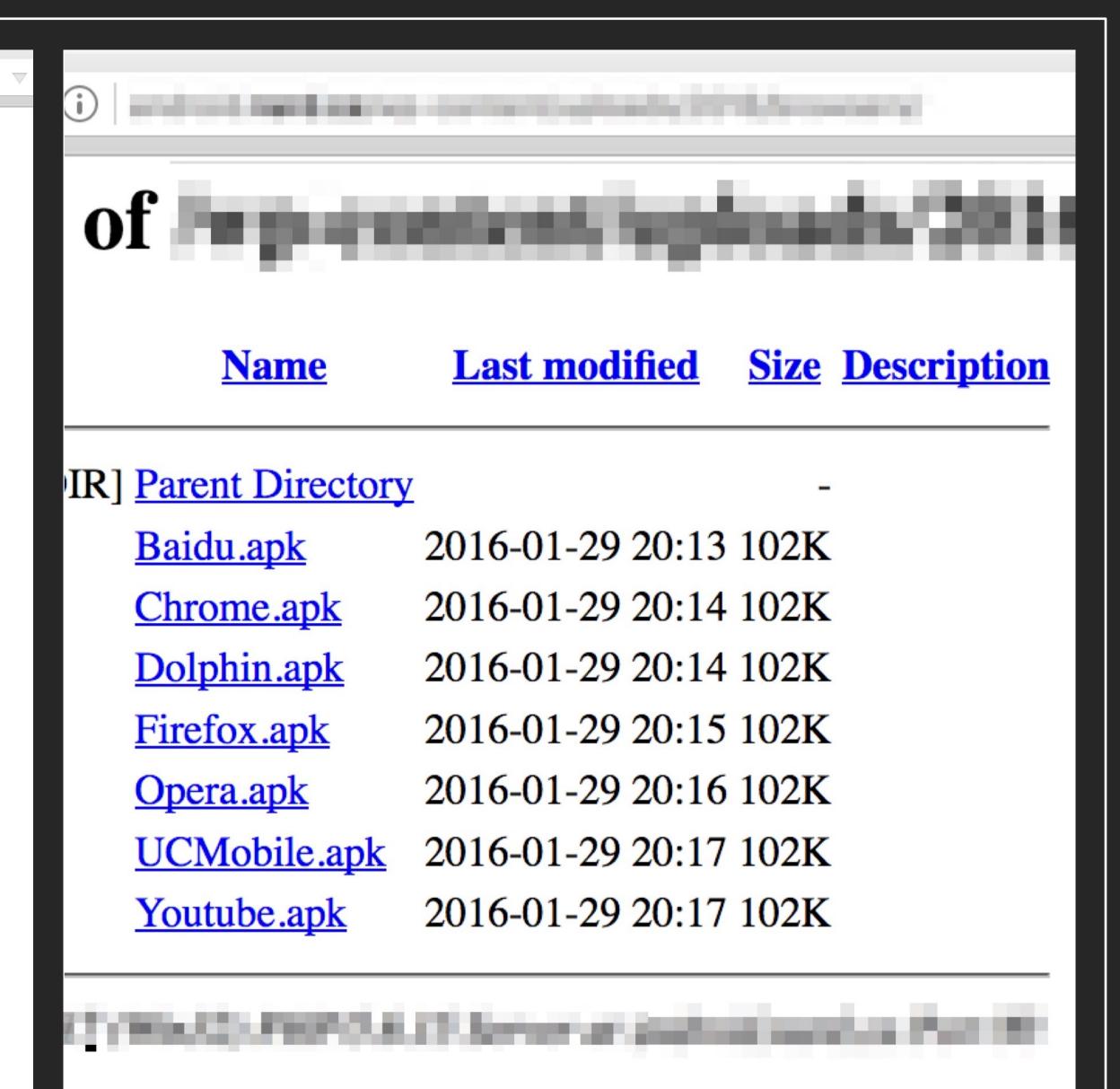
Index of

[ICO]	<u>Name</u>	Last modified	Size Description
[PARENTDIR	2] Parent Directory		-
[]	<u>.تسریع نت مج</u>	2017-09-25 22:52	1.4M
[DIR]	<u>04/</u>	2017-04-09 20:25	-
[DIR]	<u>05/</u>	2017-05-31 09:16	-
[DIR]	<u>06/</u>	2017-06-01 11:27	-
[DIR]	<u>07/</u>	2017-07-02 14:34	-
[DIR]	<u>08/</u>	2017-08-01 16:31	-
[DIR]	<u>09/</u>	2017-09-02 18:49	-
[DIR]	<u>10/</u>	2017-10-01 10:50	-
[]	ChatSecureLite.apk	2017-09-25 22:52	1.4M
[]	ChatSecurePro.apk	2017-10-16 15:38	1.5M
[]	Wifi Auto 3G.apk	2017-08-19 17:12	1.5M
[]	WordActivation.apk	2017-10-16 15:27	1.4M
[]	kaser-pro.aman.belg.apk	2016-12-29 22:45	1.5M
[]	skype.exe	2015-11-02 00:47	45M
[]	telegramupdate 2017.apk	2017-10-16 15:41	1.5M
[]	whatsapp 2017.apk	2017-10-26 11:54	1.5M
[]	whatsappupdate 2017.apk	2017-10-16 15:45	1.5M
[]	windows5000.key	2017-09-13 20:46	203K

Appropriate Control of Control of

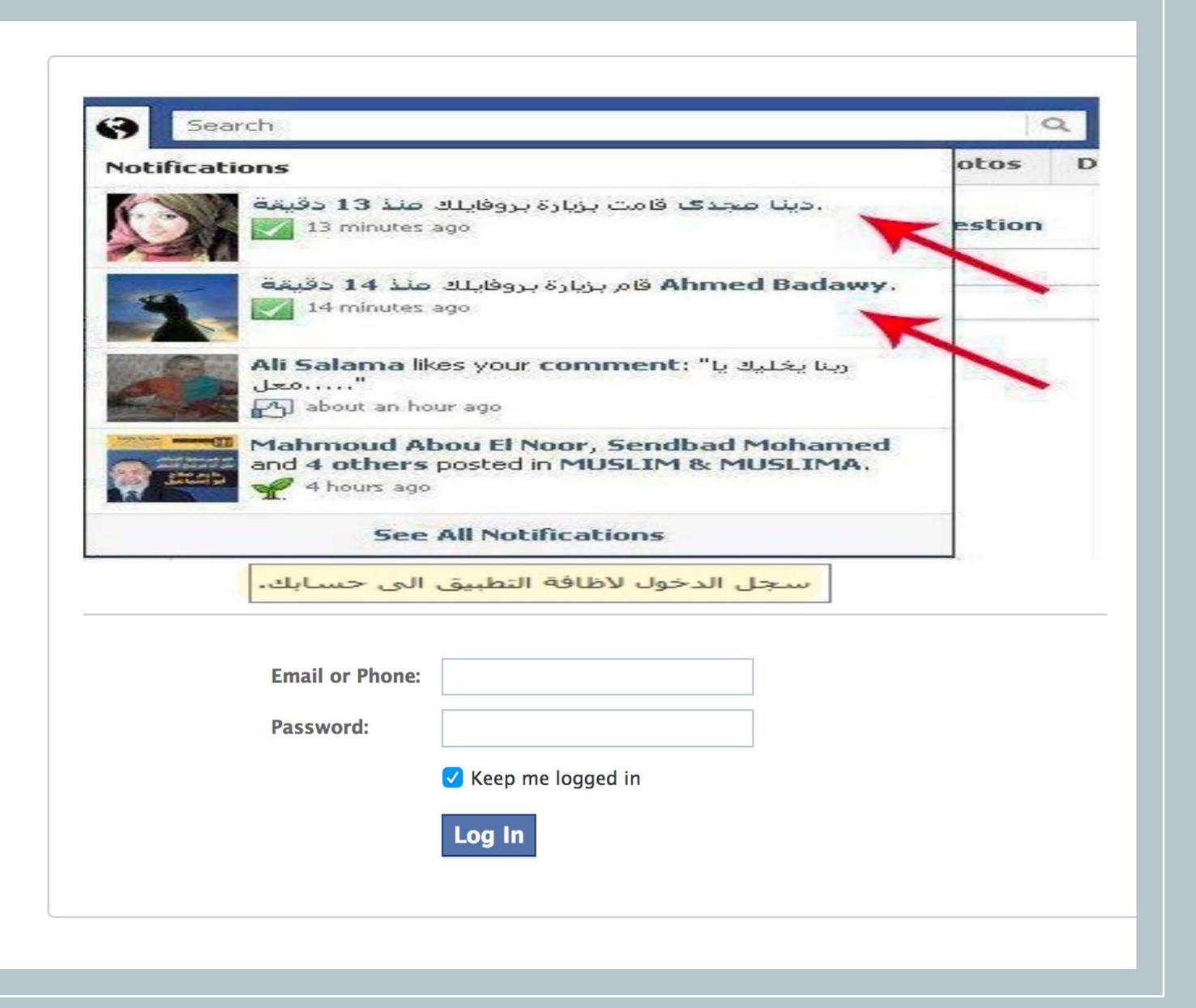
19

♦ (+) (1)			, martine
[ICO]	<u>Name</u>	Last modified	Size Description
[PARENTDIR]	Parent Directory		-
[]	Facebook.apk	2016-01-29 19:56	102K
[]	Firefox1.apk	2016-01-29 16:25	35M
[]	<u>Line.apk</u>	2016-01-29 19:58	102K
[]	Messenger.apk	2016-01-29 19:58	102K
[]	Messenger1.apk	2016-01-29 16:29	26M
[TXT]	New Text Document.txt	2016-01-29 23:11	41
[]	Skype.apk	2016-01-29 19:59	102K
[]	SnapChat.apk	2016-01-29 19:59	102K
[]	Telegram.apk	2016-01-29 20:00	102K
[]	Twitter.apk	2016-01-29 20:01	102K
[]	UCMobile1.apk	2016-01-26 15:09	17 M
[]	Viber.apk	2016-01-29 20:01	102K
[]	WhatsApp1.apk	2016-01-26 12:43	26M
[]	WhatsAppPlus.apk	2016-01-29 20:12	102K
[]	baidu1.apk	2016-01-27 21:19	6.5M
[]	chrome1.apk	2016-01-26 16:55	39M
[]	dolphin1.apk	2016-01-27 21:21	7.8M
[]	facebook1.apk	2016-01-26 12:43	33M
[]	imo.apk	2016-01-29 19:57	102K
[]	imo1.apk	2016-01-27 14:09	5.0M
[]	<u>line1.apk</u>	2016-01-27 14:03	33M
[]	opera1.apk	2016-01-27 21:24	17 M
[]	skype1.apk	2016-01-27 14:04	36M
[]	snapchat1.apk	2016-01-26 12:43	33M
[]	telegram1.apk	2016-01-26 12:43	12M





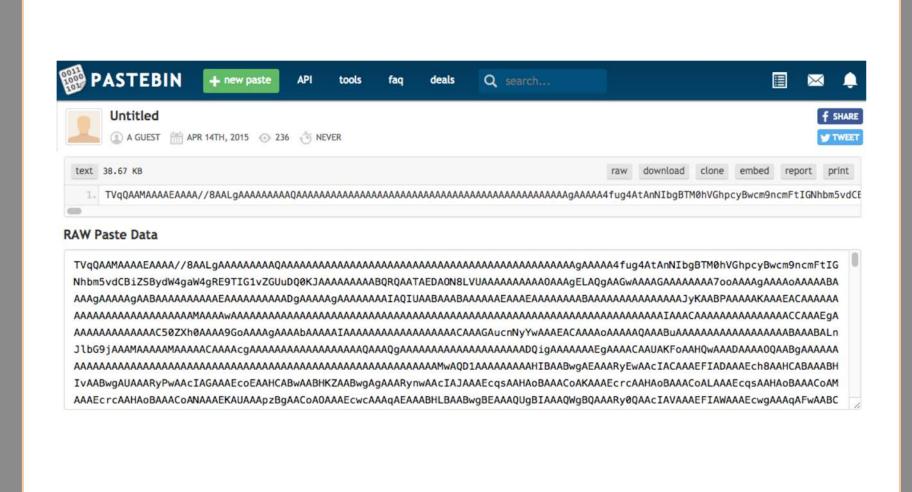


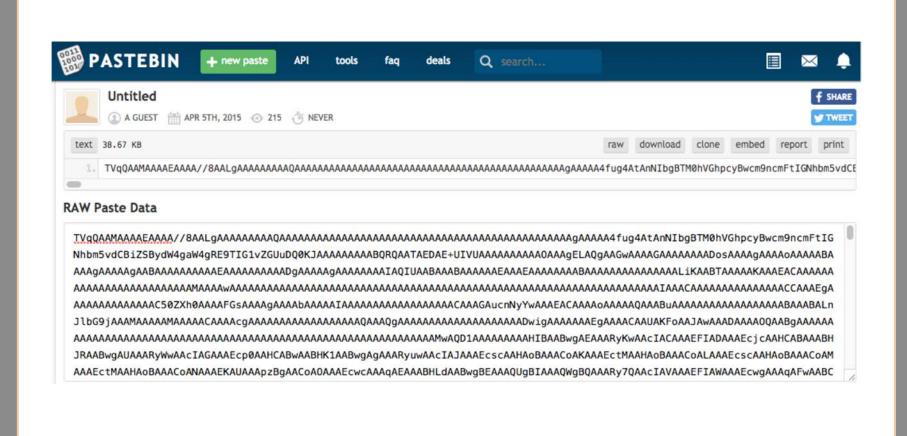


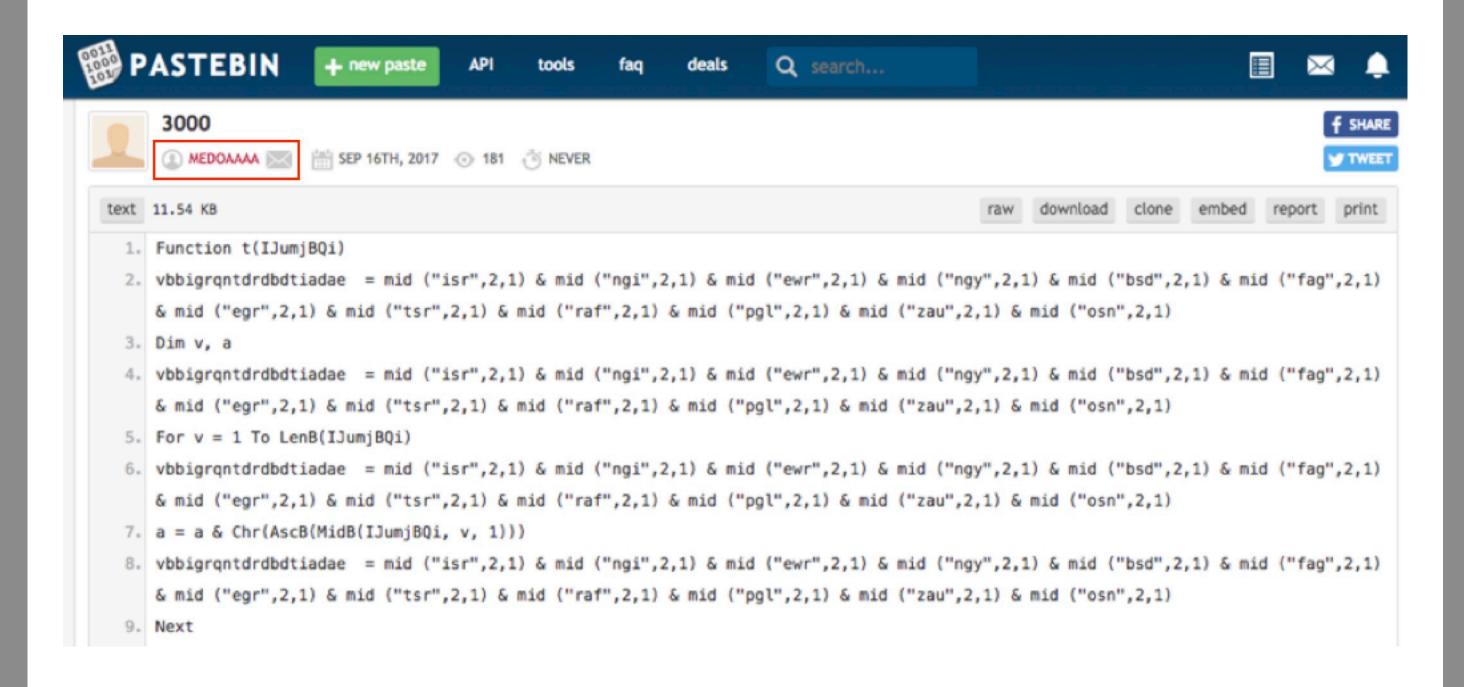
التولغرام لديك قديمة لاتتوافق مع نسخة التلغرام لدى @aboazzam77 السيرة الذاتية جى تحديث نسخة التيلغرام لديك لقراءة المحتوى : Exchange of Prisoners معلومات شخصية : اص بالكمبيوتر 2017 : هائف فاكس هائف منزل 1 Google Earth coordinates of the Lat Party in Calmoun and http://telgram.strangled.net/wp-content/uploa هائف جوال ناص بالجوال 2017 : Weber الأهداف : http://telgram.strangled.net/wp-content/uploads/2017/tele Brigadier General Manaf Tlass heads the General Staff المؤهلات العلمية والشهادات الحاصل عليها: Leaks deal system and the Corps of Rahman الدورات التدريبية والتدوات والمحاضرات وورش العمل : Orient channel - radar program - a military analysis - strategic الخبرات العملية : - Hisham Khreisat Homs Talbisse mortar bombardment العضويات واللجان المشارك فيها: اللجنة أو الجمعية نوع العضوية لاق النار والتي تم بخلالها الاتفاق على تسليم ما يقارب 100 معتقل في CLICK HERE TO CONTINUE مهارات أخرى عيث تم التوقيع من قبل قائد العمليات العسكرية في الغوطة الشرقية العميد نوعية المهارة الحرس الجمهوري علي يونس محمد والشيخ ابو يحيى نائب النقيب أبو تقتية المكاتب صر (عبد الناصر شمير) قائد فيليق الرحمن والاسماء التي تم طرحها الحاسب الألى والانترنت NjRAT ادل خلال الاسبوع الاول من العام 2017 هي العربية تاريخ ومكان الولادة H-Worm Plus 1989/3/12 دوما 100 Custom .NET Downloader 1975/ 1/11 دوما 1990/10/20 دوما المراجع : 5/18/ 1985 دوما and the DarkComet 1990/9/22 دوما 1963 /12/11 بسيمة Marie III 1988/2/13دوما ARCHIVE STATE and part of 1982/9/22 دوما

1963 /12/11 بسيمة

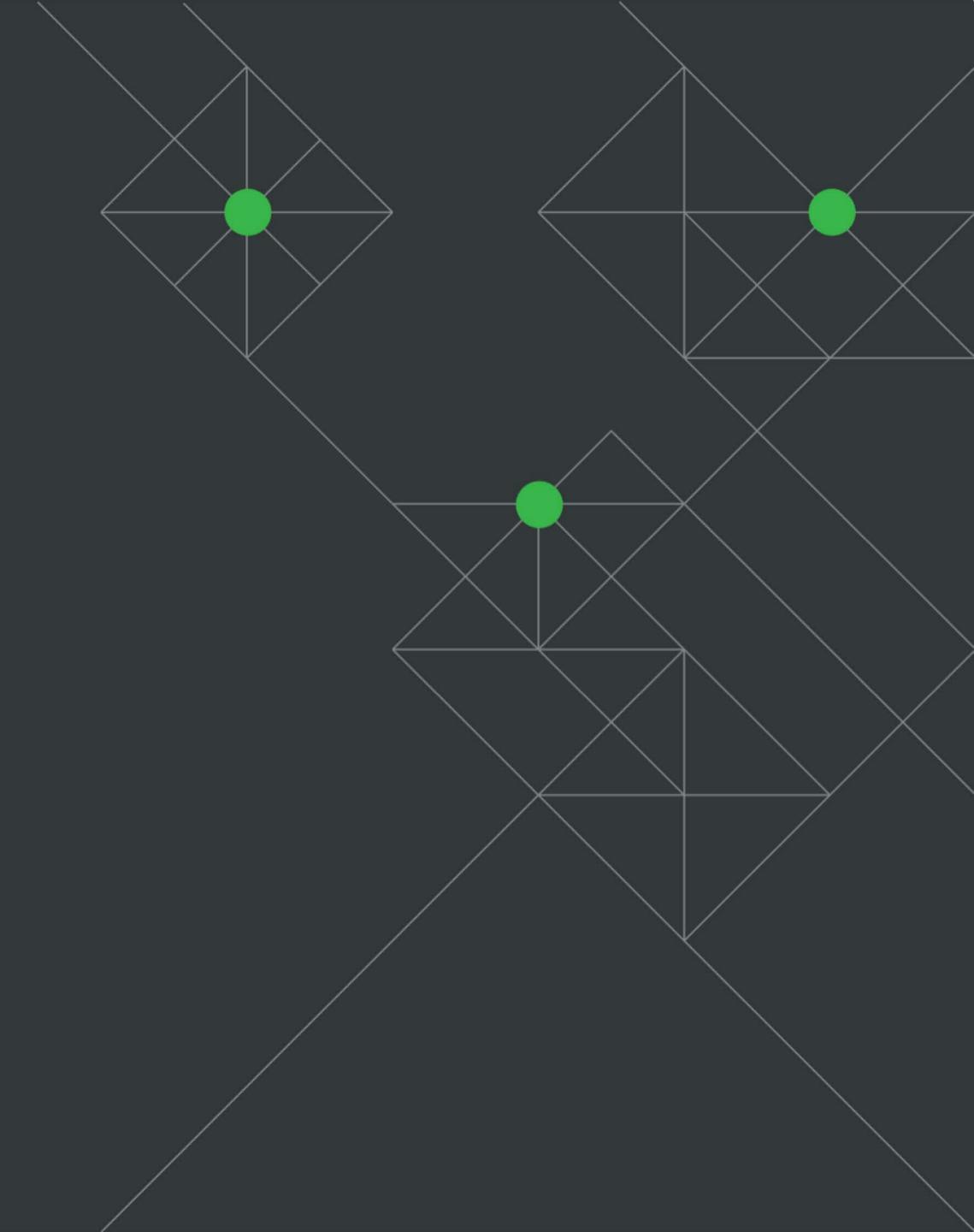
1990/5/22 عربين







Tying It All Together



Personas

Piecing together the players involved

File paths for debugging symbols in .NET binaries Metadata in word files Open directories on Logging statements in Android infrastructure & some C2 samples domains

Connected Personas

Domains and PDB file paths

basharalassad1sea.noip.me

c:\Users\Allosh Hacker\Desktop\Application\obj\Debug\Clean Application.pdb

C:\Users\THE3pro\Desktop\fadi+medo\fadi+medo\obj\Debug\medo.pdb

C:\Users\Th3ProSyria\Desktop\cleanPROs\cleanPROs\obj\Debug\NJ.pdb

C:\Users\User\Desktop\THE PRO\SERVER PRO WEB\SERVER PRO WEB\obj\x86\Release\SERVER PRO WEB\obj\x86\Release\SERVER PRO

c:\Users\Abo Ala\Desktop\blow\blofish\blofish\obj\Debug\blofish.pdb

c:\users\abo moaaz\documents\visual studio 2012\Projects\System\System\obj\Debug\System.pdb

c:\Users\Abo Ala\Desktop\newhas\new\new\obj\Debug\@new.pdb

Khattap
Abo Omar
Medo CoDeR

Connected Personas



AHMED AL AGHA

Conspiracy to Gain Unauthorized Access to and Damage Computers; Conspiracy to Convey False Information Regarding a Terrorist Attack; Conspiracy to Cause Mutiny of United States Military Members; Conspiracy to Commit Identity Theft; Conspiracy to Commit Access Device Fraud







DESCRIPTION

Aliases: Ahmad Al Agha, Ahmad 'Umar Agha, Ahmed 'Umar Temer, Ahmed Temer Agga, "Th3 Pr0", "The Pro"

Date(s) of Birth Used: January 10, 1994	Place of Birth: Damascus, Syria
Hair: Dark Brown	Eyes: Brown
Height: 5'10"	Weight: 110 pounds
Build: Thin	Sex: Male
Race: White	Nationality: Syrian

REWARD

The FBI is offering a reward of up to \$100,000 for information leading to the arrest of Ahmed Al Agha.

REMARKS

Al Agha is known to wear prescription eyeglasses. He is believed to be residing in Damascus, Syria.

CAHTION

Ahmed Al Agha is wanted for his alleged involvement in the Syrian Electronic Army (SEA), a group of individuals who allegedly commit hacks in support of the Syrian Regime. It is alleged that, between September of 2011 and January of 2014, Al Agha committed dozens of cyber attacks against United States government agencies, media organizations, and private organizations under the SEA banner while using the online nickname, "Th3 Pr0" On June 12, 2014, a criminal complaint was filed in the United States District Court, Eastern District of Virginia, Alexandria, Virginia, charging Al Agha with conspiring to violate numerous laws related to the commission of computer intrusions.

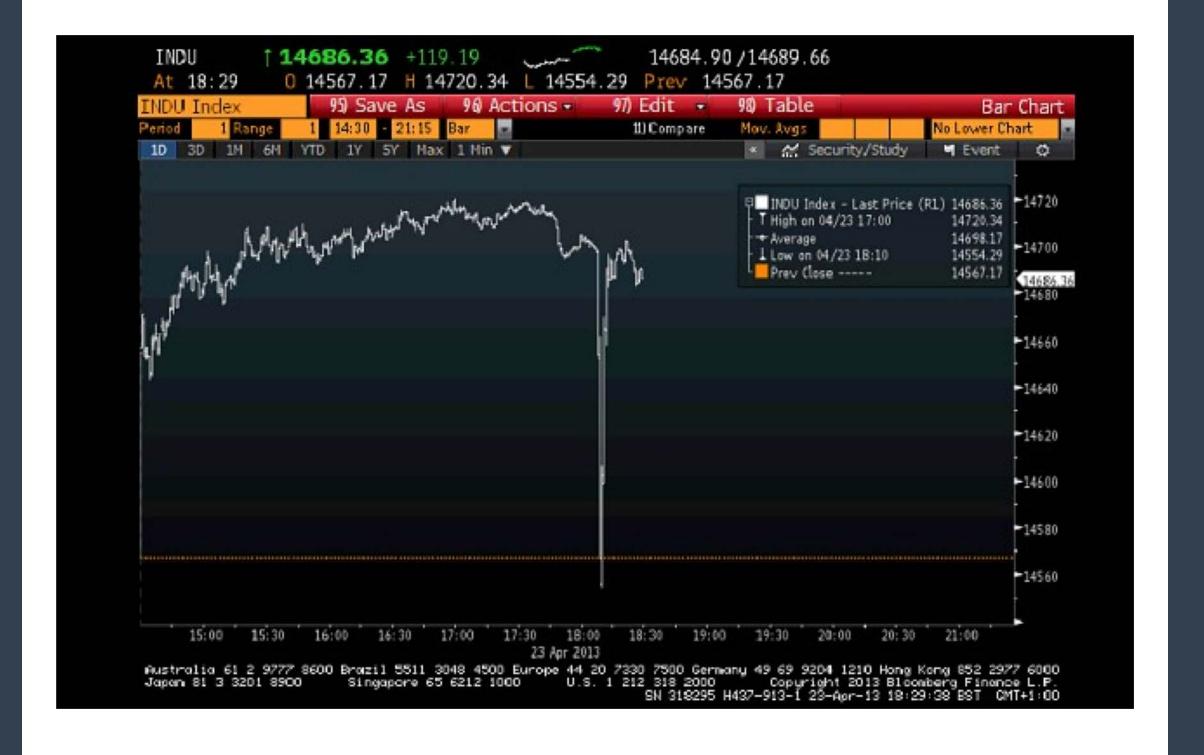
If you have any information concerning this person, please contact your local FBI office or the nearest American Embassy or Consulate.

Field Office: Washington D.C.

Charged and indicted with criminal conspiracy relating to:

- engaging in a hoax regarding a terrorist attack
- attempting to cause mutiny of the U.S. armed forces
- illicit possession of authentication features
- access device fraud
- unauthorized access to, and damage of, computers
- unlawful access to stored communications

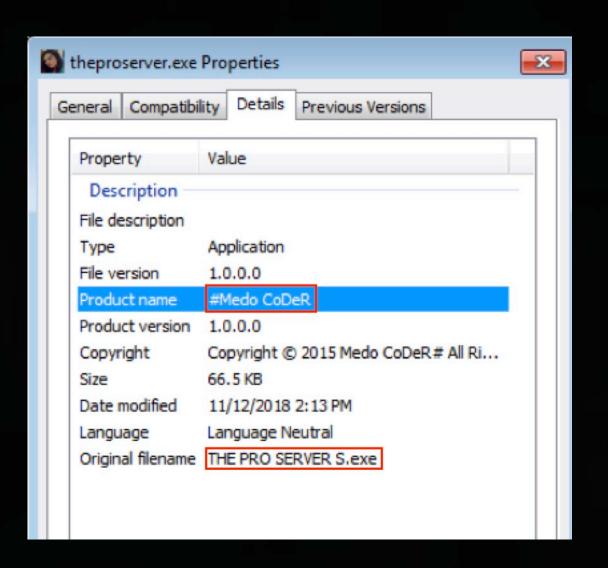
Agha is wanted for his allege t of the Syrian Regime. It is all gainst United States governm kname, "Th3 Pr0" On June 12 a, Virginia, charging Al Agha ve any information conce

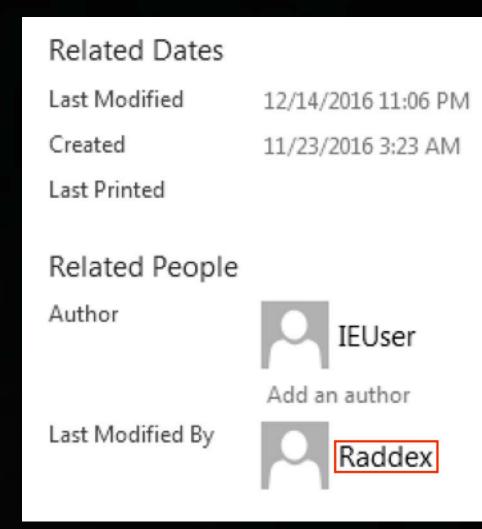




Connected Personas

Metadata and Logging Statements





```
Related People
Author

IEUser
Add an author

Last Modified By

Khattap

Related Documents

Open File Location

Show All Properties
```

```
PacketProvider.MyDir = v6.trim().startsWith("/") ? v6.trim() : PacketProvider.MyDir + "/" + v6.trim();
goto label_40;
}
else {
    v3.writeBytes("cd " + PacketProvider.MyDir + "; " + arg9 + ";" + "\n");
    v3.flush();
    goto label_113;
label_40:
    File v6_1 = new File(PacketProvider.MyDir);
    if(!v6_1.exists()) {
        PacketProvider.MyDir = v0_1;
        return "Hey Raddex" -- no such directory : " + v6_1.getAbsolutePath() + "\n"
}

PacketProvider.MyDir = PacketProvider.getPWD();
}
```

Allosh Hacker

- Known to use the same desktop and mobile tools
- Infra has been same /24
- EFF & CL report tied to SEA



Ahmed Al Agha

- "Th3Pro" / "The3Pro"
- SEA Special Operations Division
- FBI wanted list



Anonymous.1.sy

- Handle leaked from earlier infrastructure
- | Leak included SEA | affiliation



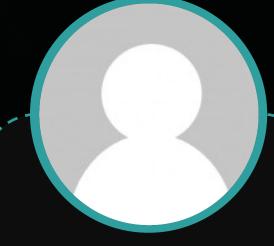
Beginner Developer

(h



Zeko

- Author on watering hole site
- Same handle present on hacker forum with SEA sy-team profile



Medo CoDeR

- Referenced in .NET binaries, Word Doc lures, and on pastebin submissions



Raddex

- Handle in APK logging statements
- Previously listed as author on watering hole



Khattap Abo Ala Abo Moaaz Fadi Medo

Research Shout Outs

360 Threat Intelligence

- https://ti.360.net/blog/articles/analysis-of-apt-c-27/
- https://blog.360totalsecurity.com/en/the-sample-analysis-of-apt-c-27s-recent-attack/

Kaspersky Labs

- https://media.kasperskycontenthub.com/wp-content/uploads/sites/43/2018/03/08074802/KL_report_syrian_malware.pdf
- https://securelist.com/the-syrian-malware-house-of-cards/66051/

FireEye

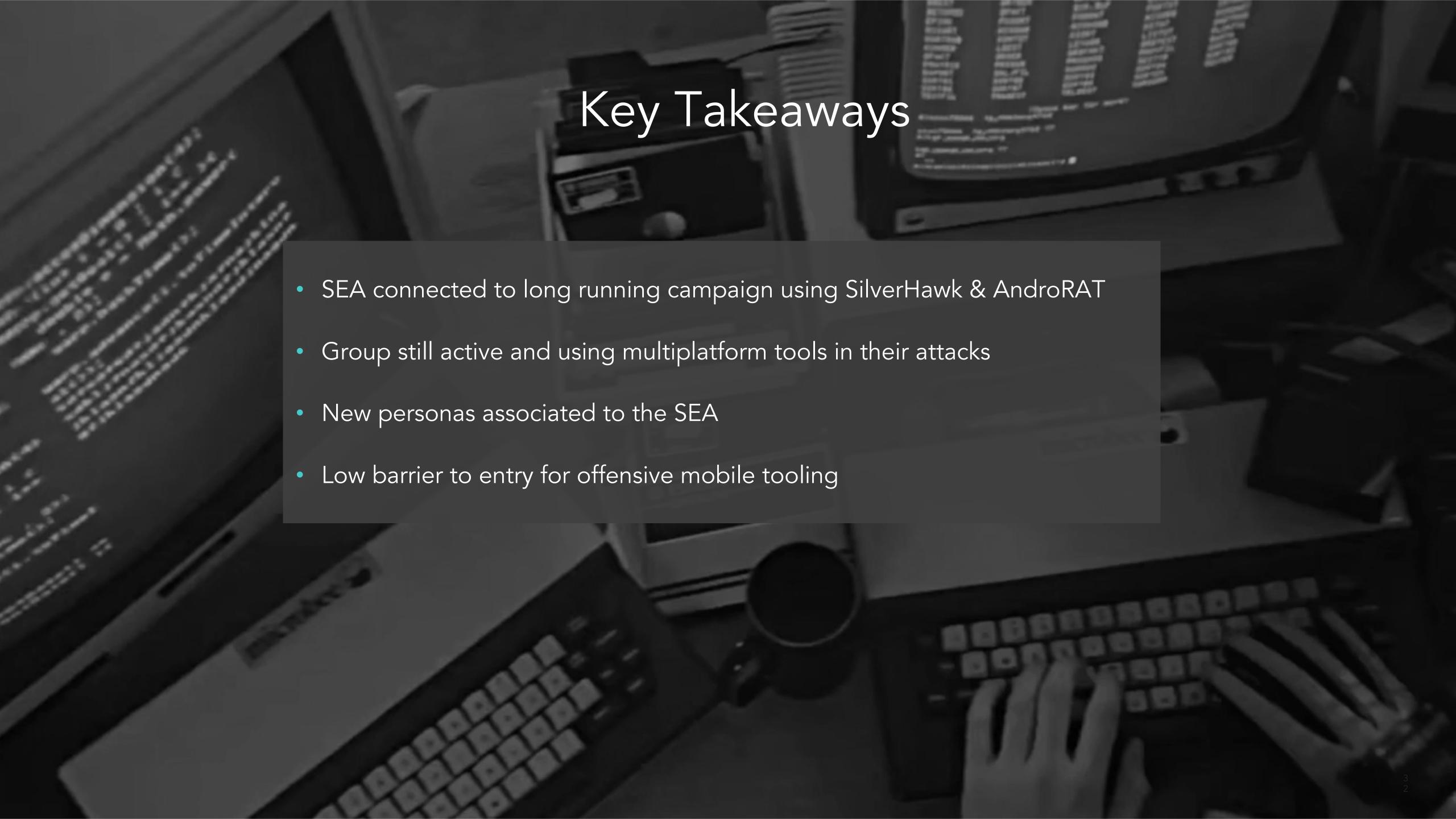
• https://www.fireeye.com/blog/threat-research/2014/08/connecting-the-dots-syrian-malware-team-uses-blackworm-for-attacks.html

EFF

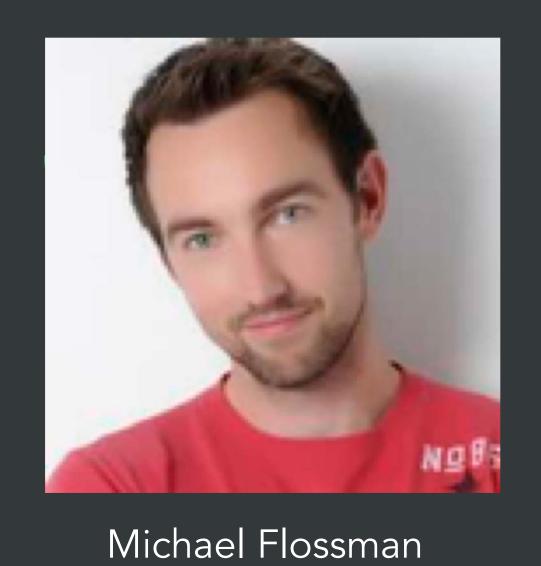
• https://www.eff.org/document/quantum-surveillance-familiar-actors-and-possible-false-flags-syrian-malware-campaigns

Citizen Lab

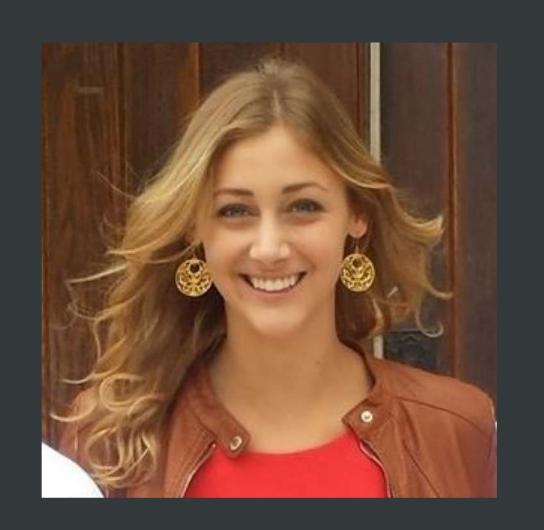
- https://citizenlab.ca/2014/12/malware-attack-targeting-syrian-isis-critics/
- https://issuu.com/citizenlab/docs/maliciously_repackaged_psiphon



Contact Us

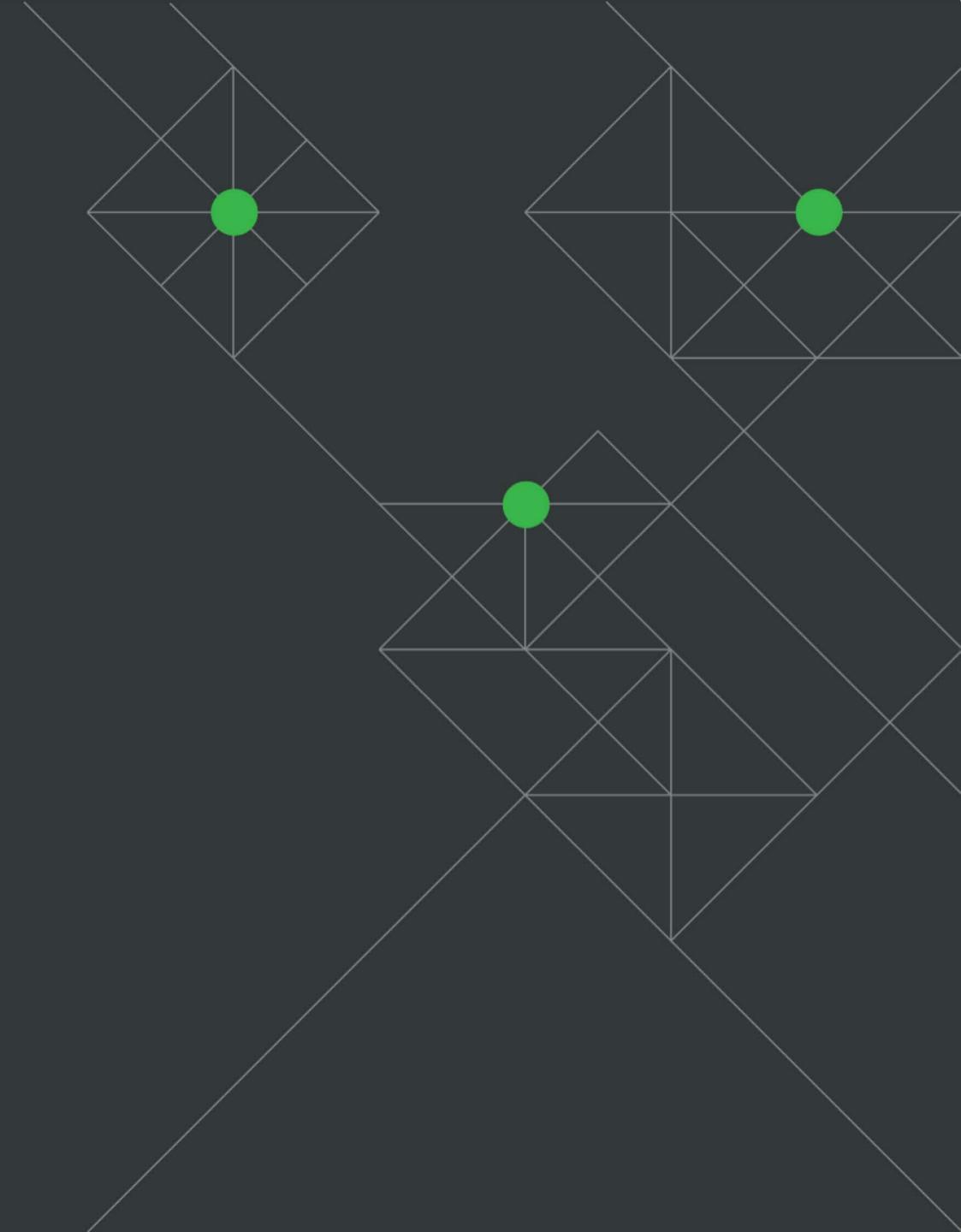


@terminalrift



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Email: threatintel@lookout.com





Thank you!

Questions?

Note: All security research conducted by Lookout employees is performed according to the Computer Fraud and Abuse Act (CFAA) of 1986. As such, analysis of adversary infrastructure and the retrieval of any exposed data is limited to only that which is publicly accessible. Any sensitive information obtained during this process, such as usernames or passwords, is never used in any authentication-based situations where its use would grant access to services or systems.

