# THE CURRENT STATE OF RANSOMWARE

**Sebastian Gebhard** 

**BSidesMunich** 

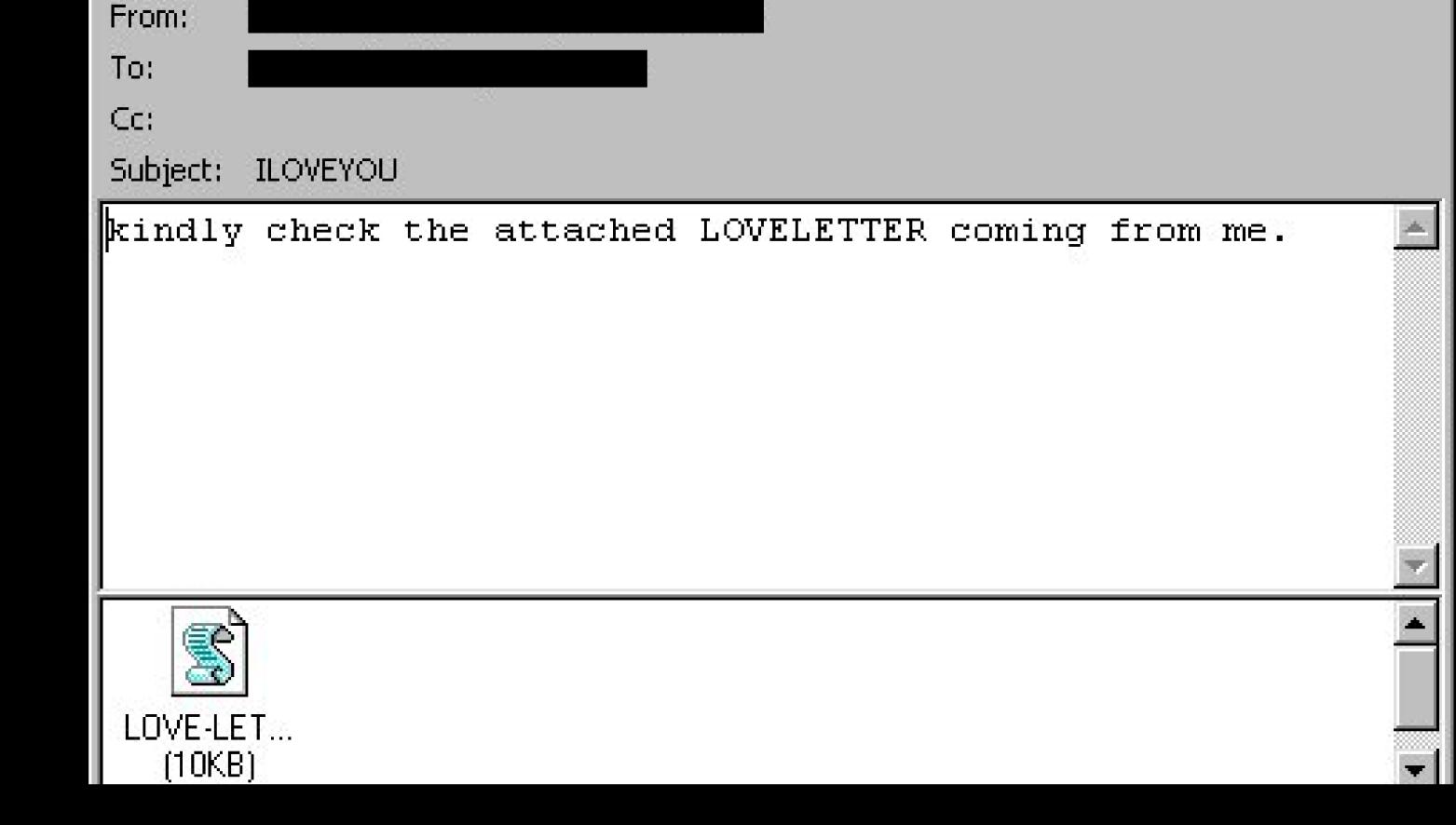
15.10.2023

- 🗆 X

□☆◇※ ± ≡

## HOW IT STARTED

A quick overview of malware history



### 2000: I LOVE YOU





# HUNTER BECOMES THE PRES





## 2017: WANNACRY

### 2023 : MOVEIT

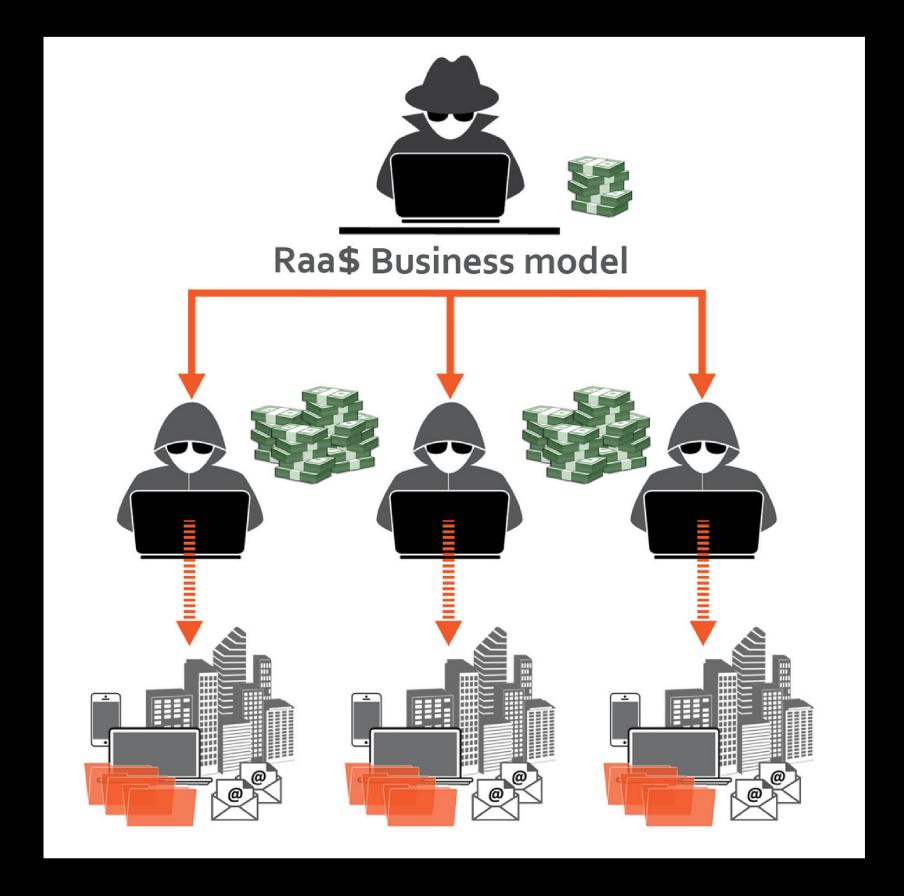


## IHOW IT'S GOING

The current threat landscape



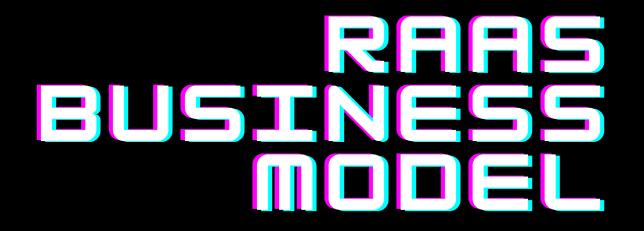
Ransomware-as-a-service

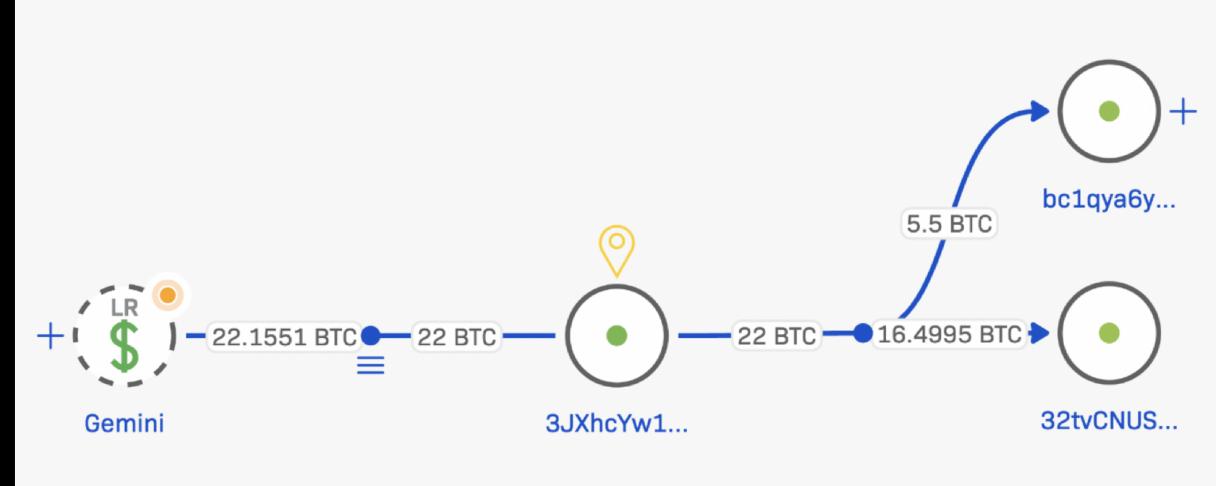


RaaS operator 20 %

Affiliates 80 %

Victims





Ransomware-as-a-service



Рынок → Партнёрки

#### [RaaS] AvosLocker - Partnership Program Windows/Linux/ESXi

AvosLocker Продавец

□ Опубликован: 29 Октября 2021 в 04:42

Avos2, AvosLocker's latest Windows variant, is one of the fastest in the market, with highly scalable threading and selective ciphers.

AvosLocker provides the following services & qualities for its affiliates:

- Supports Windows, Linux & ESXi
- Affiliate panel
- · Negotiation panel with push & sound notifications
- · Assistance in negotiations
- · Consultations on operations
- · Automatic builds
- · Automatic decryption tests
- · Encryption of network resources
- · Killing of processes and services with open handles to files
- · Highly configurable builds
- · Removal of shadow copies
- · Data storage
- · DDoS attacks
- Calling services
- · Diverse network of penetration testers, access brokers and other contacts

### **AFFILIATES?**

Our new variants (avos2 / avoslinux) have the best of both worlds to offer: high performance & high amount of encryption compared to its competitors.

Compared to our competitors, we encrypt the largest amount of data PER FILE, meaning large files are impossible to recover unlike some variants that only encrypt a tiny section of the files. We also achieve the maximum performance possible on any hardware as our cipher is a software stream cipher. We use I/O completion ports in avos2 for our threading model.

We regularly update our products (lockers,panel and everything else) based on our affiliates' feedback.

Terms and conditions vary.

Attacking Post-soviet/CIS is not allowed.

Contact Information



Рынок → Партнёрки

#### [RaaS] AvosLocker - Partnership Program Windows/Linux/ESXi

AvosLocker Продавец

Опубликован: 29 Октября 2021 в 04:42

O0 @ 17

Avos2, AvosLocker's latest Windows variant, is one of the fastest in the market, with highly scalable threading and selective ciphers.

AvosLocker provides the following services & qualities for its affiliates:

- Supports Windows, Linux & ESXi
- Affiliate panel
- · Negotiation panel with push & sound notifications
- · Assistance in negotiations
- Consultations on operations
- · Automatic builds
- · Automatic decryption tests
- · Encryption of network resources
- Killing of processes and services with open handles to files
- Highly configurable builds
- · Removal of shadow copies
- Data storage
- DDoS attacks
- Calling services
- Diverse network of penetration testers, access brokers and other contacts

### **AFFILIATES?**

Our new variants (avos2 / avoslinux) have the best of both worlds to offer: high performance & high amount of encryption compared to its competitors.

Compared to our competitors, we encrypt the largest amount of data PER FILE, meaning large files are impossible to recover unlike some variants that only encrypt a tiny section of the files. We also achieve the maximum performance possible on any hardware as our cipher is a software stream cipher. We use I/O completion ports in avos2 for our threading model.

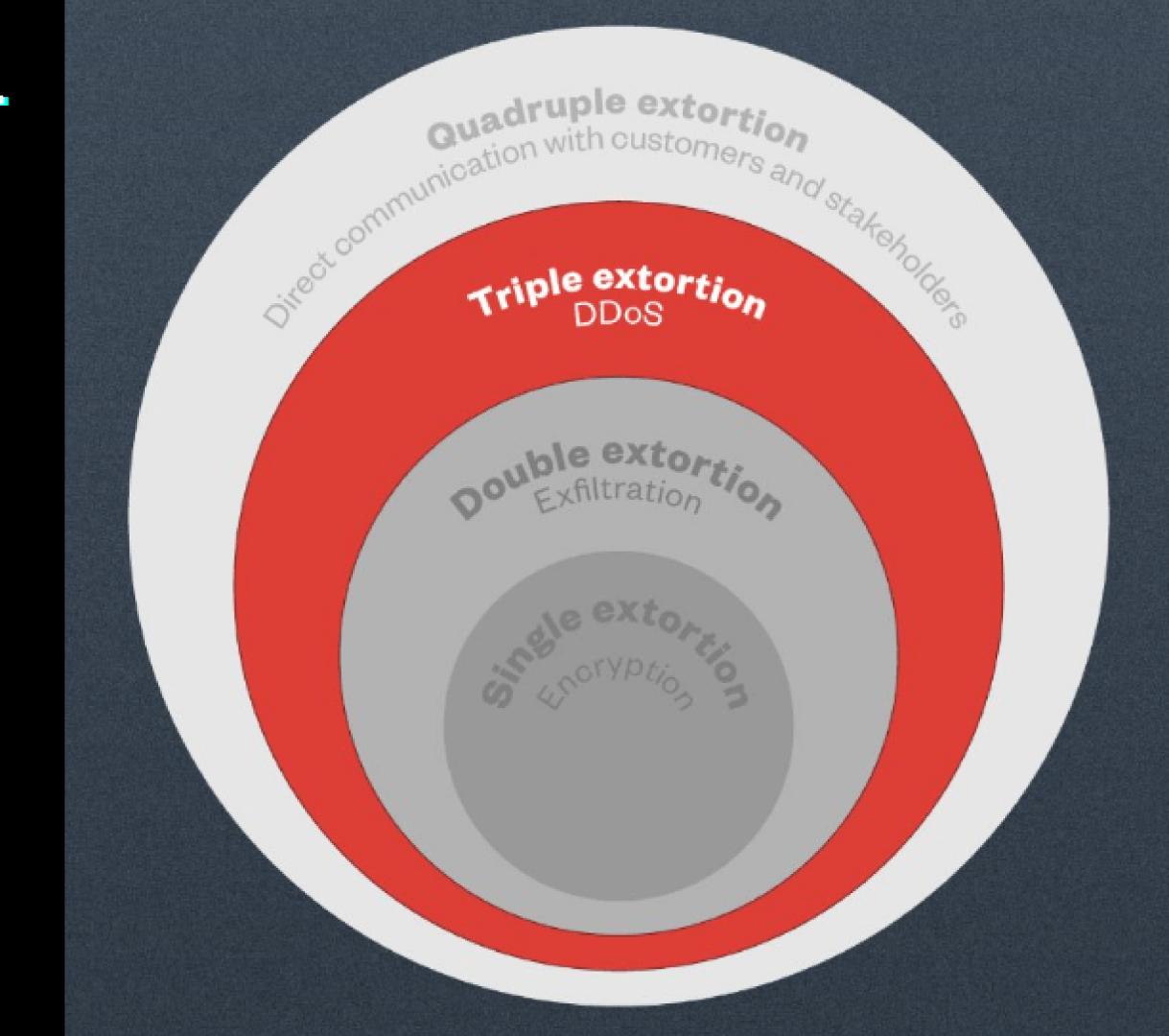
We regularly update our products (lockers,panel and everything else) based on our affiliates' feedback.

Terms and conditions vary.

Attacking Post-soviet/CIS is not allowed.

Contact Information

### QUADRUPLE EXTORTION



### **AFFILIATES?**

All your files stolen and encrypted for more information see RESTORE-MY-FILES.TXT that is located in every encrypted folder.

Would you like to earn millions of dollars?

Our company acquire access to networks of various companies, as well as insider information that can help you steal the most valuable data of any company.

You can provide us accounting data for the access to any company, for example, login and password to RDP, VPN, corporate email, etc.

Open our letter at your email. Launch the provided virus on any computer in your company.

Companies pay us the foreclosure for the decryption of files and prevention of data leak.

You can communicate with us through the Tox messenger

https://tox.chat/download.html

Using Tox messenger, we will never know your real name, it means your privacy is guaranteed.

If you want to contact us, use ToxID:

If this contact is expired, and we do not respond you, look for the relevant contact data on our website via Tor or Brave Browser

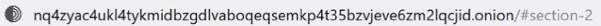


### **AFFILIATES?**

After many years of experience, we concluded that the most effective way to test a candidate for accession is a deposit. When you join, you deposit 1 bitcoin in our wallet, in fact, this amount is an advance and will be used at your subsequent payments as payment for our 20% share. For example, the company paid you a ransom for decrypting 100 bitcoins, you have to transfer a share of 20 bitcoins to us, but thanks to the deposit you made when you joined, the amount of the share paid will be 19 bitcoins. This procedure is required only once, only when you join the affiliate program. The deposit weeds out insecure newbies, cops, FBI agents, journalists, white haters, web pentesters, competitors, and other small rodent pests. The deposit amount may be reduced or not required at all, depending on what reputation you have and what information you can provide about yourself.

Recommended, but not required, application form when joining:

- 1. Links to your profiles on various hacker forums the older your account, the better.
- 2. Describe your experience with other affiliate programs, preferably with some evidence, such as screenshots and transactions that show your payouts.
- 3. Show your balance in cryptocurrency at the moment.
- 4. Explain the reasons why you left another affiliate program and want to work with us.
- 5. Tell about the current accesses you have and are ready to attack immediately after joining us. It is recommended to prove yourself immediately after joining the sooner you get the first payment, the less doubt will be cast on your identity.
- 6. It is desirable to have already downloaded information for the blog from the intended target for the attack and provide evidence of the existence of this information, such as screenshots, file tree or access to these files.
- 7. Ask your friends or acquaintances who already work with us to vouch for you.
- 8. Request a bitcoin or monero wallet to make a deposit, in case you are confident in your abilities and ready to earn millions of dollars with us.











### next categories of organizations



#### Hospitals

Except private plastic surgery clinics, private dental clinics



#### Non-Profit

Any non-profitable charitable foundation



#### Schools

Except the major universities



#### Small Business

Companies with annual revenue less than 4 mln\$ (info about revenue we take from zoominfo)









### We do not audit

### next categories of organizations



#### Hospitals

Except private plastic surgery clinics, private dental clinics



foundation

#### Categories of targets to attack:

It is illegal to encrypt files in critical infrastructure, such as nuclear power plants, thermal power plants, hydroelectric power plants, and other similar organizations. Allowed to steal data without encryption. If you can't figure out if an organization is a critical infrastructure, ask your helpdesk.

The oil and gas industry, such as pipelines, gas pipelines, oil production stations, refineries, and other similar organizations are Any non-profita not allowed to be encrypted. It is allowed to steal data without encryption.

It is forbidden to attack the post-Soviet countries such as: Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Uzbekistan, Ukraine and Estonia. This is due to the fact that most of our developers and partners were born and grew up in the Soviet Union, the former largest country in the world, but now we are located in the Netherlands.





#### We do not audit

### next categories of organizations



#### Hospitals

Except private plastic surgery clinics, private dental clinics



foundation

#### Categories of targets to attack:

It is illegal to encrypt files in critical infrastructure, such as nuclear power plants, thermal power plants, hydroelectric power plants, and other similar organizations. Allowed to steal data without encryption. If you can't figure out if an organization is a critical infrastructure, ask your helpdesk.

The oil and gas industry, such as pipelines, gas pipelines, oil production stations, refineries, and other similar organizations are Any non-profita not allowed to be encrypted. It is allowed to steal data without encryption.

It is forbidden to attack the post-Soviet countries such as: Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Uzbekistan, Ukraine and Estonia. This is due to the fact that most of our developers and partners were born and grew up in the Soviet Union, the former largest country in the world, but now we are located in the Netherlands.



#### sickkids.ca

We formally apologize for the attack on sikkids.ca and give back the decryptor for free, the partner who attacked this hospital violated our rules, is blocked and is no longer in our affiliate program. http://lockbitfile2tcudkcqqt2ve6btssyvqwlizbpv5vz337lslmhff2uad.onion /r/n2JhJ1SdnB#JjXDyRUlUlb7Gg3PNlGtl5zJGPOdacCVtW6lMytOd80=

#### ALL AVAILABLE DATA PUBLISHED!

UPLOADED: 31 DEC, 2022 17:59 UTC

UPDATED: 27 SEP, 2023 10:30 UTC

Figure 1: Top Threat Groups for Ransomware-as-a-Service Ecosystem



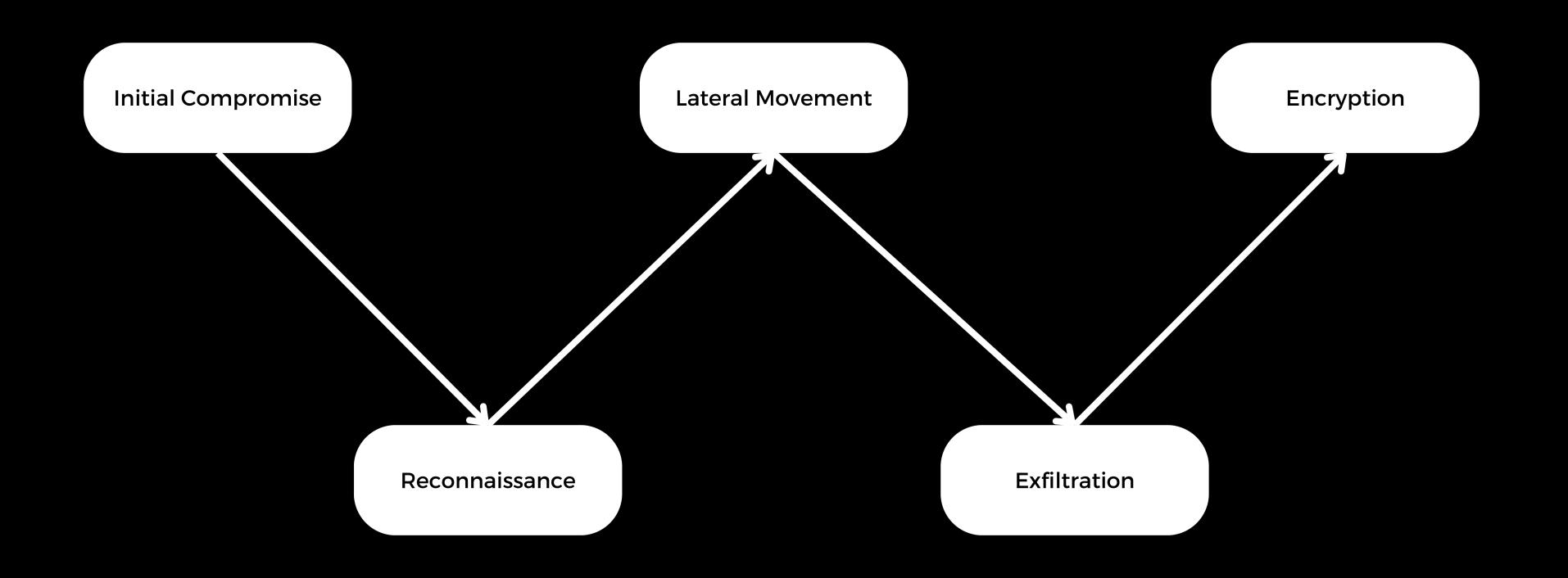
INNOVATION ABILITY AS OF MARCH 2023

Source: Halcyon (March 2023)

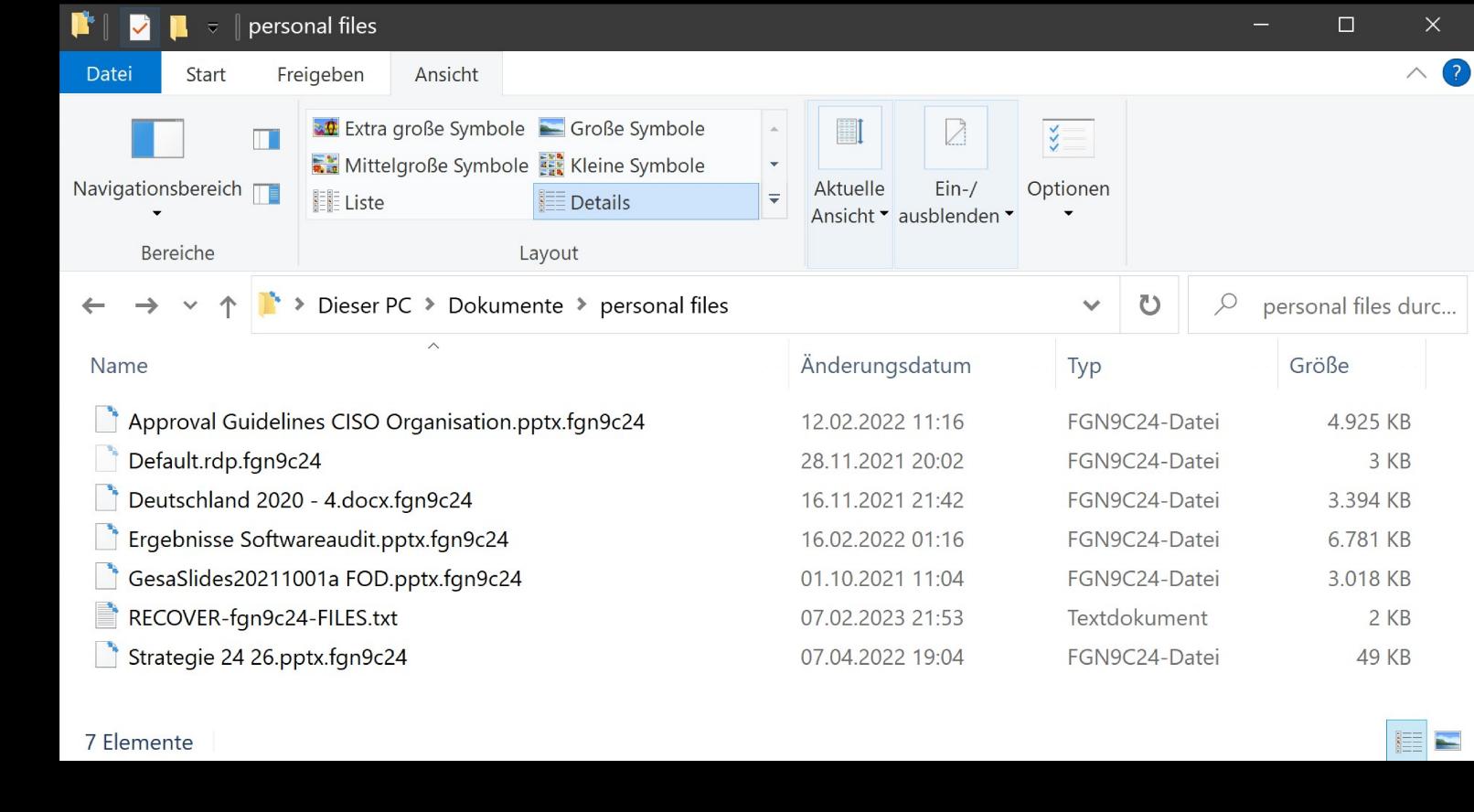
### VENDOR RANKING

## WAR STORIES

Inside an incident









### RANSOMNOTE

Your network has been penetrated.

All files on each host in the network have been encrypted with a strong algorythm.

Backups were either encrypted or deleted or backup disks were formatted.

We exclusively have decryption software for your situation.

DO NOT RESET OR SHUTDOWN - files may be damaged.

DO NOT RENAME the encrypted files.

DO NOT MOVE the encrypted files.

This may lead to the impossibility of recovery of the certain files.

To get info(pay-to-decrypt your files) contact us at:

@protonmail.com

r

@tutanota.com

BTC wallet:

To confirm our honest intentions.

Send 2 different random files and you will get it decrypted.

It can be from different computers on your network to be sure we decrypts everything.

Files should have .LOCK extension of each included.

2 files we unlock for free.



#### Your network was compromised.

Important files on your network was downloaded and encrypted.

Our custom **Decrypt App** is capable of **restoring** your **files**.

In order to buy it you have to follow **Instructions** below. If you have questions please feel free to use **Live-Chat**. Act quickly to get a **Discount**!

#### **Decrypt App Price**

You have 5 days, 05:42:12 until:

- Decrypt App special discount period will be discontinued.
- Discount Price is available until 2/1/22, 6:02 AM

Discount Price: \$

\$9000000

Full Price: \$14000000

#### Status

Awaiting payment of **\$9000000** to one of the following wallets:

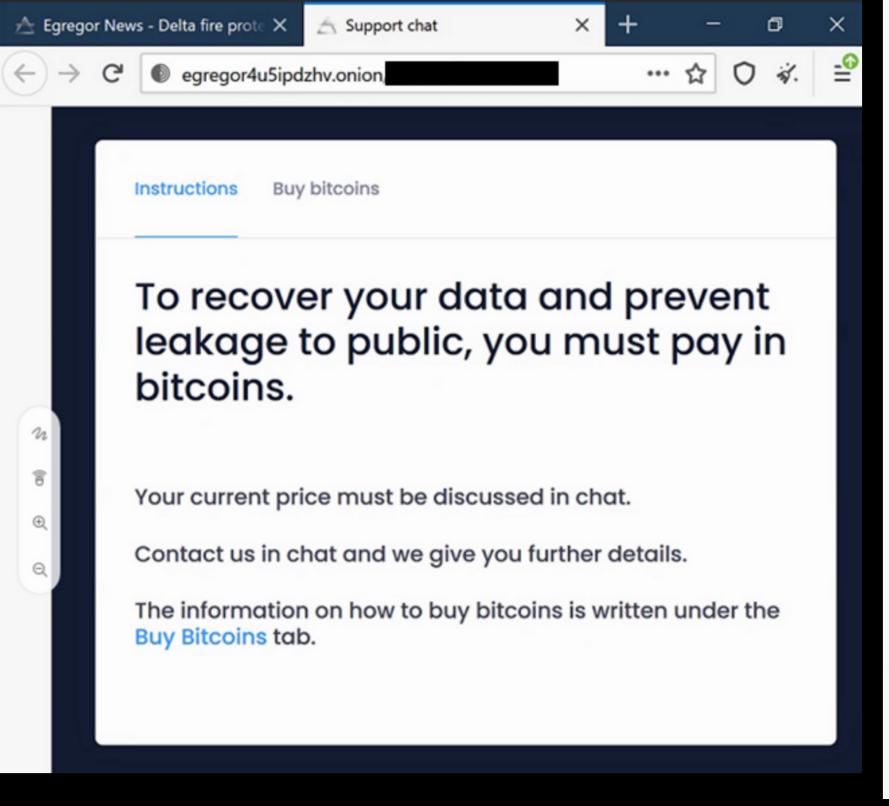
C

Monero Monero

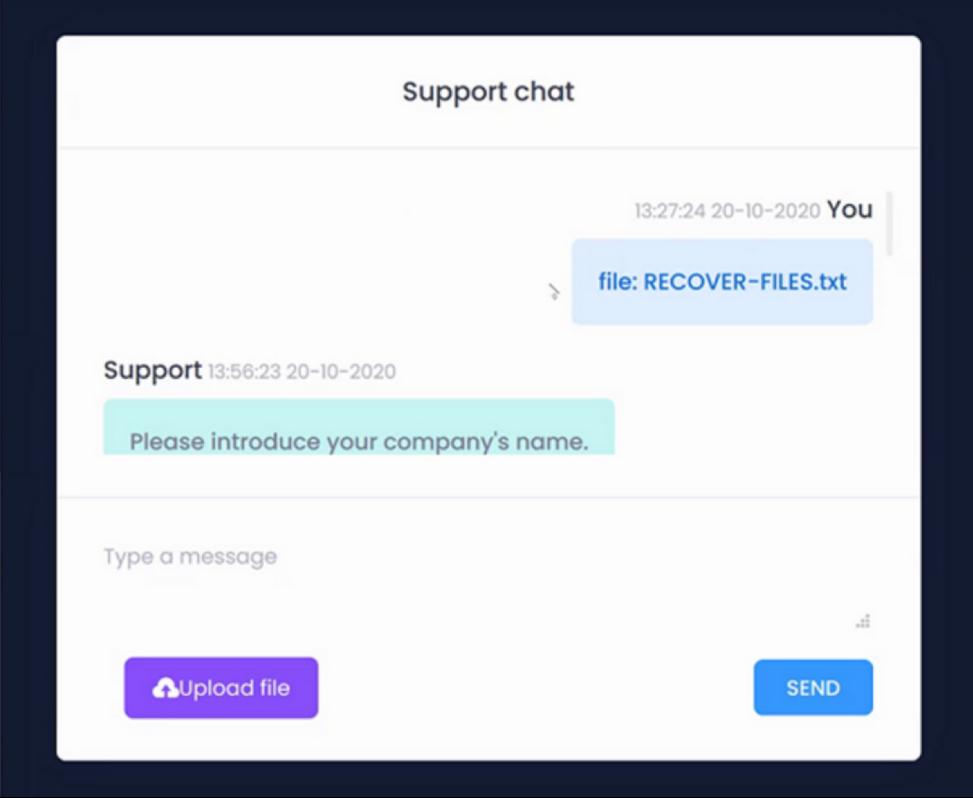
Instructions Live-Chat Trial Decrypt Intermediary

I wish to pay with Bitcoin

1. Create a Bitcoin Wallet.



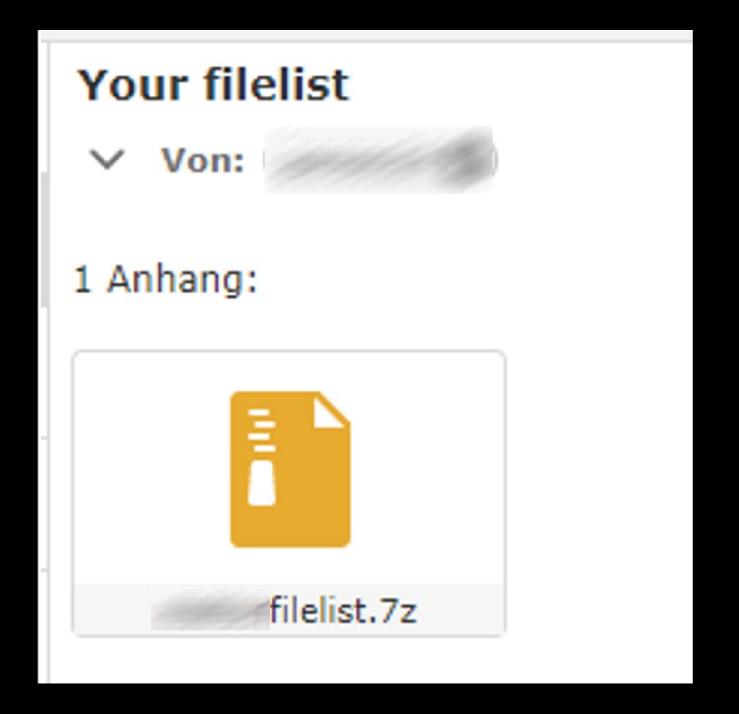
### COMPANY NAME?



### PROOF

Thanks for your information so far. We take your action seriously and would like to discuss further steps with you. To be able to evaluate the data you have downloaded, we ask you to send us some data examples. Regards





Thanks for your information so far. We take your action seriously and would like to discuss further steps with you. To be able to evaluate the data you have downloaded, we ask you to send us some data examples. Regards

### NO PROOF?

Good afternoon, yet we cannot provide, the person who has access to data - does not contact for the reasons unknown to us. But it already was, I think will appear in the nearest future.

### NO PROOF?

Good afternoon, yet we cannot provide, the person who has access to data - does not contact for the reasons unknown to us. But it already was, I think will appear in the nearest future. You can send files for test interpretation. Did you estimate mashtaba? how to you?



#### vx-underground 🐶 @vxunderground · 8. Juli

\*\*

Earlier this morning we spoke with Lockbit ransomware group administrative staff. We asked why there has been a significant decrease in victim postings and blog activity.

They informed us they're currently on holiday and enjoying the nice summer weather.

Q 34

€7 212

C 1.285

1 157.135







#### vx-underground 🐶 @vxunderground · 8. Juli

Earlier this morning we spoke with Lockbit ransomware group administrative staff. We asked why there has been a significant decrease in victim postings and blog activity.

They informed us they're currently on holiday and enjoying the nice summer weather.

7/\_(ツ)\_/

Q 34

₾ 212

♡ 1.285

157.135





### Make a decision faster, our team is going on vacation

```
> On 2022-10-11 15:27, kluke01 wrote:
>> bro , how to decrypt and how much ?
>>
>> Please contact: volkzidonov@cock.li
>> spare email: volkzidonov@morke.org
>> Your identity code: XdM5FGoro1Tj
>>
>> kluke01
>> kluke01@126.com
```

### NEGOTIATION

```
> On 2022-10-11 15:27, kluke01 wrote:
>> bro , how to decrypt and how much ?
>>
>> Please contact: volkzidonov@cock.li
>> spare email: volkzidonov@morke.org
>> Your identity code: XdM5FGoro1Tj
>>
>> kluke01
>> kluke01@126.com
```

### NEGOTIATION

```
On 2022-10-11 19:45, volkzidonov@cock.li wrote:
> Dear
> First of all, thank you for contact us, we're sorry to attack your
> company, we are a mature and integrity team. We hope to reach an
> agreement with you with the fastest speed to solve this case. If you
> have any questions, you can tell us, we are willing to communicate
> with you with the greatest sincerity.
> Please buy $510,000(usd) worth of ETH to send to our wallet address.
> ETH address:0x282dC843E849914082Ec54c494a6D65738568979
> After we receive ETH, I will send all the passwords to you. We randomly
> generate a password for each server, each password is only taken
> effect on one server. AES encryption is the most advanced encryption
> algorithm in the world, without anyone can crack. Even the US FBI and
> the Ministry of Defense cannot be decrypt. Please don't try scan disk
> or recovery. This will make data damage, once the data is damaged,
> even if you pay the ETH, I can't restore the data. Data will be
> permanently lost.
> In addition, we will provide you with test password. Decrypt software:
> C:\crypt\bcfmgr.exe
> Select the volume and click "decrypt volume". Enter the password to
> decrypt.
> SERVER-TEST-005 192.168.12.130 abcdefgh
> VMWARE 99-2021 192.168.12.132 E:\ abcdefgh
> KLZSRV32-TEST 192.168.12.155 abcdefgh
```

> KLZSRV19 192.168.12.54 abcdefgh

```
> On 2022-10-11 15:27, kluke01 wrote:
>> bro , how to decrypt and how much ?
>>
>> Please contact: volkzidonov@cock.li
>> spare email: volkzidonov@morke.org
>> Your identity code: XdM5FGoro1Tj
>>
>> kluke01
>> kluke01@126.com
```

Gesendet: Montag, 13. Oktober 2022 um 16:19 Uhr

Von: volkzidonov@cock.li

**An:** mailadresse@corporate-trust-verhandlungsteam

Betreff: Re: help

I have reply.

#### NEGOTIATION

```
On 2022-10-11 19:45, volkzidonov@cock.li wrote:
> Dear
> First of all, thank you for contact us, we're sorry to attack your
> company, we are a mature and integrity team. We hope to reach an
> agreement with you with the fastest speed to solve this case. If you
> have any questions, you can tell us, we are willing to communicate
> with you with the greatest sincerity.
> Please buy $510,000(usd) worth of ETH to send to our wallet address.
> ETH address:0x282dC843E849914082Ec54c494a6D65738568979
> After we receive ETH, I will send all the passwords to you. We randomly
> generate a password for each server, each password is only taken
> effect on one server. AES encryption is the most advanced encryption
> algorithm in the world, without anyone can crack. Even the US FBI and
> the Ministry of Defense cannot be decrypt. Please don't try scan disk
> or recovery. This will make data damage, once the data is damaged,
> even if you pay the ETH, I can't restore the data. Data will be
> permanently lost.
> In addition, we will provide you with test password. Decrypt software:
> C:\crypt\bcfmgr.exe
> Select the volume and click "decrypt volume". Enter the password to
> decrypt.
> SERVER-TEST-005 192.168.12.130 abcdefgh
> VMWARE 99-2021 192.168.12.132 E:\ abcdefgh
```

> KLZSRV32-TEST 192.168.12.155 abcdefgh

> KLZSRV19 192.168.12.54 abcdefgh

The money, even with the 20% discount, is unfortunately over our financial possibilities. We have heard that in other cases 10% of the EBIT of the last years is paid. The EBIT of the last 3 years for Holding was 4.8 \$. We can send you the balance sheet data if you would like to see it. This gives a total of \$484,000. That's the maximum because we can't make any sales because of your cyber attack.

#### NEGOTIATION

The money, even with the 20% discount, is unfortunately over our financial possibilities. We have heard that in other cases 10% of the EBIT of the last years is paid. The EBIT of the last 3 years for Holding was 4.8 \$. We can send you the balance sheet data if you would like to see it. This gives a total of \$484,000. That's the maximum because we can't make any sales because of your cyber attack.

දිදු

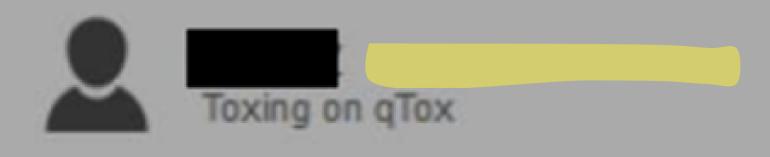
Basta Group, 11:11

No need to tell us Wilhelm Hauff's fairy tales. Our analytical department analyzed your financial documents and appointed the amount you are able to pay without any problems. Therefore, our price is \$880,000. You have 3 days to make the payment. After that, our price will be \$1,100,000 again.

### NEGOTIATION

#### NEGOTIATION

We decrypt a lot of companies every day and we don't want to waste time. Your order is a very little business. We don't care much. So, if you want to get the password, then pay for it, if not, just ignore it, no need to contact us.





20:10:27

20:10:27

20:32:15

I can sell a decoder that will decrypt all your files.

It costs 0.16 BTC

Payment is accepted only in bitcoins.

You can send me 2-3 files for free decryption, the files should not contain valuable information - it's just a way to prove that the decoder works and is able to recover files without data loss.

I also want to warn you that after 2 days, the price of buying a decoder will increase by \$100 every day.

### NEGOTIATION

It was opened by a user with citrix access password. Then, using the CVE-2020-0796 vulnerability, rights were raised to the local administrator. After that, using the program Blood Hound were found computers where there are authorization data domain administrators.

The computer was found, we were able to get access to it and spread the network. We found local administrator computers where passwords to different resources were stored in the open. We found out where there were backups, SQL, etc. Then we found the local computers of your domain administrators. With the help of mimmkatz, passwords of administrators on these computers were obtained. Going to the RDP on them, we found Key Pass programs from where we got access to your AV server.

Support: Our advice to you. Put a server in the domain that will download daily updates from Microsoft. And once a week or twice a week, distribute updates from this server to all computers and servers on your network. Thus, in the future you will protect your network from known public vulnerabilities. Also install Kaspersky or Sentinel antivirus. Make it a rule to change all important passwords once a month. Tell your administrators to turn off their local computers when they go home.



It was opened by a user with citrix access password. Then, using the CVE-2020-0796 vulnerability, rights were raised to the local administrator. After that, using the program Blood Hound were found computers where there are authorization data domain administrators.

The computer was found, we were able to get access to it and spread the network. We found local administrator computers where passwords to different resources were stored in the open. We found out where there were backups, SQL, etc. Then we found the local computers of your domain administrators. With the help of mimmkatz, passwords of administrators on these computers were obtained. Going to the RDP on them, we found Key Pass programs from where we got access to your AV server.

Support: Our advice to you. Put a server in the domain that will download daily updates from Microsoft. And once a week or twice a week, distribute updates from this server to all computers and servers on your network. Thus, in the future you will protect your network from known public vulnerabilities. Also install Kaspersky or Sentinel antivirus. Make it a rule to change all important passwords once a month. Tell your administrators to turn off their local computers when they go home.



It was opened by a user with citrix access password. Then, using the CVE-2020-0796 vulnerability, rights were raised to the local administrator. After that, using the program Blood Hound were found computers where there are authorization data domain administrators.

The computer was found, we were able to get access to it and spread the network. We found local administrator computers where passwords to different resources were stored in the open. We found out where there were backups, SQL, etc. Then we found the local computers of your domain administrators. With the help of mimmkatz, passwords of administrators on these computers were obtained. Going to the RDP on them, we found Key Pass programs from where we got access to your AV server.

Support: Our advice to you. Put a server in the domain that will download daily updates from Microsoft. And once a week or twice a week, distribute updates from this server to all computers and servers on your network. Thus, in the future you will protect your network from known public vulnerabilities. Also install Kaspersky or Sentinel antivirus. Make it a rule to change all important passwords once a month. Tell your administrators to turn off their local computers when they go home.



It was opened by a user with citrix access password. Then, using the CVE-2020-0796 vulnerability, rights were raised to the local administrator. After that, using the program Blood Hound were found computers where there are authorization data domain administrators.

The computer was found, we were able to get access to it and spread the network. We found local administrator computers where passwords to different resources were stored in the open. We found out where there were backups, SQL, etc. Then we found the local computers of your domain administrators. With the help of mimmkatz, passwords of administrators on these computers were obtained. Going to the RDP on them, we found Key Pass programs from where we got access to your AV server.

Support: Our advice to you. Put a server in the domain that will download daily updates from Microsoft. And once a week or twice a week, distribute updates from this server to all computers and servers on your network. Thus, in the future you will protect your network from known public vulnerabilities. Also install Kaspersky or Sentinel antivirus. Make it a rule to change all important passwords once a month. Tell your administrators to turn off their local computers when they go home.



NB 44.12 Windows Server 2019 Standard

HA 214.12 Windows Server 2019 Standard

KI 114.12 Windows Server 2019 Standard

HH Windows 2000 Server

PS 16.47 Windows Server 2003

PS 16.48 Windows Server 2003

HH Windows Server 2003

PS 16.107 Windows Server 2003

BW Windows Server 2003

EA Windows Server 2008 HPC Edition

H0 Windows Server 2008 R2 Enterprise

### PROOF OF DELETION

**Support:** Is it ok for you that we will use this program https://docs.microsoft.com/en-us/sysinternals/downloads/sdelete to delete files from our server. After deletion we will provide you proof log?

0

Support: We will provide both reports in 1-2 days. We need some time to proceed with them.



Support: deletion log

https://www.sendspace.com/file

https://www.sendspace.com/delete



# HOW TO STAY SAFE

What you can do to avoid a ransomware incident.

## REACT

Patching

## REACT

### REACT

Patching

Hardened Infrastructure



REACT

Patching

Hardened Infrastructure

**Emergency Preparedness** 



REACT

Patching

Hardened Infrastructure

**Emergency Preparedness** 

Backups



### REACT

Patching

Hardened Infrastructure

**Emergency Preparedness** 

Backups

Visibility





GEBHARD@CORPORATE-TRUST.DE

WWW.LINKEDIN.COM/IN/SEBASTIAN-GEBHARD/