

# Update of the Cyber Threat Landscape and Its Relationship with Internet Hygiene

HACK A DAY <sup>2</sup>  
Securing identity

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February 2025



# The ransomware landscape was disrupted in 2024, making them unpredictable following law enforcement disruptions and exit scams



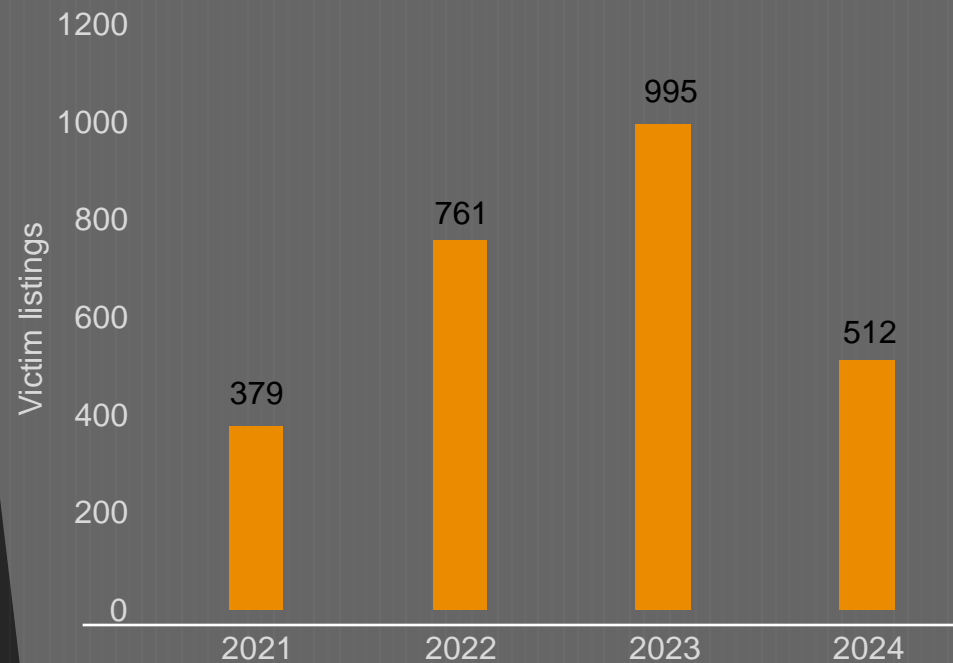
Fabian Wosar  
@fwosar

Since people continue to fall for the ALPHV/BlackCat cover up: ALPHV/BlackCat did not get seized. They are exit scamming their affiliates. It is blatantly obvious when you check the source code of the new takedown notice. You will see code like this.

```
c="THIS%20WEBSITE%20HAS%20BE  
tion has been taken in coord
```

Source: PwC Dark Lab, August 2021 to October 2024 Threat Intelligence Monitoring  
Based on Proprietary Insights, Open Source Intelligence, and Dark Web Monitoring

The Rise and Fall of LockBit



↑ **30%**  
in active ransomware  
threat groups

↑ **42**  
new dedicated leak  
sites in 2024

👤 **27**  
ransomware groups  
defunct in 2024

**Dark Lab**

February 2025

# Threat actors are rapidly adapting by diversifying their tactics and exploring alternative means to increase their chances of success



**Skip the encryption;  
it's all about data theft**  
Single extortion returns with direct sale of victim's data on leak sites



**Adoption of Generative AI in social engineering**  
Accelerate creation of highly convincing deepfake and phishing campaigns



**Increased targeting of cloud and SaaS credentials**  
Targeting exposed configuration files with secrets and API keys

Email	Domain	Password	Password Type	Q' Source	Source Type	Posted Date
kok.t.gan@hk.pwc.com	hk.pwc.com	he	he	Pure Incubation Breach	Database Dump	Aug 15, 2024
kok.t.gan@hk.pwc.com	hk.pwc.com	he	he	Pure Incubation Breach	Database Dump	Aug 15, 2024
kok.t.gan@hk.pwc.com	hk.pwc.com	he	he	People Data Labs Breach	Database Dump	Oct 28, 2020
kok.t.gan@hk.pwc.com	hk.pwc.com	he	he	Verifications.io email records	Database Dump	Jul 15, 2020
kok.t.gan@hk.pwc.com	hk.pwc.com	he	he	LinkedIn Breach	Database Dump	May 5, 2012

**Significant increase in data sales**  
Specifically leaked credentials that extend beyond the victim to their third parties



**Increase in fake SMS impersonation**  
Going beyond PII and credit data, and looking to steal valid credentials, sessions, and victim's metadata

Source: PwC Dark Lab, Threat Intelligence Monitoring Based on Proprietary Insights, Open Source Intelligence, and Dark Web Monitoring

# whoami



..... **Founder** .....



..... **Dark Lab** .....



..... **Hack A Day** .....



..... **Malaysian** .....



..... **Father of 2** .....



..... **Wine Lover** .....



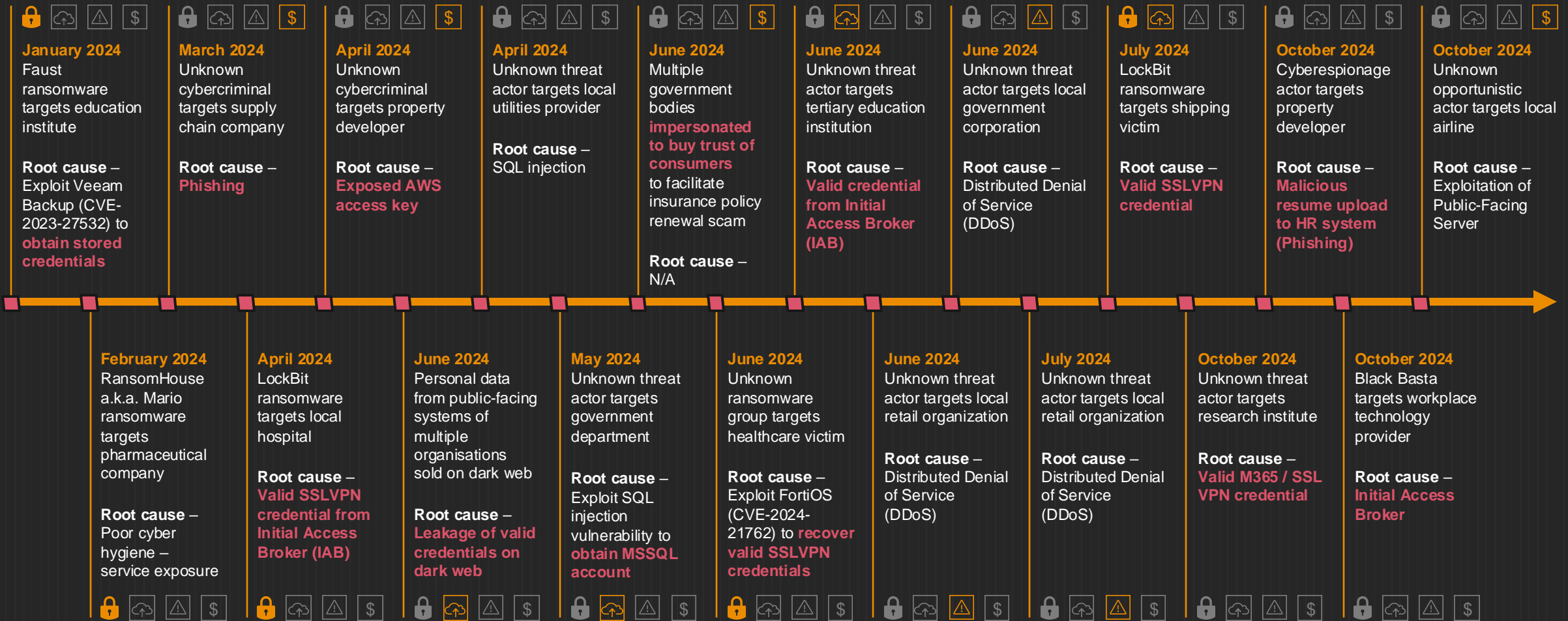
This leads to today's million-dollar question  
How should we define and protect 'Identity'?

“ **Identity** refers to an **attribute**  
or set of attributes that  
**uniquely describes a user** ”





# 2024 Cyber Threats Overview with Identity as a twist



■ Impact    🛡️ Ransomware    ☁️ Data Exfiltration    ⚠️ Denial of Service    💰 Monetary Loss

**Dark Lab**

# Summary of Lessons Learnt

Threat actors are more **intentional** and **resourceful** in their attacks, focusing on **abusing valid identities** to bypass defenses



Weaponisation of CVEs is **increasingly targeted at compromising identity and/or bypassing controls safeguarding identity**

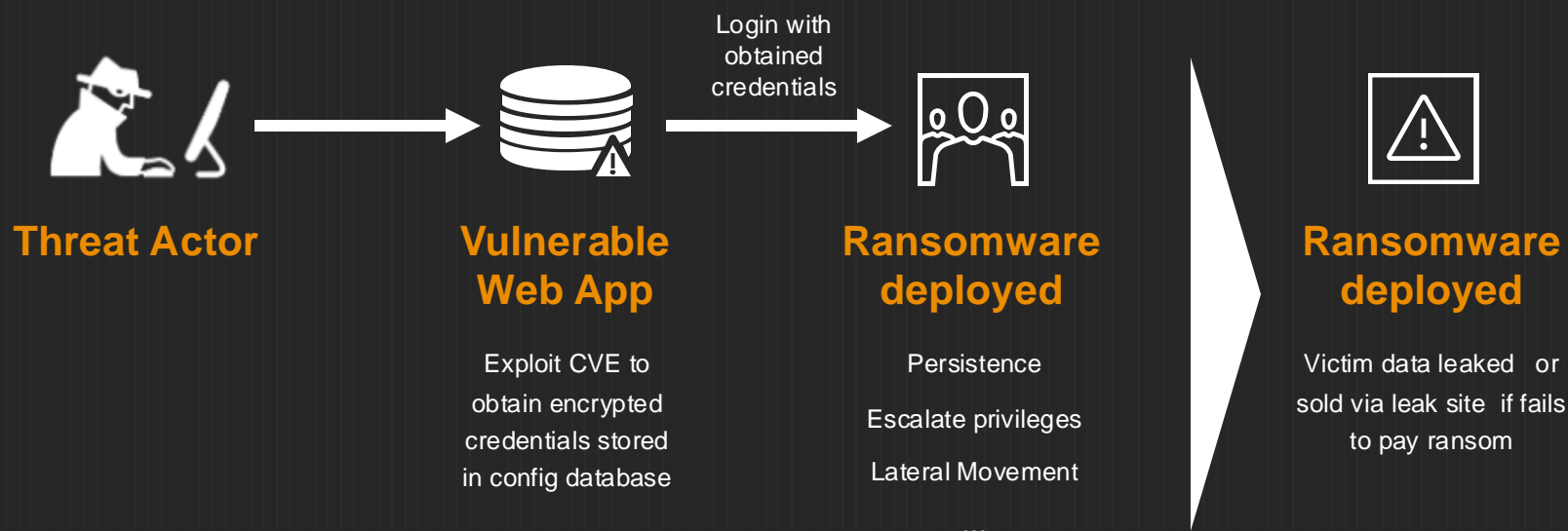


**Adaptation of leaked credentials** as an attack vector against a broader attack surface such as **unintentionally exposed non-production or administrative services**



Evolution of phishing attacks to **capture valid sessions** and impersonate the victim's identity, while others **impersonate trusted brands**

# Exploitation of CVEs are increasingly focused on obtaining valid identities and bypassing identity security



Source: PwC Dark Lab, 1 January 2023 to September Threat Intelligence Monitoring Based on Proprietary Insights, Open Source Intelligence

↑ **57%** in exploitation of CVEs related to stealing identity

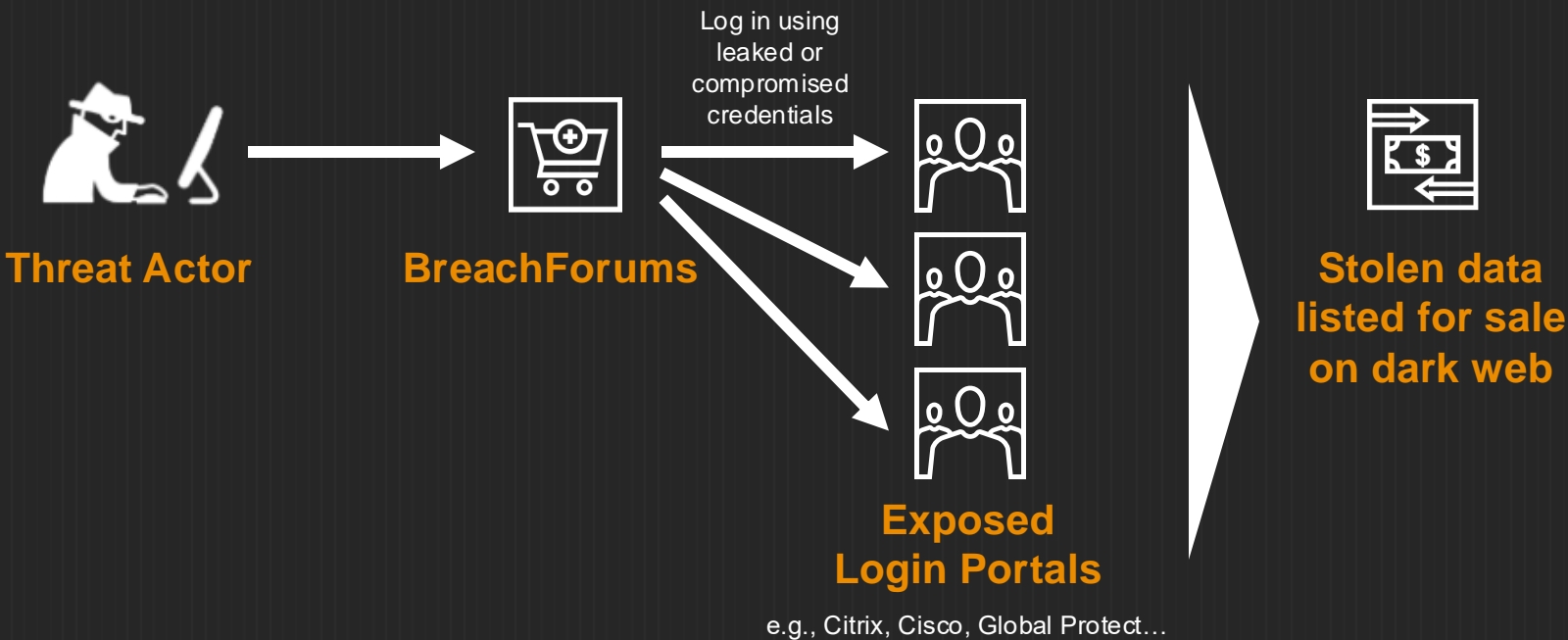
↑ **11%** in exploitation of CVEs related to bypassing controls to secure identity

## Most targeted technologies:

- SSLVPN
- Firewall
- Mobile Device Management
- Unintentionally exposed public cloud assets/services
- Unhardened 3<sup>rd</sup> party hosting services



# The cybercriminal ecosystem is increasingly intentional in their weaponization of identities



Source: PwC Dark Lab, 1 January 2023 to 10 October 2024 Threat Intelligence Monitoring Based on Proprietary Insights, Open Source Intelligence, and Dark Web Monitoring

↑ **37%** in info-stealer infections against Hong Kong

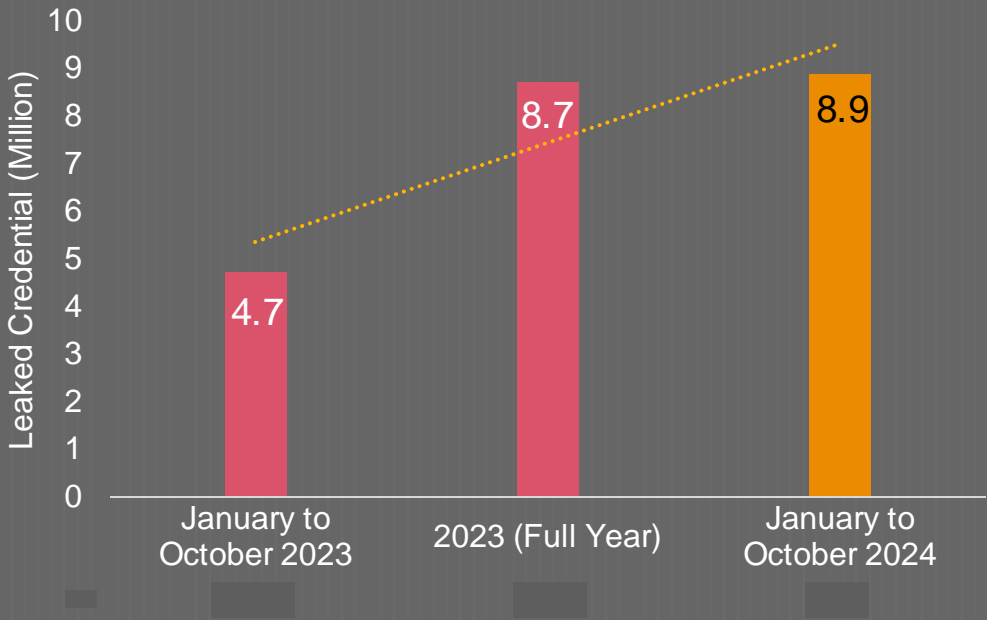
↑ **174%** in average price per access sale

Year	Price
2023	US\$ 1583
2024	US\$ 4339

↑ **1238%** highest value listing price

Year	Price
2023	US\$ 74.8K
2024	US\$ 1 MIL

# The macro and micro shifts in the cyber threat landscape have significantly contributed to the increase in leaked credentials on the dark web



Source: PwC Dark Lab, 1 January 2023 to 22 October 2024 Threat Intelligence Monitoring Based on Proprietary Insights, Open Source Intelligence, and Dark Web Monitoring

### Cisco Data Breach

by IntelBroker - Monday October 14, 2024 at 04:12 PM

10 hours ago

**IntelBroker**  
BreachForums Operative  
Posts: 1,995  
Threads: 299  
Join: [date]  
Reputation: [score]

Today, I am selling the Cisco breach that recently happened (6/10/2024)  
Breached by @**IntelBroker** @**EnergyWeaponUser** & @**[Mod] zj**

Hello BreachForums Community

**CISCO**

香港\_HKE\_股票·证券\_350万\_数据已去重

数据出自网站: <http://www.hkexnews.hk> 内容: &#39;联系号码&#39;: 平台: 主板: &#39;名称&#39;: &#39;地址&#39;: &#39;地区&#39;:

商品价格 **\$799.00**

商品类型: 自动发货

数据来源: 自

可支付币种: USDT-TRC20 USDT-ERC20 ETH

发布者: a\*\*\*\*

上次在线: 12

购买数量:

站内信 给他留言

### Hong kong Database \*(personal informations)

by R-W-M-GROUP - Sunday September 22, 2024 at 02:00 PM

11 hours ago

**R-W-M-GROUP**  
Breached  
MEMBER

Im selling 13 million line of data hong kong

- name - gender- phone number- date of birth

-date: 2023- 2024

Telegram: @X\_0x25

Samples:

Name, Gender, Birthday, Mobile, Tel  
王湘泉, M, 19451221, 85291876609, 852-9187660  
陈世光, M, 19590211, 85293452757, 852-23167718  
胡国强, M, 19580112, 13652969301, 852-92597629  
Chow Chi Ho, M, 19820509, 13534211262, 852-9704835  
林伟基, M, 19660204, 13822703123, 852-13822703123

### Chinese University - 1.3B revenue

by Sukob - Wednesday October 9, 2024 at 03:16 AM

3 hours ago

**Sukob**  
Malware Connoisseur

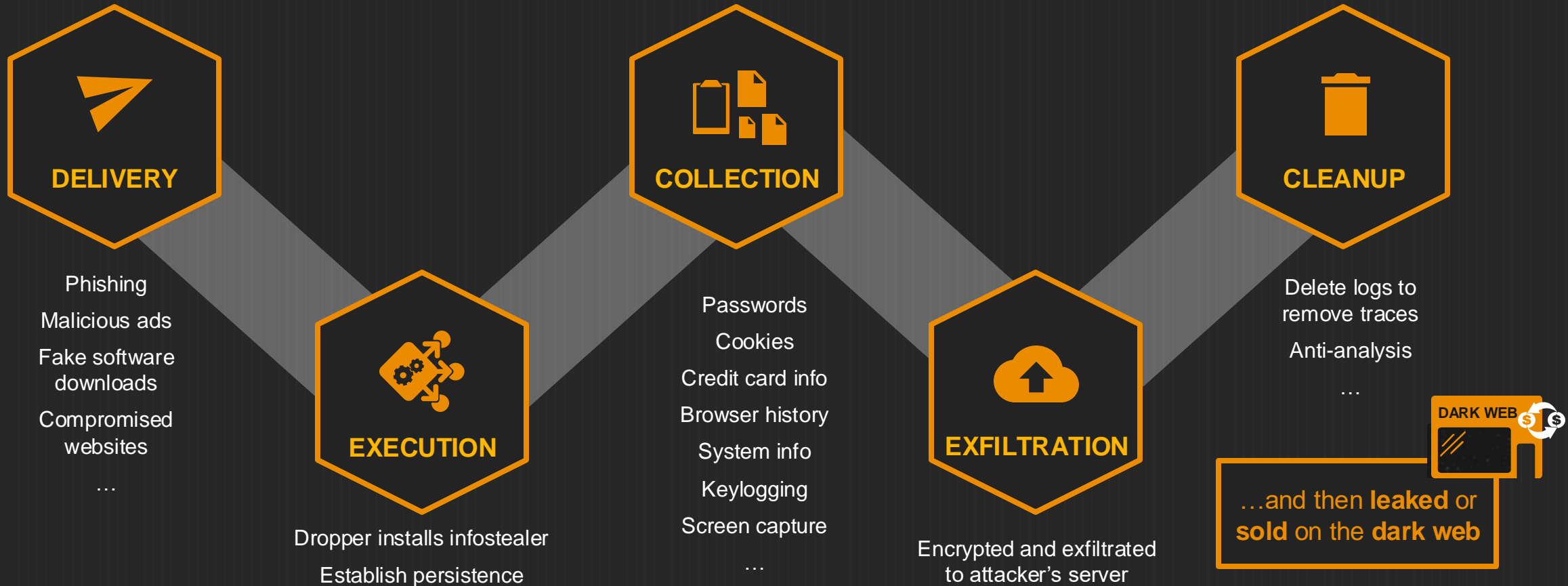
Selling access to a web server for a **Chinese** University

**Info:**  
Ranked in top 60 universities in the world  
\$1.3B revenue  
~50,000 students  
Access is a subdomain with a vulnerable endpoint

Potential access to lots of student and bio med research data

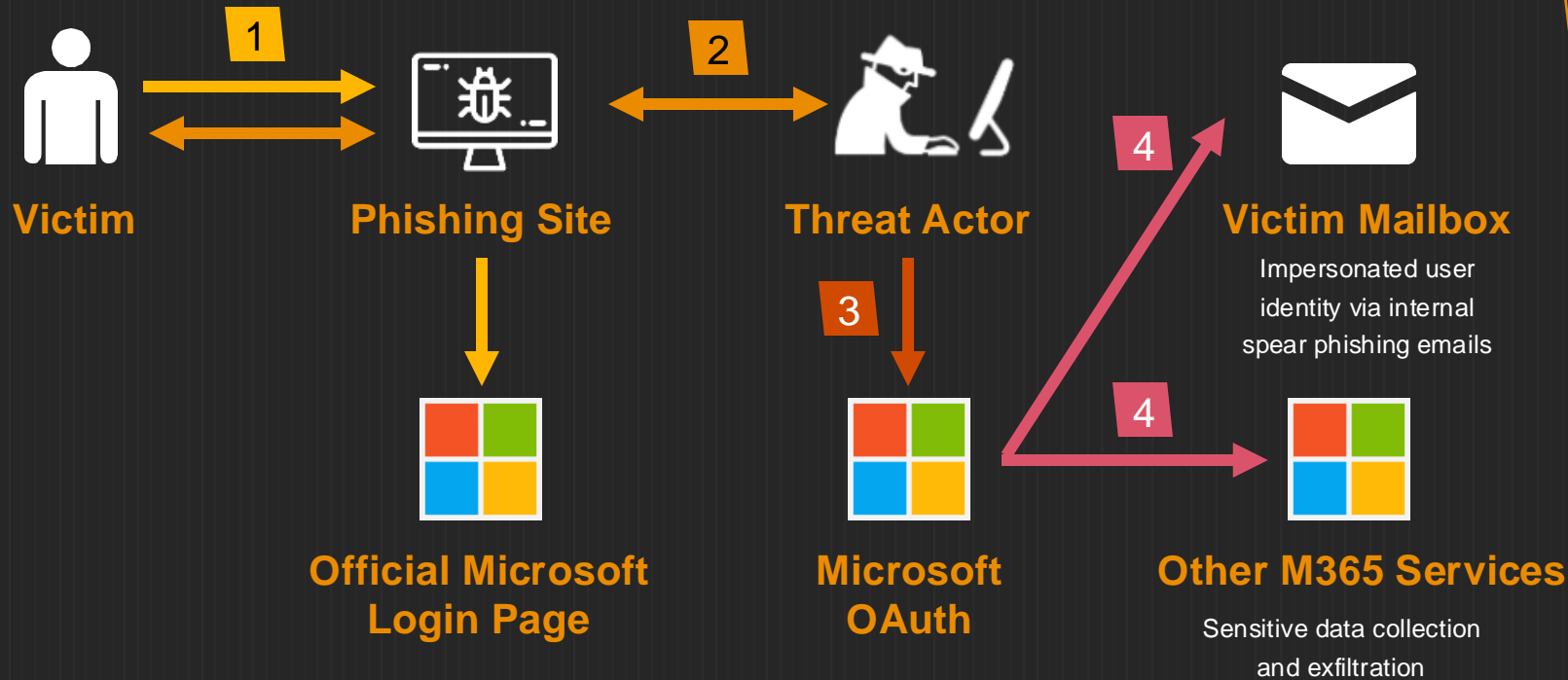
Price: **\$1500** negotiable serious offers only

# The use of infostealers has become more prevalent, with these tools specifically designed to harvest credentials from infected systems



Source: PwC Dark Lab's Proprietary Insights

# Adversary-in-the-Middle (AiTM) phishing campaigns persist, impersonating trusted brands



**1** **Phishing Website Redirect**  
Victim visits phishing site and is redirected to the official M365 login page.

**2** **Authentication**  
Victim performs legitimate login with MFA on the M365 portal. Threat actor captures credentials and token.

**3** **Persistence**  
Threat actor requests Primary Refresh Token (PRT) to register own device for Single Sign-On (SSO) to M365.

**4** **Impact**  
Access and collect data from M365 services, and victim impersonation via internal spear phishing.

# How can we prevent and detect these attacks?

## We must focus on how to protect the identity!

### PREVENTION



Employ a **conditional access policy** to restrict unauthorised access

- Restrict the use of tokens only from devices on which they were issued
- Enable token protection
- Allow sign-ins only from devices that hybrid-joined to Entra ID or are managed by MDM or MAM solutions
- Require strong, multi-layered authentication methods
- Limit the session duration of Outlook on the Web (OWA) to 1 hour

### DETECTION



Detect and monitor for **anomalous activity**

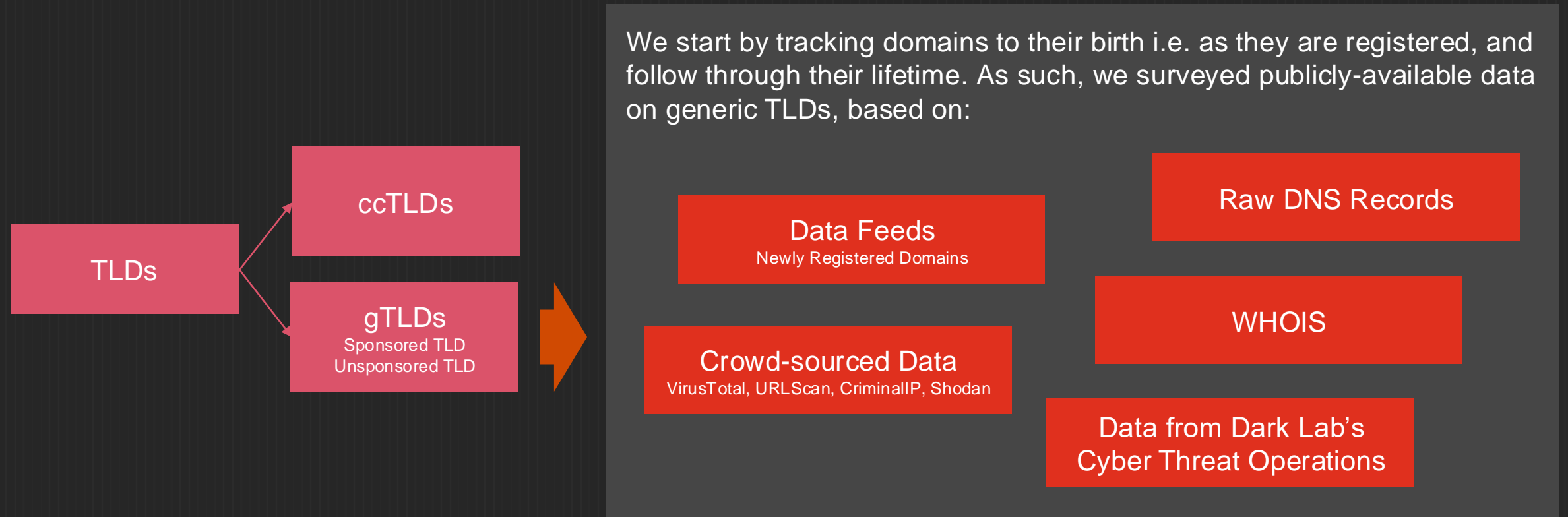
- Accesses from 2+ countries within short period in Entra ID
- Review the 'Risky' Sign-In on Entra ID
- Monitor for assignments of Temporary Access Passes on sensitive accounts
- Monitor for large numbers of users signing in "from" the same device
- Specific user events (e.g., user registered security information, started security info registration,...)



Send **device registration notifications** to users

# Our approach to tracking domains – how do they begin?

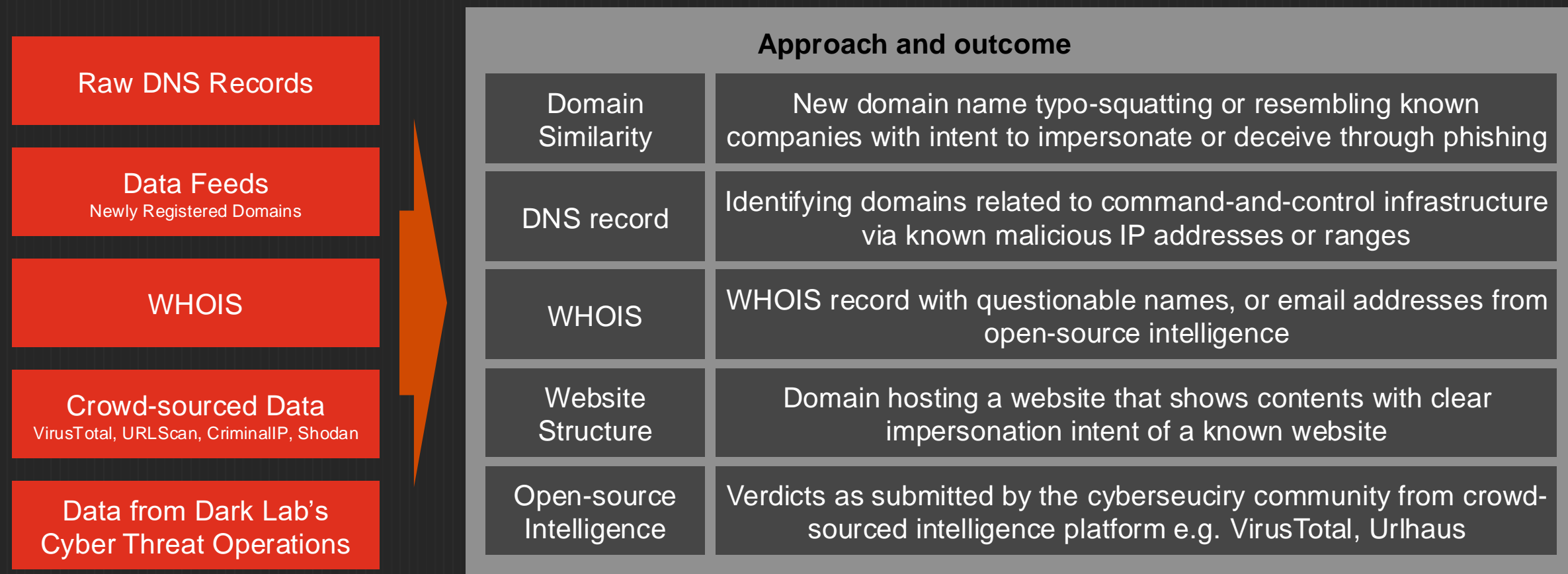
Domains take an important role in infrastructure used by cybercriminals and the like. Dark Lab asks the question of: how do threat actors groom their domains?



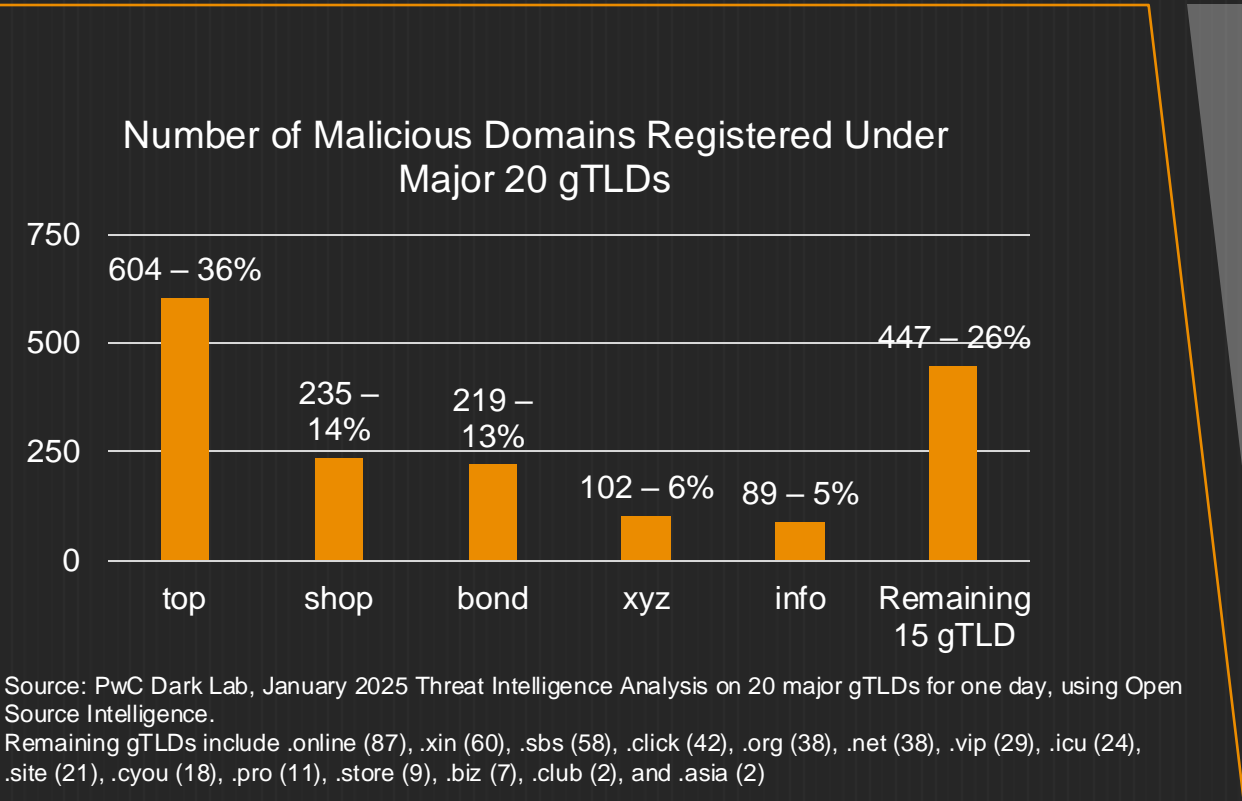


# Our approach to tracking domains – how do they begin?

We look historically at domains that are deemed suspicious or malicious.



# What insights did we glean from our study into newly registered domains for 20 major gTLDs for a selected day in January 2025?



Phishing

Spam

Malware

C2

APT-related activities

70,000 newly registered domains per day

2,800 of the 70,000 newly registered domains reported as malicious

74% of newly registered malicious comprise of the top 5 gTLDs

# Example of newly registered malicious domains

Phishing

Spam

Malware

C2

Newly registered domains are typically deployed in SMS to redirect and deceive victims into providing sensitive information (e.g., credentials, PII, etc.) by impersonating well-known organizations

The image shows a phishing attempt. On the left, a dark grey SMS bubble contains a message in Chinese from '中國銀行(香港)' (Bank of China Hong Kong). The message states that the recipient's rewards points are about to expire and provides two links: <https://macau-boc.top> and <https://www.chinabankofmoab.top>. On the right, a screenshot of a website impersonates the Bank of China Hong Kong rewards portal. The website features the bank's logo and name in both Chinese and English. It prompts the user to '查詢您的特選獎賞積分' (Check your special rewards points) and includes a form with a phone number field (prefixed with +853) and a '進入' (Enter) button. At the bottom, it provides contact information: '聯絡我們' (Contact us), '客戶服務熱線: +852 3988 2888' (Customer service hotline), '電郵我們' (Email us), and '即時線上對話' (Live chat). Links for '條款及細則' (Terms and conditions) and '私隱政策' (Privacy policy) are also visible.

The image shows a phishing website impersonating a credit card payment page. The website features the Bank of China Hong Kong logo and name. It displays a payment amount of '付款MOP\$1.00' and a transaction number '訂單號: MO-240925-072315971'. Below this, there are input fields for '持卡人' (Cardholder), '卡號' (Card number), '有效期' (Validity period), and '卡背面安全碼 (CVV)' (Card back security code). A '提交' (Submit) button is at the bottom. At the bottom of the page, it provides contact information: '聯絡我們' (Contact us), '客戶服務熱線: +852 3988 2888' (Customer service hotline), '電郵我們' (Email us), and '即時線上對話' (Live chat).

- Impersonate BOC rewards portal to target Macau and HK
- Trick victims to provide credit card info, OTP from credit card and PII, e.g., name, address email, phone number...



# Example of newly registered malicious domains (cont'd.)

Phishing

Spam

Malware

C2

Social media and instant messaging platforms have become a popular target for financial gain in recent years, facilitated by low cost to register look-alike domains



搜索关键词...

WhatsApp网页版  
服务与帮助

## 适用于 WhatsApp Web（谷歌）电脑网页版


WhatsApp Web（谷歌）网页版使用End-to-End Encryption, E2EE加密技术，只有通信的双方才能解密和读取消息内容。

为了进一步保护用户的账户，WhatsApp 提供了2FA功能，启用后，除了手机号码外，用户还需要输入一个六位数的PIN码才能登录账户，这大大增加了账户安全。



 Windows 为了获得最佳体验，推荐升级到最新的 WINDOWS 版本，建议使用 WINDOWS 10 或更高版本。

WhatsApp网页版



## Telegram

请确认您的国家地区代码  
并且输入您的手机号码

国家  
China

电话号码  
+86-----

下一步

[通过二维码登录](#)



# Example of newly registered malicious domains (cont'd.)

Threat actors leveraging infostealers (e.g., Lumma) or hosting C2 often register new domains to either distribute the malware to unsuspecting users or to maintain persistence and communicate with their victim.

Challenged.com		172.67.192.161	443	unwrittenuzy.shop
Challenged.com		172.67.192.161	443	unwrittenuzy.shop
Challenged.com		172.67.192.161	443	unwrittenuzy.shop
Challenged.com		172.67.192.161	443	unwrittenuzy.shop
Challenged.com		172.67.192.161	443	unwrittenuzy.shop
Challenged.com		172.67.192.161	443	unwrittenuzy.shop

HTTP Requests

+ POST https://culturedirtys.click/api 200

DNS Resolutions

+ culturedirtys.click

IP Traffic

TCP 104.21.90.4:443 (culturedirtys.click)

TCP 172.67.150.129:443 (culturedirtys.click)

51 / 72

Community Score

51/72 security vendors flagged this file as malicious

08b0ca8f336a894ad88a68640c0487b078402731f0b29db4a51af6382d58a8d0

peexe overlay invalid-signature assembly checks-user-input long-sleeps

DETECTION

DETAILS

RELATIONS

ASSOCIATIONS

BEHAVIOR

CONTENT

TEL

Malware config detection ⓘ

⚠ This file contains malware configuration that may be attributed to lummac (also known as lumma) family.

C2IntelFeedsBot @drb\_ra · Dec 22, 2024

Cobalt Strike Server Found  
C2: HTTPS @ 101[.]126[.]21[.]197:2087  
C2 Server: api[.]nbccheck[.]xyz/index[.]html  
Country: China (AS137718)  
ASN: VOLCANO-ENGINE Beiji...  
Host Header: api[.]nbccheck[.]xyz/cc @Namecheap  
#C2 #cobaltstrike

1 190

C2IntelFeedsBot @drb\_ra · Dec 19, 2024

Cobalt Strike Server Found  
C2: HTTPS @ 111[.]229[.]187[.]190:8344  
C2 Server: sts[.]tencentopenapi[.]xyz/image/  
Country: China (AS45090)  
ASN: TENCENT-NET-AP Shenz...  
Host Header: sts[.]tencentopenapi[.]xyz  
#C2 #cobaltstrike

109

C2IntelFeedsBot @drb\_ra · Dec 18, 2024

Cobalt Strike Server Found  
C2: HTTPS @ 148[.]135[.]77[.]103:55555  
C2 Server: www[.]mcirosoft[.]xyz/image/mcirosoft[.]xyz/image/  
Country: United States (AS35916)  
ASN: MULTA-ASN1  
Host Header: www[.]bing[.]com  
#C2 #cobaltstrike



# Why might this be happening?

## Lack of Proactive Governance of gTLD



Per ICANN, registrars rely on the community's **abuse report** to identify and takedown malicious domains



There is a lack of a **proactive, regular and measurable monitoring mechanism** to flag suspicious domains in a timely manner

This similar pain point **extends to ccTLDs (!)**

## Too Simple Registration Process, Compounded by Low Cost

Very **affordable** to register domains at scale

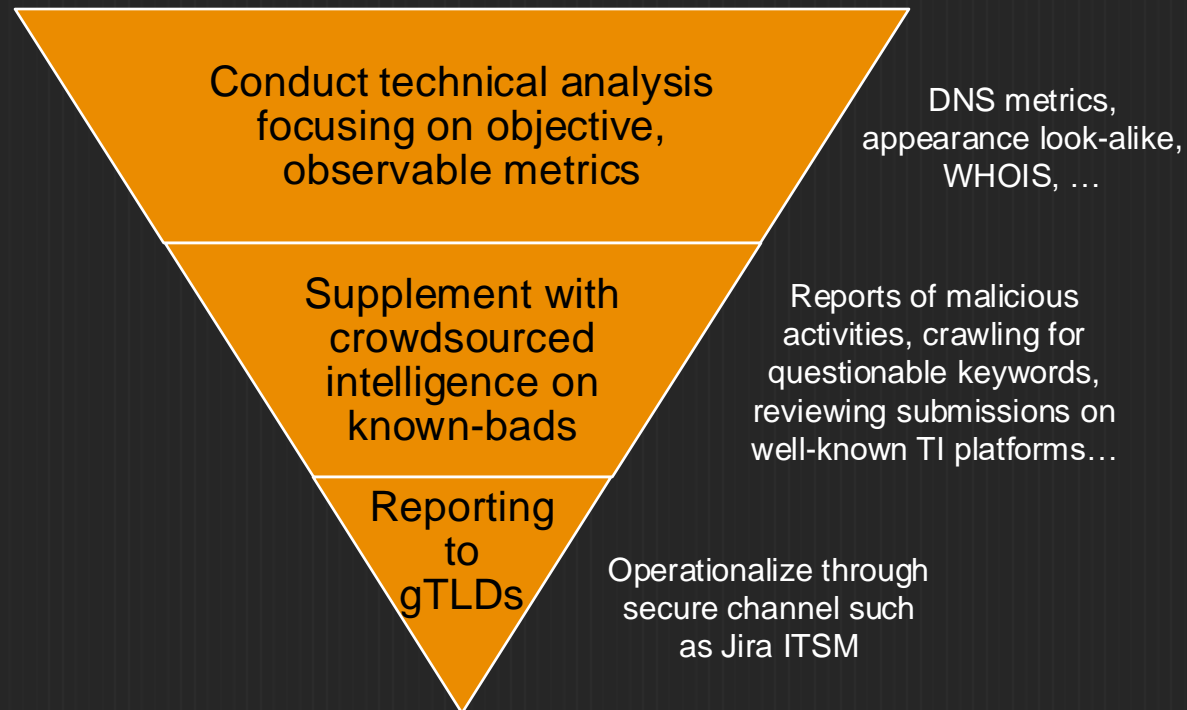
Domain Registration darklabhk.org	1 Year	<input type="checkbox"/> AUTO-RENEW	\$12.98 \$7.48 42% OFF 1ST YEAR	
Domain Registration darklabhk.top	1 Year	<input type="checkbox"/> AUTO-RENEW	\$5.98 \$2.98 50% OFF 1ST YEAR	
▼ ICANN fee \$0.18				
Privacy and Uptime protection				
Domain Privacy *	<input checked="" type="checkbox"/> ENABLE	<input type="checkbox"/> AUTO-RENEW	\$0.00 FREE FOREVER!	
1 year subscription				
^ What is the benefit?				
Privacy protection service that hides your personal info in the public Whois database, keeps your data safe and helps to avoid spam. Now free forever!				



Limited WHOIS contact information required, with **insufficient validation** of registrant data due to domain privacy

# We devised a proactive mechanism and are working with .top to proof of concept it, before looking to scale out

**Receive zone file from gTLD on regular basis**



**Takedown by gTLD or share with law enforcement and potential victims**



**Official collaboration since 2024 Hack A Day to strengthen Hong Kong's cyberspace resilience**

Source: <https://www.pwchk.com/en/press-room/press-releases/pr-111124.html>

**Dark Lab**



Q&A





# .my and .pw domain related to Lumma stealer

<input type="checkbox"/>	Domain list - 8 Domains	Associations ⓘ	Detections ⓘ	Registrar	Created	Last updated	
<input type="checkbox"/>	cooingshutwz.my 104.21.68.48 172.67.186.169	lummac +1	2 / 94	-	2024-12-01 00:00:00	2024-12-01 00:00:00	
<input type="checkbox"/>	youngsweays.my 104.21.96.1 104.21.16.1 104.21.80.1 dga	lummac +2	18 / 94	-	2024-12-02 00:00:00	2024-12-02 00:00:00	
<input type="checkbox"/>	exchanwrysu.my 104.21.80.1 104.21.32.1 104.21.48.1 dga	lummac +1	14 / 94	-	2024-12-02 00:00:00	2024-12-02 00:00:00	
<input type="checkbox"/>	lonylexpedn.my 188.114.97.0 188.114.96.0 188.114.97.7	lummac +2	13 / 94	-	2024-12-02 00:00:00	2024-12-02 00:00:00	
<input type="checkbox"/>	lettuchsy.my 172.67.188.28 104.21.7.245	lummac +1	8 / 94	-	2024-12-01 00:00:00	2024-12-01 00:00:00	
<input type="checkbox"/>	placekeawe.my 172.67.183.172 104.21.64.115 75.2.115.196	lummac +2	6 / 94	-	2024-12-01 00:00:00	2024-12-01 00:00:00	
<input type="checkbox"/>	tallyoveriw.my 104.21.112.1 104.21.32.1 104.21.96.1	lummac +2	14 / 94	-	2024-12-02 00:00:00	2024-12-02 00:00:00	
<input type="checkbox"/>	abrasigehs.my 104.21.32.1 104.21.16.1 104.21.48.1	lummac +2	13 / 94	-	2024-12-01 00:00:00	2024-12-01 00:00:00	

<input type="checkbox"/>	Domain list - 10 Domains	Associations ⓘ	Detections ⓘ	Registrar	Created	Last updated	
<input type="checkbox"/>	pooreveningfuseor.pw 104.21.47.153 172.67.148.219 nxdomain potential-c2	lummac +3	14 / 94	NICENI...	2024-02-14 12:01:07	2024-02-22 11:06:24	
<input type="checkbox"/>	politefrightenpowoa.pw 188.114.96.0 188.114.97.0 172.67.140.1	lummac +2	17 / 94	PDR Lt...	2023-12-04 20:16:21	2024-12-05 00:32:28	
<input type="checkbox"/>	chincenterblandwka.pw 188.114.96.3 188.114.97.3 188.114.97.0	lummac +2	16 / 94	PDR Lt...	2023-12-21 14:02:06	2024-12-22 00:09:46	
<input type="checkbox"/>	sideindexfollowragelrew.pw 172.64.80.1 188.114.97.3 188.114.96.3	lummac +3	16 / 94	PDR Lt...	2023-12-30 18:08:42	2024-12-31 00:10:33	
<input type="checkbox"/>	opposesicknessopw.pw 172.67.146.121 104.21.79.159	lummac +2	18 / 94	PDR Lt...	2023-12-04 20:16:22	2024-12-05 00:43:37	
<input type="checkbox"/>	recessionconceptjetwe.pw 172.67.187.94 104.21.64.188	lummac +2	17 / 94	PDR Lt...	2023-12-26 17:45:22	2024-12-27 00:09:43	
<input type="checkbox"/>	blastechohackopepower.pw 188.114.96.9 188.114.97.9 188.114.96.7	lummac +2	17 / 94	PDR Lt...	2023-12-26 17:45:22	2025-02-01 00:45:42	
<input type="checkbox"/>	tollactionancestorw.pw 172.64.80.1 172.67.181.85 104.21.75.202	lummac +2	14 / 94	PDR Lt...	2023-12-30 18:08:42	2025-02-05 00:42:09	
<input type="checkbox"/>	carstirgapcheatdeposwte.pw 104.21.95.9 172.67.142.124	lummac +2	16 / 94	PDR Lt...	2023-12-26 17:45:22	2025-02-01 00:45:42	
<input type="checkbox"/>	playerweighmallydailaw.pw 172.64.80.1 188.114.97.7 188.114.96.7	lummac +2	16 / 94	PDR Lt...	2023-12-26 17:45:21	2024-01-26 12:16:38	

# Lumma gTLD

<input type="checkbox"/>	Domain list - 10 Domains			Associations ⓘ	Detections ⓘ	Registrar	Created	Last updated	
<input type="checkbox"/>	<b>babberstalek.org</b> 172.67.194.49 104.21.76.119			lummac +2	20 / 94	-	2025-01-24 00:00:00	2025-01-24 00:00:00	
<input type="checkbox"/>	<b>carrystuppeder.net</b> 188.114.97.9 188.114.96.9 188.114.97.0			lummac +2	21 / 94	-	2025-01-24 00:00:00	2025-01-25 00:00:00	
<input type="checkbox"/>	<b>classyhelped.net</b> 104.21.112.1 104.21.80.1 104.21.64.1			lummac +2	21 / 94	-	2025-01-24 00:00:00	2025-01-25 00:00:00	
<input type="checkbox"/>	<b>climepunneddus.com</b> 172.67.185.92 104.21.88.148			lummac +2	20 / 94	-	2025-01-24 00:00:00	2025-01-24 00:00:00	
<input type="checkbox"/>	<b>flockefaccek.org</b> 188.114.97.3 188.114.96.3 188.114.97.9			lummac +2	20 / 94	-	2025-01-24 00:00:00	2025-01-24 00:00:00	
<input type="checkbox"/>	<b>rebuildhurrte.com</b> 104.21.25.12 172.67.221.141			lummac +2	20 / 94	-	2025-01-24 00:00:00	2025-01-24 00:00:00	
<input type="checkbox"/>	<b>beevasyeip.bond</b> 172.67.205.24 104.21.15.29			lummac +1	13 / 94	-	2025-01-19 00:00:00	2025-01-19 00:00:00	
<input type="checkbox"/>	<b>broadecatez.bond</b> 104.21.77.186 172.67.210.243 91.195.240.123			lummac +1	14 / 94	-	2025-01-19 00:00:00	2025-01-19 00:00:00	
<input type="checkbox"/>	<b>carfeuspitt.bond</b> 104.21.65.106 172.67.145.35 91.195.240.123			lummac +3	17 / 94	-	2025-01-19 00:00:00	2025-01-19 00:00:00	
<input type="checkbox"/>	<b>ecofriendlyhometop.top</b> 104.21.50.213 172.67.167.116 91.195.240.123			lummac +1	16 / 94	-	2025-01-19 00:00:00	2025-01-19 00:00:00	

Dark Lab

# Thank you

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