Cybercrime and The Underground Economy

CS 161: Computer Security

Prof. David Wagner

April 22, 2016

REQUEST FOR URGENT BUSINESS RELATIONSHIP

FIRST, I MUST SOLICIT YOUR STRICTEST CONFIDENCE IN THIS TRANSACTION. THIS IS BY VIRTUE OF ITS NATURE AS BEING UTTERLY CONFIDENTIAL AND 'TOP SECRET'. I AM SURE AND HAVE CONFIDENCE OF YOUR ABILITY AND RELIABILITY TO PROSECUTE A TRANSACTION OF THIS GREAT MAGNITUDE INVOLVING A PENDING TRANSACTION REQUIRING MAXIMUM CONFIDENCE.

WE ARE TOP OFFICIAL OF THE FEDERAL GOVERNMENT CONTRACT REVIEW PANEL WHO ARE INTERESTED IN IMPORATION OF GOODS INTO OUR COUNTRY WITH FUNDS WHICH ARE PRESENTLY TRAPPED IN NIGERIA. IN ORDER TO COMMENCE THIS BUSINESS WE SOLICIT YOUR ASSISTANCE TO ENABLE US TRANSFER INTO YOUR ACCOUNT THE SAID TRAPPED FUNDS.

OMG so sketchy...

THE SOURCE OF THIS FUND IS AS FOLLOWS; DURING THE LAST MILITARY REGIME HERE IN NIGERIA, THE GOVERNMENT OFFICIALS SET UP COMPANIES AND AWARDED THEMSELVES CONTRACTS WHICH WERE GROSSLY OVER-INVOICED IN VARIOUS MINISTRIES. THE PRESENT CIVILIAN GOVERNMENT SET UP A CONTRACT REVIEW

Discussion

 Why do Nigerian scammers say they're from Nigeria? And why so many spelling mistakes?

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Hint: It's not an accident....

Answer

 Scammers want to quickly weed out all but the most gullible marks.

 Lesson: Crime is a business; criminals will follow easiest route to make a buck.

Discussion

 You get an email from someone overseas who wants to hire you as their financial agent in the US. They'll send you a cashier's check for \$8000, and you should deposit it in your bank account and wire \$7500 to their supplier and keep \$500 for your trouble.

What's that all about?

Answer

 It's a scam! After you wire the money out, the cashier's check will bounce and the bank will reverse the transaction.

Possibility 1: Check fraud.

 Possibility 2: Laundering money out of stolen accounts. You're being used as an unwitting money mule.

Specialization....

Goals For Today

- A look at profit-driven cybercrime
 - Monetization of malware
 - Monetization of spam
- ... including the *Underground Economy*
 - Elements
 - Significance
 - Infiltration/disruption

Cybercrime



Discussion

 Suppose you've hacked a bunch of machines. How could you make money from this?

Monetizing Malware on 1 Machine

- General malware monetization approaches:
 - Keylogging: steal financial/email/social network accounts
 - Ransomware
 - Scareware ("fake AV")

System scan progress



Shared Documents





My Documer

Hard drives



Local Disk (C:) 353 trojans



Local Disk (D:)



🦄 78 trojans

DVD



DVD-RAM Drive (E:)

100%

Scan procedures finished, 431 Probably harmfull items was t



Your Computer is Infected!

http://protection-check07.com



OK.

http://protection-check07.com

Your computer remains infected by threats! They might lead to data loss and file structure damage, and needed to be heal as soon as possible.

Return to Personal Antivirus and download it secure to your PC

Cancel

OK

Threats and actions:

Name	Risk level	Date	Files infected	State	^
@ Email-Worm.Win32.Net	Critical	11.18.2008	36	Waiting removal	
@ Email-Worm.Win32.Myd	Critical	11.18.2008	65	Waiting removal	
Win 32:Delf-XQ	Critical	11.18.2008	44	Waiting removal	+

Description:

This program is potentially dangerous for your system. Trojan-Downloader stealing passwords, credit cards and other personal information from your computer.

Advice:

You need to remove this threat as soon as possible!



Monetizing Malware on 1 Machine

- General malware monetization approaches:
 - Keylogging: steal financial/email/social network accounts
 - Ransomware
 - Scareware ("fake AV")
 - Transaction generators ("man-in-the-browser")
 - Malware watches user's surfing ...
 - ... waits for them to log into banking site (say) ...
 - ... and then injects additional banking transactions like "send \$50,000 to Nigeria" ...
 - ... and **alters** web server replies to mask the change in the user's balance

Monetizing Large-Scale Malware

- Monetization that leverages botnet scale
 - DDoS (extortion)
 - Spam
 - Click fraud
 - Scam infrastructure
 - Hosting web pages (e.g., phishing)
 - Redirection to evade blacklisting/takedown (DNS)
 - Proxying traffic to thwart tracing / provide IP diversity
- Which of these cause serious pain for infected user?
 - None. Users have little incentive to prevent
 - ⇒ *Externality* (cost one party's actions impose on another)

Spam & Spam Profit

Monetizing Spam

- In what different ways can spammers make money off of sending spam?
 - And who has incentives to thwart these schemes?
 - (Other than law enforcement)
- Scheme #1: advertise goods or services
 - Examples: fake Rolexes, Viagra, university degrees
 - Profit angle: increased sales
 - Who'll try to stop it: brand holders

Anatomy of a modern Pharmaceutical spam campaign

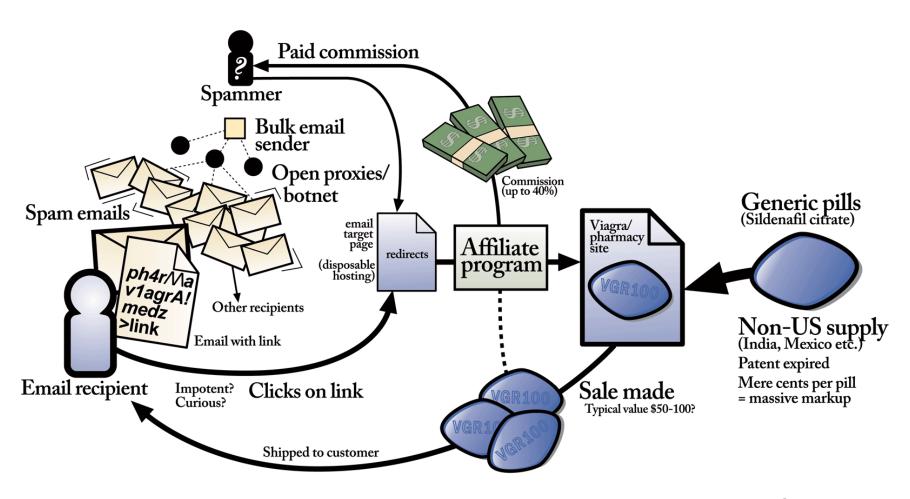


Diagram by Stuart Brown modernlifeisrubbish.co.uk

Monetizing Spam

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 - Who'll try to stop it: brand holders
- Scheme #2: phishing
 - Profit angle: transfer \$\$\$ out of accounts; sell accounts to others; use accounts for better spamming (e.g. Facebook)
 - Opponents: issuers of accounts
 - Note: targeted phishing ("spear-phishing") doesn't actually need much in the way of spam due to low volume

- Scheme #3: scams
 - Examples: pen pal relationships, 419 ("Nigerian")
 - Profit angle: con victim into sending money
 - Opponents: scambaiters (e.g., www.419eater.com)

- Scheme #4: recruiting crooks/underlings
 - Examples: money mules, reshippers
 - Profit angle: enables profiting from cybercrime
 - Opponents: ?

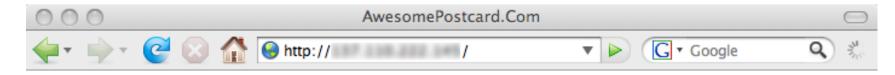
- Scheme #3: scams
 - Examples: pen pal relationships, 419 ("Nigerian")
 - Profit angle: con victim into sending money
 - Opp(Money mules take incoming (fraudulent) financial transfers to their bank accounts, wire-transfer 90% out of country, keep 10%
- Scheme #4: recruiting crooks/underlings
 - Examples: money mules, reshippers
 - Profit angle: enables profiting from cybercrime
 - Opponents: ?

- Scheme #3: scams
 - Examples: pen pal relationships, 419 ("Nigerian")
 - Profit angle: con victim into sending money
 - Opponents: sca
 Reshippers receive shipments of goods (e.g., a laptop bought using a stolen account) and re-mail them outside the country
- Scheme #4: recruiting crooks/underlings
 - Examples: money mules, reshippers
 - Profit angle: enables profiting from cybercrime
 - Opponents: ?

- Scheme #5: pump-and-dump
 - Example: "Falcon Energy (FPK) is about to go through the roof! Don't miss out on \$eriou\$ Profit\$!"
 - Profit angle: penny-stock momentarily goes up, dump pre-bought shares when it does
 - Opponents: Securities and Exchange Commission
 - Note: unlike other monetization techniques, the "back channel" is out-of-band
 - No link in messages back to the scammer
- Scheme #6: recruiting bots
 - Examples: "important security patch!", "someone sent you a greeting card!"
 - Profit angle: get malware installed on new machines
 - Opponents: ?

1

Welcome to **Storm!**





Your download will start in 5 seconds. If your download does not start, click here

©2000-2008 AwesomePostCard.com - All rights reserved.

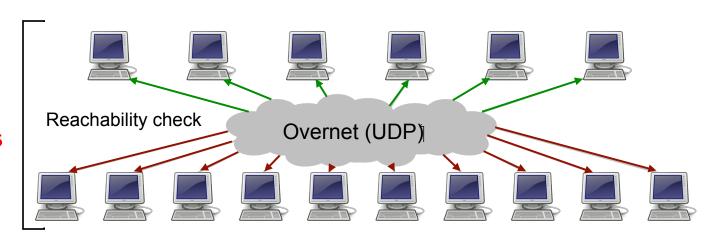
Done

Would you like to be one of our newest bots? Just read your postcard!

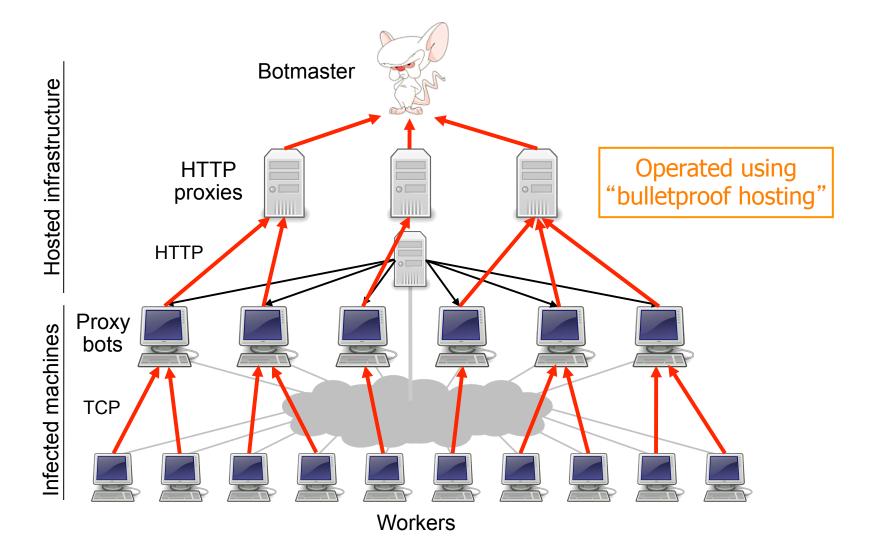
(Or even easier: just wait 5 seconds!)

The Storm Spambot

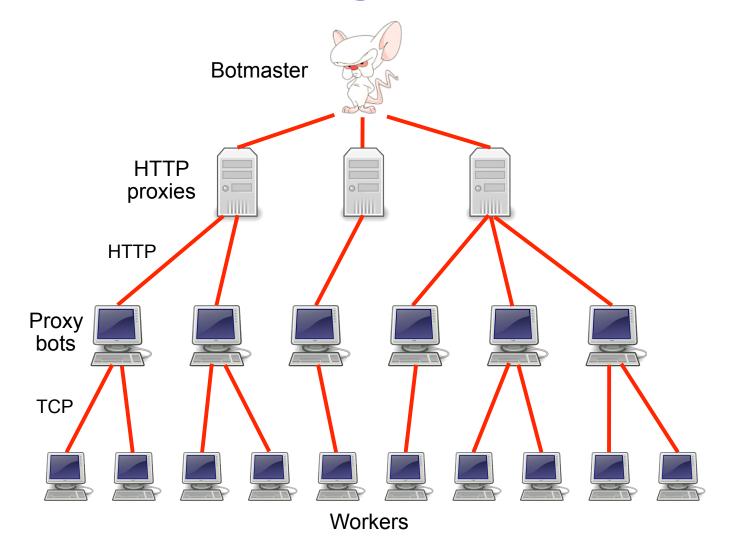
Infected systems



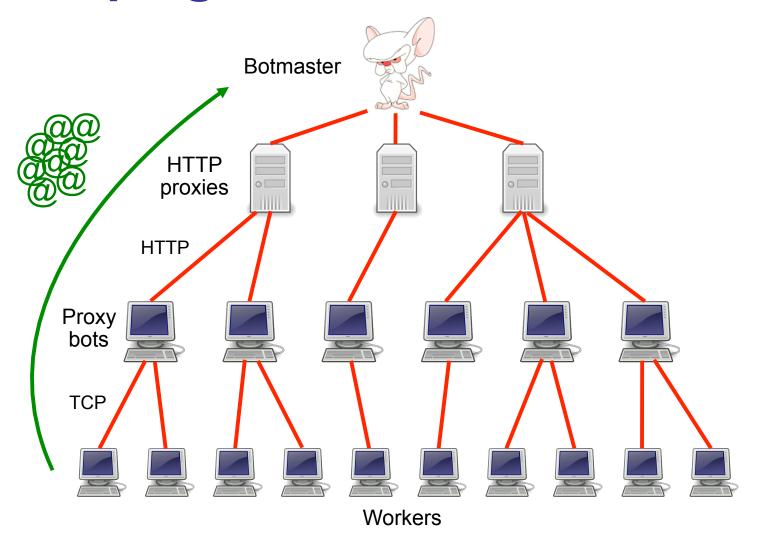
The Storm Botnet



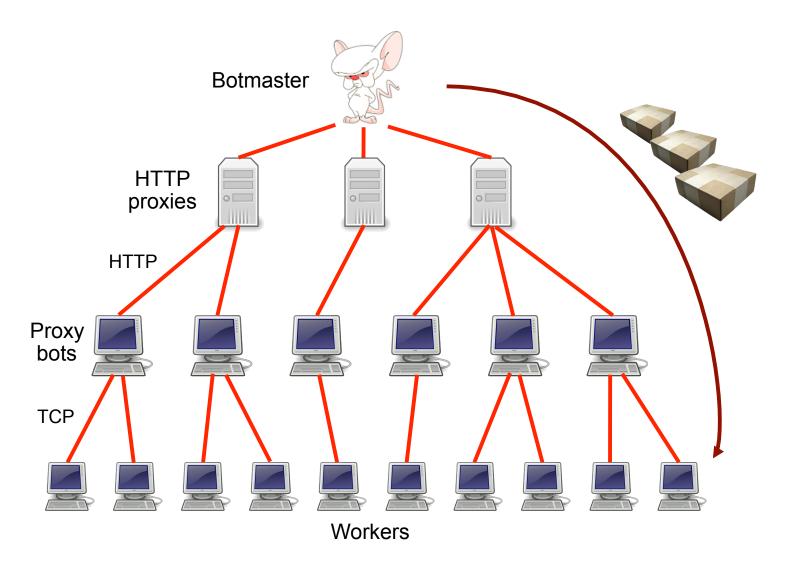
Spam "Campaign" Mechanics



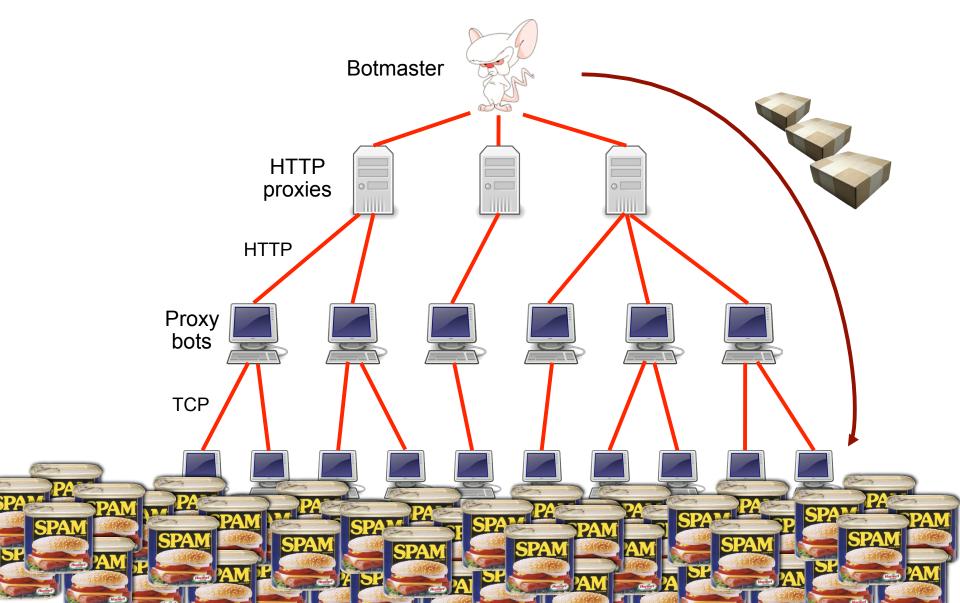
Campaign Mechanics: Harvest



Campaign Mechanics: Spamming

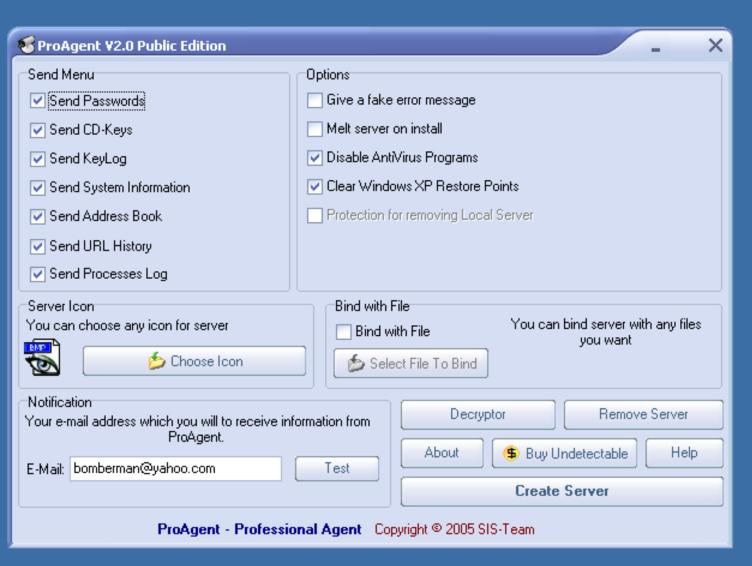


Campaign Mechanics: Spamming



The Rise of the Underground Economy









Spy Instructors Software

NEW GENERATION SOFTWARE SOLUTIONS



PRODUCTS

DOWNLOADS



ABOUT US



ProAgent v2.1



- ProAgent Spy Software is one of the most powerful monitoring and surveillance applications available today.
- It is an ultimate solution for monitoring spouses, children, employees, or anyone else!
- ProAgent records all typed keystrokes, all active window texts, all visited web sites, usernames, passwords and more and sends e-mail reports to your e-mail address that you specified when creating the server, completely hidden!
- ProAgent can work in all kind of networks, it doesn't matter if the PC is behind a firewall or behind a router or in a LAN, ProAgent works in all of these conditions without any problems.

Click here to purchase **ProAgent v2.1** Special Edition...

Click here to download ProAgent v2 1 Public Edition

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- Purchase Program
- Customer Support Department



- Commercial Programs
- Freeware Programs
- Custom Special Programs

New Generation Software Solutions...

New Products

SIS-IExploiter v2.0



ProAgent v2.1



SIS-Downloader

Virtual Keyboard

AntiDote v1.2

allBots Inc.

Social Networking Bots

GOOD News!!! We have something more for you! Yes, we have just integrated CAPTCHA Bypasser* in all of our bots.

Winsock (Multi-threaded) Bots
Click here for 30+ MySpace Bots

Become an Affiliate and Start Earning Now

Accounts Creator (You Just Need To Type In The CAPTCHAs To Create Accounts) Social Networks					
MySpace Accounts Creator with Picture Uploader, Profile & Layout Manager (Winsock)	PayPal Buy Nov \$360.95	\$320.00			
YouTube Accounts Creator	PayPal Buy Nov \$120.95	\$95.00			
Friendster Accounts Creator	PayPal Buy Nov \$120.05	\$95.00			
Hi5 Accounts Creator	PayPal Buy Nov \$120.95	\$95.00			
TogWorld Assounts Creater	PayPal				

Friend Adders, Message Senders, Comment Posters & Others

(All Bots Work In A Conventional Manner, They Gather Friend IDs/Names And Send Friend Requests, Messages, Comments Automatically)

Chaining Feature Is Available On All Bots for All Networks Except Facebook



S Магазин Аккаунтов #1 в Рунет...

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Наш магазин аккаунтов рад предложить аккаунты различных почтовых служб и бесплатных хостингов для любых задач. Вы получете аккаунты **СРАЗУ после оплаты** заказа через Webmoney.

Также доступна услуга залива редиректов на Pochta.ru, Cwahi.net и Ocatch.com что является уникальной услугой - вы получаете готовые редиректы в течение часа после заказа. При покупке аккаунтов менее 1000 штук действует специальный тариф.

www.FreedomScripts.org - разработка софта на заказ Мега Софт для дорвеев - Zerber Одобрятор друзей - Мой мир

Twidium - безопасный и профессиональный инструмент для раскрутки твиттера накрутить фолловеров в Твиттер

Заработай на продаже аккаунтов

Купить аккаунты Одноклассников Купить аккаунты Вконтакте

Сейчас в продаже

Служба	Кол-во акков	Цена за 1К аккаунтов
Mail.ru	117025	до 10К: \$5 от 10К до 20К: \$4.5 от 20К: \$4
Mail.ru Mix	327199	до 10К: \$5 от 10К до 20К: \$4.5 от 20К: \$4
Mail.ru Second Hand	0	до 10К: \$4 от 10К до 20К: \$3.5 от 20К: \$3
Mail.ru Mix S/H	15811	до 10К: \$4 от 10К до 20К: \$3.5 от 20К: \$3
Yandex.ru	4758	до 10К: \$20 от 10К до 20К: \$19 от 20К: \$18
Narod.ru	5315	до 10К: \$50 от 10К до 20К: \$50 от 20К: \$50



06 Anp 2013

Временно не продаем аккаунты Twitter.com

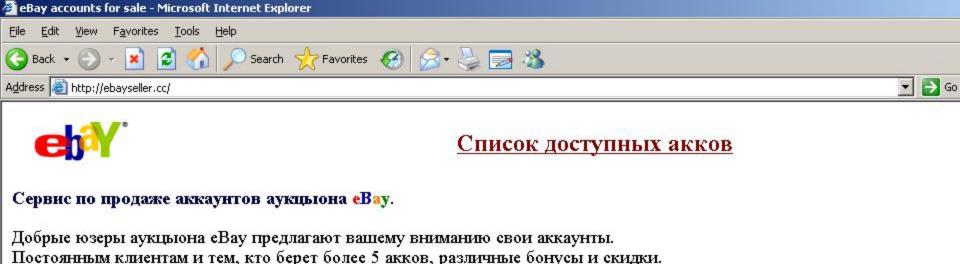
15 Map 2013

Отличная цена на аккаунты Facebook.com! Всего \$80 за 1000 шт. Дешевле не бывает!

07 Фев 2013

Сенсационная цена на аккаунты **Yahoo.com**. Теперь отличные аккаунты **со** всеми регистрационными данными по цене **от \$7** за **1000 шт**!

06 then 2013



Вы сами выбираете акк (несколько акков) из списка. Говорите мне. Оплачиваете и получаете. Все акки предварительно проверяются перед продажей, в случае, если что-то не работает - 100% замена.

Актив/не актив смотрите сами по юзер ид. По активности не сортирую, так как это для каждого субъективно.

Также в продаже бывают акки PayPal. Цены рыночные. Постоянно не продаю.

Оплата по WM.

Перед покупкой следует обязательно ознакомиться с FAQ.

По работе с товаром не консультирую.

Работа через гарант сервис приветствуется.

Все аккаунты с доступом к мылу холдера.

Мон цены:

```
seller/баер акк до 10 фидов = 5$
seller/баер акк 10-25 фидов = 10$
seller/баер акк 25-50 фидов = 15$
seller/баер акк более 50 фидов = 25$
```

Advertisement

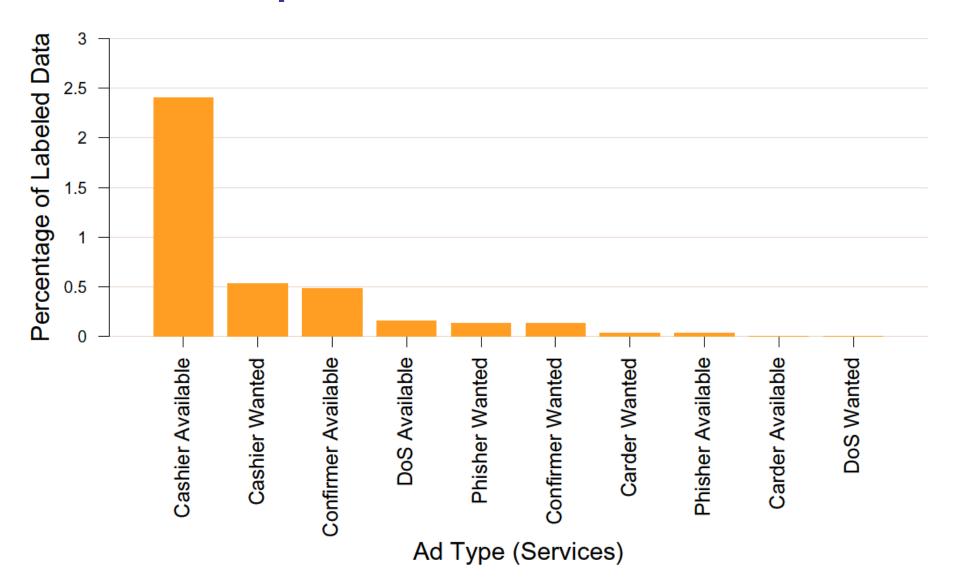
i have boa wells and barclays bank logins....

have hacked hosts, mail lists, php mailer send to all inbox

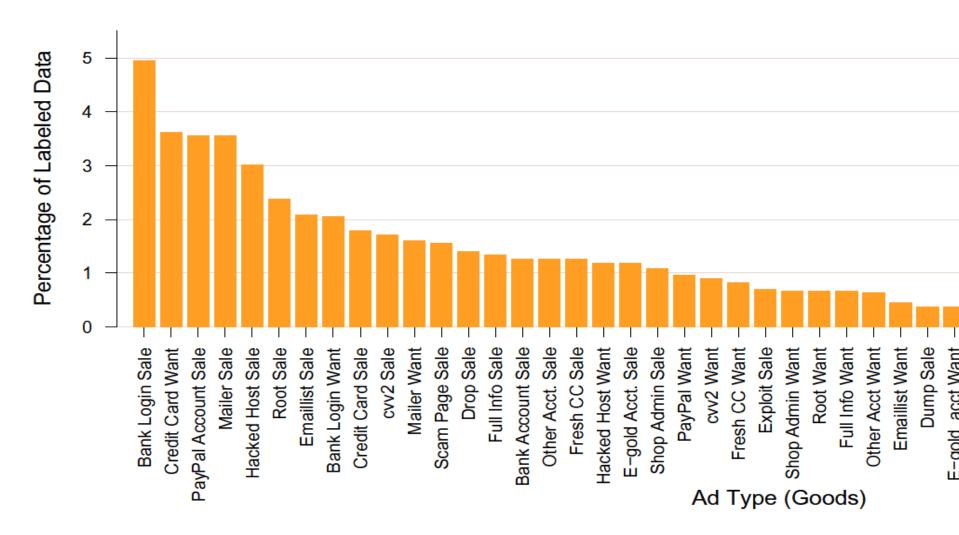
i need 1 mastercard i give 1 linux hacked root

i have verified paypal accounts with good balance...and i can cashout paypals

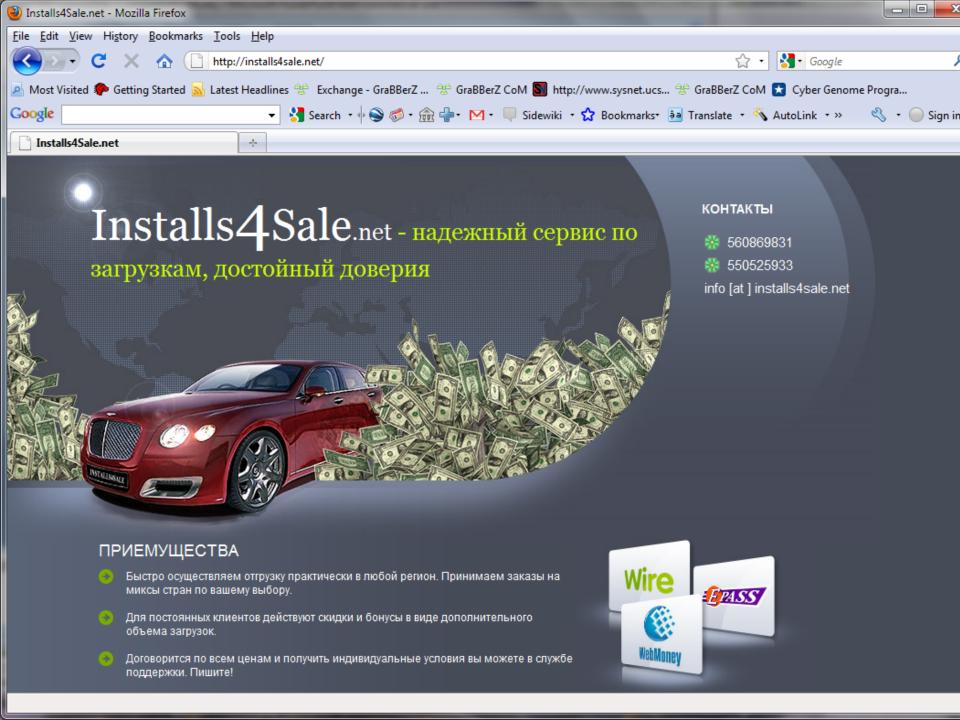
Marketplace Ads for Services

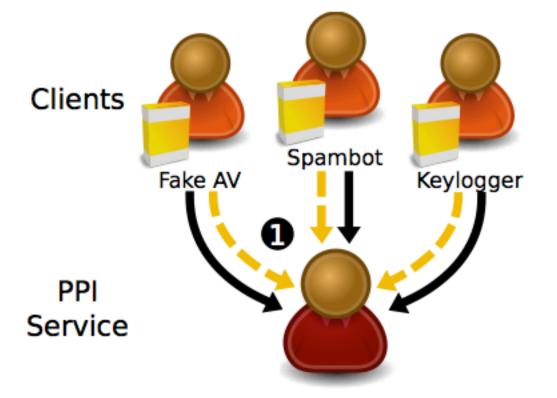


Marketplace Ads for Goods

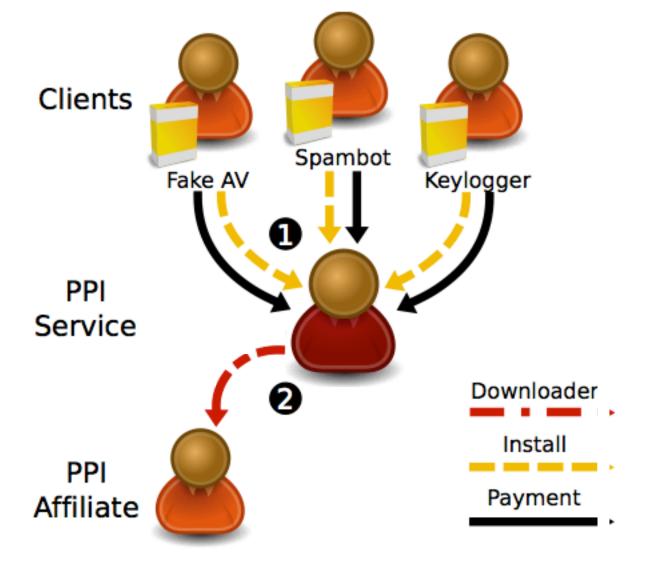


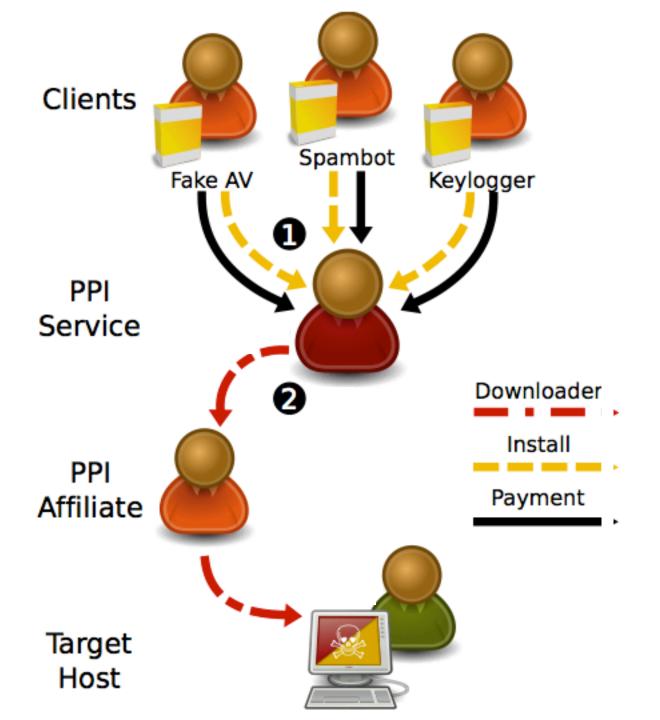
Pay-Per-Install (PPI)

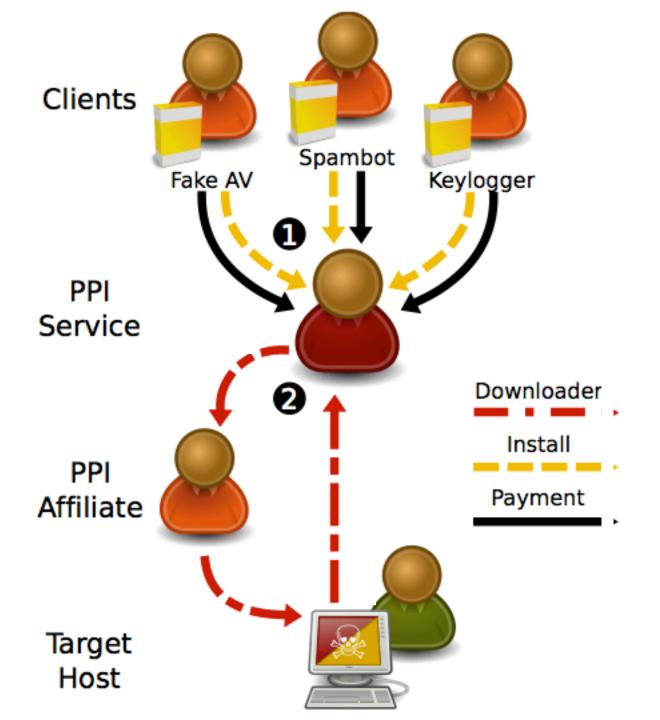


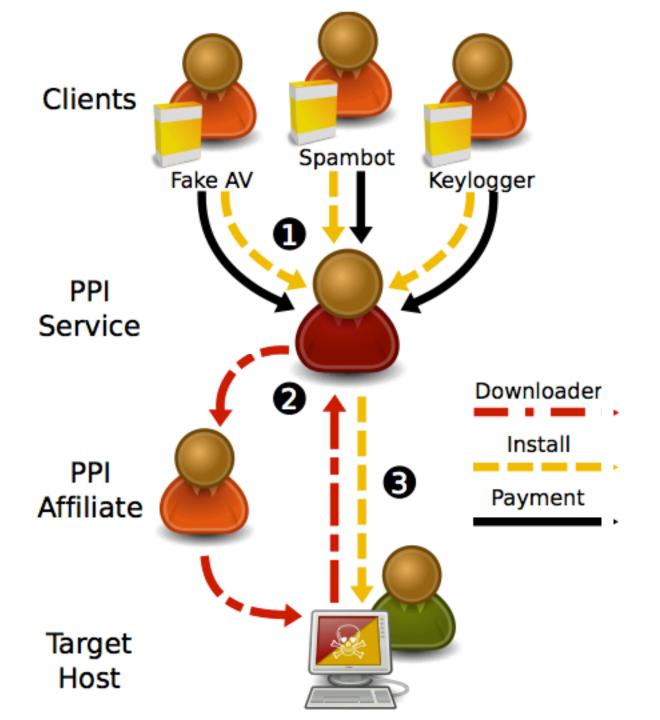


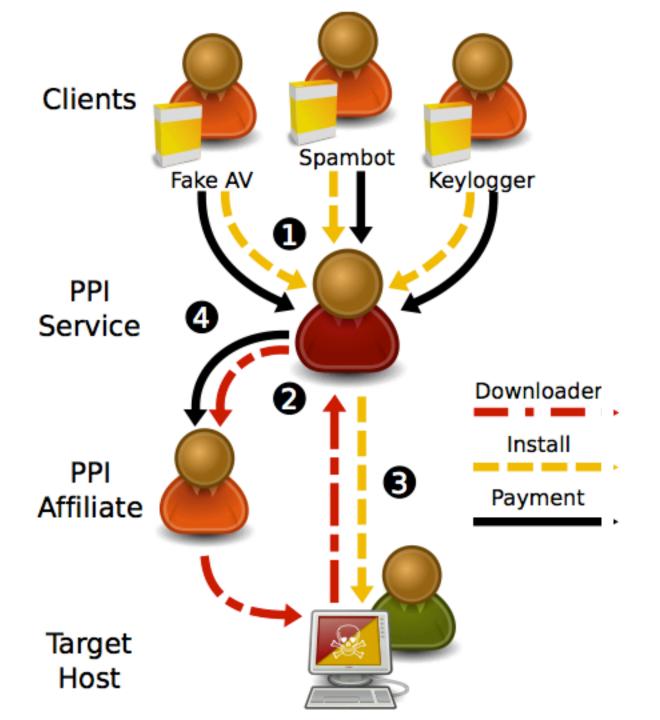




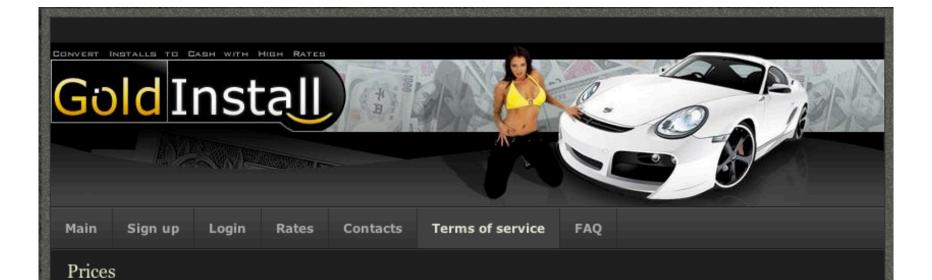












Goldinstall Rates for 1K Installs for each Country.

Country	Price	
ОТН	13\$	
US	150\$	
GB	110\$	
CA	110\$	
DE	30\$	
BE	20\$	
IT	65\$	
CH	20\$	
CZ	20\$	
DK	20\$	
ES	30\$	
AU	55\$	
FR	30\$	
NL	20\$	
NO	20\$	
PT	30\$	
LB	6\$	

Defenses

The Underground Economy

- Why is its emergence significant?
- Markets enable efficiencies
 - Specialization: individuals rewarded for doing a single thing particularly well
- Lowers barrier-to-entry
 - Only need a single skill
 - Some underground market activities are legal
- Competition spurs innovation
 - Accelerates arms race
 - Defenders must assume a more pessimistic threat model
- Facilitates non-\$ Internet attacks (political, nation-state)
 - Provides actors with cheap attack components
 - Provides stealthy actors with plausible cover

The Underground Economy, cont.

- What problems do underground markets face?
- Depending on marketplace architecture, can present a target / single point of failure
- By definition, deals are between crooks
 - Major issue of betrayal by "rippers"
- Markets only provide major efficiencies if they facilitate deals between strangers
 - Susceptible to infiltration

Life As A Spammer ...

- Storm infiltration study found:
 - Modern spam campaigns can send 10s of billions of spams using mailing lists of 100s of millions of addresses
 - 3/4 to 5/6 of all spam delivery attempts fail before the message is even sent to the receiver's server …
 - ... due to heavy & effective use of black-listing
 - It takes around 20,000 "postcard" spams to get one person to visit the postcard site
 - 1 in 10 of the visitors will click to download the postcard
 - It takes around 12,000,000 Viagra spams to get one person to visit the site and make a purchase (~\$100)
 - Even given those low rates, huge volume ⇒ profitable

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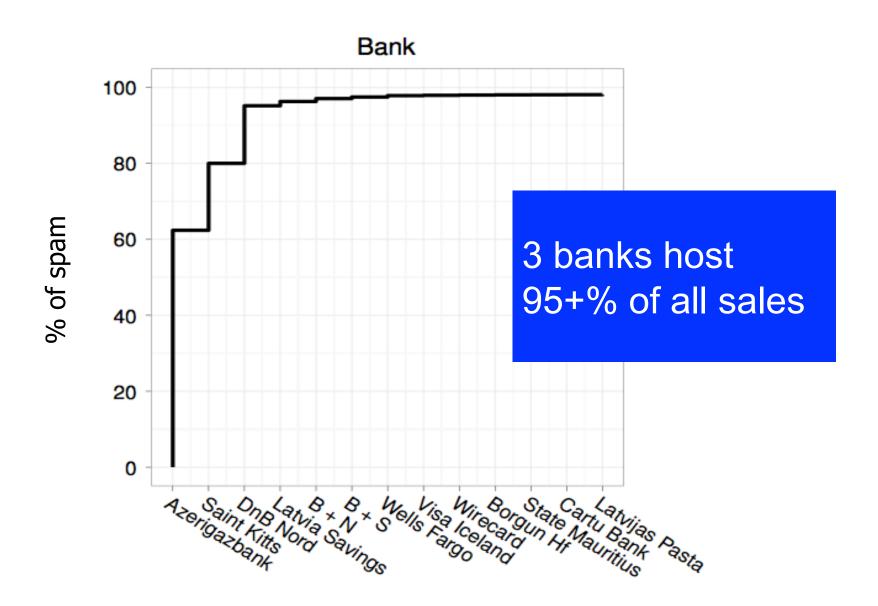
Another study based on making purchases of spam-advertised pharamaceuticals found that 3 merchant banks hosted **95+% of all sales** ...

- ... suggesting a novel way to suppress spam is to undermine the credit-card processing
- It takes around 12,000,000 Viagra spams to get one person to visit the site and make a purchase (~\$100)
- Even given those low rates, huge volume ⇒ profitable

~ \$1.5-2M/year revenue

ses

Merchant Bank bottlenecks



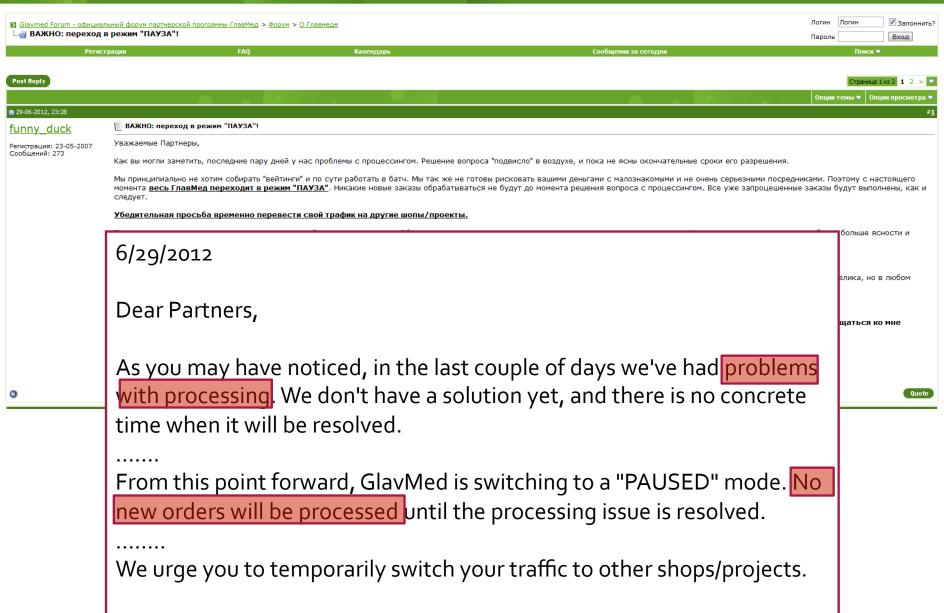


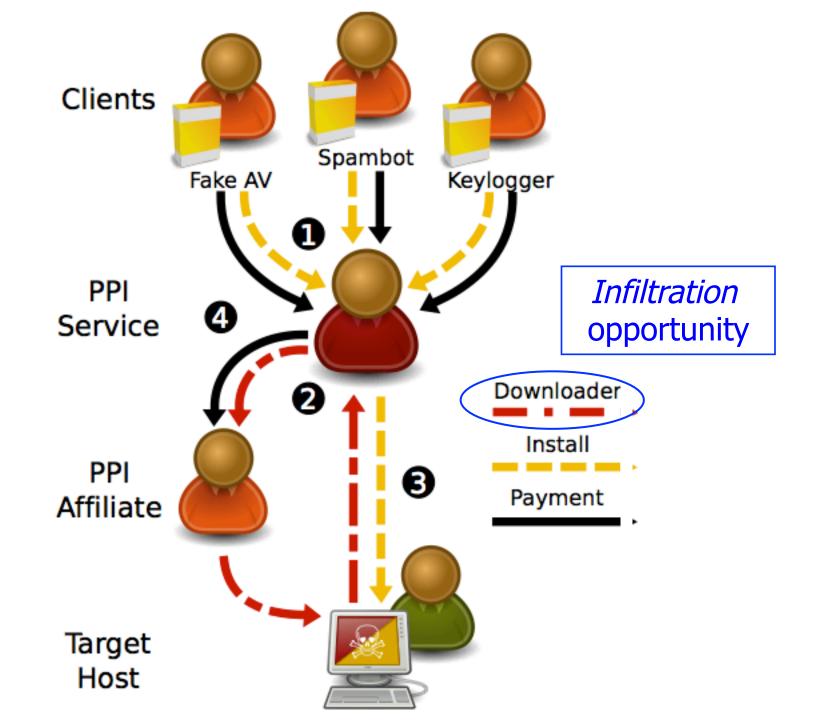
Dear webmasters,

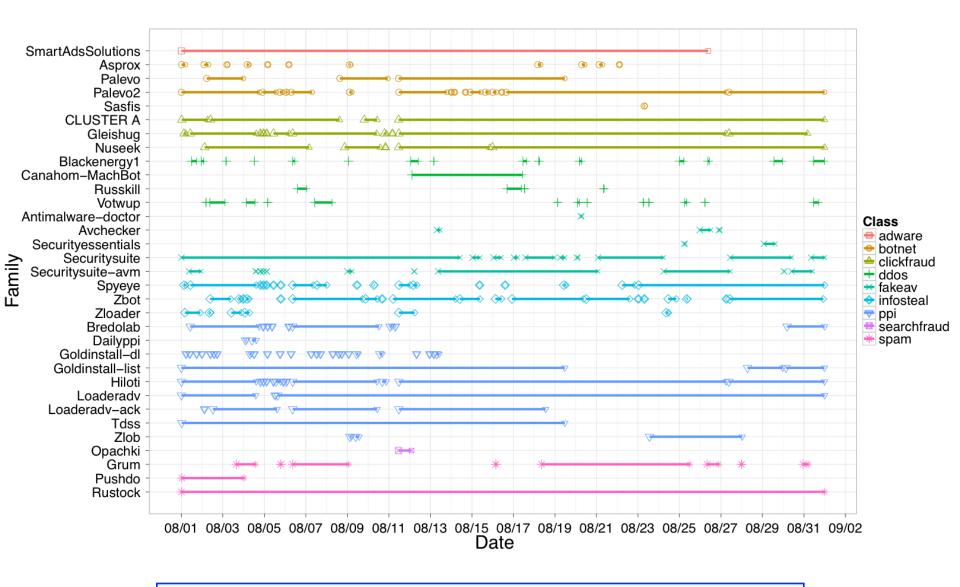
Due to the recent developments which led to all our bank and processing accounts being jeopardized, we have to inform you, that functioning of the Medinc partnership program will be discontinued, as no reliable solution has been found to keep it working, and the debts to suppliers and partners keep increasing.

We were happy to work with all of you, and we are very sorry that we can't cooperate with you anymore within this project. If we manage to find a reliable processing solution to resume working, all webmasters will receive an email notification sent to the address submitted during registration.









Via protocol emulation, extracted ("milked") > 1M malicious binaries over 6 months

					/ \
	Name	%	MONETIZATION	KIT	SEEN
1	Palevo	7.50	DoS,Info stealer	/	1
2	Hiloti	4.69	Downloader/PPI		1
3	Zbot	3.62	Info stealer	/	1
4	FakeRean	3.47	Rogue AV(s)		/
5	Onlinegames	2.94	Info stealer		?
6	Rustock	2.66	Spam		/
7	Ldpinch	2.64	Info stealer	1	?
8	Renos	2.58	Rogue AV(s)		?
9	Zlob	2.54	Rogue software		/
10	Autoit	2.53	Downloader/PPI		
11	Conficker	2.48	Worm		
12	Opachki	1.95	Click Fraud		/
13	Buzus	1.91	Info stealer		
14	Koobface	1.17	Downloader		
15	Alureon	1.16	Downloader	/	/
16	Bredolab	1.15	Downloader/PPI	/	/
17	Piptea	1.13	Downloader/PPI		1
18	Ertfor	0.91	Rogue AV(s)		1
19	Virut	0.91	Downloader/PPI		1
20	Storm 2.0	0.80	Spam		\ /
					\vee

Table 2: FireEye's top 20 malware families observed in their MAX Cloud network on the April-June 2010 time

The majority of the world's top malware appeared in PPI downloads



S Магазин Аккаунтов #1 в Рунет...

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Наш магазин аккаунтов рад предложить аккаунты различных почтовых служб и бесплатных хостингов для любых задач. Вы получете аккаунты **СРАЗУ после оплаты** заказа через Webmoney.

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www.FreedomScripts.org - разработка софта на заказ Мега Софт для дорвеев - Zerber Одобрятор друзей - Мой мир

Twidium - безопасный и профессиональный инструмент для раскрутки твиттера накрутить фолловеров в Твиттер

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Mail.ru Second Hand	0	до 10К: \$4 от 10К до 20К: \$3.5 от 20К: \$3
Mail.ru Mix S/H	15811	до 10К: \$4 от 10К до 20К: \$3.5 от 20К: \$3
Yandex.ru	4758	до 10К: \$20 от 10К до 20К: \$19 от 20К: \$18
Narod.ru	5315	до 10К: \$50 от 10К до 20К: \$50 от 20К: \$50



06 Anp 2013

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06 then 2013













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If you need quality bulk accounts, you've come to the right place. You can get your accounts immediately after your payment - there is no need to wait.

All the accounts are provided in any format you like. Just use our free account converter to get them in the way you need.

Special rates are applied if you purchase less than 1000 accounts.

We accept Liberty Reserve and Paypal.

Please, review our terms and conditions before purchasing any accounts.

Buy Yahoo Account Buy Twitter Accoun Buy Livejournal Acc **Buy Hotmail Accour**

06 Apr 2013

Twitter accounts are not available. We will start selling them shortly.

For sale

Provider	Quantity	Rate for 1000	06 Apr 2013 Twitter accounts are not available. We will
Hotmail.com	449292	1K-10K: \$5 10K-20K: \$4.5 20K+: \$4	start selling them shortly.
Hotmail.com Verified	423418	1K-10K: \$6 10K-20K: \$5.5 20K+: \$5	O7 Feb 2013 Added Instagram accounts at a great rate:
Outlook.com Plus	9661	1K-10K: \$4 10K-20K: \$3.5 20K+: \$3	\$50 per 1000. 04 Dec 2012
Gmail.com USA PVA	4340	1K-10K: \$100 10K-20K: \$95 20K+: \$90	Just added Fully Profiled Twitter Accounts at a great rate - \$30 per 1000. Accounts
Yahoo.com	14058	1K-10K: \$8 10K-20K: \$7.5 20K+: \$7	come with avatar, bio and random background.
Yahoo.com USA	8688	1K-10K: \$15 10K-20K: \$15 20K+: \$15	19 Nov 2012 Great prices for wholesale Twitter.com and
Nokiamail.com	0	1K-10K: \$10 10K-20K: \$10 20K+: \$9	Hotmail.com orders!

Infiltration

ShadewCrew
Infiltrated
(Secret Service)

CarderPlanet

CardersMarket



State-sponsored Adversaries



- Largest political event of its kind since the fall of the USSR
- An estimated 50,000 people gathered in Moscow and 10,000 in St Petersburg
- They allege widespread fraud in Sunday's polls
- More than 1,000 arrests

#триумфальная (#triumphal)

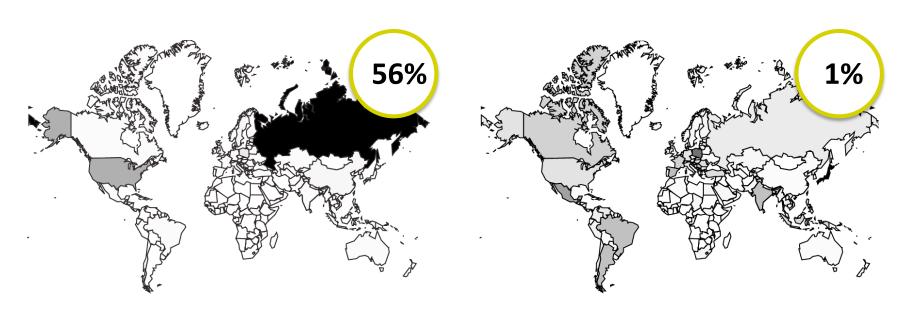


Geolocation of Logins



Nonspam Logins

Geolocation of Logins



Nonspam Logins

Spam Logins

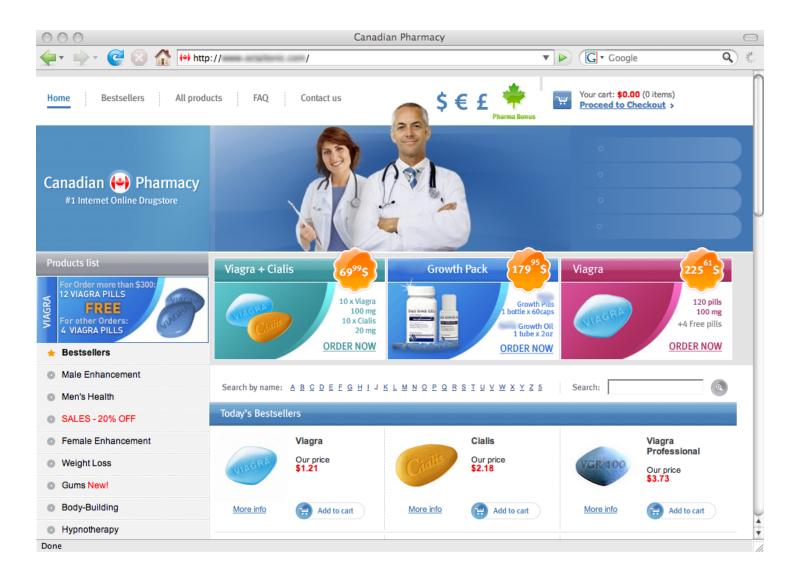
26K accounts purchased from *spam-as-a-service* program. Part of a "lot" of 975K. Used ~20K distinct IP addresses.

Takeaways

- Rise of cybercrime is a major challenge for security, because adversaries have become far more capable...
- But cybercriminals are lazy and look for easiest way to make a buck. So, focus defenses on the easiest ways to turn a technical security breach into money.
- "Follow the money."

Extra Material

Welcome to **Storm!** What can we sell you?









Kirill Levchenko

I am a project scientist with the <u>Systems and Networking</u> group in the Computer Science department at the University of California, San Diego. My current research

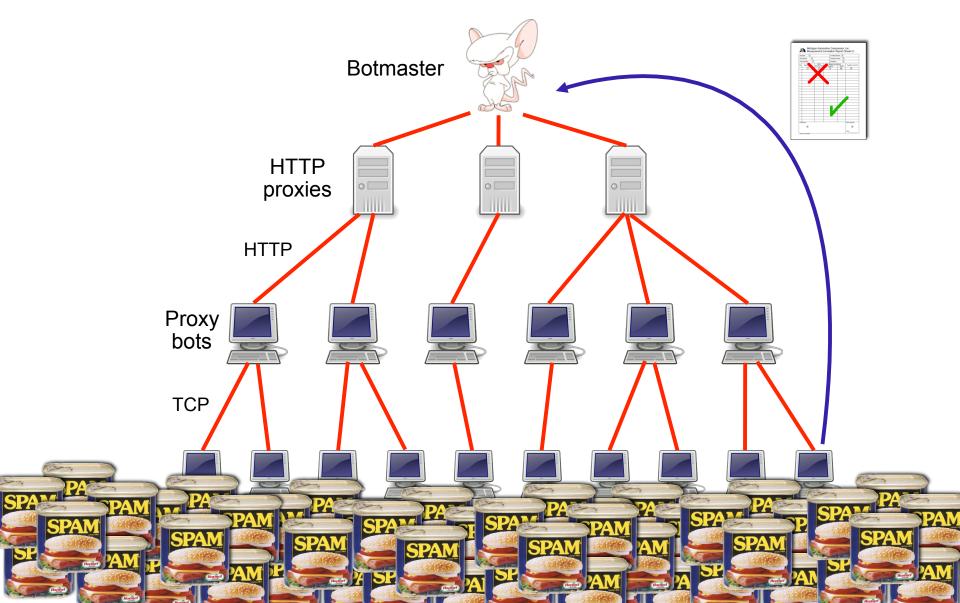
Figure 2: Snippet of a spam template, showing the transformation of an email header from template (top) to resulting content (bottom). The >-symbol indicates line continuations. Bold text corresponds to the formatting macros and their evaluation.

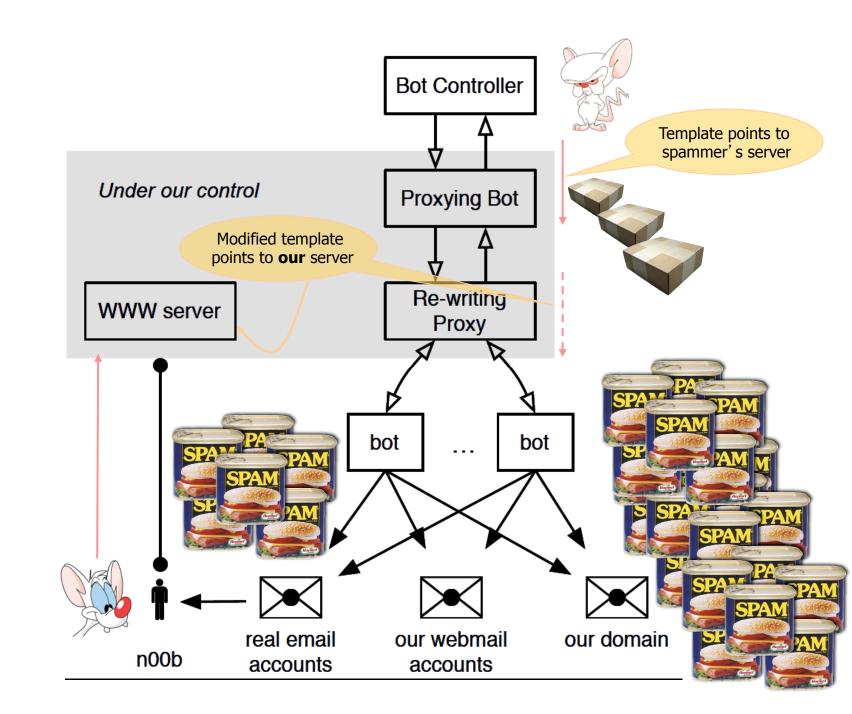
Synthetic diversity aims to thwart content-based anti-spam filtering

MACRO	SEEN LIVE	FUNCTIONALITY
(0)	√	Spam target email address.
(A)	✓	FQDN of sending bot, as reported to the bot as part of the preceding C&C exchange.
(B)		Creates content-boundary strings for multi-part messages.
(Cnum)	✓	Labels a field's resulting content, so it can be used elsewhere through (V); see below.
(D)	✓	Date and time, formatted per RFC 2822.
(E)		ROT-3-encodes the target email address.
(Fstring)	✓	Random value from the dictionary named string. ²
(Gstring)	✓	Line-wrap <i>string</i> into 72 characters per line.
(Hstring)		Defines hidden text snippets with substitutions, for use in HTML- and plain-text parts.
(I)	✓	Random number between 1 and 255, used to generate fake IP addresses.
(Jstring)		Produces quoted-printable "=20" linewrapping.
(K)		IP address of SMTP client.
(M)	✓	6-character string compatible with Exim's message identifiers (keyed on time).
(N)		16-bit prefix of SMTP client's IP address.
(Ostring:num)	✓	Randomized message identifier element compatible with Microsoft SMTPSVC.
$(Pnum_1[-num_2]:string)$	✓	Random string of num_1 (up to num_2 , if provided) characters taken from string.
(Qstring)		Quoted-printable "=" linewrapping.
$(Rnum_1-num_2)$	✓	Random number between num_1 and num_2 . Note, special-cased when used with (D).
(Ustring)		Randomized percent-encoding of string.
(Vnum)	✓	Inserts the value of the field identified by (Cnum).
(W)		Time and date as plain numbers, e.g. "20080225190434".
(X)		Previously selected member of the "names" dictionary.
(Ynum)	✓	8-character alphanumeric string, compatible with Sendmail message identifiers.
(Z)	✓	Another Sendmail-compatible generator for message identifiers.

Table 2: Storm's spam-generation templating language.

Campaign Mechanics: Reporting





Axiom of Criminal Laziness

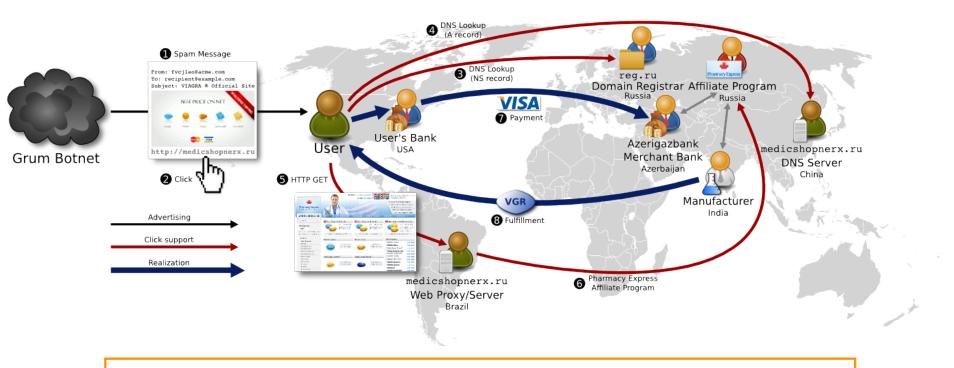
Axiom* of Criminal Laziness

Cybercrooks will work energetically to sustain their current cash flow ...

... but will not look out strategically beyond it to serve their long-term interests

(* This is a working hypothesis to explain the observed pace of attacker innovation – not something definitively established)

Phases of the Spam Value Chain



If we were to "snip" a link in this chain, which one would be the most disruptive for our least expenditure?

Measuring URLs, DNS servers, HTTP redirection, etc. all a matter of energetic crawling & recording.

But merchant banks / Visa / "fulfillment" ?





Our advantages

- Best exhaust of similar solutions
- stable payments
- Reliability cooperation
- Individual approach

With referrals

Additional information

Successfully convert the following countries: US, CA, AU, GB, DE, FR. Increased long-term performance and exhaust from each installs. We offer individual and payment rates the constant partners. You can use your own Landing drain web

Dear webmaster! We congratulate you on the Day of Victory! Today osobnenno German installs go well;)

05/05/2010

Access to auto-update

Dear webmaster! To improve the stability of the affiliate program and prevent discharges of our module access Autoupdate temporarily closed



MAIN

STUDY PROGRAMS

RULES | CONTACT US

Study programs: