DARK MARKET ECONOMICS

Rolf van Wegberg
OUTLINE

- Dark Markets
  - What?
  - How?
  - Who?

- Understanding the ecosystem, the trends, and ‘governance’
UNDERGROUND / DARK MARKETS

Three pillars of anonymity
DARK MARKET

Silk Road
anonymous market

Drugs
Cannabis 24
Dissociatives 4
Ecstasy 30
Opioids 8
Other 15
Precursors 7
Prescription 39
Psychedelics 54
Stimulants 17
Apparel 18
Art 0
Biologic materials 0
Books 11
Collectibles 0
Computer equipment 2
Custom Orders 0
Digital goods 3
Drug paraphernalia 5
Electronics 0
Erotica 0
Forgories 16
Hardware 0
Herbs & Supplements 0
Jewelry 0
Lab Supplies 1
Lotteries & games 5
Medical 0
Money 3

browsing drugs

<table>
<thead>
<tr>
<th>item</th>
<th>vendor</th>
<th>price</th>
<th>action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1g DMT Freebase</td>
<td>ringo</td>
<td>$0.35672880</td>
<td>add to cart</td>
</tr>
<tr>
<td>7g (1/4oz) P.Cubensis Powder</td>
<td>magiced</td>
<td>$0.16030500</td>
<td>add to cart</td>
</tr>
<tr>
<td>FREE 25I-NBOME 1mg blotter sample</td>
<td>elemaisy</td>
<td>$0.00000000</td>
<td>add to cart</td>
</tr>
</tbody>
</table>
(AK-74 BRAND NEW FULL AUTO 5.45x39mm)

Price: 19,937.79 BTC
Ship from: USA
Ship to: Worldwide
Created in: 2013-08-26 02:31 UTC
Last update: 2013-09-16 15:29 UTC
Listing Feedback: 0/0/0

Description:

For sale is SELECT FIRE AK-74 built from beginning as such. Not a converted semi auto, legit full auto function just like factory rifle. I built the rifle with original UNISSUED Bulgarian AK-74 parts and quality US made barrel and receiver. Headspace checked to ensure safe operation. Because gun was made of brand new parts, some of them still covered in anti-rusting grease.

Bulgarian made polymer stocks.

I can add extra parts and accessories at you cost.

Select fire shoot both semi auto and full auto. Rifle is BRAND NEW only 30 rounds fired for test. Include 1 magazine and 30 rounds of 5.45x39mm surplus Russian ammo.

Full escrow.

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>US/mexico mild stealth 1-3 days with tracking</td>
<td>6.79511 BTC</td>
</tr>
<tr>
<td>Worldwide high stealth 6-10 days with tracking</td>
<td>2.39234 BTC</td>
</tr>
</tbody>
</table>

Questions to Vendor

Question by: Katsal at 2013-09-17 09:01 UTC
Select fire? can you have ammo?
Digital Goods

- Cannabis: 254
- Ecstasy: 56
- Benzos: 223
- Stimulants: 97
- Opioids: 48
- Steroids: 35
- Prescription: 156
- Paraphernalia: 95
- Psychedelics: 90
- Services: 121
- Total: 1196

Digital Goods

- Last seen: Jul 17
- Total sales: 28
- Average sale: $23

Bitcoin Ransomware (With Sourcecode)

- Price: $12.00 (0.01 BTC)
- Views: 699
- Purchases: 3
- Digital Download: Free!
- Escrow: Yes!

This Ransomware is editable and you can change your own amount and bitcoin address.

Ransomware will lock all files on the computer and unlock them after payment.

You will have the option to change the encryption extension of the ransomware.

Victim will have no choice but to contact you via email for payment.

Refund Policy

All products are guarantee, if you have some misunderstand, contact me, we will work on it. Have fun!
Hacked Remote Desktop Server

This offer is for logins to remote desktop servers from a random country with a random user privilege obtained through advanced password cracking.

If you would like to make a bulk purchase please contact me and I will add more servers to the logs.

These servers are mostly located in North America, South America, and Germany.

Many have admin privs but not all of them do, most if not all should have plenty of vulnerabilities for privilege escalation if needed (you can contact me if you need help with this).

These servers are everything from personal machines to point of sale machines and pharmacy computers, so use wisely and safely!
DIGITAL GOODS LISTINGS ON DREAM MARKET IN 2017 (N=40,229)
Bitcoin flowing to darknet markets

Share of bitcoin economic value

Millions of USD per year

- 2011: $5
- 2012: $57
- 2013: $196
- 2014: $254
- 2015: $357
- 2016: $566
- 2017: $707
- 2018: $603

CHAINALYSIS
UNDERSTANDING THE ECOSYSTEM

Core aspects:

- Trust
- Security
UNDERSTANDING THE ECOSYSTEM

Opportunity theory applies:
- Low effort – everything via the Internet
- Low risk – anonymization technology
- High rewards – high volume & value

Dark markets offer several controls:
- Escrow, Referral, Vendor bond, Finalize early control, Personal messaging
- But who controls the admin?
UNDERSTANDING THE ECOSYSTEM

Core aspects:

- Trust
- Security

Market provides:

- Reputation mechanisms
- Anonymity measures
UNDERSTANDING THE ECOSYSTEM

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UNDERSTANDING THE ECOSYSTEM

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UNDERSTANDING A DARK MARKET

- Vendor/Buyer registers
  - admin sets registration policy

- Vendor creates listing
  - admin checks for banned goods/services

- Buyer orders & pays
  - admin keeps payment in escrow

- Vendor signs payment & ship

- Buyer signs delivery & gives feedback
  - admin collects fee, releases the payment

- Vendor receives payment
UNDERSTANDING THE ECOSYSTEM

› How to communicate:

› PGP (on market)

› TOR-mail (separate from market)
UNDERSTANDING THE ECOSYSTEM

› ‘Businesses to businesses’ vs
› ‘Businesses to consumers’
› Branding
UNDERSTANDING THE OFFENDERS

- Male

- Likely to be from North America, Europe or Australia

- Top associated products
  - Amphetamine
  - Cocaine
  - Cannabis
  - Sedatives
UNDERSTANDING THE OFFENDERS

- Young (Median 26)
- Limited drug use
UNDERSTANDING THE TRENDS

- Take down of Silk Road and arrest of Ross Ulbricht resulted in serious attention of traditional media. (~400,000 Google results for “Silk Road” “Ross Ulbricht”)

- Furthermore, it resulted in further *professionalization* of this underground economy.
## UNDERSTANDING THE TRENDS

<table>
<thead>
<tr>
<th>Marketplace</th>
<th>19&lt;sup&gt;th&lt;/sup&gt; April 2016</th>
<th>17&lt;sup&gt;th&lt;/sup&gt; July 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agora</td>
<td>17200</td>
<td>17400</td>
</tr>
<tr>
<td>Nucleus</td>
<td>7980</td>
<td>11462</td>
</tr>
<tr>
<td>BlackBank</td>
<td>5381</td>
<td>EXIT SCAM</td>
</tr>
<tr>
<td>MiddleEarth</td>
<td>3396</td>
<td>4358</td>
</tr>
<tr>
<td>Alphabay</td>
<td>2338</td>
<td>11036</td>
</tr>
</tbody>
</table>
UNDERSTANDING THE TRENDS

- (More) professional communication
- Most users (at least Dutch) started to communicate in English
- Users only discuss about business, less, and less personal (PII), so old data is important

Re: QualityWeed ### OFFICIAL VENDOR REVIEW THREAD ###

Reply #8 on: May 31, 2014, 10:40:53 PM

Quote from: Bestintheworld on May 31, 2014, 03:13:30 PM

breh, zou die kilo listings uit je profielje halen anders ga je als een oplichter lijken en een kilo wil je echt niet verzenden door de post, je maakt het meeste geld op 10g bags, trust me.

kusjes

This is not the place to impose yourself and you should be well aware of that. We will formally request your and our comment be removed.

"English motherfucker, do you speak it?"
UNDERSTANDING THE TRENDS

Vendors spread the risk

DutchMagic was active on three marketplaces

Business continuity is key
UNDERSTANDING THE TRENDS

Distributed Marketplaces

RAMP: RUSSIAN ANONYMOUS MARKETPLACE

Твердый гашиш "Rolex"
Москва
10 грамм
5000 руб.
Купить

Амфетамин
Москва
10 грамм
6500 руб.
Купить
UNDERSTANDING THE TRENDS

- Single-vendor marketplaces
UNDERSTANDING THE TRENDS

Advertisements
UNDERSTANDING THE TRENDS

Single-vendor service models
UNDERSTANDING THE TRENDS

- Forced security

A Dark Web Child Porn Site Is Forcing Its Visitors to Learn Security Tips
January 10, 2017 // 12:00 PM EST

Law enforcement are constantly hunting dark web child pornographers. Whether cops are going undercover to learn more about suspects, or deploying hacking tools to unmask them on a mass scale, each side is always trying to stay one step ahead of the other.

Apparently in response to law enforcement's use of malware, one dark web child pornography site recently started redirecting visitors to a page with additional security advice if their browser runs JavaScript.

“At [child pornography site] we have always had a big JavaScript warning if you have it enabled,” one user on a dark web child abuse site wrote in December of last year.
DARK MARKET GOVERNANCE?

Vendors guideline

Vendor application
Registration as vendor requires a deposit of vendor bond, which is paid back when the vendor revokes his vendor status. Application for vendor status can be done with this link.

Forbidden products and services
- Assassinations or any other services which constitute doing harm to another.
- Weapons of mass destruction: chemical, biological, explosives, etc.
- Fentanyl.
- Weapons.
- Poisons.
- Child pornography.
- Live action snuff/hurt/murder audio/video/images.

Buyers guideline

First of all all members are kindly asked to be honest regarding package delivery, product quality and shipping conditions. This helps maintaining a trusted network, which is a major basis in hidden web marketplaces. Scammers are not tolerated and are quickly identified as such. As a buyer you can look out for a "trusted vendor" label. Vendors with this label have an advanced trusted status, which means they have proven to be trustworthy and they have a long history of successful transactions and positive buyer relations. Vendors without the trusted vendor status are most likely trustworthy too, but they are either new on this market or they did not apply for a trusted vendor status on this site.

Secure your account
- Do not use the same password on other sites, especially not other markets
- Change your password regularly
- Use a strong password
- Use 2FA login
- Verify you are not on a phishing site and you have never been on a phishing site. Elsewise change your password after you created your account or after you logged in.
WiFi-access? Do you have your dws.pm account from TNO?

Power-user rights?

TOR-browser?
INTERVENTIONS

- Operation Marco Polo
- Operation Onymous
- Operation Bayonet
SOSKA & CHRISTIN (2015)
OPERATION BAYONET

This hidden site has been seized and controlled since June 20
by the Dutch National Police in conjunction with the Bundeskriminalamt, Littehos Policia, Federal Bureau of Investigation and Europol, under the authority of the Dutch National Prosecutor’s Office and the Attorney General’s office of the Federal State of Hesse (Germany).

This hidden site has been seized since July 4, 2017

in accordance with the law of European Union member states and obtained pursuant to a forfeiture order by the United States Attorney’s Office for the Eastern District of California and the U.S. Department of Justice’s Computer Crime & Intellectual Property Section.

AlphaBay Market

HANSA
MEASURING THE IMPACT OF OPERATION BAYONET

- Distinction between Operation Bayonet and previous interventions
- Crime displacement as intended effect – sting-operation
- New methodology – vendor angle
- Investigating business continuity management of (reputable) vendors
MEASUREMENTS ON DREAM MARKET

- Dream Market became market leader after Operation Bayonet
- Leveraging longitudinal insights into Dream Market

- Dump of usernames, registration dates and user type (July – September 2017)

- Hypotheses:
  - Vendors tend to move along
  - Vendors migrating from Hansa are more careful
USERBASE OF DREAM MARKET

Figure 1: Daily new users on Dream Market in 2017

Figure 2: Users on Dream Market in 2017
Figure 3: Breakdown of newly registered vendors on Dream Market (n=220)
MIGRATION OVER TIME

Figure 5: Cumulative number of newly registered vendors on Dream Market per origin on date (n=220)
CHANGES IN VENDOR BEHAVIOR?

Figure 4: Breakdown of evasive strategies of migrated vendors to Dream Market (n=131)
Figure 6: Cumulative number of evasive measures by newly registered vendors on Dream Market on date (n=53)
TAKE-AWAYS

› Dark markets as facilitator of a variety of crimes

› An ecosystem build on trust and anonymity

› Innovation in police interventions

› Varying levels of impact

› But ‘above all’, a great research object ;-)

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