

Darkode

Analyse de la structure relationnelle d'un réseau de hackers d'élite

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**POLYTECHNIQUE
MONTRÉAL**



Myth of the lone hacker



The online offender dilemma

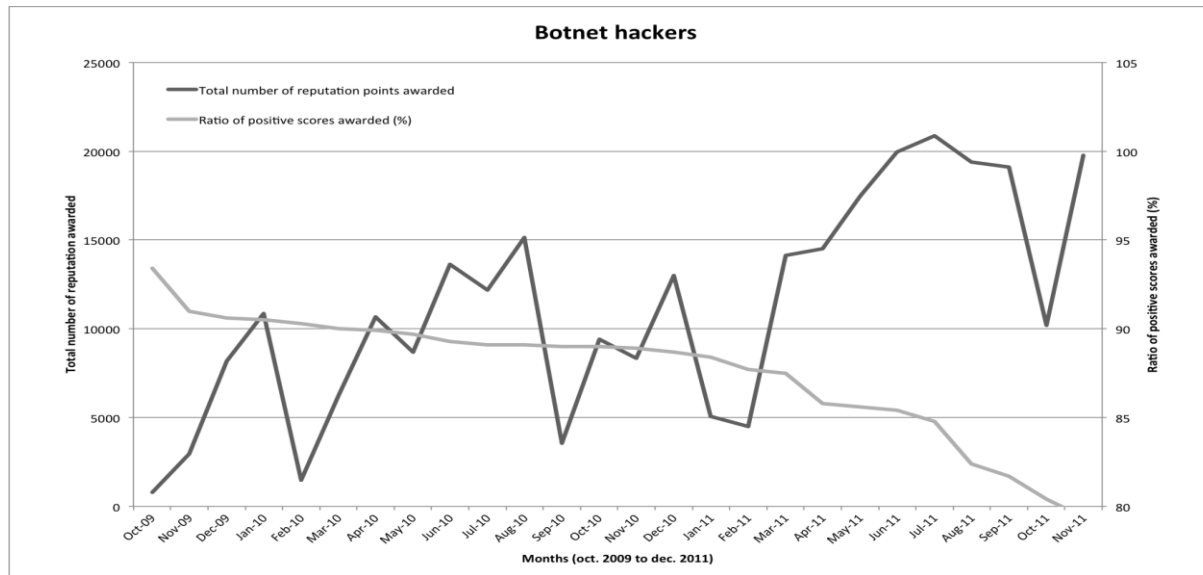


Large scale reputation systems...



Reputation Report for #Skyline				
Summary				
#Skyline				
Cunts & Blunts				
		Positives	Neutrals	Negatives
Total Reputation:		Last week	4	0
		Last month	26	1
		Last 6 months	111	2
Positives: 111				0
Neutrals: 2				2
Negatives: 6				6
Comments				
(-6)	Neutral (0): User accused of "Sales Trashing" when I called out a fake vouch on his product.			06-26-2015, 12:41 PM
Famalam (29)	Positive (+1): HQ user always see him helping out In the Rat section and knows what he Is talking about!			06-22-2015, 07:18 AM
That Nigga Guy (28)	Positive (+1): Looks like a really smart guy			06-22-2015, 12:30 AM
LordCoder (223)	Positive (+3): Skilled and HQ user. :)			06-21-2015, 04:38 AM
Raymond Reddington (489)	Positive (+1): #####skyline#####			06-20-2015, 03:46 AM
SteveThaSavage (339)	Positive (+3): "im a skid" #skyline 2k15			06-17-2015, 07:14 PM
BennK (619)	Positive (+3): GTR R34 . VROOOOM			06-17-2015, 01:08 PM
Asian (154)	Positive (+3): rembahh meh ? 200 btw :D			06-16-2015, 02:23 AM
Tick (1188)	Positive (+3): u are my love			06-15-2015, 04:33 AM
Alison Wonderland (265)	Negative (-3): Snitching on the TS man, really			06-15-2015, 04:26 AM
ChromeProducts (301)	Positive (+3): Worst user scemmed me out of my lambo			06-15-2015, 04:07 AM

... are not very reliable



$R (-0.73^{**}). P < 0.01^{**}$

Table 6: *Nature of comments used to support feedback ratings in the botnet community*

Categories	Positive feedbacks (%)	Neutral feedbacks (%)	Negative feedbacks (%)
Business relationship	9.38	13.00	11.72
General contribution to the community	13.41	28.00	22.95
Specific behavior directed at feedback provider	24.58	42.89	20.57
Quality of technical skills	20.22	2.84	3.61
Sarcasm or no context	29.65	10.77	36.74
Unreadable	2.75	2.50	4.41
Total	100.00	100.00	100.00



The private club model



WELCOME TO DARKODE

"The best malware marketplace on the net"

- “The most dangerous cybercrime forum in the world” according to the FBI
- Open: 2007- 2015
- Purpose: elite underground marketplace for high quality products and services (e.g. exploit kits, botnets, software, coding services, databases, 0day exploits, etc.)
- Approximately 450-500 English speaking members from around the world

Creation: 2007

Matjaz Skorjanc

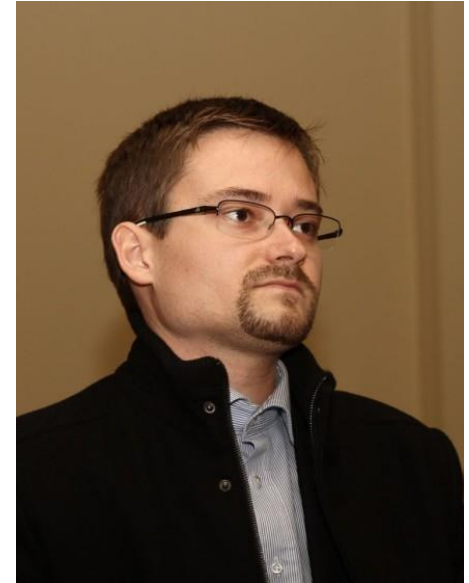
27-year old Slovenian hacker

Aka: Iserdo

Butterfly/Mariposa botnet

Arrested in 2010

Sentenced to 58-month jail term (Dec. 2013)



Daniel Placek

27-year old US hacker

Aka: Nocen, Loki, Juggernaut

Credential harvesting software & botnets

Arrested in 2010

cooperated for 5 years with investigation

Pleaded guilty (sentence sought: 6-12 months)

Now a network engineer at Swick Technologies



Administration

2010

Johan Anders Gudmunds takes over as admin

27-year old Swedish hacker

Aka: Mafi, Crim, Synthet!c

Author of the exploit kit CrimePack, and operator of a 50,000 nodes botnet (Blazebot)

Arrested in 2015



Administration

2013: After a massive infiltration of a large number of law enforcement agents and security researchers in the forum, Mafi “resigns” as administrator

Duties taken over by: **Sp3cial1st**

Unlike previous admins, the main contribution of Sp3cial1st isn't his technical skills, but a will to massively expand the membership while being very selective in order to prevent suspicious members from being admitted (see next slide)

Arrest: still at large

Darkode's structure

- Three tiered system
 - Level 0: *FreshFish* (introduction section, zero access)
 - Level 1: *Trusted members* (access to the market-buys and sales)
 - Level 2: *Highly trusted members* (administrators and influential members)
- invitation only forum
- Multi-step membership process
 - 1) Invitation by an existing member
 - 2) Introduction message to present skills/experience
 - 3) Interview with Level 2 or Level 1 member
 - 4) Public vote by the community

Admission process under Sp3cial1st

Author	Message
<p data-bbox="112 315 278 344"><u>sp3cial1st</u></p> <p data-bbox="25 458 374 625">Skillset Rep: 2445 Location: 48.82518 2.1985795</p> <p data-bbox="25 648 374 739">Examples</p> <p data-bbox="25 748 374 896">Recent experience</p> <p data-bbox="25 948 374 1096">Ongoing activities</p>	<p data-bbox="401 322 672 351">READ SECOND</p> <p data-bbox="401 362 625 391">New Members</p> <p data-bbox="401 396 1926 602">We are going to open up the introduction to new members shortly. Some of them may not have contacts in darkode but are known to be personally trusted. In the event a new member does not know many people on darkode, they may opt. to be interviewed by a L1 or L2 Member (anyone in either usergroup may also volunteer). After the interview the content of the discussion should be posted on the new members introduction thread for the rest of us to review and ask questions. If you decide to interview a new member please be certain to asses these items</p> <ol data-bbox="401 636 1926 945" style="list-style-type: none">1. What is their skillset? What do they have previous experience in that could show they know what they are doing and aren't some kind of script kiddy.2. Ask them for an example of their work, or proof of concept they can do x,y,z (whatever they state as their skills). IE: Lets say they have a lot of hacked servers, so ask them to paste you a screenshot of access to some of them...3. What have they been up to the past 6 months? (Don't include anything from #1, this is meant to be an open questions any answer is ok even if it has nothing to do with malware or anything illegal. Call it a "get to know you" question. <p data-bbox="401 979 888 1008">Notes On Suspended Members</p> <p data-bbox="401 1013 1926 1182">You have been pushed to the introduction section due to inactivity or questionable behavior. If you would like to be readded to darkode please explain why you have been absent and what you can bring to darkode (IE: a reason we should re-add you). If you state you can sell x,y, or z you will have 1 week upon being approved to start selling these item(s) if not you will be permanently banned.</p> <p data-bbox="401 1253 768 1282">_____ Ooga Booga Goes Here.</p> <p data-bbox="1541 254 1742 345">Interview guidelines</p> <p data-bbox="1835 317 1893 339">QUOTE</p>

Darkode high-profile members

- *TinKode*: NASA hack [arrested Jan. 2012]
- *Alexudakov*: Phoenix exploit kit [arrested July 2012]
- *Bx1*: Zeus botnet [arrested May 2013]
- *Gribodemon*: SpyEye [arrested Summer 2013]
- *Paunch*: Blackhole exploit kit [arrested Oct. 2013]
- *Phastman*: Facebook Spreader [arrested Summer 2015]
- Members from Lizard Squad forum [Sony Playstation DDoS attacks]



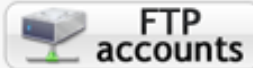
Spy Eye v1.3



Find INFO



Statistic



FTP accounts



Settings



Screen shots



BOA Grabber



CC Grabber



Certificate Grabber

bx1
Guest

• Selling Spreader BIN's (Facebook , USB , IM)

QUOTE

April 2016
15 year sentence
(USA)

and many other methods and adding more in future (OFC by request)

Начало:



Конец:



Применить

Автообновление: 5 сек.



СТАТИСТИКА

ЗА ВЕСЬ ПЕРИОД

13289 ХИТЫ



11506 ХОСТЫ



1187 ЗАГРУЗКИ



10.32%

ПРОБИВ

ЗА СЕГОДНЯ

3013 ХИТЫ



2760 ХОСТЫ



300 ЗАГРУЗКИ



11.55%

ПРОБИВ

ПОТОКИ

ХИТЫ ↑

ХОСТЫ

ЗАГРУЗКИ

%

DENIS >

13285

11505

1187

10.32

default >

4

3

1

0.00

БРАУЗЕРЫ

ХИТЫ

ХОСТЫ

ЗАГРУЗКИ

%

Chrome >

2273

2148

485

22.58

ЭКСПЛОИТЫ

ЗАГРУЗКИ

%

Java X >

584

49.20

Java SMB >

460

38.75

PDF >

108

9.10

Java DES >

29

2.44

MDAC >

6

0.51

СТРАНЫ

ХИТЫ ↑

ХОСТЫ

ЗАГРУЗКИ

%

United States

12417

10981

1119

10.19

Brazil

154

101

9

8.91

India

63

35

4

11.43

Japan

47

9

3

33.33

Mexico

37

28

0

0.00

Argentina

31

12

2

16.67

Bulgaria

31

10

0

0.00

Paunch
LEVEL 2

Joined: 26 Jan 2011

Posts: 22

Rep: 1589

Fri Jan 28, 2011 9:06 pm

April 2016
7 year sentence (Russia)

Linux

179

143

19

13.48

Windows XP

3838

3206

399

12.48

Windows 7

5059

4490

478

10.66

Windows Vista

3173

2752

264

9.61

Mac OS

978

900

18

2.00

Создать виджет



Operation **SHROUDED HORIZON**

Takedown: 15 July 2015

An investigation against Darkode, led by the US Department of Justice and the FBI, involving law enforcement agencies from 20 countries worldwide

Arrests and searches involving 70 members and associates around the world

US indictments against 12 members

FBI's seizure of Darkode's domain and servers

The Darkode database

- ≈ 5000 screenshots (jpeg) from the Darkode forum
- Hacked by Xylitol [released April 1st, 2013]
- Posts cover 2009 - 2013

Data found in the DB:

- Membership list and links to the member's level
- Products for sale
- Transaction reports (new products and buys)
- Tutorials
- Questions about specific problems
- Programming tips
- Malware analysis
- Name of hackers and of specific malware tools
- Hall of shame & conflict management procedures

Specific objectives

1) To understand the mechanisms underlying the admission of new members to the forum

What key information needs to be provided in intro message to be accepted in the forum?

2) To understand the forum's structure using network analysis techniques

Pre- and post-arrest metrics

3) To understand the impact of Darkode on the malware scene (both products and services)

Qualitative analysis of marketing strategies and related business activities

Objective 1: Growth patterns of an elite hacking community

- 476 screenshots from the “introduction section”
- 344 applications analyzed (2009-2013)
- Qualitative analysis of the discussion following each application
- Coding of introductions based on the key information provided
 - 1: *Sponsors known inside the forum*
 - 2: *Experience in other forums*
 - 3: *Technical skills*
 - 4: *Business interests*
 - 5: *Products offered*

Example of an introduction message [RockLustig]

Author	Message
<p data-bbox="164 334 311 391">rocklustig Guest</p> <p data-bbox="131 525 349 572">Experience</p> <p data-bbox="131 1025 349 1072">Motivation</p>	<p data-bbox="430 334 629 405">RockLustig Howdy...</p> <p data-bbox="962 362 1128 405">Sponsor</p> <p data-bbox="1522 376 1619 419">Skills</p> <p data-bbox="430 434 1773 1362"><u>Who invited me:</u> Godlike <u>Purpose of being here:</u> To buy, learn, share, and (from what I've heard) be part of the only community left that is still pure from the old days. 😊 <u>Areas of expertise:</u> Networking, Firewalls, Sniffers, VPNs, and Carding 😊.</p> <p data-bbox="430 605 1773 719">Figured I'd get the 3 big questions out of the way first to then talk a bit about myself. I've been around the hacking/carding world since 2001. I was very active in the old Astalavista forums (way before they got hacked), and eventually found my way into the carding scene (Carderplanet, Counterfeit Library, Shadowcrew, Darkmarket, and many others).</p> <p data-bbox="430 762 1773 848">For being active in the Carding community for the past 10 years, I've been involved in a bit of everything and even ended up doing some time. There's probably some people on this forum that I've talked to plenty in the past.</p> <p data-bbox="430 876 1773 1062">Nowadays I'm really out of the carding world - got sick of it especially because the resources and forums that exist today are pathetic and dead - nothing like the good ol days. So I spend most of my online-time on hacking forums, and things networking related as it's part of my real-life job. Poker is another big hobby of mine which i know has probably nothing to do with this place - but in event there are some degenerate poker players on here with coding skills... I might as well say something right?</p> <p data-bbox="430 1090 1773 1190">Why would I consider joining this place especially when I'm a very weak coder? Well, the day I stop wanting to learn something new is the day I'll just jump off a bridge and die. I've heard good things about DarkCode so I'm intrigued</p> <p data-bbox="430 1219 1773 1362">That's all that I can think of cuz I really don't like these intro posts where people go on about how big their penis is (mine is 15 inches by the way LOL). I don't mean to diss the concept of filtering new users by asking for a intro, I just mean that you can't really tell what kind of a user/person someone is by 1 single post you know? So my concept for these is to KISS it: Keep It Simple Stupid 😊</p>

Results' overview

Approval rate: 94.5%

In their introduction message, *FreshFish* (new members without access to the forum) put forward 5 types of key information to elicit trust from existing members.

Here's the proportion of those key information in the introduction messages.

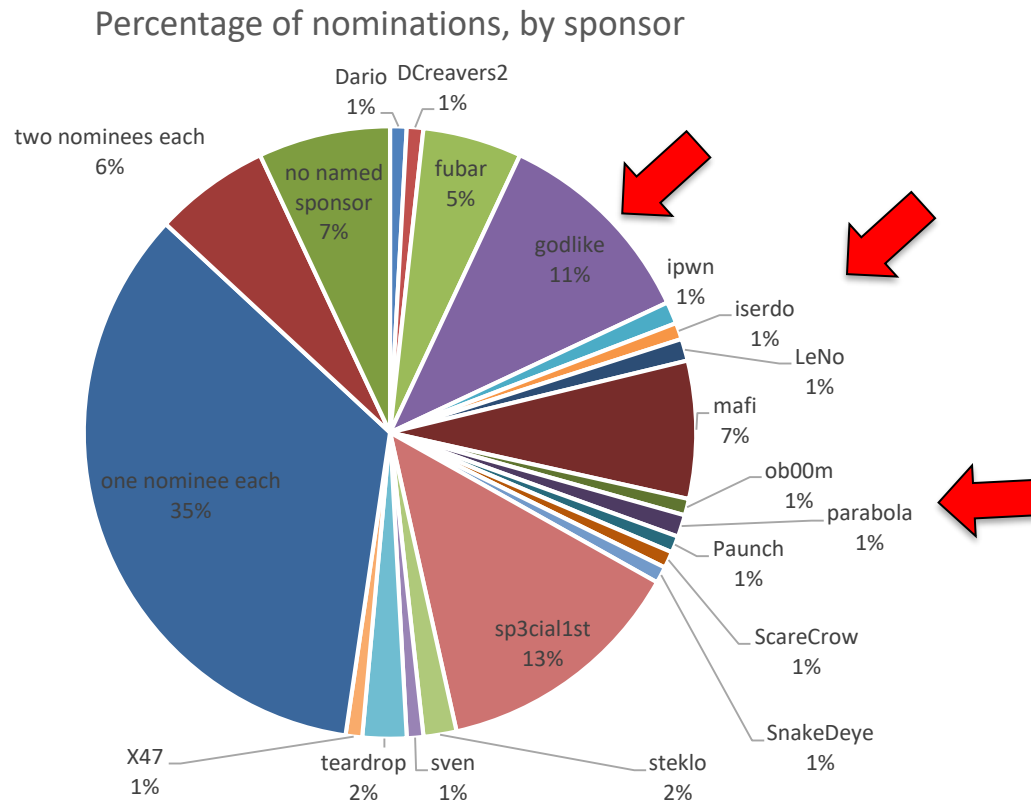
Introduction « *FreshFish* »

Categories	Percentage
Sponsor	83%
Experience	62%
Technical skills	67%
Business interests	54%
Products	55%

Sponsors

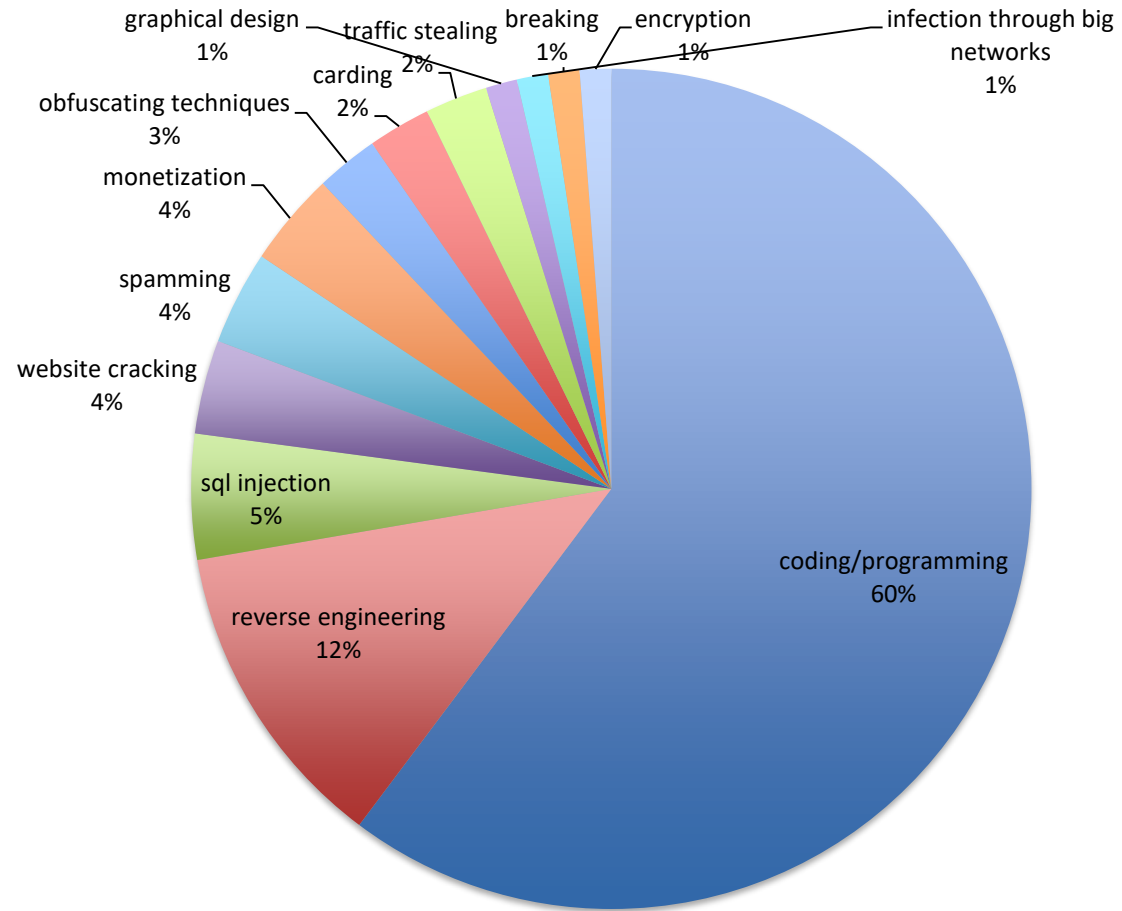
The 344 introductions acknowledge invitations (or nominations) extended by 119 Darkode members (average of 2.7 and median of 1 invitation converted per referrer, range: 1-46)

The four most influential recruiters (Sp3cial1st, G0dlike, Mafi, and Fubar) account for 36% of invitations



Technical skills

Distribution of technical skills that applicants claim and tools they can design/operate

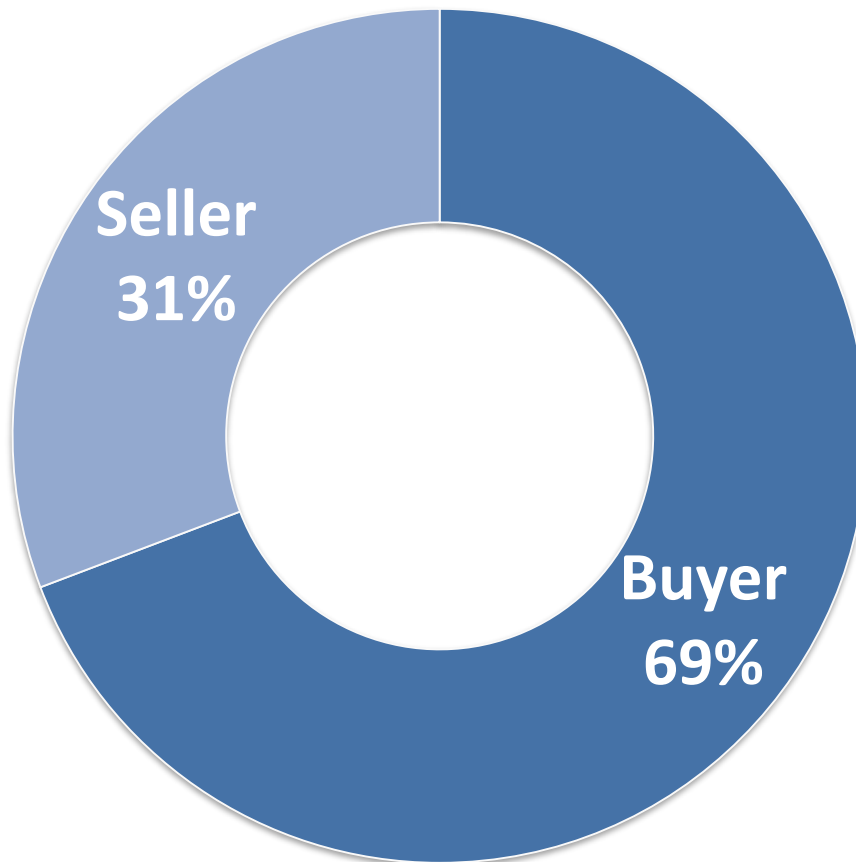


Specific tools and programs mentioned

Python, vb6, linux, xss, sqli,
C/C++, html, ASM, Javascript,
Nimrod, Vala, D, shells, databases,
Windows, Linux, Php, Perl,
Botnets, Exploit kits, Hacking
proxys, ATMs...

Darkode: a seller's market

**The proportion of interest in
buying and selling**



What is on demand:

- Rootkits
- Botnets
- Malware tools
- Codes
- C++ projects
- Exploits
- Database
- Oday
- Crypters
- Mails or accounts
- Trojans
- Proxies
- Traffic
- Software

Products

Also sold by established members and administrators themselves.

Author	Message
<p data-bbox="162 425 251 454">fubar</p> <p data-bbox="98 462 309 491">👑 King Hustler 👑</p> <p data-bbox="23 562 303 648">Joined: 21 Mar 2009 Posts: 3381 Rep: 4397</p>	<div data-bbox="1812 425 1908 454">QUOTE</div> <p data-bbox="421 428 730 462">🔴 ngrBot (IRC bot)</p> <p data-bbox="421 476 761 554">ngrBot Current version: 1.0.3</p> <p data-bbox="421 625 1866 696">I'll keep this thread relatively short but you can check out the full readme (image link below) if you want to know everything 😊</p> <p data-bbox="421 733 1912 1370">Short description: ngrBot is a modular IRC bot with very advanced functionality. The bot's core is an advanced ring3 (usermode) system-wide injection and hooking engine. The system uses techniques similar to those of Zeus and SpyEye. The bot runs on Windows 2000, XP, Vista, 7, Server 2003 (and R2), and Server 2008 (and R2). It also supports 64-bit operating systems, but currently it can only inject into 32-bit processes. The bot is designed to install silently and successfully on a Windows Vista or 7 system on a limited account with UAC enabled. Bin size without modules is 40kb, and with all modules is 84kb. ngrBot has a variety of modules that greatly enhance functionality (again, see below image for full details), including:</p> <ul data-bbox="421 1071 977 1370" style="list-style-type: none">- Rootkit- RusKill- Proactive Defense (PDef+)- DNS (domain/IP) blocker/redirector- SYN/UDP/Slowloris flooders- IE/FF login (form)grabbers- FTP login grabber- USB spreader- MSN spreader

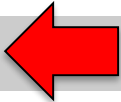
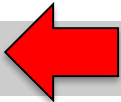
Products

Sample of products and services advertised on Darkode.

Product Types		Product Names
Crypting tools	Ddos	Zeus
Coding shells	Exploitkits	Spyeye
Software	Rootkits	Citadel
Porn	Traffic (mails)	Yoshi
VPN	Bitcoin	Fahrenheit
BP (server, domain)	Databases	Eleonore
Installs accounts	Malware	AlHost
Oday exploits	Phone numbers	Winlocker source code
Botnets	Accounts (Facebook,	Propack exploikit
Proxies	Hotmail, Yahoo, Paypal,	
Trojan	academic)	
Adverts systems		

Introductions' outcomes

Each introduction is commented/vetted by existing members. Some offer welcome, others ask questions on specific skill or experience, or discuss the potential value added by the prospective member. DK members conclude their comments by a vote in favour or against the applicant's admission. The table to the right lists the distribution of (mostly positive) comments across the five features presented above.

Categories mentioned	Introductions	Answers from existing members
	Percentage	Percentage
Sponsor	83%	16%
Experience	62%	56% 
Technical skills	67%	20%
Business	54%	34% 
Products	55%	--%

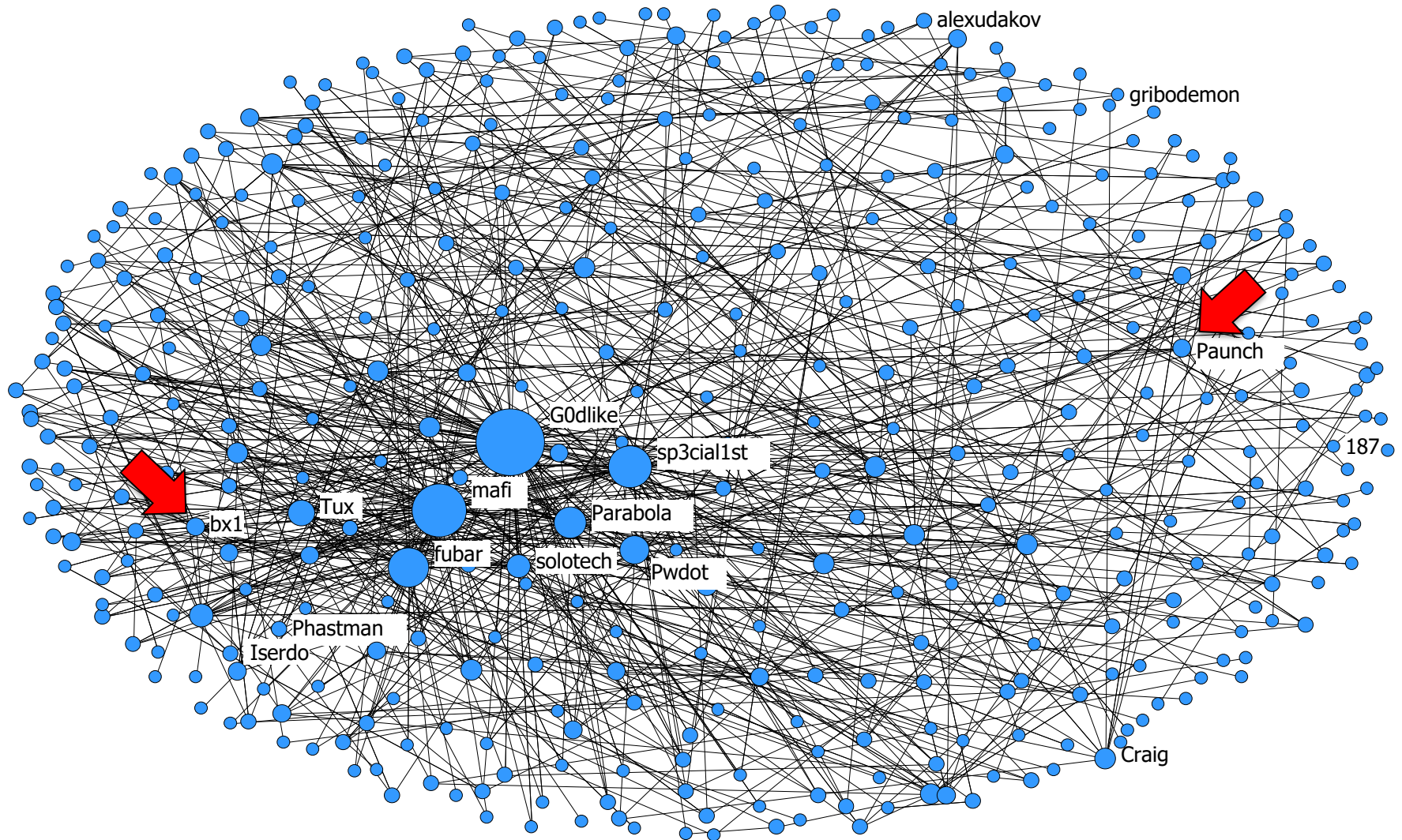
Objective 2: Map the network structure of this forum

Data:

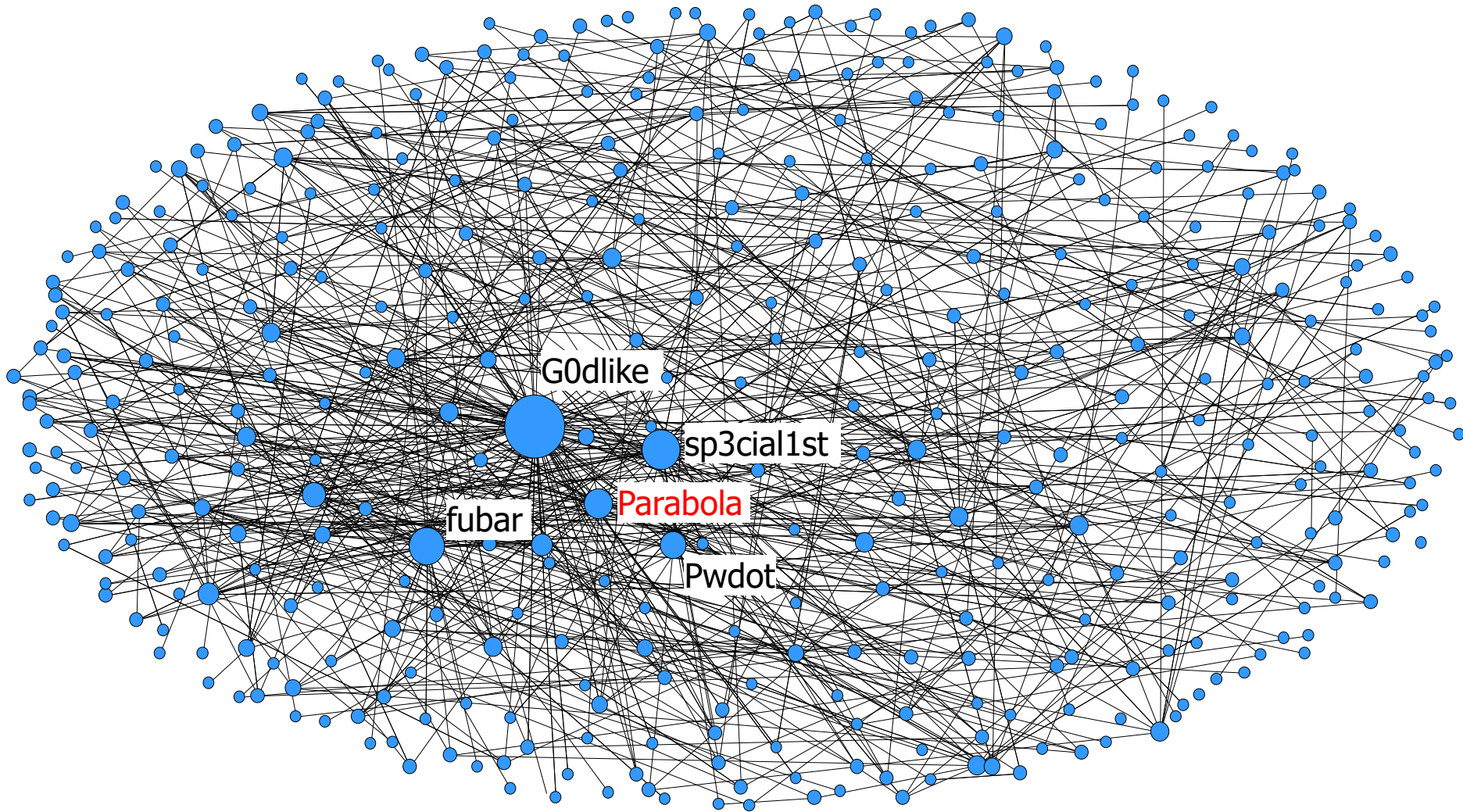
- 476 screenshots from the “introduction section”
- 404 members (2009-2013)
- Qualitative analysis and coding of introductions and comments
- Posts contain information describing social ties between members: *FreshFish* names sponsor; sponsor confirms he knows the applicant; other members state prior collaborations and ties that are meant as a vetting mechanism; etc.

Pre-arrest network

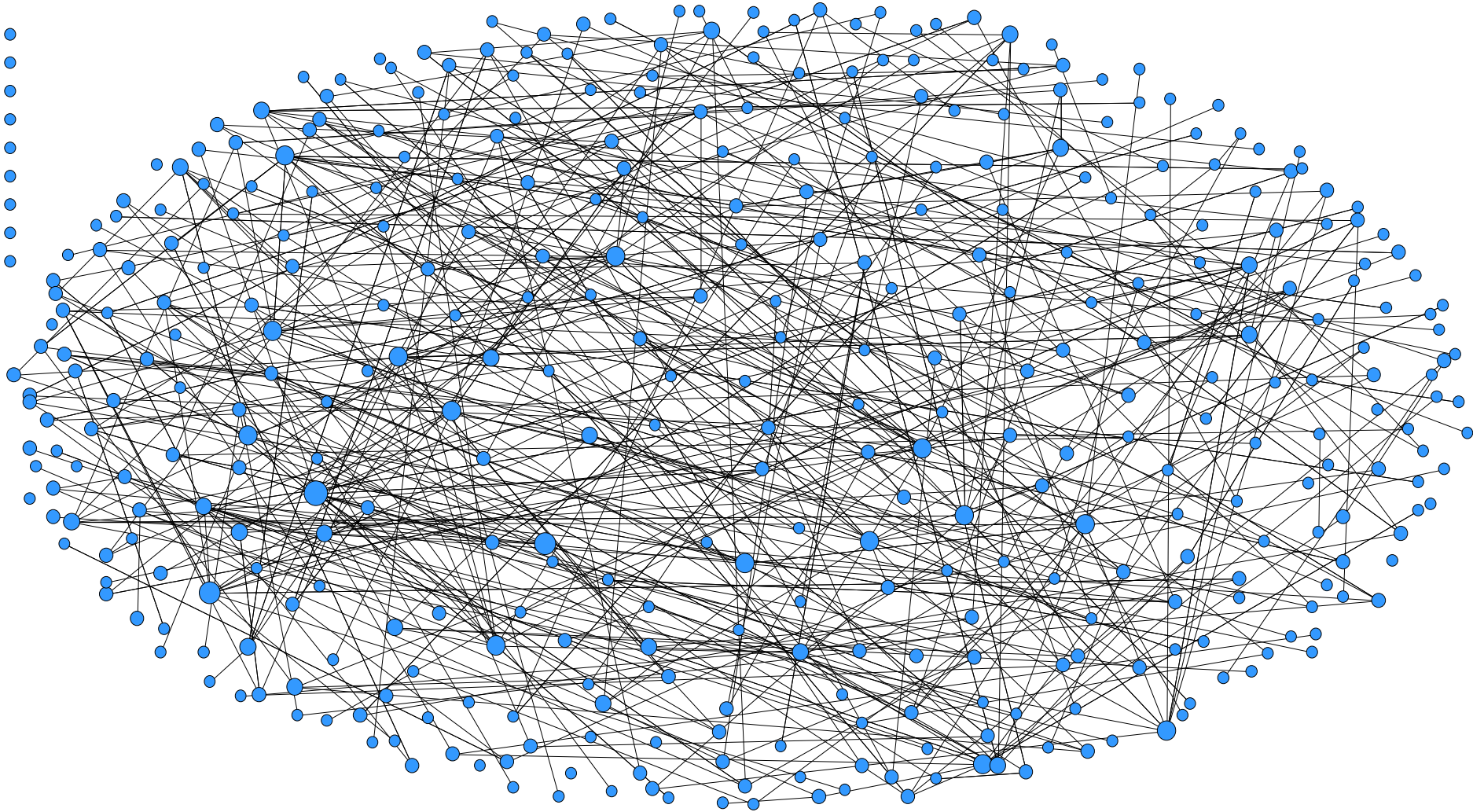
404 nodes – Density: 0.006 – average degree: 2.6 [1-69]



Post-arrest network (extrapolated)



Optimal arrest outcomes



Objective 3: To understand the marketing strategies and nature of business activities on the malware scene (both products and services)

Data:

- 811 threads from the “marketplace” and “hall of shame fame” sections
- Qualitative analysis and coding of products, services, prices and negotiations
- Ongoing analysis

The tough business life of the hacker

bx1 Guest	➕ Shopadmin's For Sale Hey too simple i got shopadmin's for sale Total orders on them : <u>140k+</u> Order and they're fresh Worldwide Order's and Mostly from US / CAN <u>Offer me a price</u>
Sat Dec 03, 2011 1:40 am	

\$70,000,000

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION

UNITED STATES OF AMERICA

v.


HAMZA BENDELLADJ (A.K.A. "Bx1")


Criminal Action No.


1:11-CR-557-AT-2


In short, Bendelladj is responsible for a loss amount of at least \$100,000,000 dollars (200,000 cards x \$500). *See* U.S.S.G. 2B1.1 Application Note 3(F)(i) ("In a case involving any unauthorized access device, loss . . . shall be not less than \$500 per access device.").⁵⁵


The tough business life of the hacker

bx1 Guest	 Info it have CC NUMBER EXP DATE CVV BILLING ADDRESS / SHIPPING ADDRESS EMAIL - PASSWORD
Sat Dec 03, 2011 3:13 am	

Jumbie LEVEL 2 Joined: 01 Jun 2010 Posts: 1073 Rep: 2534	 ok....what ur starting bid...i need this
---	---

bx1 Guest	 alright my starting bid is 20k\$
---------------------	--

Donchicho Guest	 :D Ok i will buy but i can give 300\$ if u will send just send me pm
---------------------------	--

bx1 Guest	 if i sell 0.5\$ each cc i get 50k Guaranteed .
---------------------	---

The tough business life of the hacker

<u>MrGold</u> LEVEL 2	2k\$
Joined: 18 Sep 2009 Posts: 1241 Rep: 2473	I'm so lucky lucky I'm so lovely lovely..

<u>sven</u> LEVEL 2	QUOTE
Joined: 10 Feb 2011 Posts: 634 Rep: 2214 Location: Bronx	<div>bx1 wrote: i tested 6 out of 160k Diff Dates means from 2008 - 2011 and all approved . i can test for interested buyer and i show them VIA Team viewer</div> you can test 100 and 100 out of 100 work when you use about 6-8k of the totak 160k, all base will go nuts and you get ~20% approvals talk to duyblue from csu if you still looking for sell, he will offer you good prices

<u>MrGold</u> LEVEL 2	3k
Joined: 18 Sep 2009 Posts: 1241 Rep: 2473	I'm so lucky lucky I'm so lovely lovely..

The tough business life of the hacker

bx1 Guest	<p>➤ Selling Spreader BIN's (Facebook , USB , IM)</p> <p>Over 40 method and soon adding more .</p> <p>1st before i start introducing it i give copyright of the panel to dubar .</p> <p>alright here we go</p> <p>i'm selling Spreader that help you get more bots with fast spread .</p> <p>Spreading method are :</p> <ul style="list-style-type: none">* Facebook (IM , Comment , MSG)* Twitter (MSG , Status)* Tagged (MSG)* eBuddy* USB (Ink , autorun.inf)* Gmail (MSN , IM)* Hi5 (Comment , MSG)* Webmails (Yahoo , Hotmail , GMX , AOL , Gmail ,)
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<p><u>gonzo</u> FRESH FISH</p> <p>Joined: 18 Jun 2010 Posts: 1361 Rep: 2839 Location: Mexico</p>	<p>➤</p> <p>Been using this since lastnight.</p> <p>Spreads like Aids... <3</p> <p>I love BX1</p>
---	---

The tough business life of the hacker

<u>solotech</u> LEVEL 1	+ QUOTE im waiting the last update he mention , but never got. and lately on jabber no reply my msgs
bx1 Guest	+ QUOTE solotech wrote: im waiting the last update he mention , but never got. and lately on jabber no reply my msgs am thinking to send you the update or no , remember what u said last week , you gonna make it public , so i don't trust you , i think on all before i give you . am asking around abt you then i decide
<u>sp3cial1st</u>	+ QUOTE Been waiting approx 1 week for a reply from you bx1! messaged you with some questions about how it works and so forth but no reply...
<u>solotech</u> LEVEL 1 Joined: 06 Feb 2011 Posts: 639 Rep: 2215 Sat Jul 02, 2011 8:11 pm	+ QUOTE Tux wrote: Any review? All the best, Tux ofc the review is <u>i ve paid 1500 bucks</u> for this and send me broken update and now no reply my msgs on jabber. [PROFILE] [PM] [EMAIL]
<u>mafi</u> Boss	+ QUOTE maybe because you threaten to leak it?

2 months later... the issue remained unresolved

sp3cial1st

ed: 07 Jul 2010
s: 945
2442
tion: 48.825183,
85795

Code

Code:

ok well ive given up trying to get ahold of bx1 to sell this (im at the point i beleive he had no intention of ever selling it and only started this topic to piss ppl off) .

Anyways solotech or anyone else who has binaries or source for this that can sell please contact me.

QUOTE

bx1
Guest

the problem is i don't have time or place , i can't even connect like before . this is summer and i worked all time because of it . now i enjoying my time . just be patient guys .

Will you be back by the end of this year, cause I remember when similar members said going to vacation, we will continue our business after and then they disappeared for like 4-7 months causing me allot pain in the ass while time to complete business wouldn't take more then 30 minutes to max couple of hours. In that time they were relaxing, swimming or getting high I lost allot of money or money I could earn, basically I had opportunity cost cause of their vacation...

Not a problem exclusive to bx1

crimepack

Guest

🔒 Crimepack leak?

QUOTE

What the fuck is the problem with you guys?

The only people that have version 3.1.3 is people on this board and how come a security researcher gets a hold of a copy of it?

You guys better start acting as fucking professionals sometime all the leaks of Crimepack so far has been thanks to people on this forum and we are supposed to hold a higher fucking standard.

I suppose in the future i will only be able to sell & give updates to very limited people and rule out the rest.

<http://contagiodump.blogspot.com/2010/09/crimepack-313-exploit-kit-info.html>

Scammers' reports

- 151 complaints over 4 years
- Equals 44% of newly admitted members

d0laR

LEVEL 2

+ nocen

He was an admin here before..

I paid him 3k+ for a project that he didn't finish. And he blocked me since then (1+ year ago).
I forgot that he must be on scammers list.

QUOTE

Joined: 24 Apr 2009
Posts: 593
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Questions & ideas?

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