



Protect what you value.

Trojans – A Reality Check

Looking at what's real

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So when did all this start?

History Lesson

- Term coined by Ken Thompson in 1983
- Used to gain privileged access to computers since the 80s
 - Keyloggers
 - Fake login screens
- ...and to maintain access
 - Rootkits
 - Backdoors
- or trivial trojans that just delete things

http://www.acm.org/awards/article/a1983-thompson.pdf





The Hype is started

- Defcon 7.0: BO2K is released
- Massive Media attention
- The Hype is started





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Hype around Trojans

- 2001: Magic Lantern
 - Supposedly developed by the FBI to replace (hardware) keyloggers
- 2007: Der Bundestrojaner
 - Proposed by German authorities to enable "online searches" on suspects computers
 - >600.000 Google hits
 - April's Fool Joke around it by the CCC scares thousands
 - Estimated cost of development ~200.000 Euro [1]

[1] Drucksache 16/3973 Deutscher Bundestag

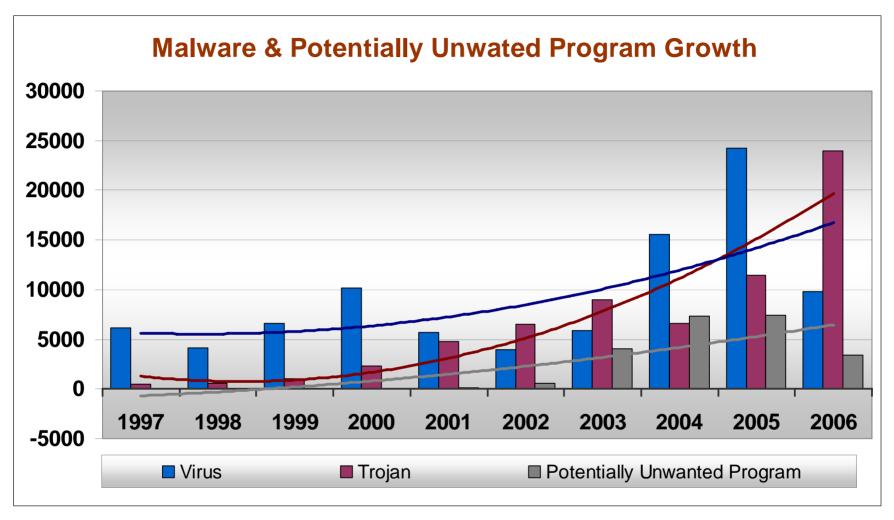


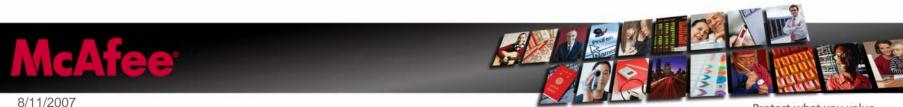


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And The Reality?

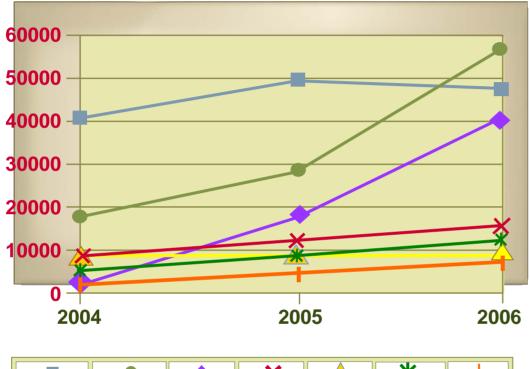




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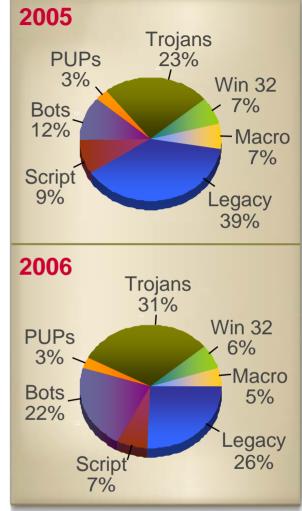
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Samples sent to McAfee Research





Legacy is defined as: DOS, boot-sector, and Win3.1 viruses Source: McAfee's statistics

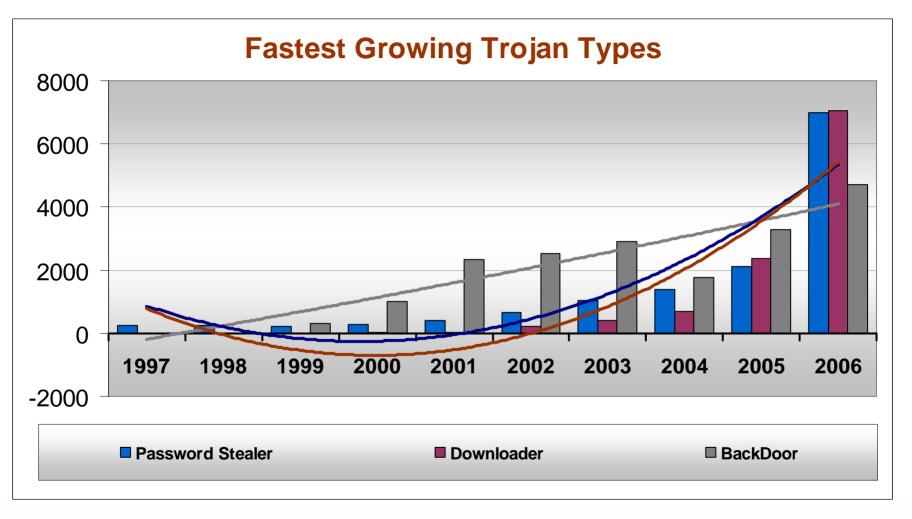




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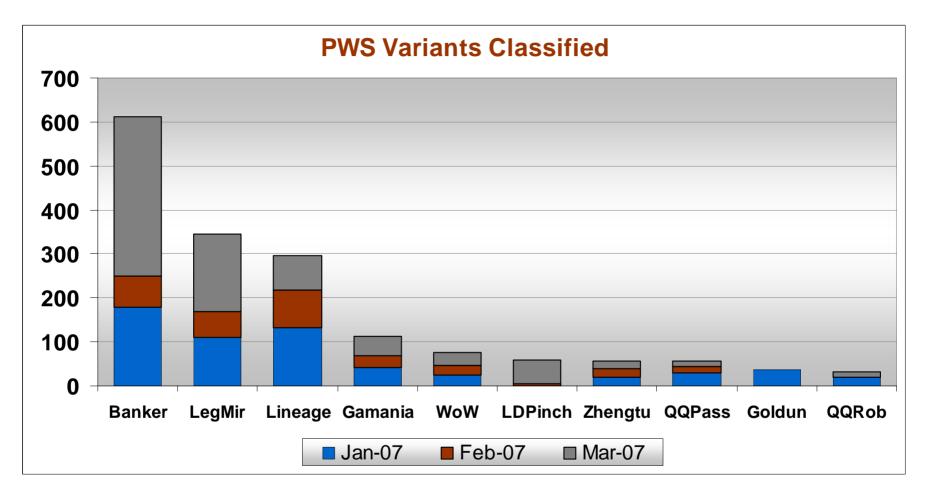
McAfee[•]

1997 - 2006





2007: Q1 Password Stealing Trojan Targets





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By The End of 2006

	1997	End of 2006
Vulnerabilities	400	21,400
Password Stealers	400	13,600
Potentially Unwanted Programs	1	23,000
Viruses and Trojans	17,000	222,000
Spam	5%	80+%



•	Last 18 months detection		
	— W32/Sober@mm!681	8.362.071	MassMailer
	— W32/Sober.gen@mm	479.392	MassMailer
	 Adware/abetterintrnt.gen.a 	318.556	Adware
	 W32/Netsky.p 	286.998	MassMailer
	 Generic Malware.a!zip 	202.929	Trojan
	 New Malware.j 	198.962	Trojan
	 W32/Almanahe.c 	63.452	Virus, Poly, Rootkit
	 Vundo.dll 	54.579	Trojan
	 Downloader.AAP 	46.870	Downloader
	 Downloader.BAI!M711 	28.093	Downloader
	— PWS-Goldun	21.403	PasswordStealer
	 PWS-Legmir 	4.100	PasswordStealer



McAfee[•]

From this list ranked with detections in 2007 only

- 1. New Malware.j
- 2. W32/Almanahe.c
- 4. Vundo.dll
- 5. Downloader.AAP
- 6. Downloader.BAI!M711

Trojan Virus, Poly, Rootkit, Downloader Trojan Downloader Downloader





- Worms/Bots?
 - Many dozens
 - All different
 - Small numbers, most below 20 unique detections



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- Worms/Bots?
 - Many dozens
 - All different
 - Small numbers, most below 20 unique detections
- And some fun detections...
 - Parity Boot (2 detections)
 - PS-Kill (1033 detections)
 - SymbOS/Comwarrior.a (544 detections? WTF!)



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2007: Q1 Trends

- 1,833 vulnerabilities in the National Vulnerability DB —(33% increase over Q1-06)
- 1,379 classified PUPs —(an 8% decrease over Q1-06)
- 85% of all e-mail considered Spam
- Password Stealing Trojans targeting banks and game accounts





Malware for Money

Installing Adware on compromised machines

- Common practise to make money with a botnet
- Pay-per-install programs offered by various companies
 - Price depends on region where the victim is located
 - Ranges from \$0.05 to \$0.50
- Financial Motivation caused major changes why people write Malware and what kind of Malware is written





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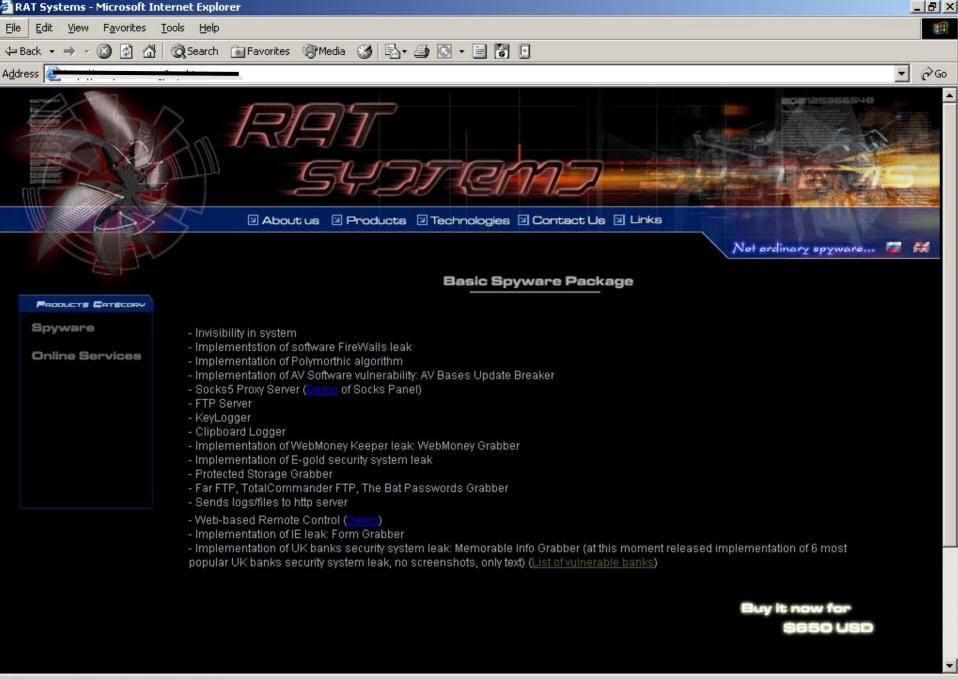
Advertised Prices for various items

 United States-based credit card with card verification value United Kingdom-based credit card with card verification value 	\$1–\$6 \$2–\$12
• List of 29,000 emails	\$5
 Online banking account with a \$9,900 balance 	\$300
 Yahoo Mail cookie exploit—advertised to facilitate full access when successful 	\$3
 Valid Yahoo and Hotmail email cookies 	\$3
 Compromised computer 	\$6–\$20
 Phishing Web site hosting—per site 	\$3–5
 Verified PayPal account with balance (balance varies) 	\$50-\$500
 Unverified PayPal account with balance (balance varies) 	\$10-\$50
Skype account	\$12
 World of Warcraft account—one month duration 	\$10

Source:Symantec Internet Security Threat Report



McAfee[•]



💽 Inbo... 🛛 🕲 Micro... 🗹 Link f... 🔌 Jasc ... 🖉 RAT ... 🗹 CIO ... 🛛 😓 🍜 🅀 🌉 🖉 🌉 🚛 👪 🚳 🕅 🖬 🎲 🌌 🖉

09:02

Contains commands for working with the selected items.

Start

The cost of cyber crime tools

S F a	MPack v0).851 stat	botkit functionalities: US\$600. counts. You load the list of FTP accounts and it automatically checks if the user arating the valid accounts from the invalid ones: US\$15.	und found und nd is found virus found nd
	Attacked host	s: (total/uniq)	Ewido 4.0 04.07.2007 no virus found	
C	IE XP ALL	12716 - 107033	500 + US\$25 for update. Fortinet 2.85.0.0 04.07.2007 suspicious F-Prot 4.3.1.45 04.04.2007 no virus four	; und
F	QuickTime	19 - 18	date: US\$5 Karus T3.1.13 04.07.2007 no virus for Kaspersky 4.0.2.24 04.07.2007 no virus for Kaspersky 4.0.2.24 04.07.2007 no virus	und
ĸ	Win2000	3819 - 3637	Iniques US\$40. NOD32v2 2172 04.07.2007 no virus found NOD32v2 2172 04.07.2007 no virus found	t ound
v	Firefox	33700 - 33148	S: US\$5 🖄 Bundle sploitov MPack (probiv adalte at 10%, ifreymah from 12 to 35)	
	Opera7	217 - 202	Update bundles eksploitov MPack lunc Current version 0.80 us f	nd found
V	Traffic: (to	otal/uniq)	S Creato - locking repeat visits using advanced system razlichayuschey run for natom A simplified compared to previous versions of the installation - counting efficiency loadera, allowing time to recognize spalivshiysya soft and not lose this potential boot	
Ņ	Total traff:	167407 - 153940	The update includes the following ekspy : - modified M506-014 with maksimizirovannoy efficiency - M506-006 under Firefox 1.5.x and Opera 7.x	
N	Exploited:	19257 - 16328	- unnamed 0day for Win2000 (ms06-044) = XML overflow under XP \ 2k3 delayed by operation = WebViewFolderIcon overflow	
	Loads count:	38669 - 12345	= WinZip ActiveX overflow = QuickTime overflow = ANI new overflow	
Ì	Loader's response:	200.8% - 75.61%	Price as before \$ 700 for ligament and \$ 300 for bilder loadera (samorazmnozhayuschiysya loader 3k \$ podnobnosti online [Only registered users can see links. Registration] D.	
ĺ	User blocking:	200	Probiv at yusa bize reaches $45\!-\!50\%$ (!) , The supplier traffa connect with the acquisition. At adalte and ifreyme increased by \sim 2-5%	
	Country blocking:	OFF	By purchasing a link with us, you would get not only an excellent product, but also first-rate support by the end of last year.	
2	Efficiency: 23	.1% - 8.02%	Also recall that existing users pounding on the update	
			phase. Checking on the older version antichat's Additional and the older version antichat's	

The purchase icq





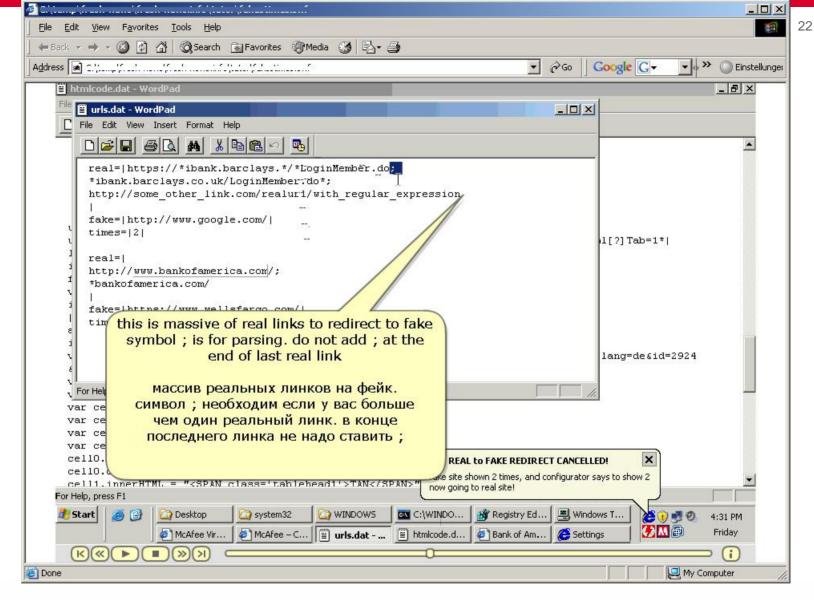
Price :

Bilder : \$ 10

Gek : \$ 30 Updates : \$ 5 VirusTotal on WMT

Compiling under your wallets : \$ 5

AhnLab-V3 2007.4.7.0 04.06.2007 no virus found





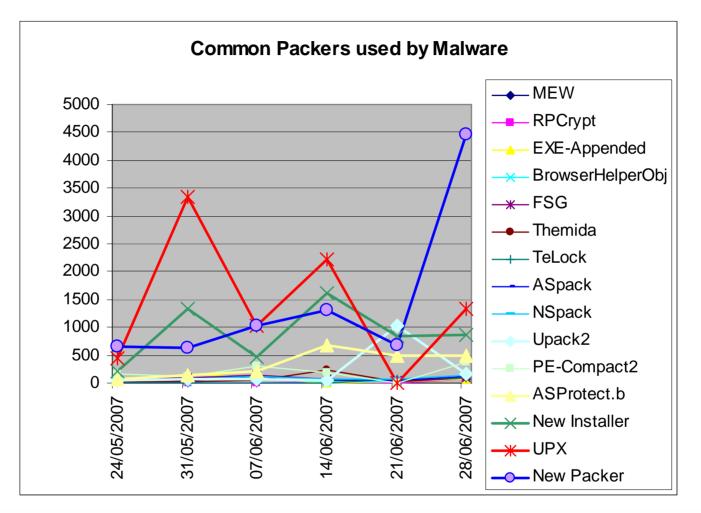
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Obfusicating Trojans to hide from AV

Using Runtime Packers to circumvent AV







Typical "outbreak" today

Mass Spam of Email with Attachment **Example** Downloader-AAP

🚔 Aktenze	ichen [08133542]	X
∫ <u>E</u> ile <u>E</u> di	t <u>V</u> iew <u>T</u> ools <u>M</u> essage <u>H</u> elp	Ð
From: Date: To: Subject:	Kriminaldirektor Mittwoch, 9. Mai 2007 03:13 spammed-addresses Aktenzeichen [08133542]	
Attach:	ATT00044.txt (0 bytes)	
im Rahm	hrter Internetnutzer, ien unserer ständigen automatisierten Überprüfung von sogenannten örsen im Internet, wurde folgende IP-Adresse auf unserem System	1
ermittelt.	fer messen som seneral som seneral som	
IP: 81.1	12.150.144	
Bundestr Es wird u und/oder sogenanr	lt Ihres Rechners wurde als Beweismittel mittels den neuen rojaner sichergestellt. umgehend Anzeige gegen Sie erstatten, da sich illegale Software, Filme r Musikdateien auf Ihren System befinden. Durch die Nutzung nter Tauschbörsen, stellen Sie diese auch anderen Nutzern zu ng und verstoßen somit gegen §§ 249ff StGB.	
	lständige Protokoll Ihrer Online-Durchsuchung finden Sie im dieser Email.	
	fanzeige und die Möglichkeit zur Stellungnahme wird Ihnen in den Tagen schriftlich zugestellt.	





Protect what you value.

Mass Spam of Email with Attachment Example Downloader-AAP

🙈 Aktenzei	then [08133542]	
From:	Kriminaldirektor	
Date:	Mittwoch, 9. Mai 2007 03:13	
To:	spammed-addresses	
Subject:	Aktenzeichen [08133542]	
Attach:	🏹 lka070507.zip (7,88 KB) 🖺 ATT000-	44
neuen		1

Sehr geehrter Internetnutzer,

im Rahmen unserer ständigen automatisierter. Tauschbörsen im Internet, wurde folgende II

Das vollständige Protokoll Ihrer Online-Durchsuchung finden Sie im Anhang dieser Email.

Die Strafanzeige und die Möglichkeit zur Stellungnahme wird Ihnen in den nächsten Tagen schriftlich zugestellt.



- 1. User opens Attachment (.zip), double clicks executable
- 2. Downloader downloads Textfile

3. Textfile gets decoded

0000000010: 000000020:	5B 7A 6C 73 5D 0F 08 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 0F	30 30 30 30 30 30 30 30 30 08 68 74 74 70 3A 2F 2F	00000000000000000000000000000000000000
0000000040:	77 77 77 2E 72 65 6E 61 6F 6D 2F 68 74 6D 6C 2F 68 74 74 70 3A 2F 2F 77	74 65 6B 6F 63 68 2E 63 34 34 2E 65 78 65 0F 08 77 77 2E 72 65 6E 61 74	om/html/44.exe*
	65 6B 6F 63 68 2E 63 6F 32 2E 65 78 65	6D 2F 68 74 6D 6C 2F 32	

- 4. Binaries are downloaded from decoded URL. This is a dropper (Spy-Agent.ba) for the actual Trojan
- 5. Spy-Agent.ba drops IPV6MOML.DLL to %windir%\System32
- 6. Spy-Agent.ba.dll gets registered as Browser Helper Object



Stolen Data sent to Attacker

CompID: [256-bit hexadecimal value] Ver: 3.7.77	
host: { <i>victim-computer-name</i> } if1 : 192.168.1.137	
Wed Mar 14 14:30:48 2007	
URL: https://www4.usbank.com/internetBanking/LoginRouter	
REQ: requestCmdId=PrivateLogon&USERID=&PSWD=&reqcrda=fake-usbank- user&reqcrdb=myusbankpassword&doubleclick=2	
URL: https://signin.ebay.com/ws/eBayISAPI.dll? SignIn&co_partnerId=2&pUserId=&siteid=0&pageType=&pa1=&i1=&bshowgif=	
&UsingSSL=&ru=&pp=&pa2=&errmsg=&runame=&ruparams=&ruproduct=&sid= &favoritenav=&confirm=&ebxPageType=&existingEmail=&isCheckout=&migrateVisitor=	
Action: https://scgi.ebay.com/ws/eBayISAPI.dll?RegisterEnterInfo&siteid=0&co_partnerid=2&UsingSSL=1 Method: post	
Action: https://signin.ebay.com/ws/eBayISAPI.dll?co_partnerid=2&siteid=0&UsingSSL=1	
Method: post userid(text): fake-eBay-userID	
pass(password): myebaypassword	
Buttons pressed: Sign In Securely >;	
REQ: MfcISAPICommand=SignInWelcome&siteid=0&co_partnerId=2&UsingSSL=1&ru=&pp=	
&pa1=&pa2=&pa3=&i1=-1&pageType=-1&rtmData=AD1%3DgAIANAVBAAAAAAAQeuuXBB%3BM01%3DAI%	
3BTC01%3DwAscfTKVEBAAACQDQVAAAAAAAAAAknrDyrgA%3BPS%3DT.0&userid=fake-eBay- userID&pass=myebaypassword	-
	-



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Another Example: Spam-Mespam

- Arrives as Email, IM-Messages (AOL, Yahoo, ICQ), Webforum – link to a website in the mail
- User follows link, gets infected
- Spreads from infected machines by injecting the link and text in emails, IM Communication from the user
 - Messages arrive from a trusted, known person
 - High social engineering factor

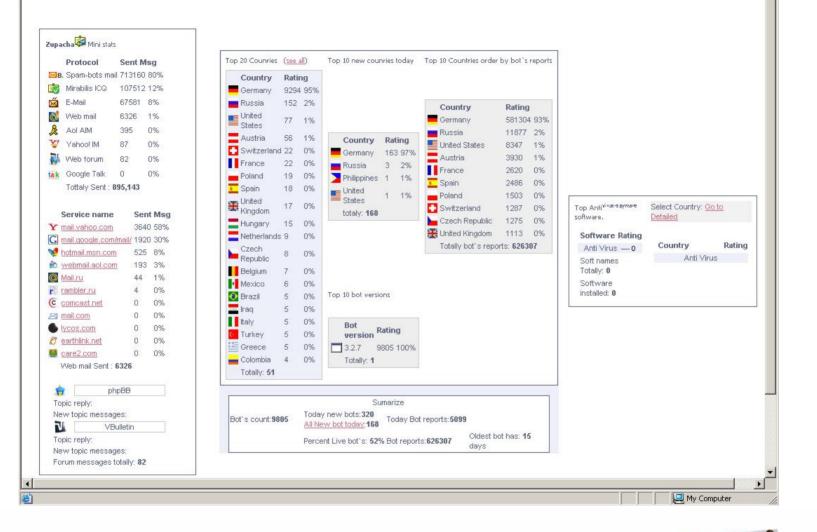




[statistics] [control] [help] [Downloaded files] [Time statistics]

[Global]

ZUnker Panel v1.4.5b [LOG OUT] .







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	[control]	[help]										ZUnker Panel v1.4.5b	[LOG OUT]	
Blobal]	Downloaded file	s] [Time statistics]												
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				Ċ.	Downloade	ed Files (AL	L) Clear	Clint Link	12					
				Land	File Name			Client-side stat						
				ALL	ebr9.exe	1	53,146	Clint Link						
				ALL	ebr9.exe	1	508	Clint Link						
				ALL	ebr9.exe	1	150	Clint Link						
				ALL	ebr9.exe	6471	70,144	Clint Link						





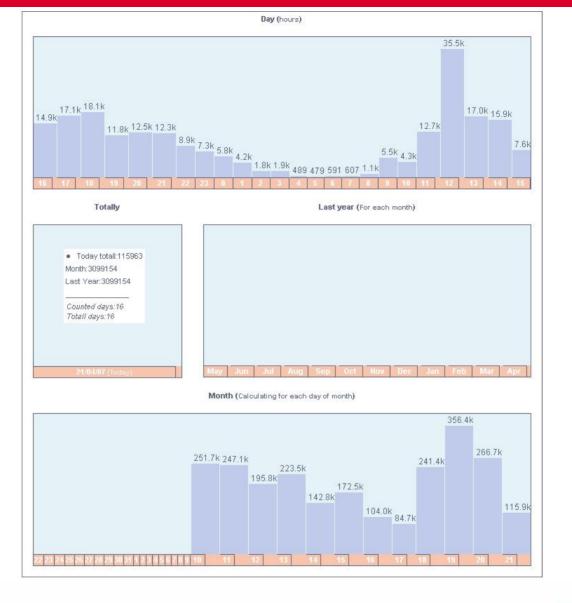
8/11/2007

Downloaded files Statistic	cs for www.		g generated on 2007/04/21	
	Downloaded Files (ALL)			
	ALL ebr9.exe 1 53	Size Client-side stat.		
	ALL ebr9.exe 1 50 ALL ebr9.exe 1 15			
Land File Name	Installed	File Size	Client-side stat.	
AL ebr9.exe	4	53,146	Clint Link	
		00,140	Setting Products	
ALL ebr9.exe	1	508	Clint Link	
AND A CONTRACTOR OF A CONTRACT	4	150	Clint Link	
ALL ebr9.exe		1.00	Serie re said fin	





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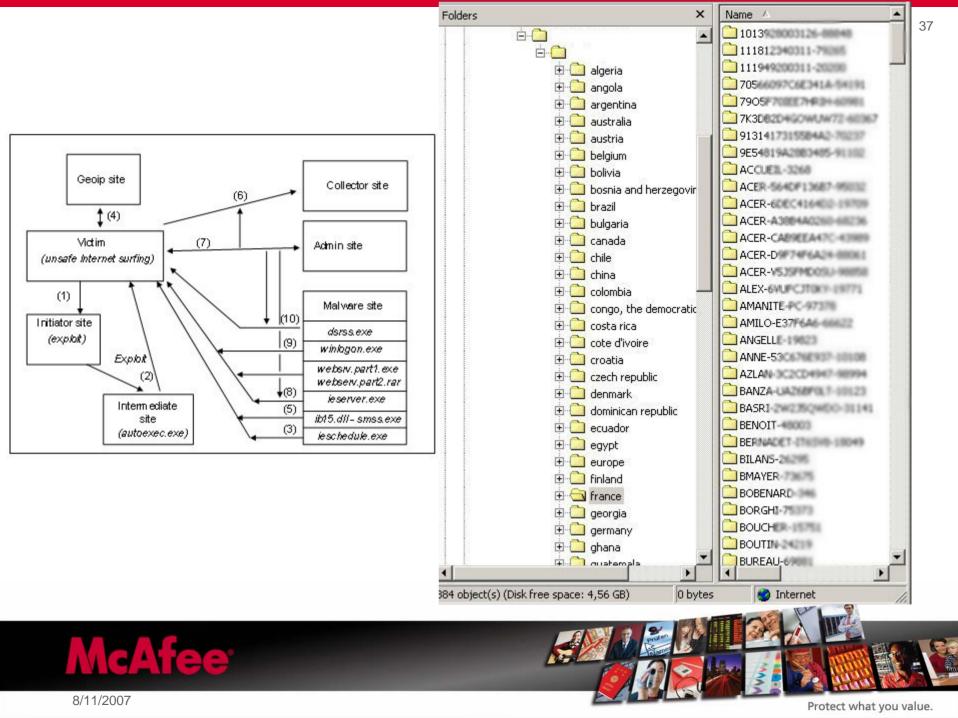


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Select Land (Multi Load) Insert CompiD (Single load) Message: Editing task for #5. Count to Install Image: Search BOT Image: Search BOT Urt's to load (Example) Don't kill loader after job Image: Search URL you should to press to make new line separate. It's necessary. Image: Search Search Reset Form Add to tasks Search BOT Search BOT Image: Search Search It's to install Ut's Image: Search Search Search Search Search Form Add to tasks Search Search Search Image: Search Search To install Ut's on shalled To install Ut's on shalled Search Form Add to tasks Done Action Action	statistics] [contro [Loade]						ZUni	er Panel v1.4.5b	[LOG OUT]
Url's to load (Example) Don't kill loader after job http://www.ebay-market.info/compexe Hint:After each URL you should to press "Enfer" to make new line separate. It's necessary. Reset Form Add to tasks Land Bot's count Installed To install Url's Done Action	All All countries					i task fi	or		
Tasks Land Bot's count Installed To install Url's Done Action	http://www.e			/ exe	you should to press Enter' to make new line separate. It's necessary.			COLUMN L	30
9805 6476 * - unlim. http://www.ebay-market.info@ballinex % Delete Edit		Installed	To install	I TAIL MANAGEMENT		Done	Action		





Victim Distribution Europe







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Victim Distribution North America







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Victim Distribution APAC

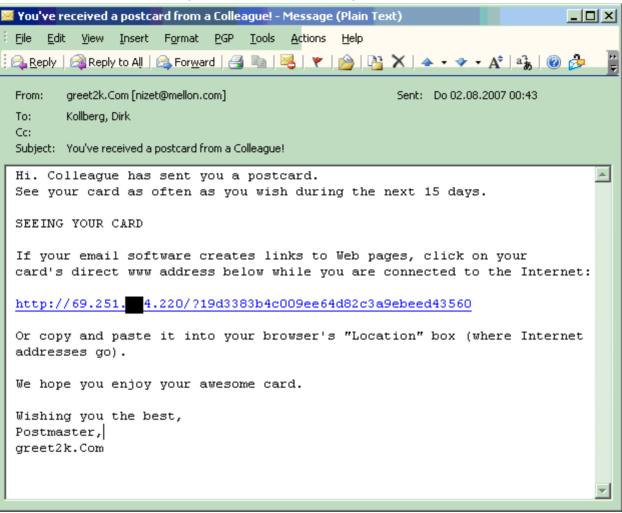






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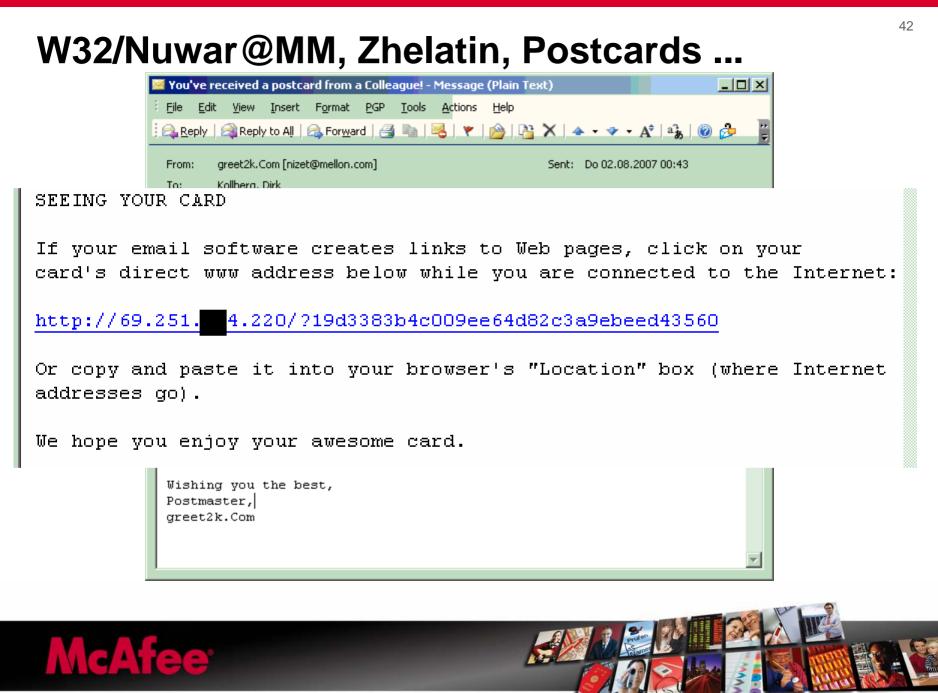
W32/Nuwar@MM, Zhelatin, Postcards ...





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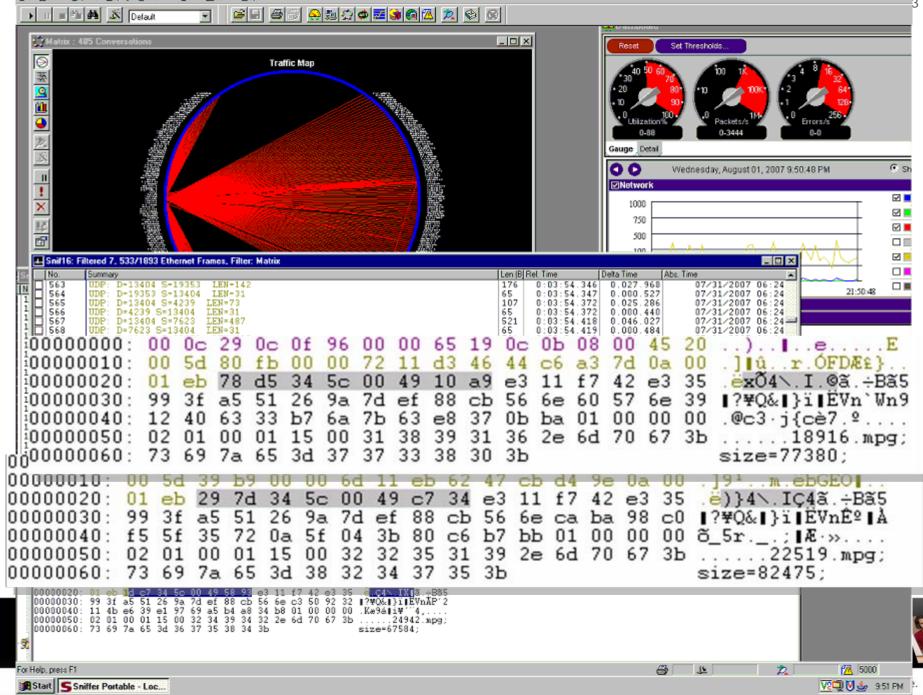


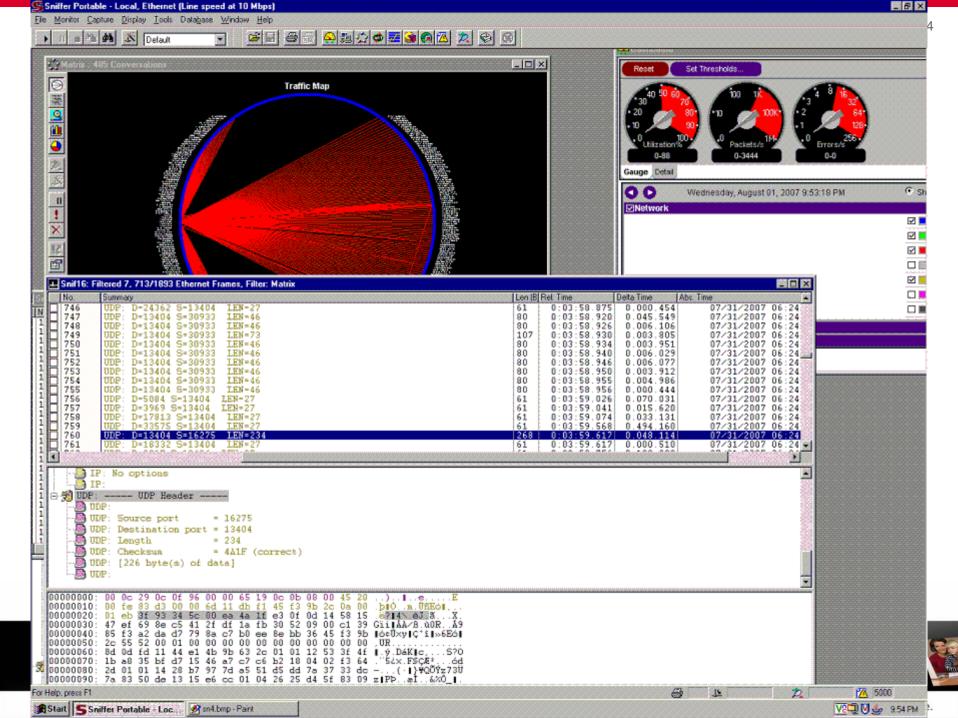


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🕵 Sniffer Portable - Local, Ethernet (Line speed at 10 Mbps)

File Monitor Capture Display Tools Database Window Help





Sniffer Portable - Local, Ethernet (Line speed at 10 Mbps)	_ & ×
File Monitor Capiture Display Tools Database Window Help	5
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Traffic Map	
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	/s 1H Errors/s 256
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ssions in RAM :		? Disk Logfile :				Set Filter	?
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16:00:28 Complete		31.07 13:29:			KNOWN		
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New C&C Methods

• IRC

- Was public IRC Servers
- Now often private IRC Servers
 - Rented Systems
 - Owned Boxes
- Plaintext protocol
- HTTP
- HTTPS
- P2P

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New C&C Methods

XML for communication to avoid detection

<pre><?xml version="1.0" encoding="utf-8" ?> <bootscript name="CoreApp::UrlMonitor" version="100"></bootscript></pre>	=post_url_ron HTTP/1.1 Content-Type: ww-form-urlencoded Accept: */* User-Agent: Internet Explorer pst: http://www.[removed].com/ Content-Length: 582 Connection: he-Control: no-cache Cookie: AlteonP=xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
<pre><pre><pre><pre><pre><pre><pre><pre></pre></pre></pre></pre></pre></pre></pre></pre>	>bsite> <name>xx.msn.com</name> >)K Date: Tue, 12 Jun 2007 xxxxxx GMT Server: Apache/1.3.33 11 mod_perl/1.29 Connection: close Transfer-Encoding: chunked ext/html 66 xml version="1.0" encoding="utf-8" ? <notification-< td=""></notification-<>

</notification-command>





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Bruteforce and Social Engineering

• Bruteforce

- Exploits on Websites
 - Detect Browser Type and OS to serve matching exploits
- Exploits in attached multimedia files
- Exploits in attached Office Documents
- Social Engineering
 - Executables embedded in Documents
 - Email titled 'Proforma Invoice for ...'
 - .doc as attachment
 - In the document 'DOUBLE CLICK THE ICON ABOVE TO VIEW DETAILS'
 - Fake Codec ,required' for multimedia files



8/11/2007



Rootkits

- The number of rootkits on 32-bit platforms increases
- approximately 200,000 systems reported rootkit infestations since the beginning of 2007
- 10 percent increase over the first quarter of 2006

Source:McAfee Research, Virus Tracking Map





8/11/2007

Rootkits

- Not commonly used with Trojans today
- But increasing
- Detection and cleaning require 2 steps
 - Detection and removal of the Rootkit
 - Detection and removal of the Trojan
- Techniques used today can be handled easily
 - Virtualization and BIOS-Rootkits not seen, yet

Free Tool: McAfee Rootkit Detective

http://vil.nai.com/vil/averttools.aspx



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McAfee

Questions?

