eCrime Reporting Challenges

Patrick Cain

Resident Research Fellow

APWG

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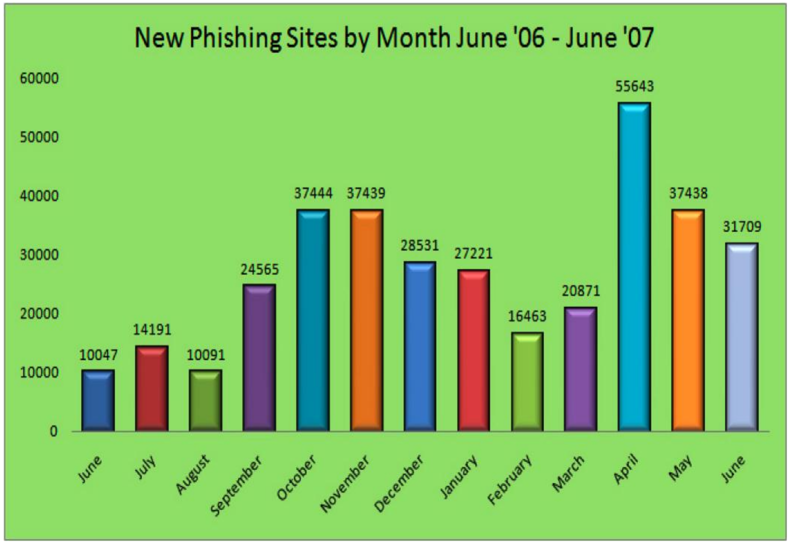
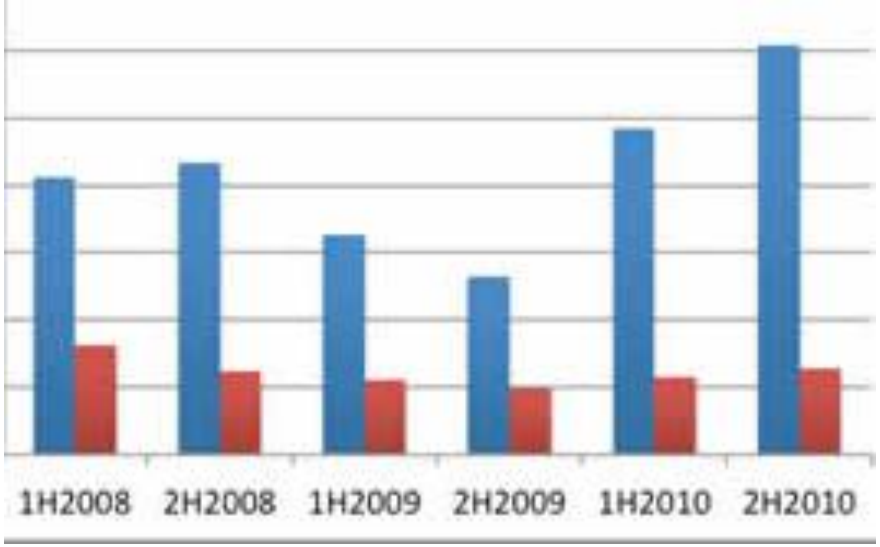
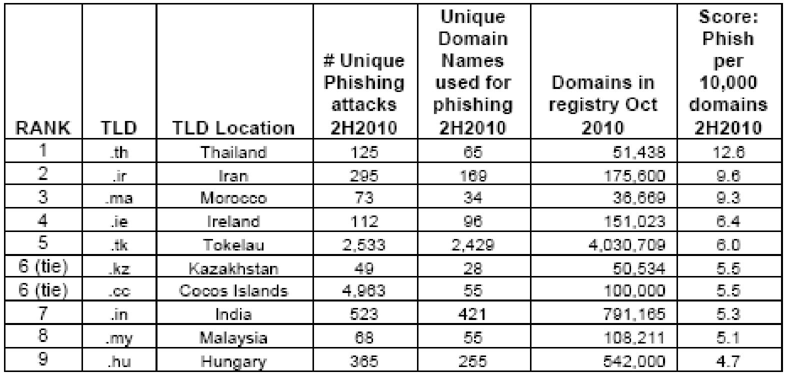
The APWG

- Started In 2004 as Anti-Phishing Working Group
- Non-profit CA corporation
- ~2100 members, 25 researcher groups
  - National Bodies, CERTs, LEA == free
  - Extreme International Composition
  - (Really) Big Company ←→ Sole Proprietor
- Many more non-members on open mail lists
- Goal: solve problems, share experiences and data
- Be vendor, country, and * agnostic

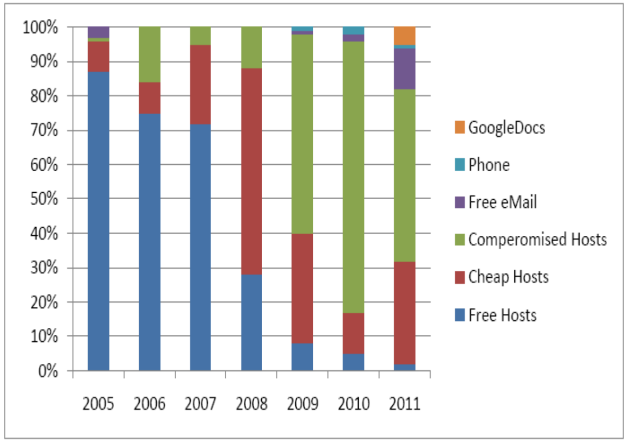
We Publish Statistics







RANK	TLD	TLD Location	# Unique Phishing attacks 2H2010	Unique Domain Names used for phishing 2H2010	Domains in registry Oct 2010	Score: Phish per 10,000 domains 2H2010
1	.th	Thailand	125	65	51,438	12.6
2	.ir	Iran	295	169	175,600	9.6
3	.ma	Morocco	73	34	36,669	9.3
4	.ie	Ireland	112	96	151,023	6.4
5	.tk	Tokelau	2,533	2,429	4,030,709	6.0
6 (tie)	.kz	Kazakhstan	49	28	50,534	5.5
6 (tie)	.cc	Cocos Islands	4,963	55	100,000	5.5
7	.in	India	523	421	791,165	5.3
8	.my	Malaysia	68	55	108,211	5.1
9	.hu	Hungary	365	255	542,000	4.7



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We Hold Meetings

- Spring ‘Operations focused’ event
  - Rotates Internationally - EU, Asia, SA
    - Next month in Hong Kong
- Fall ‘Researchers Symposium’ in the US
  - In conjunction with the IEEE (and Research Advisors)
  - Accepted papers are published in an IEEE Journal
- Small, Spring European Researcher Summit
- Affiliated groups
  - Apwg.eu
  - Apwg.jp

In the beginning we collected ‘data’

- In 2004, we started collecting and sharing phishing URLs
  - Highly automated
  - Includes extra data (confidence, type of activity, etc)
  - Refreshed every 5 minutes
  - Entries time out after a few days
  - Errors can be corrected VERY quickly
  - List has between 30,000 and150,000 entries at a time
- We generate statistics on the collection
- There are multiple ways to send us data
  - Email. ftp, web GUI, etc
  - We do not operate data collectors – members and friends send us their observations

Then we moved to ‘events’

- This is really data aggregated to show patterns
  - E.g., brute forcing passwords, phishing campaigns, bot-infected systems, attack sources
- We use XML whenever possible to describe the event
- Developed the eCrime Exchange (ECX) to:
  - Get data; Put data; uses the data clearinghouse model
  - Explain your analysis of data; Talk about data
    - Goal: Make data analysis faster
  - Contains an automated notification facility
    - For ISPs, CERTS, etc for new data
    - For system owners if their systems are reported
  - Has a GUI for searching and examining
- Greatly increased the international participation

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Now moving to 'e-crime'

- Events aggregated for malicious activity
- A number of issues arose:
  - What is 'malicious activity'?
    - We need internationally agreed upon terms and definitions
  - Who do we report or notify?
    - National CERTS? ISPs? Police?
    - This isn't 'evidence', it's 'observations'
  - What specific data is needed by the receiver of the data

- We're rethinking the model of our data clearinghouse…

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Rethinking how we collect and share the datum

Framing the Engagement Model: The Organizing Question

- How does a world of localities engage the global cybercrime problem and respond as a unified, if virtual, enterprise?
- Traditional Models of Engagement
  - War Fighting?
    - Requires clearances, big money
    - Industrial/NGO responders are not soldiers
  - Law Enforcement?
    - Requires badges
    - Industrial/NGO responders are not police
  - Public Health?
    - The epidemiologic aspects of this model has some resonance with the challenges of engaging eCriminals
    - Definite maybe

How Does an Epidemiologic Response Model Work for Cyber Security?

- Public Health data collection & analysis is very similar to the way that cyber security firms collect, share and analyze cybercrime data
- Identification and quarantine procedures
  - Internet service providers emulate these practices for securing customers
- Remediation of outbreaks quickly after detection and diagnosis
  - Very important in both of these domains
- Imparting long-term hygienic principals that protect an individual and the public
  - An inoculation model of intervention

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Challenges in Using the Public Health Model for Fighting Cybercrime

- Private, not public, enterprises possess most of the event data that would inform epidemiologic models
- Private enterprise does not and likely will never have the authority to extract additional data, unlike public health agencies
- Cybercrime event data collection and exchange is impeded by regulatory, legal and apparent liability burdens
- Maximal results are attained when cybercrime event data collection and exchange happens at the speed of the crime itself
- eCrime responders and investigators need to be as good as the bad guys about sharing techniques and tips

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The Plan for Addressing the Challenges

- Develop cybercrime forensic response standards, protocols and resources to prioritize and coordinate interventions and investigations
- Organize a globalized response internetwork, or enable its development to reduce the eCrime infrastructure footprint
- Identify impeding areas in law/regulation and work with treaty organizations and governments to resolve conflicts with responder imperatives

No matter the model. things that still need work

- Useful data markings
  - Mark sensitive or not-sharable data subsets
- New consumable or supportable metrics
- Legal tweaks in data exchanges
  - Dealing with privacy is important
    - Especially in international contexts
- Sharing more data types in real-time

  CALAGI Polixenia
  - Malware distribution sites
  - Infected systems, C&C
  - Proxies and anonymisers addresses

Our Learned Lessons

- Sharing needs a level playing field
  - This is true for kindergarten; true for adults
  - Everybody signs the data sharing agreement (DSA)
    - What the receiver of the data can do with the data
    - Submittor expectations (resharing, publicity, marking, etc.)
- Data submission/retrieval needs to be easy
  - Nobody gets paid to send you data
    - Or to write the tools to move data
  - And automatic, or at least no human interaction necessary
- Normal operations need to be thought out
  - How do I fix errors & conflicts FAST
  - How to associate submittor feelings to recipient
  - How to get rid of DSA violators

Thank You

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