Internet Security and Resiliency: A Collaborative Effort

Baher Esmat
Manager, Regional Relations
Middle East

MENOG 4
Manama, 9 April 2009

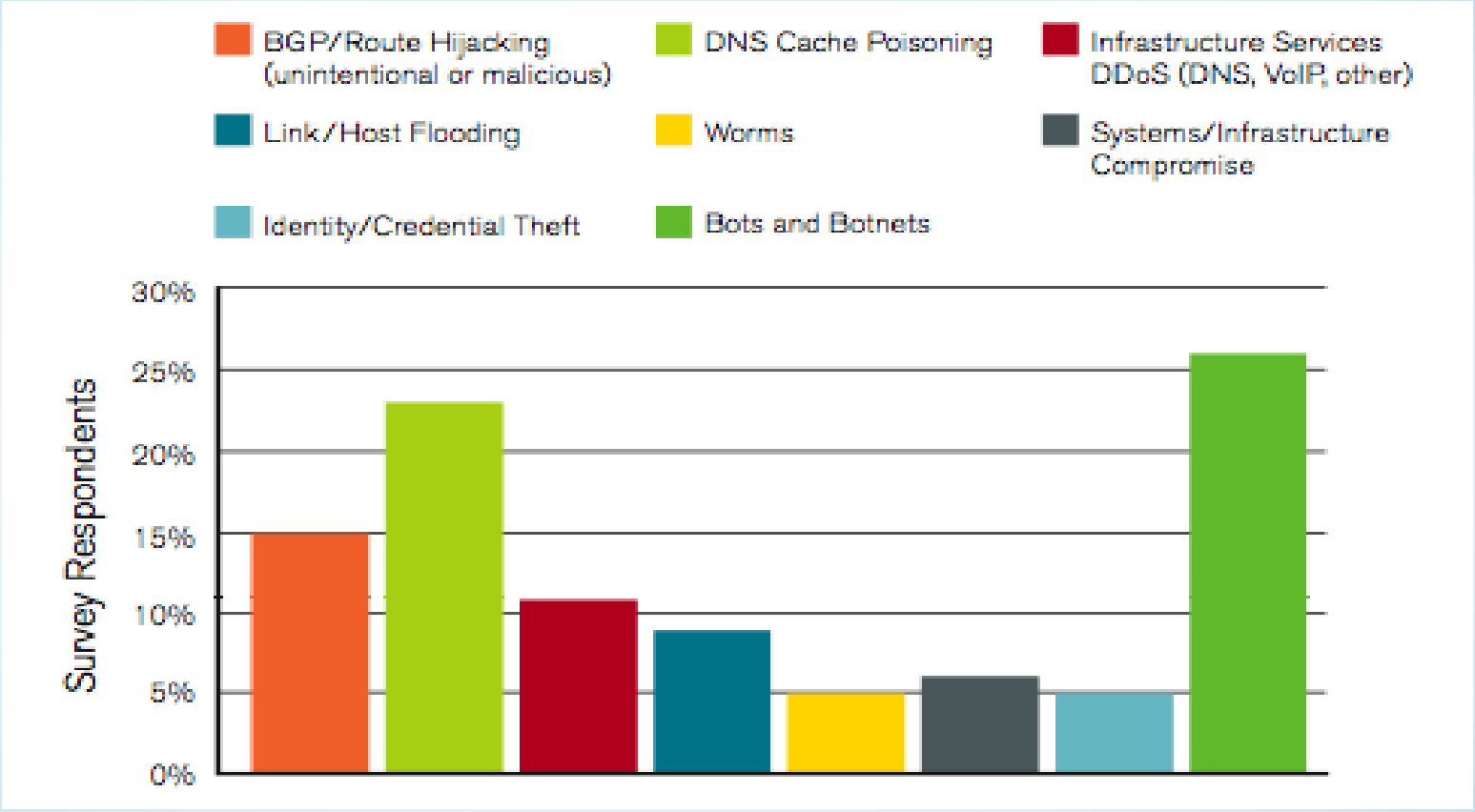
WHAT IS THIS PRESENTATION ABOUT?

ICANN's effort in enhancing security and resiliency of the Internet's unique identifiers

Internet's Threat Landscape

- Combine web, malware, botnets and spam *(Cisco 2008 Annual Security Report)*
- Botnets are becoming more sophisticated and more harmful
  - Almost 10% of computers on the Internet are infected by botnets *(Source: Emerging Cyber Threats Report 2008, Georgia Tech Information Security Center)*
  - From spam and DDOS, to financial fraud and espionage – and could also be "multi-tasking"
  - Techniques to hide (i.e. fast-flux)
- Growth in DDOS attack size – reached 40 Gbps in 2008 *(Source: Worldwide Infrastructure Security Report, October 2008, Arbor Networks)*
- Involvement of criminal organizations in malicious activities
  - 24-hour DDOS attack for $35 *(Source: Global Threat Research Report: Russia, iDefense)*
  - Motives could be commercial or political
- Continuous DDOS attacks against core DNS operations; DNS vulnerabilities (i.e. cache poisoning)

Most Significant Threats



Source: Worldwide Infrastructure Security Report, October 2008, Arbor Networks, Inc.

Risks to DNS

- Continued DDOS attacks against core DNS operations
  - Root servers
  - TLD operations
  - DNS service providers
- Cache poisoning
  - Kaminsky vulnerability
- Registry/Registrar failures
  - Technical
  - Business

Why DNS Security Matters

- Significance of DNS
  - Essential to the effective operation of the Internet
- Managed as a distributed system with diffuse roles and responsibilities
  - User, ISP, Registry/Registrar, root server operator, ICANN
- Range of threats and risks
  - To user, to business, to the whole Internet

ICANN Roles and Responsibilities

- Mission: Coordinate, at the overall level, the global Internet's systems of unique identifiers, and ensure the stable and secure operation of such systems
- Core: Preserve and enhance the operational stability, reliability, security, and global interoperability of the Internet
- Contributor: Identifications of DNS abuse; challenges to Internet security
- Not involved in content control, spam, and areas related to cyber espionage and cyber war

What is ICANN Doing?

- Continued implementation of agreements
  - With Registries/Registrars on Data Escrow, WHOIS, other provisions
- Enhancing and exercising the gTLD registry continuity plan
- Working towards implementing DNSSEC at the root
- Participating in Anti-Phishing Working Groups and other forums to understand effective approaches to identify abuse
- Co-sponsored the first Global Symposium on DNS Security, Stability and Resiliency *(http://www.gtisc.gatech.edu/icann09)*
- ccTLD capacity building initiative in planning and response to disruptions
  - Partnered with ccTLD regional organizations to provide training/ exercise events to develop capacity

A Collaborative Effort

- ICANN's efforts in this area ensure its partnership with other organizations and stakeholders
  - Root server operators; Registries and Registrars community
  - IETF and IAB
  - ISOC
  - RIRs
  - Regional TLD Associations
  - Regional NICs and NOGs
  - DNS Operations, Analysis and Response Center (OARC)
  - Forum of Incident Response and Security Teams (FIRST)
  - Anti-Phishing Working Group
- ICANN is engaging and will continue to collaborate with regional organizations and governments across the globe
- ICANN is also willing to pursue constructive collaboration with any relevant stakeholders to enable security, stability and resiliency activities

ccTLD Security and Resiliency Capacity Building Initiative

Attack and Contingency Response Planning (ACRP)

- Understanding and Assessing Risks to TLD Operations
- Developing a Contingency Plan / Strategy

Registry Operations Curriculum (ROC)

- Three-tier, Hands-on Operations and Security Training
- Cyber Attack Detection, Monitoring, Analysis & Response

Table-Top Exercise (TTX) Workshop

- Techniques for Designing and Running Table-Top Exercises
- Hands-on Planning and Execution of an Exercise

ACRP – Progress To Date

Kuala Lumpur, May 2008

- Prototype with APTLD
- ~ 25 participants

Cairo, October 2008

- ~ 40 participants, 25 ccTLDs
- 4 regions
  - APTLD, AfTLD, LACTLD, CENTR
- ICANN, ISC, and ISOC

Mexico City, February 2009

- ~ 25 participants, 11 ccTLDs
- 4 regions
  - APTLD, AfTLD, LACTLD, CENTR
- ICANN

Upcoming Events

- “Mini” ACRP & SROC, Arusha, Tanzania, 13 – 15 April 09
  - During AfTLD meeting, sponsored by AfTLD
- ACRP Workshop, Nadi, Fiji, 26 – 28 April 09
  - During PITA meeting
- ACRP Workshop, Amsterdam, 11 – 13 May 09
  - Follows RIPE meeting, sponsored by CENTR

Information Sharing

- Bridge the experience gap between ccTLDs
- Engage the ccTLD community to collaborate with each other
- Combined ICANN/OARC effort to create a trusted TLD portal
- Provides access to templates, best practices, lessons learned, forums, etc

Prototype Site:
http://tld-portal.dns-oarc.net

A Recent Event: Conficker C

- Represents the third major revision of the Conficker malware family
  - Previous revisions (A and B) focused on a limited number of domain names
  - Conficker C seeks large number of domain names - 50,000 randomly generated names a day -116 zones of 110 top-level domains
- Collaboration among security, vendor and DNS communities to disseminate information about how the malicious code may seek to leverage the DNS system
  - Conficker Working Group *(http://www.confickerworkinggroup.org/wiki/)*
  - ICANN helped reach out to 110 TLD Registry
- Activation date: April 1st 2009
  - Nothing major was expected to happen
  - More than one million infected computers around the world *(http://www.networkworld.com/news/2009/040309-confickerc-controls-4-of-all.html?page=2)*
  - Cooperation will continue to stop the spread of the worm and block control of the infected computers
- Resources:
  - http://mtc.sri.com/Conficker/addendumC/
  - http://www.f-secure.com/weblog/archives/00001647.html
  - http://confickerworkinggroup.org/wiki/

Conclusions

- ICANN understands its role going forward must include plans and activities related to making the DNS a more secure, stable and resilient environment
- ICANN also recognizes the limits to its role and resources and its strategy in this area plans to rely heavily on partnerships and a wide ranging collaboration

ICANN's Security Team

A group of senior staff focusing on security issues that relate to ICANN and the Internet's Identifier Systems

Greg Rattray, Chief Internet Security Advisor
John Crain, Chief Technical Officer
Geoff Bickers, Director of Security Operations

Thanks!

baher.esmat@icann.org