Protecting High Value Domains

SSAC Public Meeting

ICANN Cairo 2008

What is a high value domain?

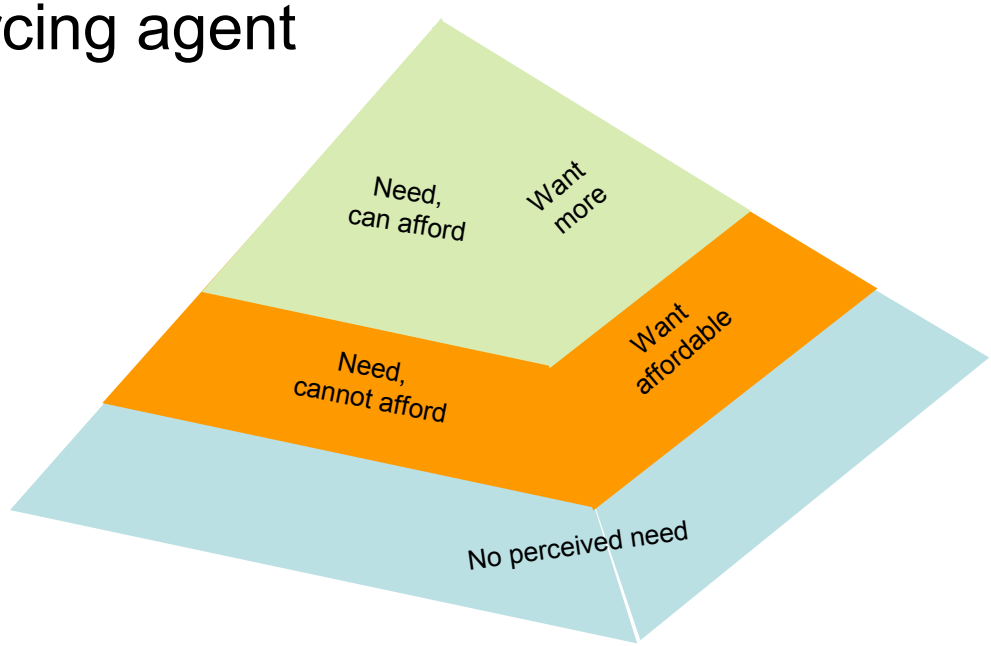
- Working definition: high value domain (HVD)
  - One or a set of names which define an organization's online presence
  - A domain an organization expects to register “forever”, without interruption
  - A name the organization cannot do without!
  - A domain that is an attractive, “high profile” target for hijacking or attacks

Attacks against High Profile, High Value Domains

- Comcast.net hijacking
  - Attacker impersonated Comcast technician, convinced registrar support staff to reset account password
  - Attacker used DNS hosting to modify zone, redirected traffic to web defacement, interrupted web mail services
- ICANN
  - Attacker gained control of domain account via ICANN's registrar's systems
  - Attacker redirected traffic to protest web page
- Paypal.com
  - Ebay (parent company) sought help from registrar to take down phishing domains. Paypal.com taken out of service as a result of registrar error

Why is SSAC interested in HVDs?

- Registrars are no less prone to errors than other businesses
- What curative measures could prevent repeat incidents involving other high profile, high value customers?
- Are protective measures available from registrars, registries, and the registrant's IT or outsourcing agent
  - Sufficient?
  - Available to as broad a range of registrants as need them?



Scope of SSAC Study

- Conduct interviews with
  - Attack victims (registrants and registrars)
  - Registrars that offer extra protective measures for domain name portfolio holders
  - Medium-sized and large organizations with HVD portfolios
- Examine existing and candidate measures to
  - Protect against unauthorized access
  - Protect against unauthorized transfers
  - Protect against internal staff or process errors (and bad acts)
  - Provide avoidance mechanisms to prevent non-renewal or deletion of domain name
  - Protect against DNS configuration abuse
  - Maintain registration information accuracy and integrity

Initial Findings

- Two registration service models exist today
  - Basic registration services
    - Oriented to consumers
    - Emphasis on high transaction rates
    - Automated processes
    - Human intervention for exception handling
  - Extra (premium) protection services
    - Protective measures are part of a broad package that emphasizes brand equity protection
    - Emphasis on handling individual transactions with low probability of error
    - Human assistance or confirmation is often mandatory

Models for Managing HVDs

- Asset and risk management
  - Domain names are assets
  - Customers must consider threat model
- Provisioning management
  - Domain names are critical to network operations and business applications
  - Primary operations are {add, drop, change}
- Primary objective of customers with HVD is protection against loss and misuse of assets
  - Add (to portfolio) is frequent, drop is rare
  - Change may occur frequently
    - Was the change expected or is it indicative of an attack?

Protecting access to domain portfolio

- Possible measures for the registrant
  - Identify multiple portfolio administrators
  - Include contacts in Employee Resource Management process
  - Self-impose a password change policy
  - Periodically verify contacts
  - Use a separate domain for registration contact email accounts (role accounts) from domains used for other business purposes

Protecting access to domain portfolio (2)

- Possible measure for registrars to offer (business opportunities not policy recommendations)
  - Enforce multi-factor authentication
  - Require multiple, unique identities as contacts in registration records
  - Require confirmations of change from multiple contacts using email, possibly via media other than email
  - Notify multiple contacts subsequent to implementing a change (possibly different or broader set than parties with change authority)

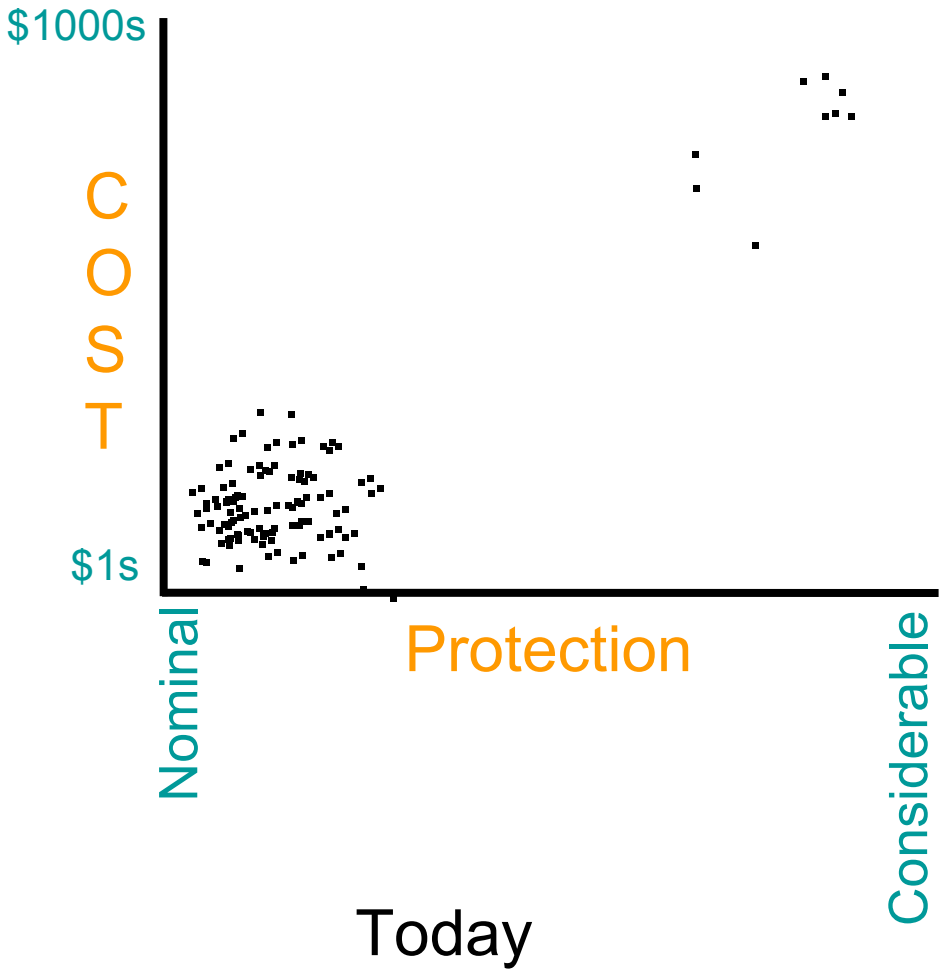
Preventing loss of domains (transfer, non-renewal, deletion protection)

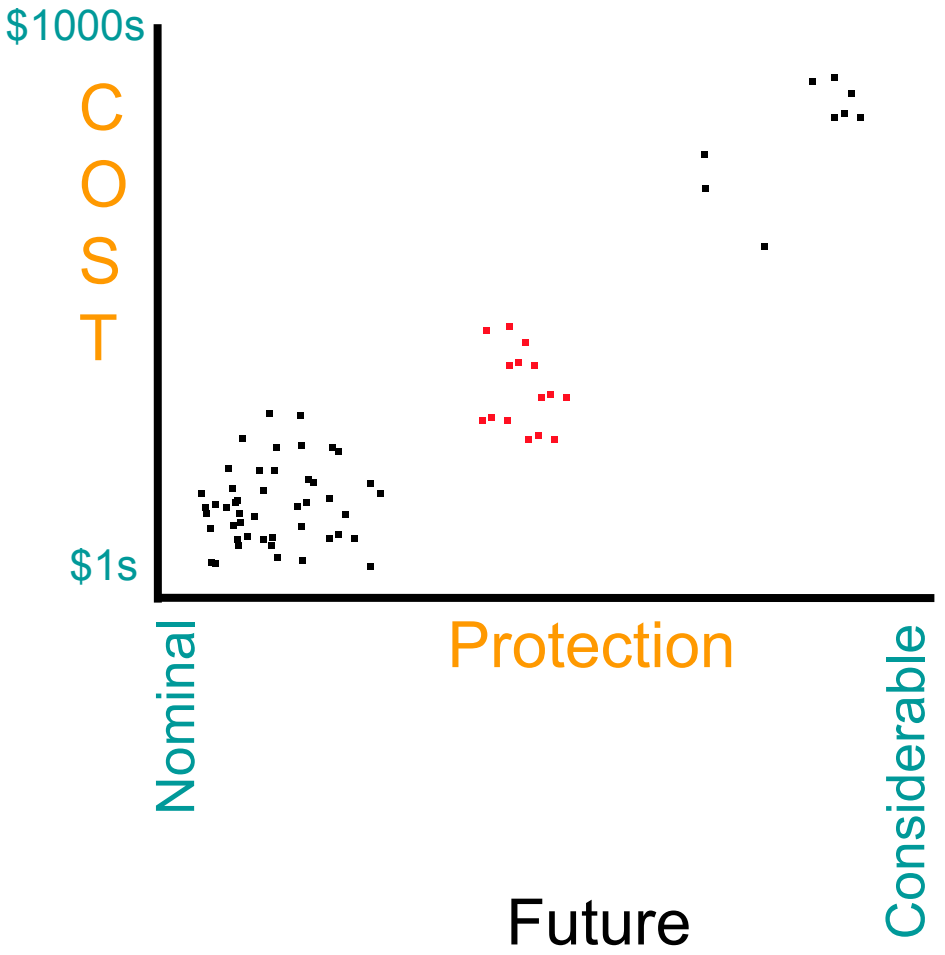
- Possible measures for the registrant
  - Proactively monitor domain name registration
  - Treat transfer attempts as a security event (check and re-check)
- Possible measure for registrars to offer
  (business opportunities not policy recommendations)
  - Registrar lock
  - Issue transfer and non-renewal notifications to multiple contacts via multiple delivery methods
  - Require multi-factor proof of identity and role from registrant, administrative and technical contacts
  - Require confirmations of change from multiple contacts using email, possibly via media other than email
  - Safeguards against internal threats or processing error

Protecting DNS configuration

- Possible measures for the registrant
  - Monitor DNS configuration activity
  - Maintain DNS configuration history for domains
- Possible measures for the registrar
  - Require multi-factor authentication for DNS changes
  - Require confirmations of change from multiple contacts using email, possibly via media other than email
  - Deliver notifications to multiple contacts when changes performed
  - Monitor DNS changes for anomalies or abuse
  - Safeguards against internal threat or configuration error

Room for a 3rd business model?





Next steps

- Continue to interview HVD owners and registrars who offer extra protection services
- Interview small and medium-sized businesses who could benefit from affordable extra protection services
- Discuss feasibility of broader range of protective measures "offerings" with registrars and resellers
- Report on findings