Name Collision Analysis Workflow

As of 13 April 2022

Goals of the Workflow

- To ensure that name collisions can be assessed
  - Requires name collisions to be visible, if they exist
- To ensure there is an opportunity for a mitigation or remediation plan to be developed *and assessed*
  - ~~Requires the root cause of name collisions be investigated~~
  - ***Requires investigating the root cause of name collisions such that a mitigation or remediation plan (or both) can be developed and assessed***

Critical Diagnostic Measurements

- Query Volume
- Query Origin Diversity
    - IP distribution
    - ASN distribution
- Query Type Diversity
- Label (at least second level) Diversity
- Other characteristics
    - Open Source Intelligence (OSINT) of string (and labels) used

- *Case Study focused on DNS queries*
    - *Queries other than DNS should be considered*

Name Collision Analysis Workflow

PREVIOUS:

1. Applicant prepares initial assessment of collision risk
2. Applicant submits application
3. Active Collision Assessment
4. Enhanced Controlled Interruption
5. Board gets final package for review

REVISED:

1. Applicant reviews public data
2. Applicant submits application
3. Passive Collision Assessment
4. Active Collision Assessment
5. Board gets final package for decision

1. Applicant Reviews Public Data

- Objective: Applicant gets an indication of the presence of name collisions
  - This is not definitive **of acceptance or rejection of application**
  - If collisions are present this is likely indicative of **the need for** further scrutiny
  - Roughly equivalent to the publication of a "do not apply" list

- Assumes passive data publicly available
  - ICANN will likely be source of passive, factual data
- Likely DNS-based only
  - ICANN has this readily available from I-root

- Applicant makes determination *(assessment?)* about the data
- Should applicant provide ~~info~~ their assessment as part of application?
- *Should a third party be able to submit data or an assessment?*
  - **Consider - should applicant be able to ask TRT for high impact assessment?**

2. Applicant Submits Application

- *Out of scope for NCAP*

3. *Passive Collision Assessment*

- Goal is to make name collisions visible
  - Pull from throughout the DNS infrastructure
  - Visibility allows for a more accurate assessment of impact and potential harm
- Passive provides very low risk to clients - not disruptive to existing behavior
- ***Technical Review Team assesses risk of Passive Collision Assessment***
- Execute with a "Trial Delegation"
  - Required of all applications
  - Proposed TLD added to root zone ***for a prescribed period of time***
  - Deploy a TLD authoritative service with "no content", i.e., "no resource records"
  - *Deploy ad-based measurement system?*
  - Collect CDMs
- Assess risk of name collisions
  - ***(Both Applicant and?)*** Technical Review Team (TRT) review usage of TLD and assess
  - Review the risk of the impact of delegation based on volume and diversity of CDMs
- Initial Risk Assessment - ***(both Applicant and?)*** TRT
  - Influence decision regarding need for mitigation or remediation

3.1 Initial Risk Assessment

- Completed only by Technical Review Team?
  - Neutral, highly skilled team
- Refocus to assess high impact?
  - Proposal - anything "above" top X% of publicly available data
  - These become special case - manual detailed technical review
  - High probability of rejection
- All other applications must complete Active Collision Assessment?
- Must select appropriate Active Collision Assessment
  - Proposal - notification is minimum requirement
    - Proposal - anything below bottom Y% requires only minimum
  - Selection of other protocols?
    - HTTP* (web)
    - SMTP* (email)
    - Discovery services

4. Active Collision Assessment

- Goal is to support preparation of a mitigation or remediation plan (or both)
  - Seek additional data in support of investigating root cause of name collision
  - Required based on results of "Initial Risk Assessment"
- Active is a risk to clients because it is disruptive to existing behavior
- Execute with a "Trial Delegation"
  - Proposed TLD added to root zone
  - Deploy a TLD authoritative service *for a prescribed period of time*
    - Include real wildcard IP addresses (IPv4 and IPv6)
  - ***Collect CDMs - discuss collection of additional protocol activity***
- Assess risk of name collisions
  - ***(Both Applicant and?)*** Technical Review Team (TRT) review usage of TLD and assess
  - ***Both*** review the risk of the impact of delegation based on volume and diversity of CDMs
  - ***Both*** develop a risk assessment
- Applicant investigates root cause of name collisions
  - Applicant develops either or both a mitigation plan and a remediation plan
- Applicant submits addendum to application
  - TRT adds an assessment of addendum for Board consideration

5. Board Reviews Complete Application

Discussion