

Name Collision Analysis Workflow

As of 27 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 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*

Technical Review Team

- Need to be independent and neutral experts
- Technical expertise must include:
 - Knowledge and understanding of DNS specifications, provisioning, and operation
 - Knowledge and understanding of Internet infrastructure
 - Where it intersects with the DNS
 - Where it intersects with the usage of the DNS by applications and services
 - Ability to review and understand data collected (e.g., CDMs)
 - Ability to understand and assess risk

“High Risk” Label

- Is it possible to objectively identify a “high risk” label?
 - If not, is it possible to provide guidance to identify a “high risk” label?
- Is it possible to objectively identify “do not apply” labels?
 - If not, is it possible to provide guidance to identify “do not apply” labels?

- Work in progress

Name Collision Analysis Workflow

1. Applicant ~~reviews public data~~ selects label
 - a. Applicant may request TRT initial risk assessment before application submission
2. Applicant submits application
3. Passive Collision Assessment
 - a. TRT initial risk assessment to identify “high risk” labels
 - b. If permitted, conduct trial delegation
 - c. TRT second risk assessment to identify “high risk” labels and select ACA method
4. Active Collision Assessment (ACA)
 - a. Conduct select trial delegation
 - b. TRT final risk assessment to determine need for mitigation or remediation plan,
 - c. If necessary, application develops mitigation or remediation plan
 - i. TRT assesses mitigation or remediation plan(s)
5. Board gets final package for decision

1. Applicant Selects Label

- 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
- Indication of the presence of name collisions?
 - Assumes passive data publicly available
 - ICANN will likely be source of passive, factual data
 - Is this even possible??
- Should applicant be able to request TRT Initial Risk Assessment
 - Perhaps only under “high risk” conditions?

2. Applicant Submits Application

- *Out of scope for NCAP*

3. *Passive Collision Assessment*

- Goal is to make name collisions visible
 - Pull data from throughout the DNS infrastructure
 - Visibility allows for a more accurate assessment of impact and potential harm
- Passive provides very low risk to clients - minimally disruptive to existing behavior
- Technical Review Team conducts Initial Risk Assessment to identify “high risk” labels
 - “High risk” labels become a “special case”
- Conduct a “Trial Delegation”
 - 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
- Technical Review Team conducts Second Risk assessment
 - To identify “high risk” labels - if so, becomes “special case”
 - To select Active Collision Assessment method

3.1 Initial Risk Assessment

- Completed only by Technical Review Team
 - Neutral, highly skilled team
- Refocus to assess high impact
 - These become special case - manual detailed technical review
 - High probability of rejection
- Must select appropriate Active Collision Assessment
 - Proposal - notification is minimum requirement
 - Are there labels for which only notification is required?
 - 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