An Alias Resolution Service for the Community

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talk goals

- give heads up to community
  - work in progress
  - early stages of implementation
- solicit feedback and requests
- look for beta testers
alias resolution

- identify which interfaces belong to the same router

- useful for ...
  - identifying border links (bdrmap-IT)
  - producing router-level and pop-level topology
    ‣ understanding full complexity of AS peering arrangements
    ‣ redundancy and resilience of ASes
  - identifying traceroute path anomalies/artifacts
    ‣ Luckie et al., "A Second Look at Detecting Third-Party Addresses in Traceroute Traces with the IP Timestamp Option"
  - decipher MDA traceroute results
project goals

- provide a community service for performing alias resolution
  - large-scale: thousands to millions of targets

- focus on techniques that aren't practical for researchers
  - complex software
  - high infrastructure and/or CPU requirements
  - high operational costs dealing with host/network failures
• re-use knowledge, experience, expertise
  – strengths, weaknesses, nuances, and pitfalls of each technique
  – best practices
  – for example, Mercator has a lot of false positives at Internet scale $O(\text{millions of targets})$
    ‣ unpublished work with Ken Keys: algorithm to prune false positives

• integrate multiple techniques, data sources, and tools
  – challenging to combine results with different accuracy
  – example tie-in: query for traces by router in Henya
  – seed aliases from one technique into others; for example, MIDAR to kapar
techniques

● planned
  – MIDAR: check IPID-based monotonic bounds test

● possibly
  – Matthew’s DNS-based technique
  – prespecified timestamps (Justine Sherry)
  – iffinder: look for common source address in responses (Mercator)
  – speedtrap: look for similar IPv6 fragment identifiers
  – kapar: APAR + extensions (passive technique; need traceroute paths)
user interfaces

- API over HTTP
  - for example, submit targets with POST request
  - query for aliases

- web interface (for humans)
  - paste targets into a text area
  - upload a file with targets
  - query for aliases with web form
querying

- queryable archive of all resolved aliases
  - aliases from past ITDK runs
  - results of user-submitted runs

- sample queries:
  - show which submitted targets are aliases of each other
  - return all known interfaces for a given target
  - show all alias sets (that is, routers) in a given prefix/AS?
architecture

web interface

database

queries

aliases

scheduling queue

targets

targets

Ark monitors

Thanks! Potential user? ark-info@caida.org