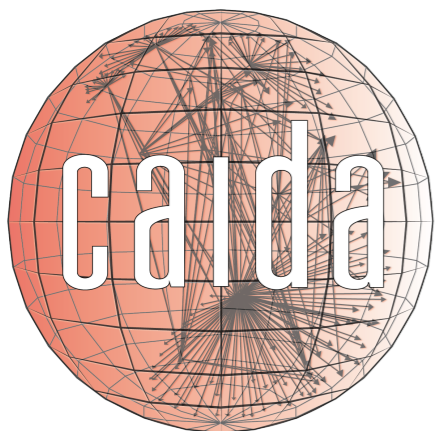


# Alias Resolution APIs

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# alias resolution

- identify which interfaces belong to the same router
- useful for ...
  - studying redundancy and resiliency of network paths
  - identifying traceroute path anomalies/artifacts
  - producing router-level and pop-level topology



# project goals

- provide a community service for performing alias resolution
- 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



# service APIs

- standard web APIs
  - API key for authentication
- two APIs: *query* and *on-demand execution*



# query API

- query MIDAR aliases from Internet Topology Data Kits (ITDK)
  - 14 ITDKs from April 2011 to Jan 2019
- 3 supported queries: track, find, group



# query: *track*

- **track** *address*

- "track a target across datasets over time"
- list all matching (dataset, alias set) pairs for a target address
- example: `track --all 173.214.129.193`

```
# dataset_id, set_id, dataset_name, timestamp*, datetime
12 3316 itdk-20170828-midar 1503878400 2017-08-28T00:00:00
13 1000 itdk-20180301-midar 1519862400 2018-03-01T00:00:00
```



# query: *find*

- **find** *address*

- find all aliases of the target address in given datasets
- example: `find --dataset=12 173.214.129.193`

```
# dataset_id, set_id, dataset_name, timestamp*, datetime, addr_count, addresses
12 3316 itdk-20170828-midar 1503878400 2017-08-28T00:00:00 15
64.141.10.85 64.141.11.73 64.141.11.145 64.141.17.25
64.141.127.105 64.141.127.109 69.196.87.193 173.214.129.193
208.118.88.217 208.118.88.249 208.118.89.137 208.118.91.9
208.118.91.217 208.118.91.237 208.118.95.77
```



# query: group

- **group** *address<sub>1</sub> address<sub>2</sub> ...*
  - group given addresses into aliases based on known alias sets
  - example: `group --dataset=itdk-20170828-midar 64.141.10.85 173.214.129.193 208.118.91.237 208.118.95.77 65.19.143.137 65.49.19.161 205.166.205.22`

```
# dataset_id, set_id, dataset_name, addr_count, addresses
12 3315 itdk-20170828-midar 2 65.19.143.137 65.49.19.161
12 3316 itdk-20170828-midar 4 64.141.10.85 173.214.129.193
208.118.91.237 208.118.95.77
```





# execution API

- two types of MIDAR executions
  - *local*: probe from one machine locally at CAIDA
  - *distributed*: probe from multiple machines around the world
  - type automatically chosen based on target set size
- user uploads a file of addresses
  - local runs: < 25k addresses
  - distributed runs: < 100k addresses (soft limit)
- get back alias sets



# future work

- **query service**
  - support offline queries: download ITDK alias data and command-line tool
  - provide human-oriented web interface
- **execution service**
  - support parallel execution better



# references

Thanks! Potential user? [ark-info@caida.org](mailto:ark-info@caida.org)

query API documentation:

<https://www.caida.org/projects/ark/vela/aliasq-api/>

MIDAR execution API documentation:

<https://www.caida.org/projects/ark/vela/midar-api/>