The Next Generation of Looking Glass Querying Delegation Platform

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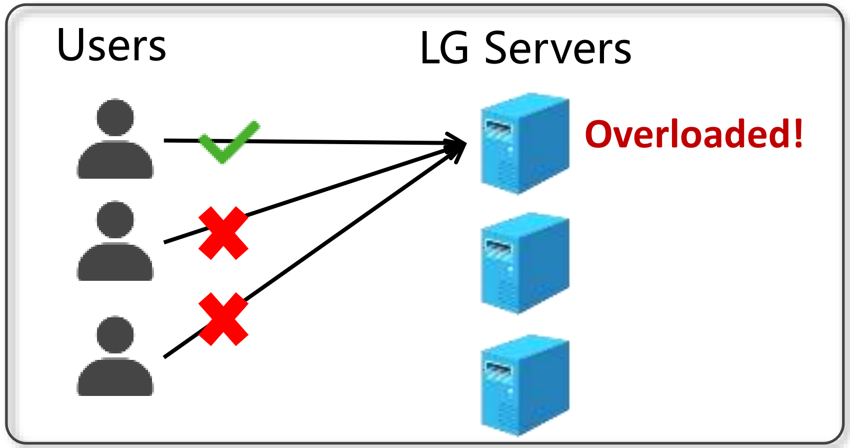
Background

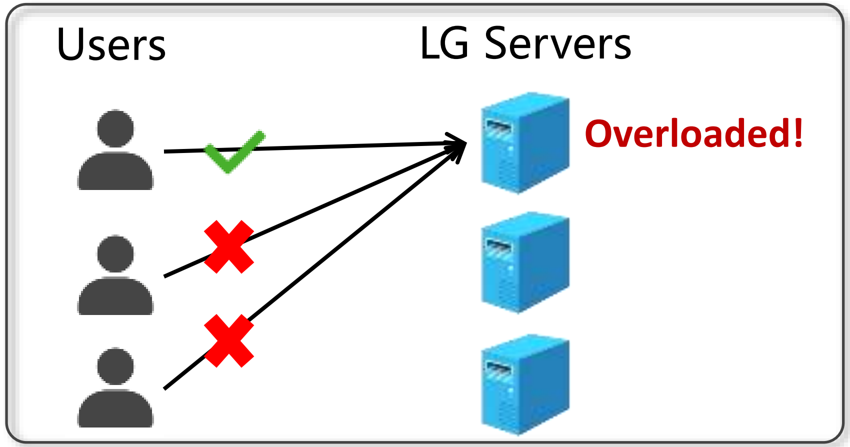
- Many Internet Service Providers (ISPs) or Internet eXchange Points (IXPs) have deployed Looking Glass (LG) servers
  - An LG server can provide probing data from one or more routers (i.e., vantage points, or VPs)
- LGs have been widely used in various network measurement and monitoring research, such as BGP hijacking detection and BGP route collection
- **Problem:** the current usage of LG servers is anarchic, posing extremely negative effects on both LG servers and users
  - For LG servers:
    - Easily be **overloaded** due to the uncoordinated queries, so they deploy query frequency limits to protect themselves
  - For Users:
    - Use LG servers at excessively low frequencies due to query frequency limits, **increasing the task completion time**



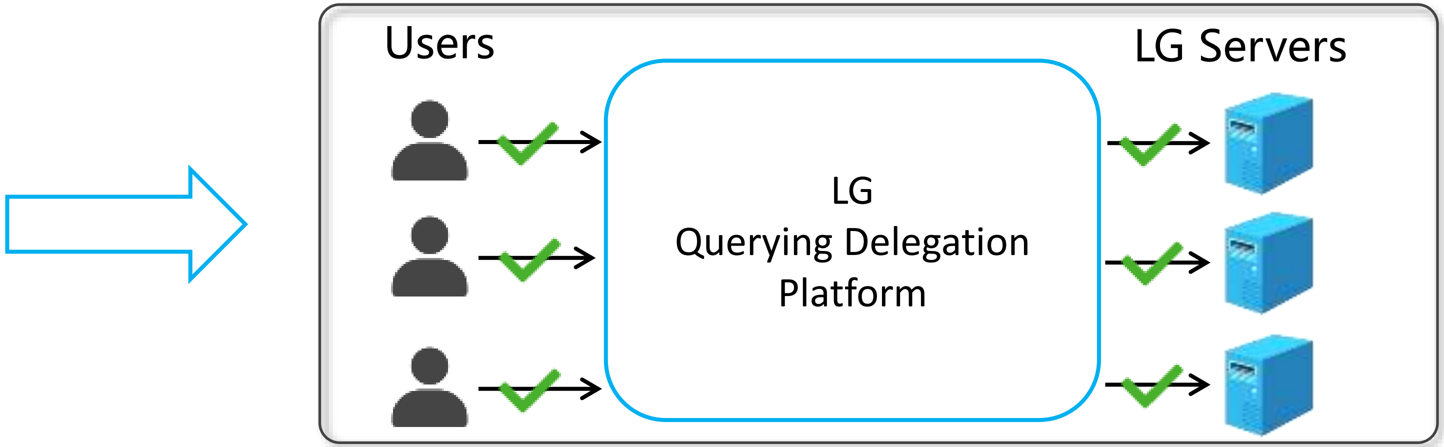
Uncoordinated queries

Goal

- **Goal:** Propose a system that can effectively minimize the completion time of user queries without causing LG server overload
- Key features
  - A querying platform: delegate user queries to LG servers
  - A scheduling module: schedule user queries to available LG servers



Uncoordinated queries



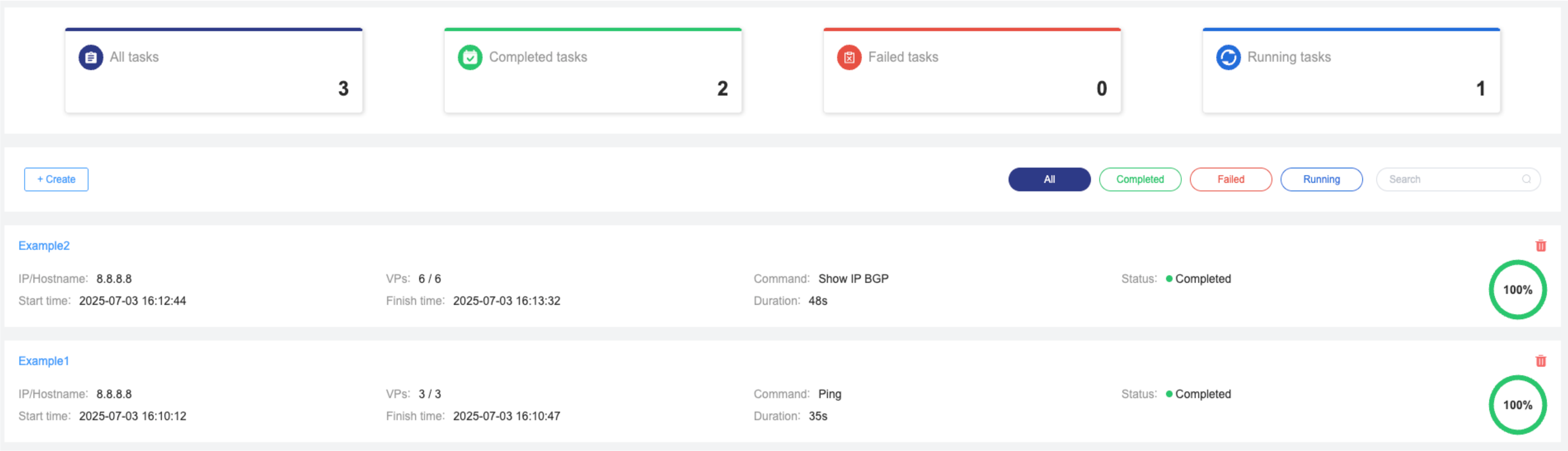
Coordinated queries

Preliminary LG Querying Website

- Our preliminary LG querying website is now available for public use
  - ✓ Aggregate 72 LG servers and 272 LG VPs
  - ✓ Support Ping, Show IP BGP, and Traceroute commands
  - ✓ Enforce access control policies to prevent abuse
  - × Does not support scheduling user queries to available LG servers
- URL: https://ki3.org.cn/#/lookingGlass

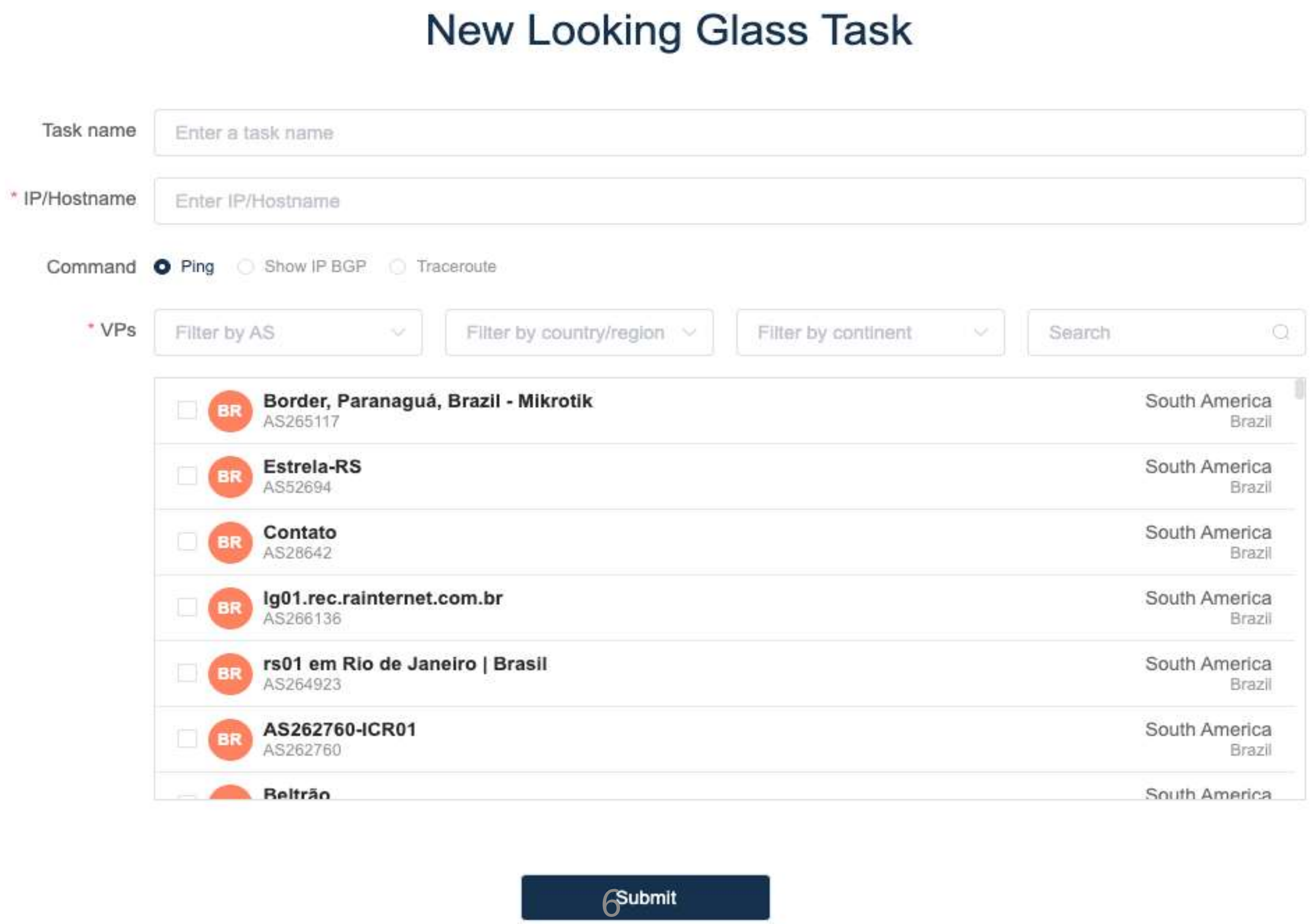
Preliminary LG Querying Website

- Task overview page
  - Contains all the querying tasks user creates
  - Records the progress of each task



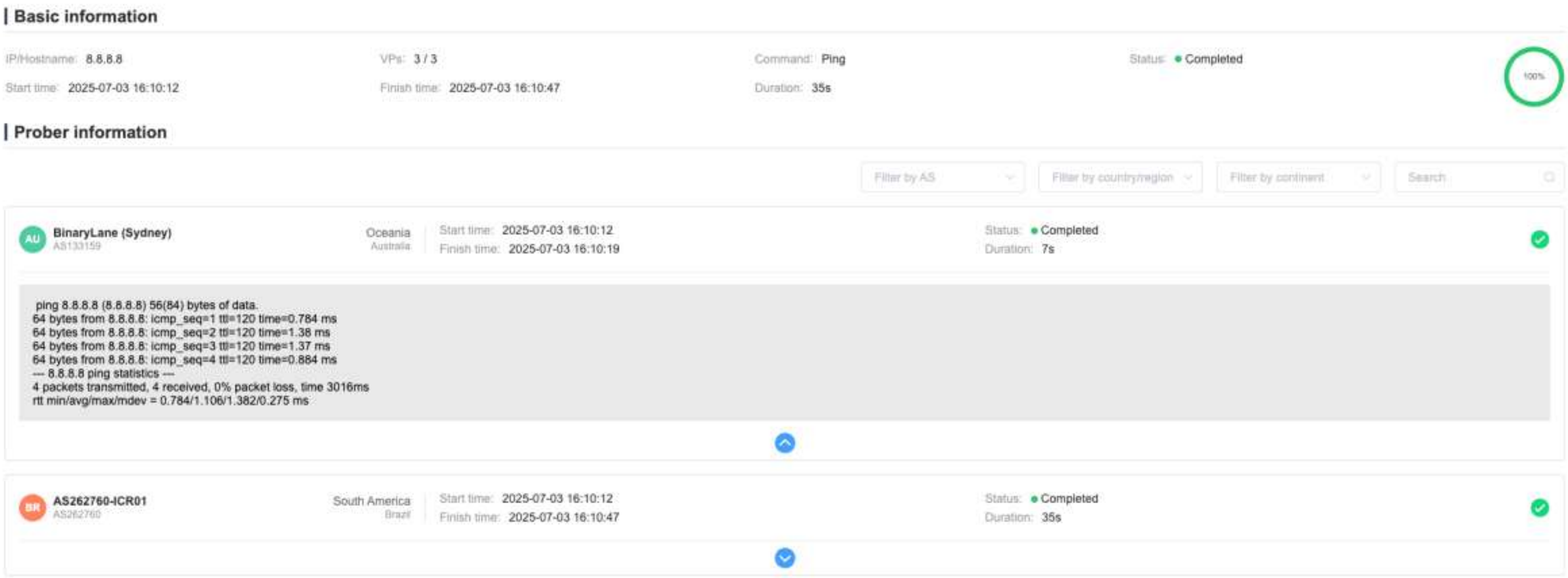
Preliminary LG Querying Website

- Task creation page
  - Provides multiple LG VPs for access and three popular probing commands



Preliminary LG Querying Website

- Task result page
  - Presents the querying result of each LG VPs for one querying task



Future Research Directions

- Understand the root cause of the anarchy based on user queries
- Design the scheduling algorithm to improve the efficiency of LG querying
- Implement the next-generation Looking Glass Querying Delegation Platform

Welcome to use our preliminary LG querying website for research or network diagnosis!

Thanks