

NetViews: Dual Plane Internet Monitoring in Real Time.

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Introduction

- Goal
 - Give network operators the ability to monitor multiple prefixes and networks on multiple planes.
- Approach
 - Leverage real time BGP update information to visualize AS-Level paths on a geographical map.
 - Utilize active measurements to obtain forwarding paths back to the subscribed source.



Dual Plane Motivation

- AS connectivity graphs may not tell the whole picture.
 - Loops on the forwarding path
 - Border routers hiding intra network problems.
- Router level graphs can be tricky to maintain.
 - How often do you probe?

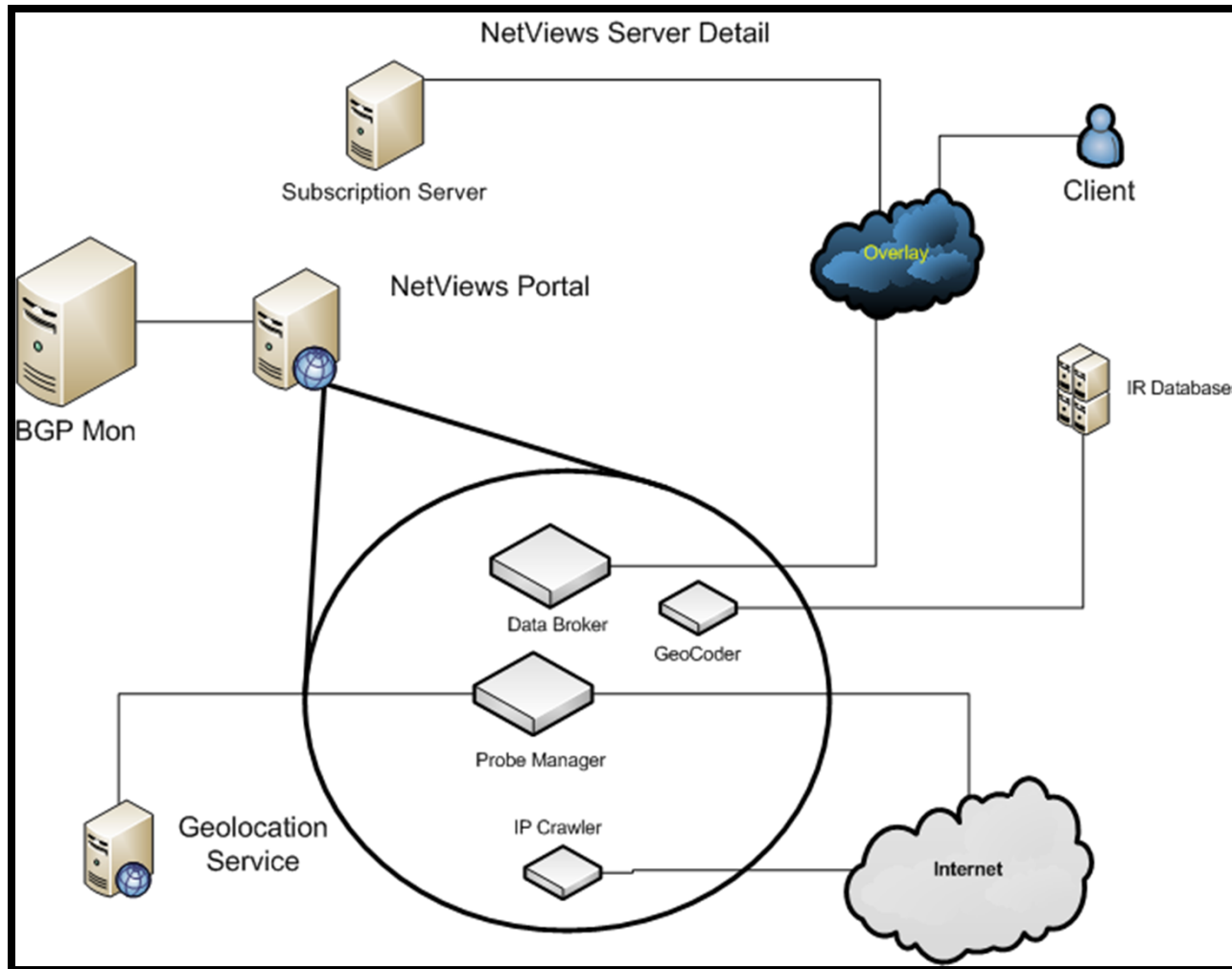


Data Sources

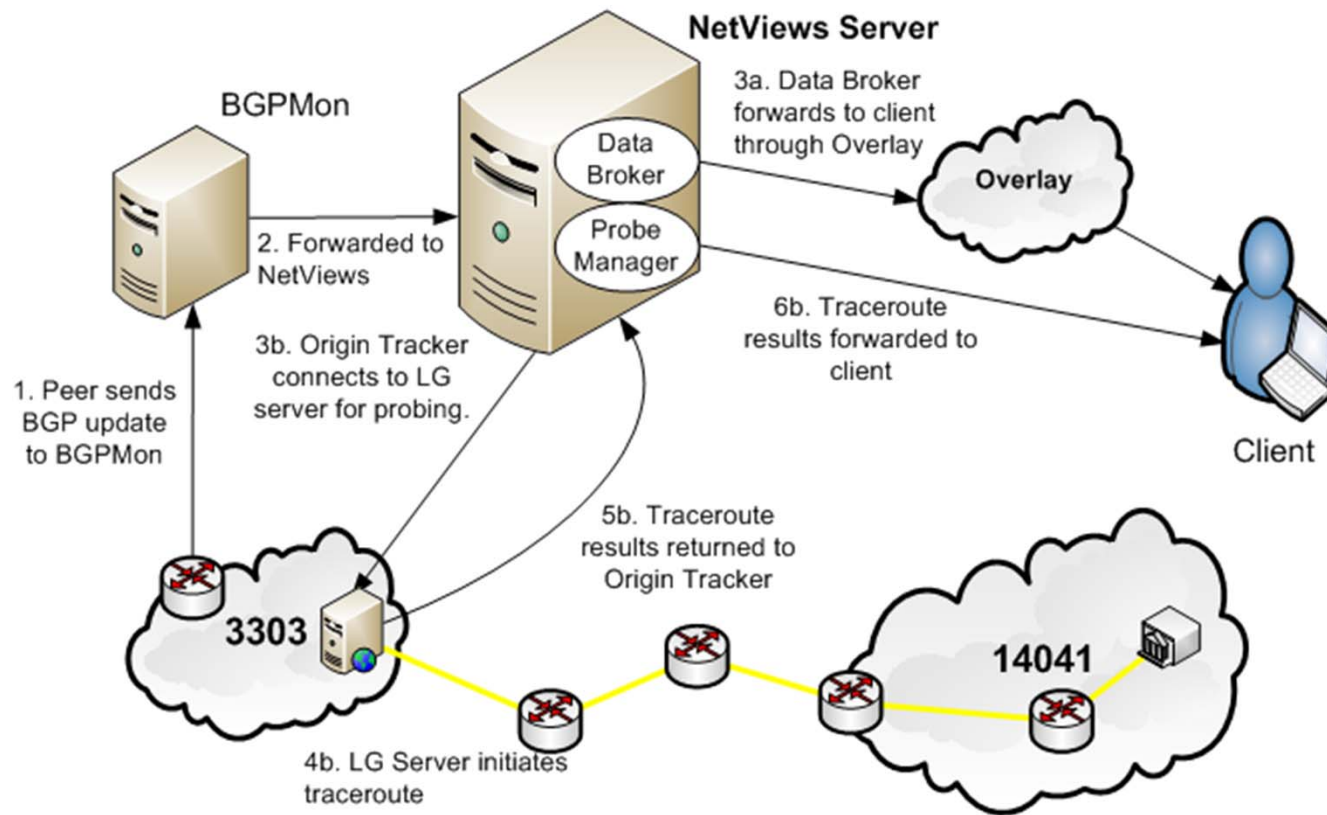
- Colorado State's experimental BGP collection system **BGPMon**.
- Looking Glass servers located within peer networks.
- Route Registries (ARIN, RIPE, etc.)
- Geolocation Services (DigitalEnvoy NetAcuity)



Architecture



AS Origin Tracking



Demo



Addressing Scalability Issues

- Possibly thousands of BGP updates per minute may need to be forwarded to hundreds or even thousands of clients.
 - Clients subscribing to BGP updates from specific prefixes or networks use normal TCP connections.
 - Clients wishing to subscribe to all prefixes (ie “/0”) join an overlay network to distribute load between clients.
 - In future, we will have overlay networks form dynamically when the number of client subscribed to a prefix grows beyond an arbitrary threshold.



Challenges and Future Work

- Find a scalable platform for running traceroute measurements other than legacy looking glass servers.
- Improve graphical presentation to make the interface convey information easier and be more intuitive.
- Stress test Databroker to determine bounds on performance.
- Integrate our active measurement module and its user interface.



People

- Primary Researcher - Dr. Lan Wang
- Lead Developer - Ernest McCracken
- Supporting Developers - Roman Birg, Gus Sanders.



Acknowledgements

