**Thesis M.Sc.**

IDP

Influence of BGP Community Attributes on Routing and Internet Traffic

Motivation

The Border Gateway Protocol (BGP) is the de-facto inter-domain routing protocol. Community attributes are a BGP extension which allow to attach additional information in the form of key-value pairs. BGP communities can be used for informational (e.g. tagging) and action (e.g. prepend, blackhole) purposes. Action communities directly influence routing decisions and as a result impact traffic.
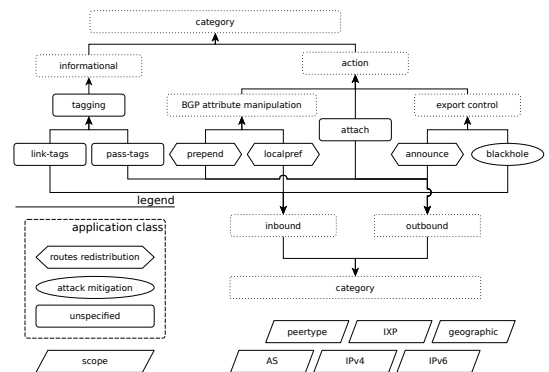
In this thesis you will design a system aimed at uncovering correlations between BGP communities and changes in the routing topology (BGP), traffic characteristics (flow data), and reachability and latency information (active measurements). We will first collect BGP community data from the IXP's route server. Then we analyze the communities and correlate action communities to changes in the network. These changes can manifest through changes in the BGP topology (e.g. route traverses different ASes to destination prefix) or traffic characteristics (e.g. change in amount of traffic to prefix). Additionally, we can provision active measurements to detect alterations in reachability or latency.

Your Task

- Design scalable implementation to deal with data at IXP-scale
- Collect BGP community data from IXP route server
- Efficiently store and classify communities
- Evaluate community usage at IXP peers
- Collect routing and traffic information to be correlated with BGP communities
- Conduct active measurements
- Correlate changes in BGP communities with routing changes, traffic statistics, and active measurements

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