

Inter-Domain Routing

The Internet is an interconnection of independent networks called **Autonomous Systems (ASes)**

The **Border Gateway Protocol (BGP)** is the de facto inter-domain routing protocol used on the Internet

With BGP, the way in which the Internet works is split in the control and data planes

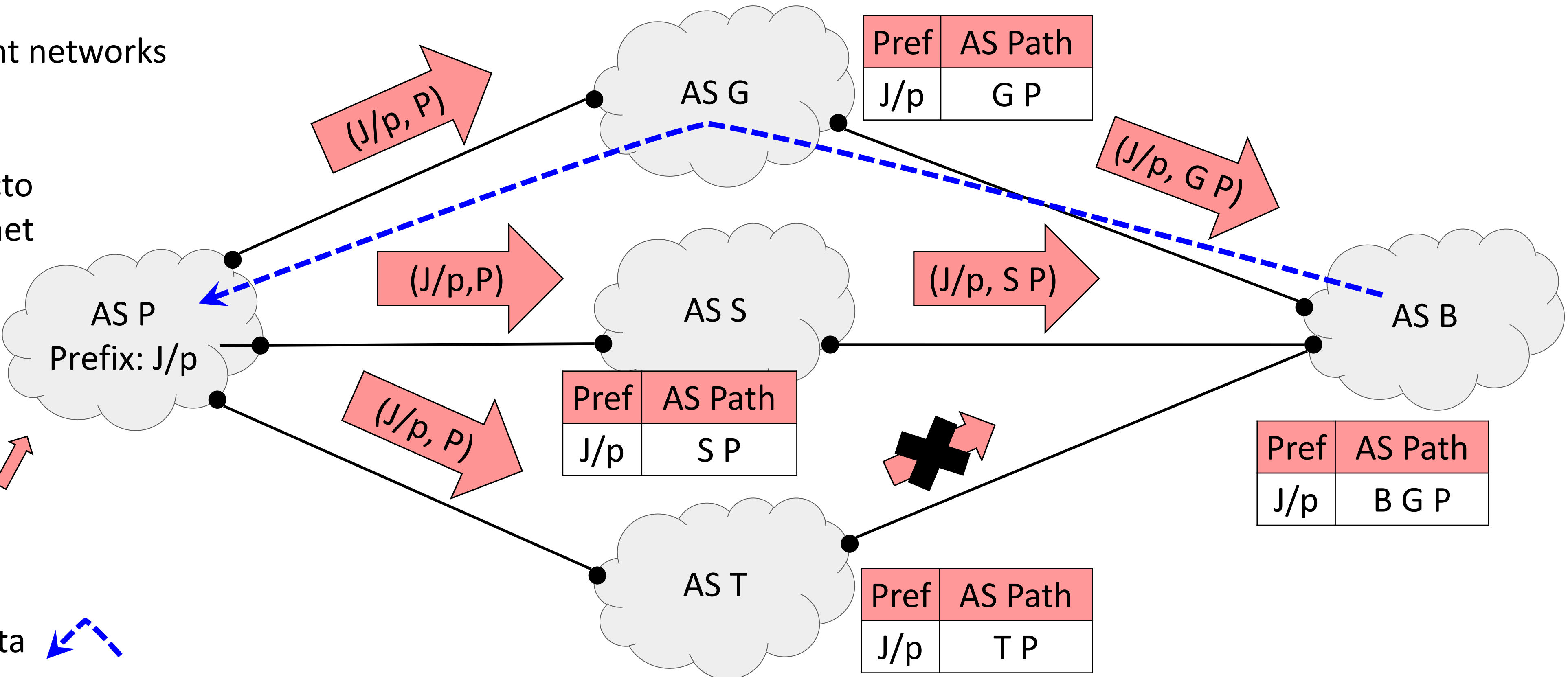
Control Plane

Advertisement of prefixes and paths

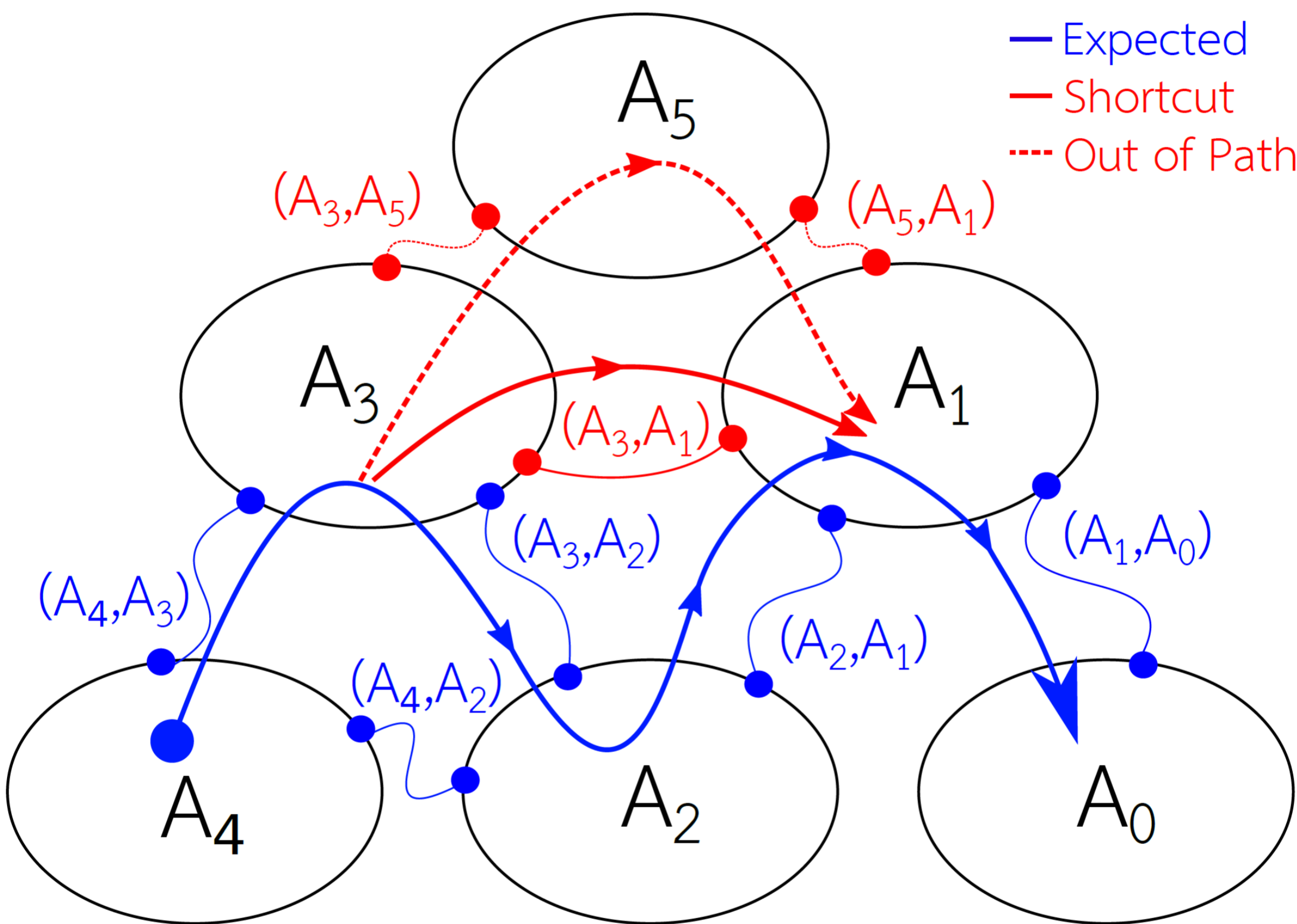
Computation of best paths

Application of policies

Data plane: Forwarding of packets containing data



Problem Statement & Objective

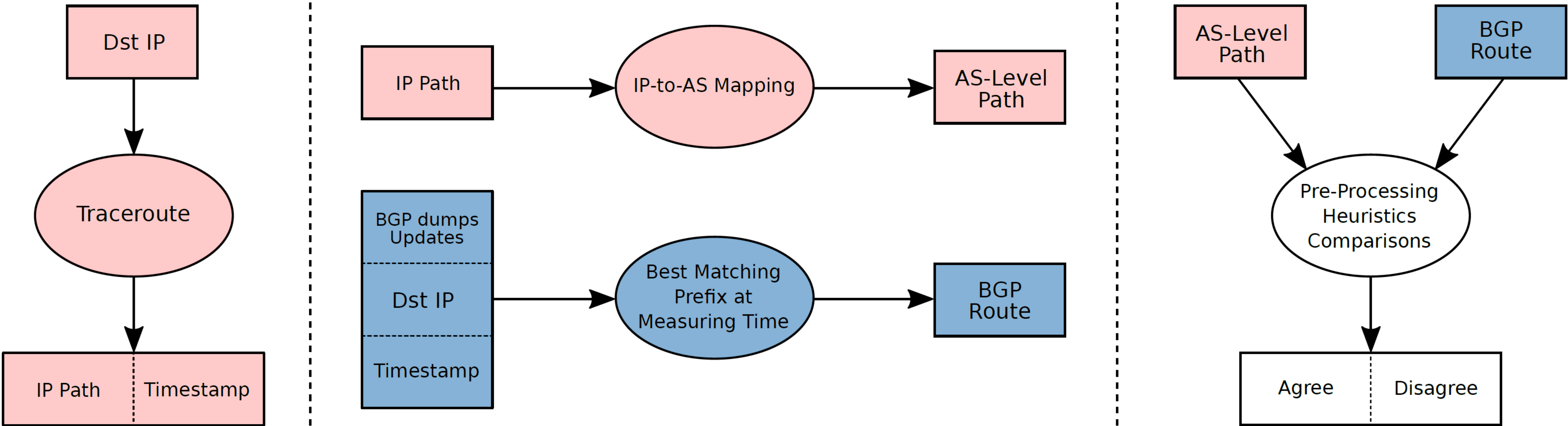


Autonomous systems may have incentives to manipulate the BGP routes they advertise in order to attract or reject traffic

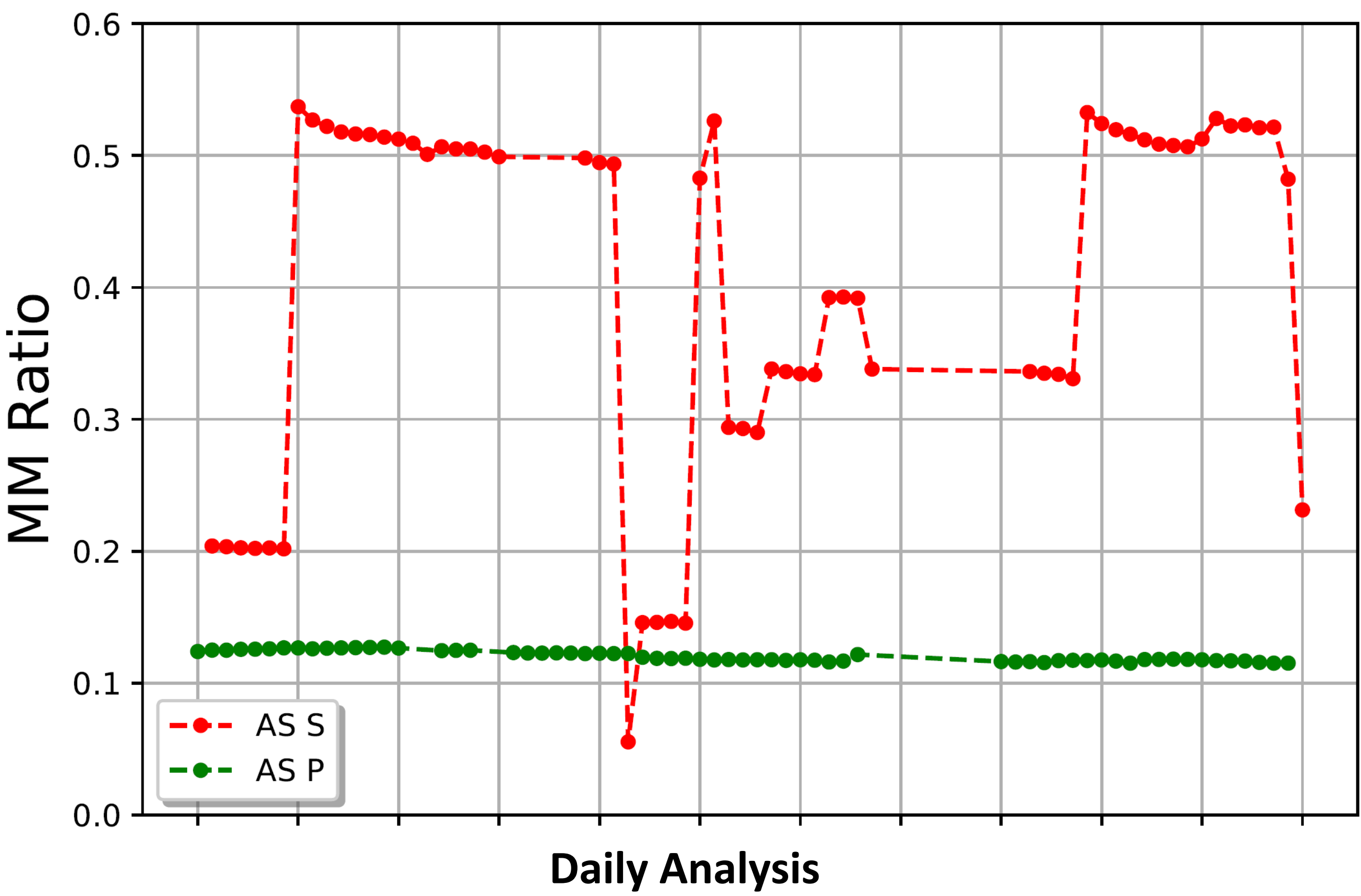
There are no means to tell if packets are following a path (**DP**) that actually agrees with the one that had been advertised (**CP**)

- We aim to ...
- Quantify the amount of mismatches (MMs) that can be observed on the Internet
 - Understand if there is an underlying cause that produces these disagreements
 - Develop a protocol that secures the inter-domain routing by exposing liars

Methodology: A daily Analysis



Results & Conclusions



Our results, carried out on different measuring points, suggest that ...

- MMs occur on the Internet at concerning rates (>10%)
- Measuring points could be clustered based on the different patterns of the variance of MMs in time
- Most of the MMs (>90%) are observed at the second hop, i.e., where we can measure more thoroughly
- Technical rather than economical incentives seem to be causing the disagreements in the paths
- Studies based only on advertised BGP routes may produce results that do not match the reality