Enabling inter-domain path diversity
Based on work presented in [1][2]

Xavier Misseri, TELECOM ParisTech, France
Damien Saucez, INRIA, France
Ivan Gojmerac, FTW, Austria
Jean-Louis Rougier, TELECOM ParisTech, France

Architecture

- BGP only selects one route
- BGP selection process is tweakable but complex selection of routes is difficult

Mapping database

BGP best route
- LP: 100
- Mapping request/answer
Our proposal: select the domain exit to benefit from external diversity:

- Path enforcement via encapsulation (bypass default route)
- Path diversity management via a Mapping System

LISP\[^1\] can help us and is implemented in some routers

\[^1\] Lewis, D., Fuller, V., Farinacci, D., Meyer, D.: Locator/ID Separation Protocol (LISP), IETF Internet Draft (January 2012)
Use case and benefits

- **Stub-ISP cooperation**
  - Choose the exit of the ISP
  - Needs cooperation with the provider
  - Diversity depends on the number of your neighbors

- **Centralization of path diversity**
  - Fed by BGP
  - Advanced route selection (e.g. stability, disjointness…)

- **Propagation of path diversity between Data Bases**
  - Different sets of routes can be sent to different clients

- **Incremental and local deployment**
  - No synchronization with your neighbor is needed

- **Based on LISP (IETF draft implemented in some routers) -> existing technology**
Next steps

- **Implementation:**
  - BGP to Mapping System route redistribution
  - Adaptation of LISP protocol

- **Generalisation to every domains (ongoing)**
  - Internet Wide multipath architecture
  - Path diversity shared to transit neighbors
Feedback - Questions

- We are very interested in getting your feedback
  - Now or after the talk 😊
  - Interesting ? We are interested in having better idea of:
    - typical use cases
    - deployment scenarios...
  - We are building a running implementation and want to build testbeds.
    - Are you interested in participating ?
    - Perhaps you are already testing LISP. Do you have feedback ?
    - Do you see deployment issues ?

- Thank you for your attention 😊