



Enabling inter-domain path diversity

Based on work presented in [1][2]

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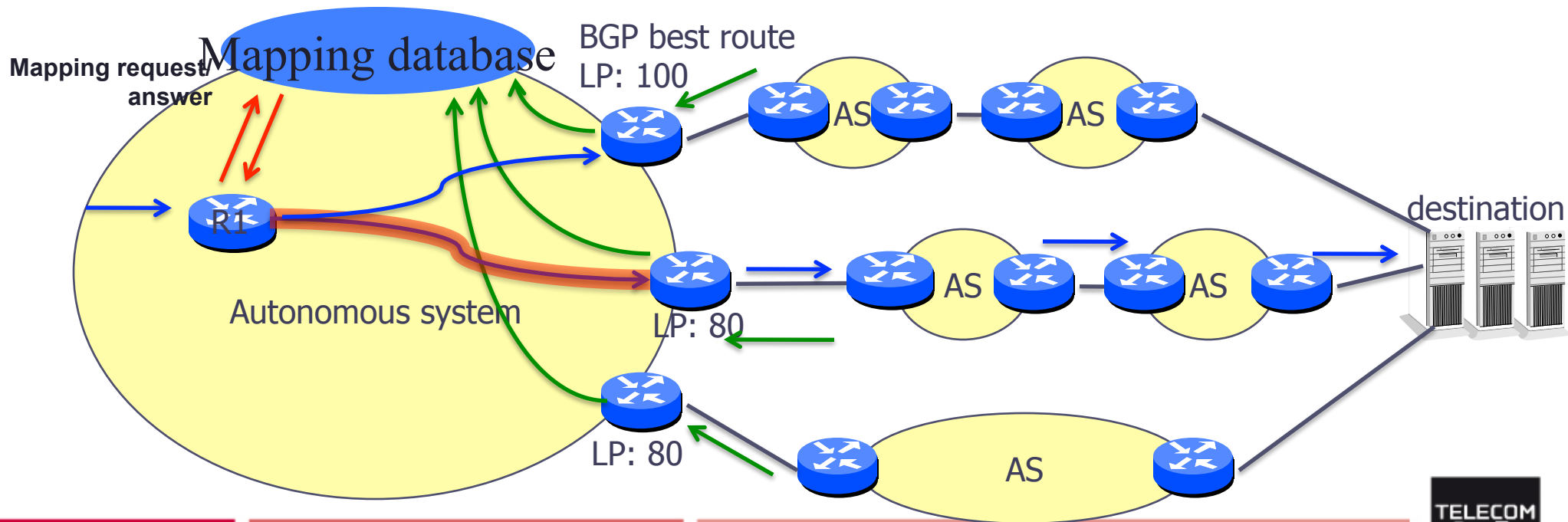
Jean-Louis Rougier, TELECOM ParisTech, France

[1] X. Misseri, J.-L. Rougier, and D. Saucez, "Internet routing diversity for stub networks with a Map-and-Encap scheme," in ICC, 2012, p. 6.

[2] X. Misseri, I. Gojmerac, and J. Rougier, "Inter-Domain Route Diversity for the Internet," in Networking ETICS Workshop, 2012, p. 8.

Architecture

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



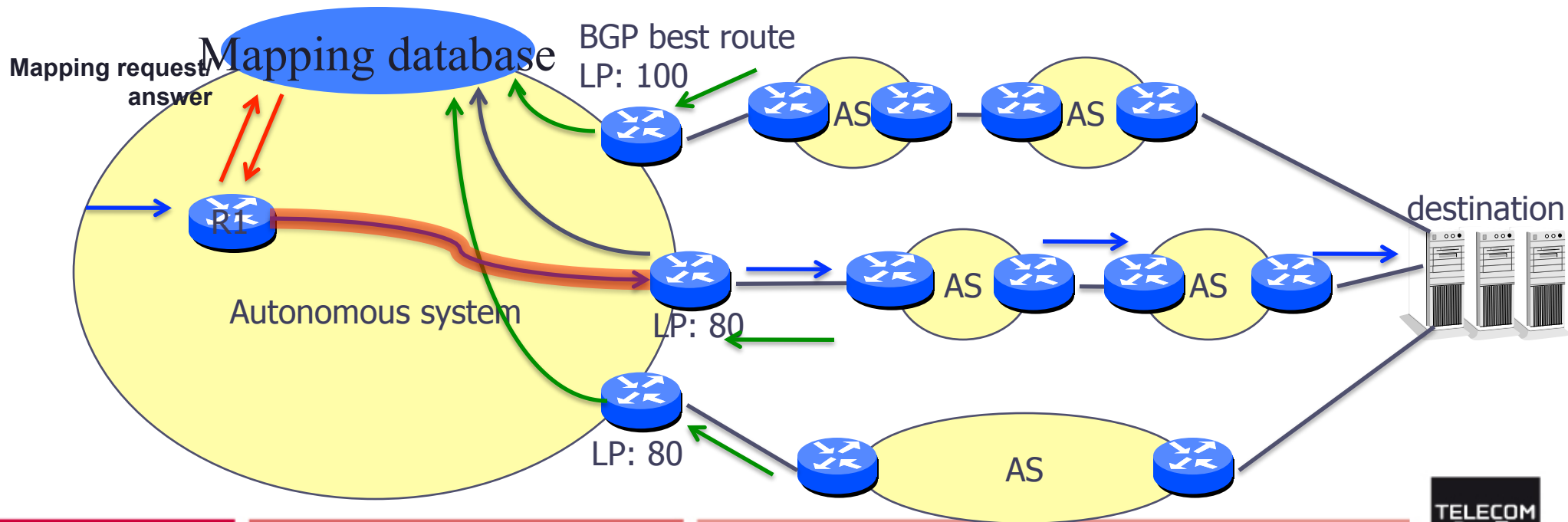
Architecture

■ Our proposal: select the domain exit to benefit from external diversity:

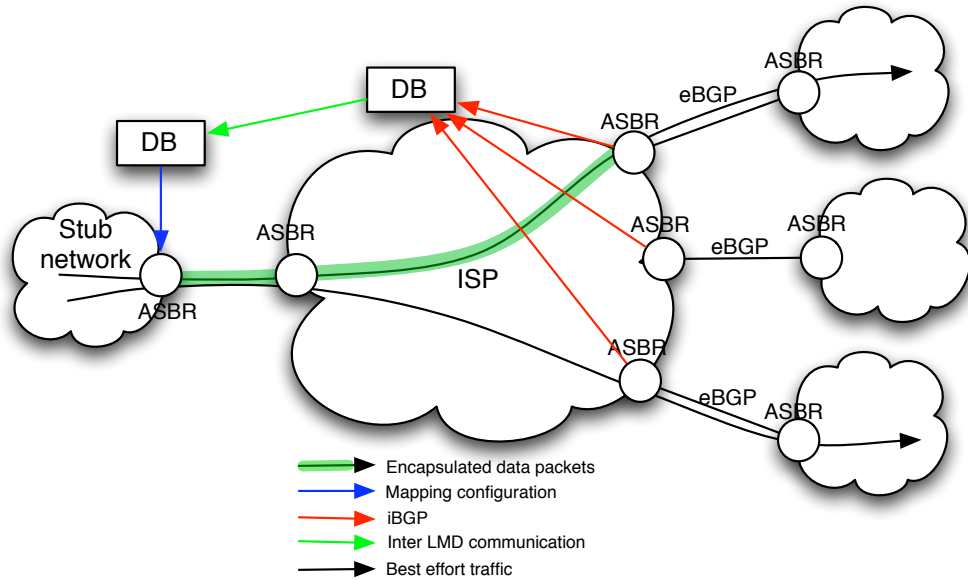
- Path enforcement via encapsulation (bypass default route)
- Path diversity management via a Mapping System

■ 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

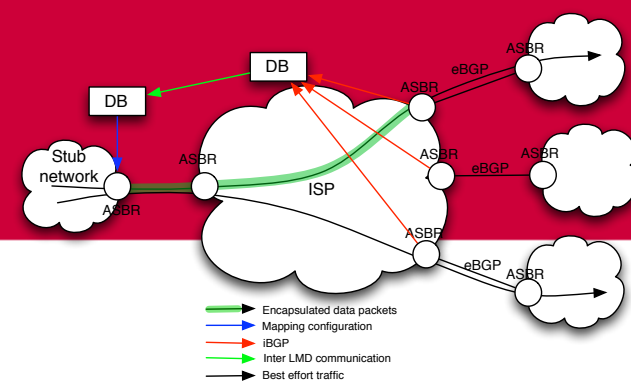
- Different sets of routes can be sent to different clients

◆ Incremental and local deployment

- No synchronization with your neighbor is needed

◆ Based on LISP (IETF draft implemented in some routers) -> existing technology

Next steps



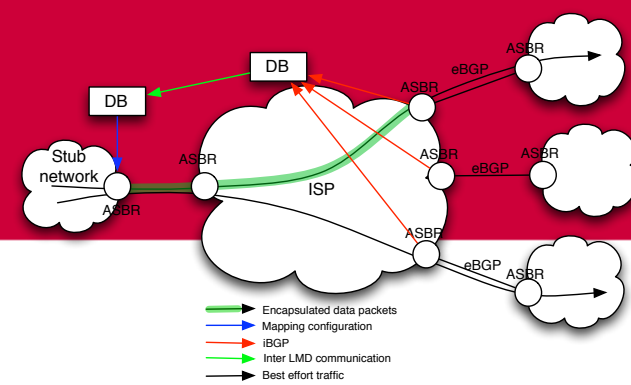
■ Implementation:

- 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 😊**