Adaptive Forwarding of Persistent Interests in Named Data Networking

ALPEN-ADRIA UNIVERSITÄT
KLAGENFURT I WIEN GRAZ

Overview

Architecture

①,④ Send PI
FIB
② Emit Probes
③ Redirect Probes
FIB
Caller
Callee
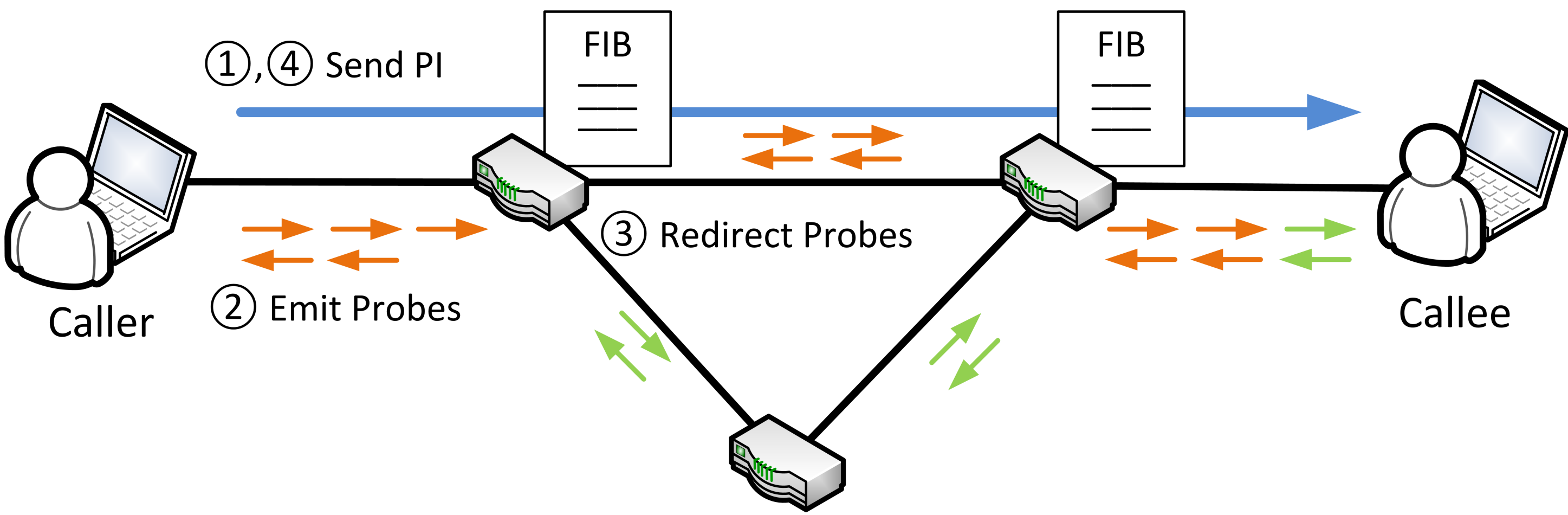
Contribution

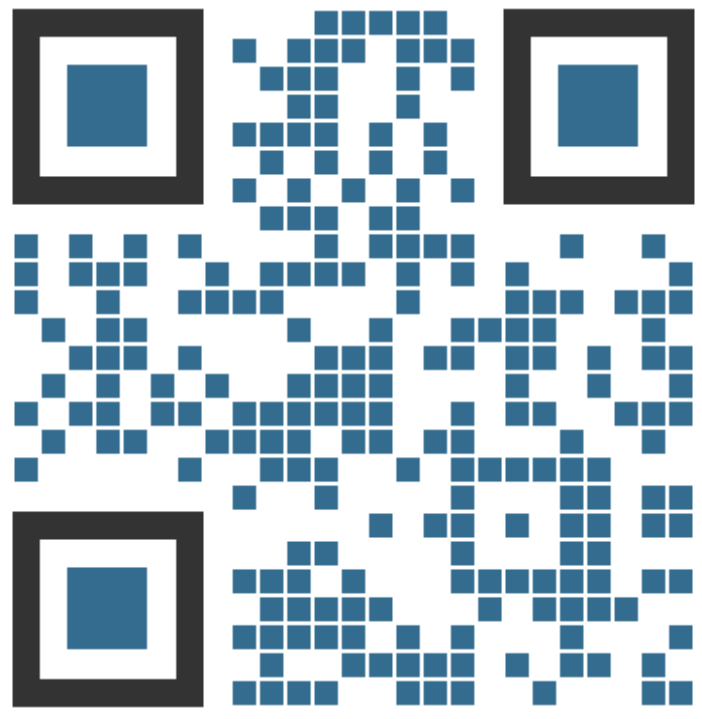Adaptive Forwarding Strategy for Persistent Interests based on Probing

Details

Workflow

① Forward first PI based on information from the FIB
② Client emits Probes to evaluate the paths to the destination
③ A fraction of the probes explores alternative paths
④ The forwarding decision for the next PI is based on probing results
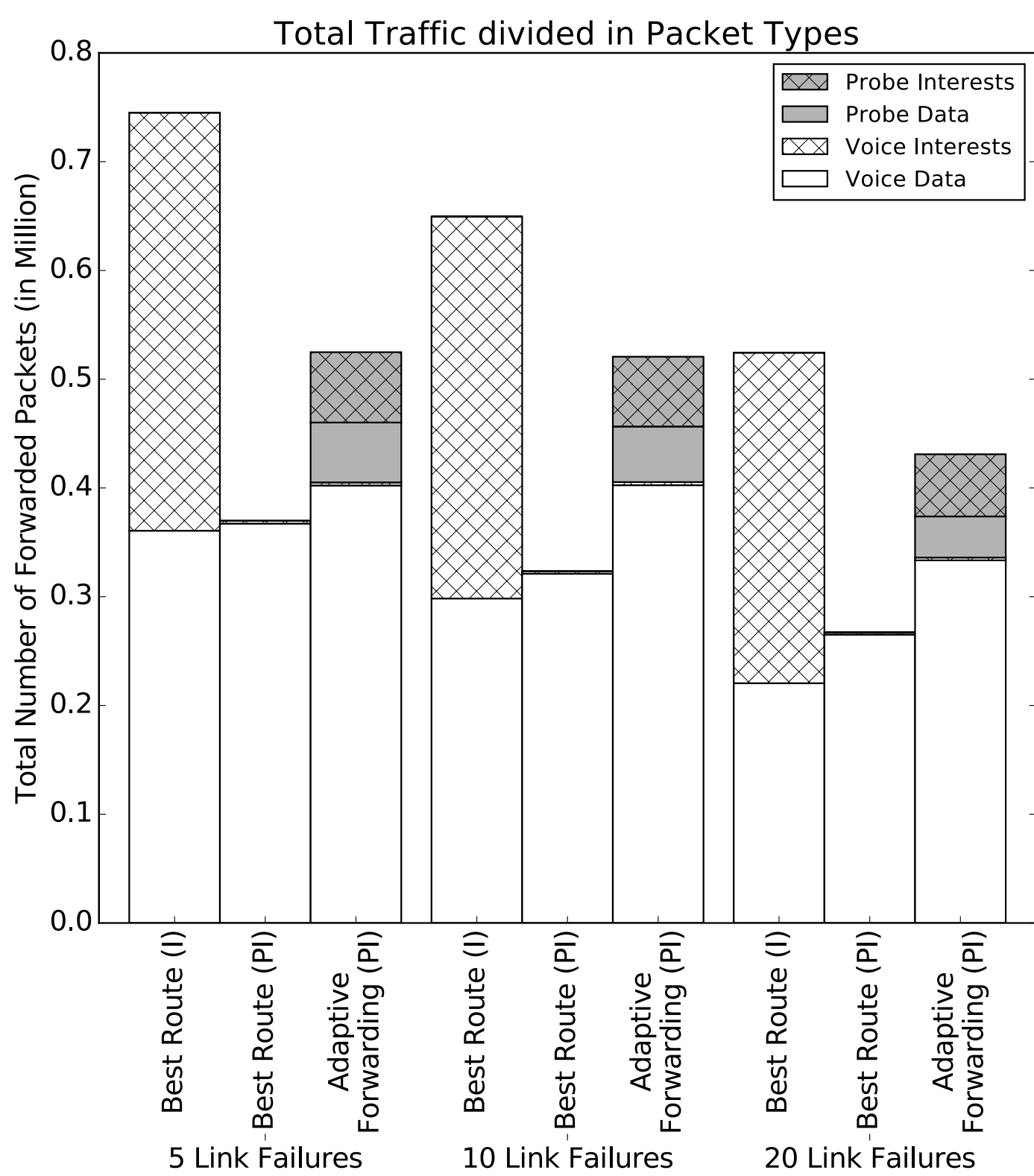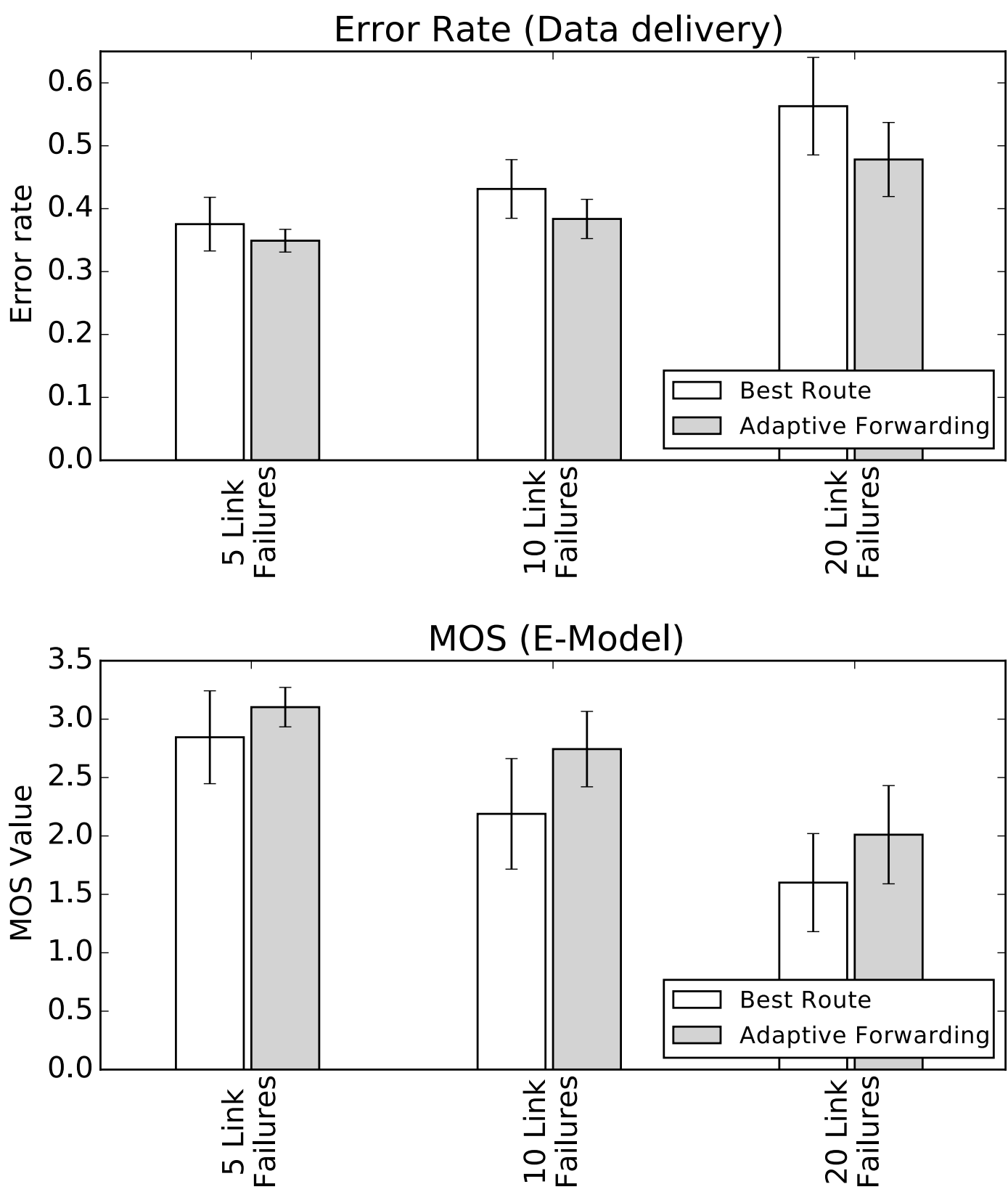
What are Persistent Interests?

I_1 I_2
D_1 D_2
Classical Interests

PI
D_1 D_2 D_{n-1} D_n
Persistent Interests
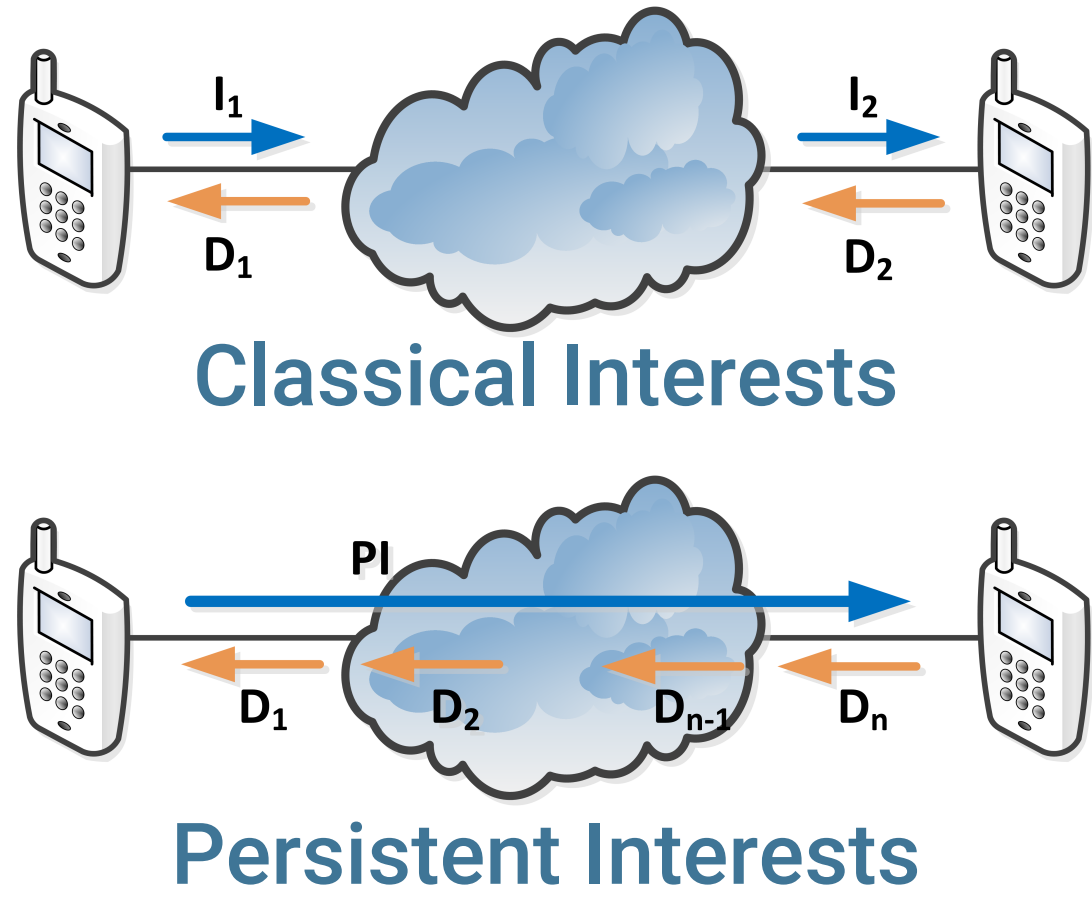
Check out our previous paper [1] for further details on Persistent Interests (PIs).

Evaluation

ndnSIM Simulation Results (10-min. voice calls)

Error Rate (Data delivery)

MOS (E-Model)

Total Traffic divided in Packet Types

Legend: Probe Interests, Probe Data, Voice Interests, Voice Data

Best Route, Adaptive Forwarding

5 Link Failures, 10 Link Failures, 20 Link Failures

Best Route (I), Best Route (PI), Adaptive Forwarding (PI)

Contact

If you are interested in our work, feel free to contact us:

Philipp Moll
philipp.moll@aau.at

Julian Janda
julian.janda@aau.at

Hermann Hellwagner
hermann.hellwagner@aau.at

http://icn.itec.aau.at

Institute of Information Technology @ Alpen-Adria-Universität Klagenfurt, Austria

Background

Abilene Core Topology

Telephony clients on randomly selected nodes

Random link failures
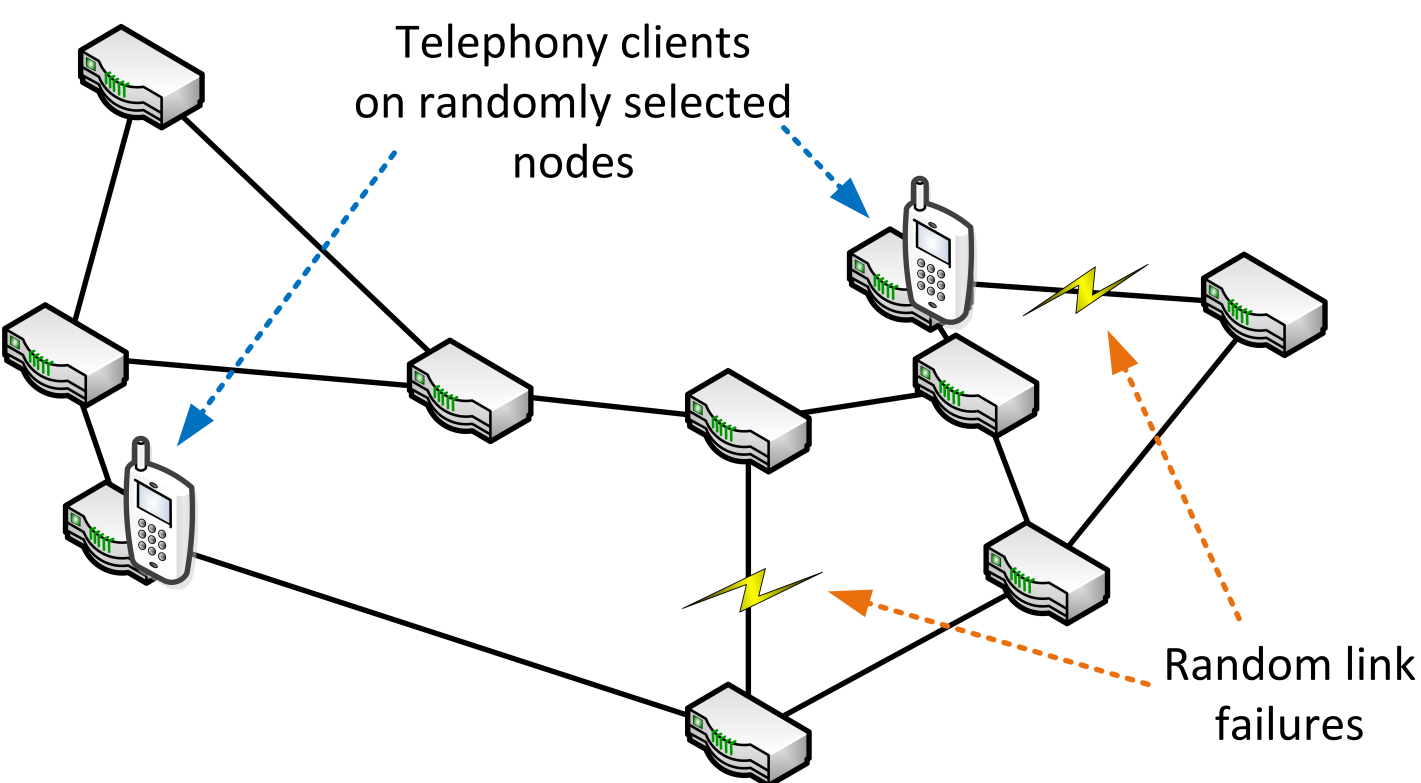
References

[1] P. Moll, D. Posch, H. Hellwagner. 2017. Investigation of Push-Based Traffic for Conversational Services in Named Data Networking. In Proceedings of the 2017 IEEE International Conference on Multimedia and Expo Workshops.

[2] K.M. Schneider, U.R. Krieger. 2015. Beyond Network Selection: Exploiting Access Network Heterogeneity with Named Data Networking. Proceedings of the 2nd International Conference on Information-Centric Networking.

[3] P. Gusev, J. Burke. 2015. NDN-RTC: Real-time videoconferencing over Named Data Networking. In Proceedings of the 2nd International Conference on Information-Centric Networking.