

Investigating the Robustness of PAN

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The purpose of this project is to investigate how well PAN reacts to forwarder failures and/or takedowns.

For this project, you will investigate how well PAN can rebuild paths to forwarders of interest in the case of forwarder churn – caused either by transient failures of nodes or permanent take-downs by adversaries (e.g. a government takes down forwarders in its network to avoid foreign users from seeing the content served to its citizens).

You will use the existing PAN implementation provided to you to help you get started. You may via simulation or via runs on PlanetLab choose to:

- 1) implement “churn” in the network
- 2) investigate a possible “failure/recovery scenario” where a forwarder comes down and another forwarder can serve in its place
- 3) measure how long it takes to rebuild a path to another forwarder given a particular failure
- 4) propose mechanisms for improving recovery
- 5) make a preliminary assessment of system requirements to allow protection against a government adversary

The project will involve learning how to work on PlanetLab and/or working with a simulator or emulator (e.g., Emulab) of your choice to emulate the failure scenario and measurement of the PAN performance during the failure experiment/simulation.

Requirements: The basic PAN implementation is in python.

For additional questions and clarifications, do not hesitate to contact Mema Roussopoulou (mema@eecs.harvard.edu)