Project: Localizing packet loss

At the RIPE 65 and NANOG 57 meetings, Nicolas Guilbaud and Ross Cartlidge presented a problem related to “localizing packet loss” and Google’s approach and experiences in that direction. They argue that traditional network monitoring may give incorrect and/or incomplete information. What is needed is:

- An approach that is able to test (via source routing on a set of to be determined paths) every link in the network.
- Near real-time failure localization via correlation the path results.

These objectives relate to two problems. First, how to find a (minimum) set of paths with which all links could be monitored. Localizing faulty links then should be a result of correlating the tested/selected paths, which is the second problem.

The main objective is to develop algorithms for the above-mentioned problems. In particular:

- Finding a minimum set of monitoring paths to detect k link failures.
- Finding a set of monitoring paths between a minimum set of source-destination nodes to detect k link failures.

Initially, we will focus on k = 1, and afterwards on arbitrary k. Finally, we would like to examine whether the monitoring paths could also provide information to find the locations where jitter and congestion are increasing.