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Measurement and Architecture for a Middleboxed Internet

The MAMI project seeks to restore balance among end-user privacy concerns in the face of pervasive surveillance, innovation in network protocols in the face of increasing ossification, and the provision of in-network functionality needed for economically viable network operation by re-architecting the Internet to allow explicit cooperation between endpoints and middleboxes.

How does it work?

Recent revelations about large-scale pervasive surveillance of Internet traffic have led to a rapidly expanding deployment of encryption in order to protect end-user privacy. At the same time, network operators and access providers rely on increasing use of in-network functionality provided by middleboxes for network operations and management. In addition, new applications such as interactive video make new demands on the transport layer, requiring the deployment of new protocols and extensions, which is often impaired by current operation of middleboxes. These three trends are on a collision course. The MAMI project targets this problem by developing and deploying a new Middlebox Cooperation Protocol (MCP) embedded in a more flexible encrypted transport layer to support the evolution of new transport protocols and features. The MAMI project will develop this new architecture based on a background of middlebox behaviour models, derived from large-scale measurements of middlebox behaviour in the public Internet. These measurements aim not only to classify existing middlebox impairments but will also provide further insights of the prevalence of the observed conditions. The MAMI project will use the facilities provided by MONROE project for Internet measurement as well as experimentation with the new architecture to evaluate its applicability to a set of real-world use cases for transport layer evolution, focusing on incremental deployability in the presence of both cooperative and uncooperative middleboxes.

How to get involved?

MAMI does not operate or extend a FIRE testbed itself; rather, it is focused on applications of the MONROE testbed. However, MAMI's measurements of middlebox behaviour in the Internet will be available for research and network operations purposes via a Path Transparency Observatory operated by the project, with public access available after the project's first year. Check the project website for announcements and details.

Project Facts

CALL: Collaborative Projects Call 2 - ICT12 | **EXECUTION:** From January 2016 to June 2018
COORDINATOR: Mirja Kühlewind (Swiss Federal Institute of Technology)
PARTNERS: Swiss Federal Institute of Technology (Switzerland), Telefonica (Spain), Alcatel-Lucent/Nokia (UK), Zurich University of Applied Sciences (Switzerland), University of Aberdeen (UK), University of Liege (Belgium), Simula Research Lab (Norway)

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