Automated Generation of Adversarial Inputs for Data Center Networks

Today's Data Center (DC) networks are facing increasing demands and a plethora of requirements. Factors for this are the rise of Cloud Computing, Virtualization and emerging high data rate applications such as distributed Machine Learning frameworks. Many proposals for network designs and routing algorithms covering different operational goals and requirements have been proposed. This variety makes it hard for operators to choose the "right" solution. Recently, some works proposed that automatically generate adversarial input to networks or networking algorithms [1,2] to identify weak spots in order to get a better view of their performance and help operators' decision making. However, they focus on specific scenarios. The goal of this thesis is to develop or extend such mechanisms so that they can be applied a wider range of scenarios than previously. The thesis builds upon an existing flow-level simulator in C++ and initial algorithms that generate adversarial inputs for networking problems.


Prerequisites

- Profound knowledge in C++

Advisors

Andreas Blenk, Johannes Zerwas