

SAI behavioral model soft switch

Abstract

The Switch Abstraction Interface (SAI) is a vendor agnostic API for controlling forwarding elements such as: switching ASIC, NPU or a software switch in a uniformed manner.

One of SAI community's goals is to enable porting a HW agnostic network application to SAI and verify the expected behavior of the network, without a specific underlying HW device. Another goal of the SAI community is to be able to enhance such pipeline to address more applications/ protocols in a timely manner.

We use P4 to achieve these goals in two stages:

1. Stage one – describe a uniformed pipeline:
Create a P4 vendor agnostic model for 'silicon free' development and conformance test
2. Stage two - Flexibility:
Modify the "fixed" pipeline model by adding new match action tables, parser, nodes, etc. to the P4 pipeline implementation.
Expose and configure the new object in SAI API

In this talk, we'll present an initial P4 implementation of such tool, as well as the challenges encountered. We'll propose solutions to these challenges, and finally, we'll present suggestions for future enhancement of P4 itself.

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GitHub

<https://github.com/Mellanox/SAI-P4-BM>