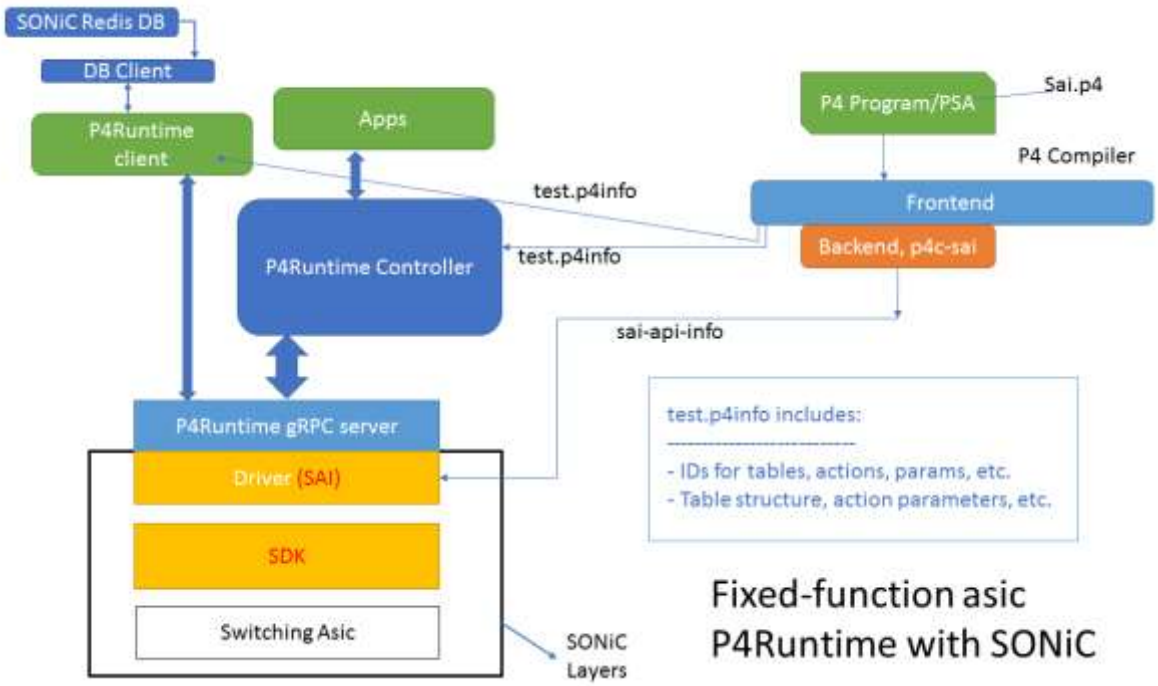
Poster Proposal

Novel Integration of SONiC with P4Runtime

Abstract

SAI [1] is supported by every switching asic. There is an interest to integrate SONiC [2]/SAI with P4runtime, especially for fixed-function switching asics. This document proposes a novel architecture for how to integrate SONiC with P4Runtime for a fixed- or programmable- asic. Existing approach to integrate P4 and SONiC has been attempted by the Stratum project. However, Stratum adds a local agent on the switch. See slide 27 at https://www.opennetworking.org/wp-content/uploads/2018/12/Stratum_-An-Overview.pdf. SAI is already a local agent on the switch. Akin to how SONiC has integrated gNMI [3] with SAI, we integrate P4Runtime with SONiC. On the switch, we add a P4Runtime translation layer over SAI. This layer interoperates with a P4Runtime client added to SONiC. With our architecture, fixed-function asic vendors focus on what they already provide – SDK and SAI. Since SONiC is open-sourced, our software changes will be open as well. At the time of writing this document, Stratum is not open-sourced. Even though the picture covers a fixed-function asic, the same architecture also works for a programmable asic.



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References:

1. SAI: https://github.com/opencomputeproject/SAI
2. SONiC: https://github.com/Azure/SONiC/wiki/Architecture
3. AZURE GNMI: https://github.com/Azure/sonic-telemetry/blob/master/doc/grpc_telemetry.md