

SONiC Network Operating System Evaluation

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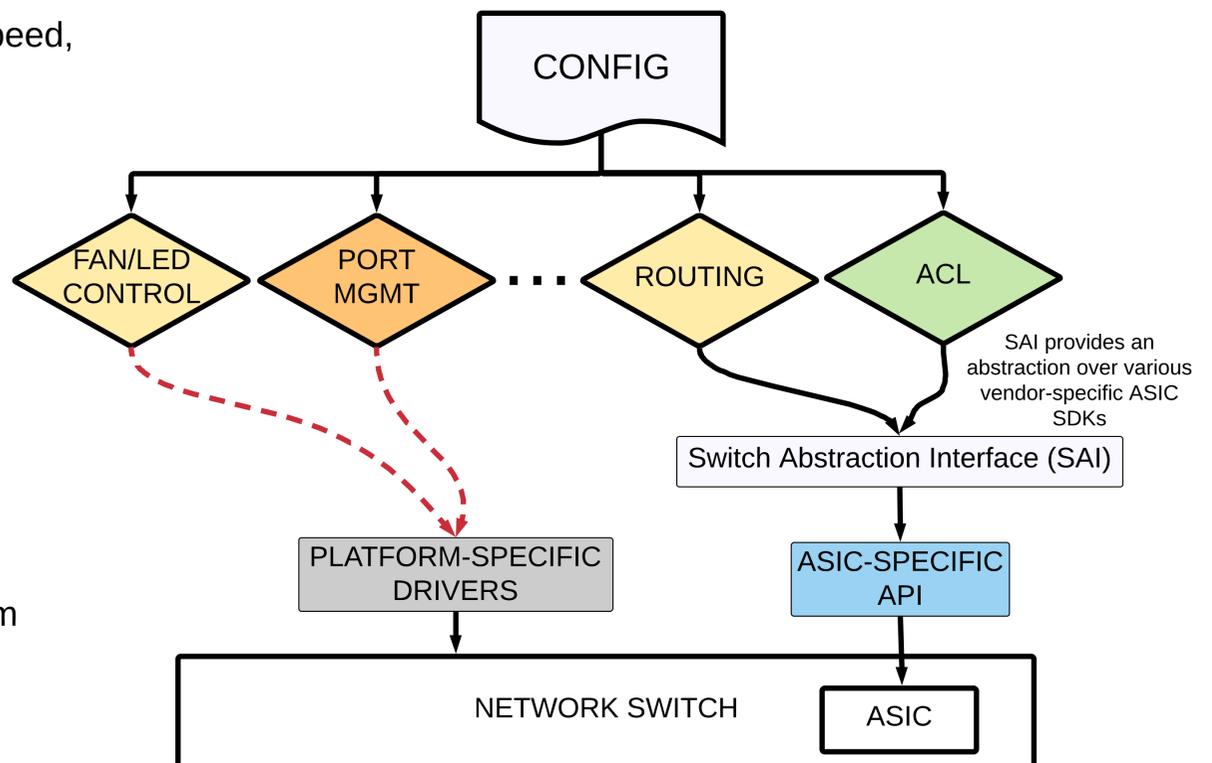
Why should you use open-source Network Operating System?

- Open-source NOSes are important element for making the networking stacks more open. Commercially available NOSes are partially or entirely built out of the proprietary software, which only a NOS vendor has control over.
- We evaluate the usability of Azure SONiC NOS outside its primary target i.e. constrained cloud environments. The goal is to test selected features of SONiC in order to understand its limitations once deployed in more diversified set-ups.

Anatomy of multi-vendor Network Operating System

NOS controls the hardware (e.g. fan speed, led state) and ASIC (e.g. L2 and L3 features):

- NOS logic needs to transform the intended configuration into the combination of lower-level primitives
- different hardware platforms require specific drivers to be used
- to program the ASIC, Switch Abstraction Interface (SAI) is used in order to decouple the NOS code from ASIC-specific SDK



Conducted tests

We evaluate SONiC running two distinct hardware platforms:

- Arista 7050QX-32S (Broadcom Trident2 ASIC)
- Mellanox SN2100 (Mellanox Spectrum ASIC)

TRANSCIEVER SUPPORT

- Direct Attach Cable (DAC)
- 40G/100G LR4 optic
- QSA adapter
- port breakout



IPv4/IPv6 ACL

- data-plane ACL
- control-plane ACLs



EXTENSIBILITY

Using not-implemented protocols:

- Spanning Tree Protocol (STP)
- Open Shortest Path First (OSPF)

ROUTING with Free Range Routing (FRR)

- BGP
- OSPF



Key takeaways

Despite its focus on cloud environments, SONiC has the potential to be used in regular data-center networks. Nevertheless, a careful assessment should be done in regard to the features it offers combined with the desired hardware platforms.

Feature	Arista	Mellanox
DAC	✓	✓
OPTIC	✓	✓
QSA	X	✓
BREAKOUT	X	✓
DATA-ACL IPv4	✓	✓
DATA-ACL IPv6	✓	✓
CP-ACL IPv4	X	✓
CP-ACL IPv6	X	✓
STP	X	✓*
OSPF	✓	✓
BGP	✓	✓
OSPF	✓	✓

* Required components are present, but we did not complete the implementation

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