Arista Solutions for Cloud Providers

Customers building large scale deployments have invested in open software solutions in pursuit of a consistent operating model, open software choice and the flexibility to choose from a broad set of hardware platforms.

With an open network software model, customers can take advantage of innovations in silicon, enable rapid technology transitions and cater to new use cases in cloud scale deployments.

These attributes empower network operators to customize their operating environments for serviceability, availability and scale, with a uniform workflow for development, testing and deployment of differentiated services.

SONiC is the leading community sourced open network operating system (NOS) that enables operators to leverage standard Linux distributions and their own choice of networking protocols to tailor their infrastructure to specific deployments.

As the industry's leader in networking for Cloud infrastructure, Arista has worked closely with key providers over the last 15 years to support open networking initiatives and continues to provide products such as the Arista Switch Abstraction Interface (SAI) for SONiC and containerized EOS (cEOS).
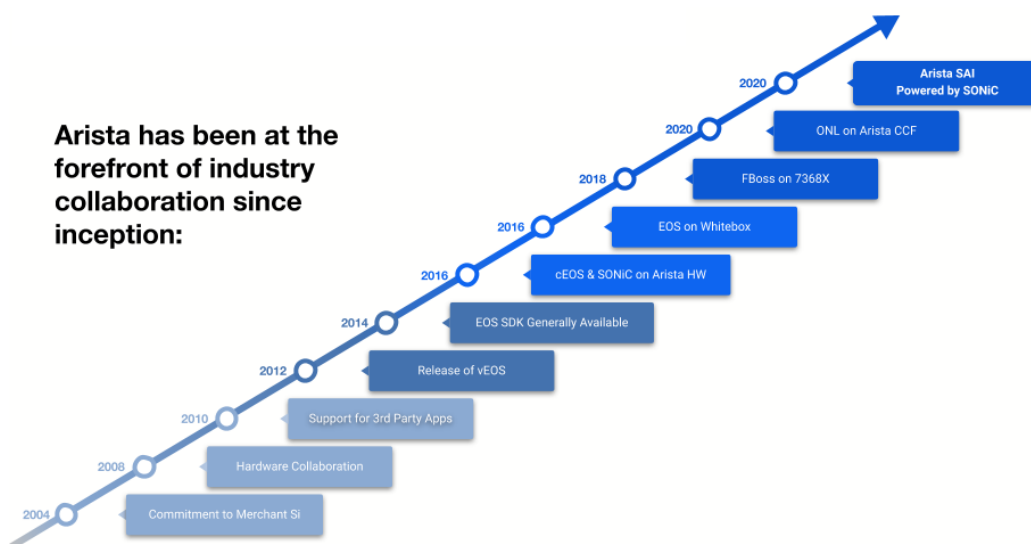

Figure 1: Arista Open Networking Collaboration Firsts

Challenges for Cloud Providers

Global Cloud Titans and Cloud Specialty Providers providers have common goals in scaling and automation with operating models and deployment approaches that vary significantly.

In an open networking model, there are four key areas of the networking stack for cloud providers to manage and maintain:

- Hardware Platforms

- Platform Drivers

- Operating System

- Protocol Suite

In the open networking model each component of this stack might be sourced from independent suppliers, giving rise to new challenges in managing dependencies and support arrangements that can increase overheads and new tasks diverting development resources from working on line-of-business efforts such as automation, protocol deployment and operations in general.

The quality and capability of the elements varies widely across suppliers, with the selection of products and often basic software drivers following a pure open model can often mean accepting a lowest common denominator level of functionality, visibility and reliability which makes it challenging for smaller and speciality providers to leverage the community driven benefits of open source.

Since both platform and software functionality and features are tuned to highly focused use cases, each cloud provider will also continue to maintain significant deployments of traditional networking platforms in areas such as general Data Center, WAN backbone, DCI and Campus - adding more complexity may simply not be possible to sustain.

Arista's Solutions

With many years of extensive collaborative experience with the largest cloud providers and the Linux community through development of its Linux based Extensible Operating System (EOS), Arista works to identify ways to reduce complexity and improve the performance, scale and reliability of the open networking stack.

In addition to ongoing direct contributions to the Linux operating system and its networking stack, Arista has created software packages that allow customers to build best of both worlds solutions for their cloud data centers. Two key products in this space are the Arista SAI and Arista cEOS which provide complete flexibility to deliver the best mixture of capabilities for each customer's needs.
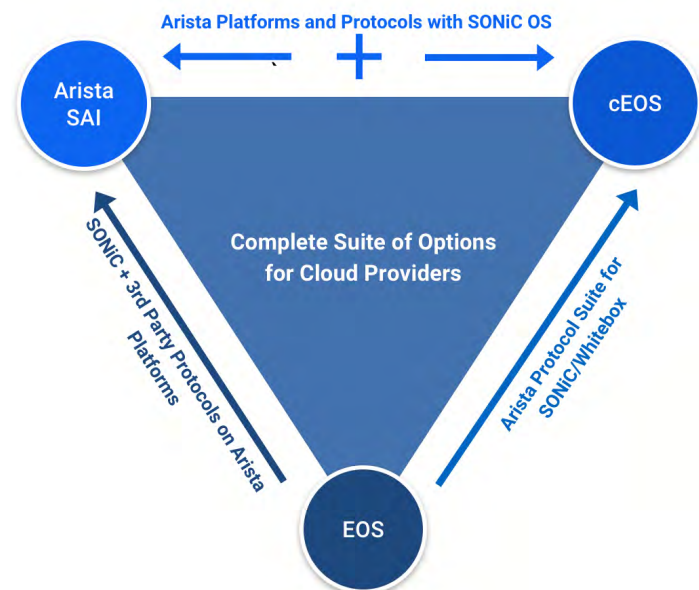

Figure 2: Suite of Options for Cloud Providers

Arista containerized EOS (cEOS)

cEOS is a container packaged variant of EOS which allows customers deploying third party hardware platforms and operating systems to take advantage of the breadth of functionality in Arista EOS. EOS contains feature rich, robust and proven implementations of common internetworking protocols including BGP, OSPF, MPLS, VXLAN and EVPN that benefit from extensive deployment in the highest value networks across the world.

Deploying cEOS eliminates the complexity and uncertainty of community sourced and supported protocol stacks to ensure higher reliability, scaling, performance and interoperability with other devices and networks, while supporting the use of custom operating systems and third party hardware platforms.

Arista Switch Abstraction Interface (SAI)

Arista's SAI addresses the opposite end of the networking stack enabling customers to deploy their own open network operating system and protocol suites on top of Arista's advanced hardware platforms in combination with Arista drivers with the following benefits;

Arista's hardware platforms provide a diverse choice of form factors and silicon with each product custom designed for performance, density, reliability and power efficiency. Together with an optimized suite of drivers built for scale and deep visibility into hardware telemetry, Arista platforms underpin some of the world's most demanding networks and applications.

The following table provides a list of the platforms that support SONiC. For an up to date list please reference Azure Sonic Supported Devices.

Table 1: Arista Hardware platforms supporting SONiC			
Platform	ASIC Vendor	Switch ASIC	Port Config
DCS-7050QX-32	Broadcom	Trident2	32x40G
DCS-7050QX-32S	Broadcom	Trident2	32x40G
DCS-7050CX3-32S	Broadcom	Trident3	32x100G + 2x10G
DCS-7050CX3-32C	Broadcom	Trident3	32x100G + 2x10G
DCS-7050DX4-32S	Broadcom	Trident4	32x400G + 2x10G
DCS-7050PX4-32S	Broadcom	Trident4	32x400G + 2x10G
DCS-7060CX-32S	Broadcom	Tomahawk	32x100G + 2x10G
DCS-7060CX-32C	Broadcom	Tomahawk	32x100G + 2x10G
DCS-7260CX3-64	Broadcom	Tomahawk2	64x100G + 2x10G
DCS-7060DX4-32	Broadcom	Tomahawk3	32x400G
DCS-7060PX4-32	Broadcom	Tomahawk3	32x400G
DCS-7060DX5-32	Broadcom	Tomahawk4	32x400G
DCS-7060DX5-64S	Broadcom	Tomahawk4	64x400G + 2x10G
DCS-7060X6-64PE	Broadcom	Tomahawk5	64x800G + 2x10G
DCS-7170-32C	Intel	Tofino	32x100G
DCS-7170-32CD	Intel	Tofino	32x100G
DCS-7170-64	Intel	Tofino	64x100G
CCS-720DT-48S	Broadcom	Trident3.X2	48x1G+4x10G
DCS-7280CR3-32P4	Broadcom	Jericho2	32x100G + 4x400G
DCS-7280CR3-32D4	Broadcom	Jericho2	32x100G + 4x400G
DCS-7800R3	Broadcom	Jericho2C+	36x400G, 48x100G

Customers leveraging Arista SAI and Arista platforms benefit from the same robust product foundations as those deploying the fully integrated EOS while retaining the ability to choose their own operating system (such as SONiC) and their own internetworking protocols to run on top as shown in figure 3.
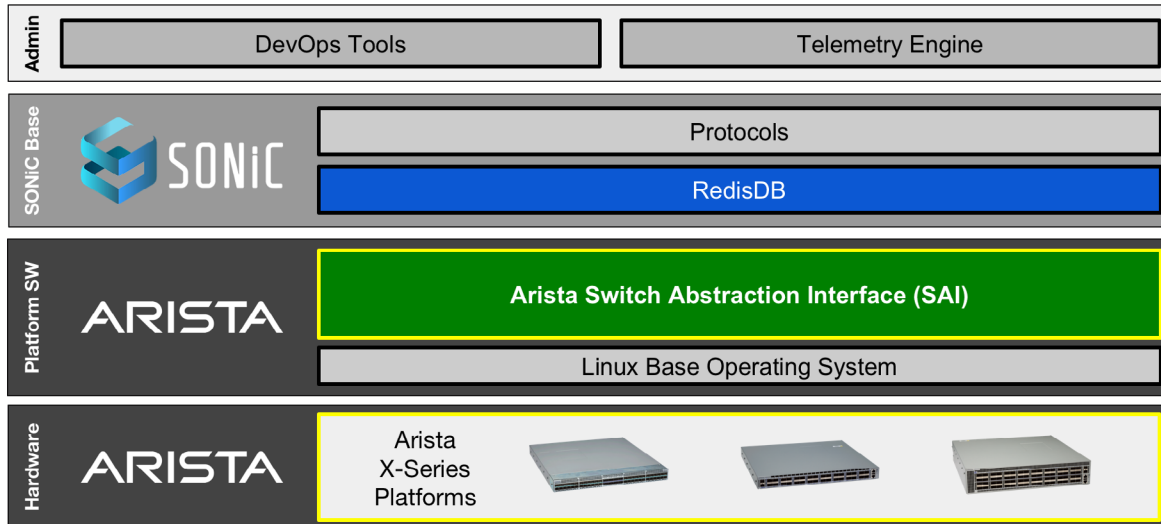

Figure 3: SONiC with Arista SAI stack overview

Arista platforms and SAI also benefit from Arista's global support presence and 24/7 technical support and engineering operation, removing the uncertainty of supportability and offering a single point of contact.

In areas where deployment requirements demand it, customers can choose to install Arista's fully integrated EOS environment on the Arista hardware to take advantage of rich multi-discipline functionality while maintaining a single supply chain and support process for the underlying platforms across multiple roles, reducing inventory complexity and ensuring simple redeployment as business needs change.

Summary

Long standing and close relationships with the cloud and open source community combined with Arista's unique modular and scalable platform and software architecture have enabled Arista to provide several unique approaches to solving the varied real-world challenges faced by cloud operators.

Figure 4: Deployment choices for EOS, cEOS and Arista SAI

As can be seen in figure 4, cEOS and Arista SAI are just two of the innovative solutions designed to provide multiple paths for operators to leverage best of breed technology combined with their choice of open hardware and/or software while ensuring consistency for used cases beyond the cloud data center walls.

For more information on how Arista supports the transition to open networking, platforms supporting SONiC and Arista SAI, please contact your Arista Networks account team.

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