

# **SONiC**

## **Forecast and Research Report**

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## Introduction

Open Networking has always been a topic of interest in data center networking. The trend started almost 20 years ago with OpenFlow and the interest in the broader ecosystem of emulating the rapid innovation in the Cloud. Google was White Box, Amazon just started the journey of White Box switching, and most end-users expressed interest in being agile like a Hyperscaler. SONiC finds its roots in the very early days of Open Networking.

Today, the focus of industry interest is on SONiC and its ability to disrupt the data center networking space. SONiC is unique. Not only can it be used as an operating system, but also as a controller. The subtle difference in the two deployments creates market confusion over how big the SONiC opportunity is and what the actual adoption of the technology will be.

In this report, we will size the market of both SONiC capable and SONiC running market sizes and the different markets that will adopt SONiC for Ethernet Switch – Data Center products. The report will not include an analysis of Routers.

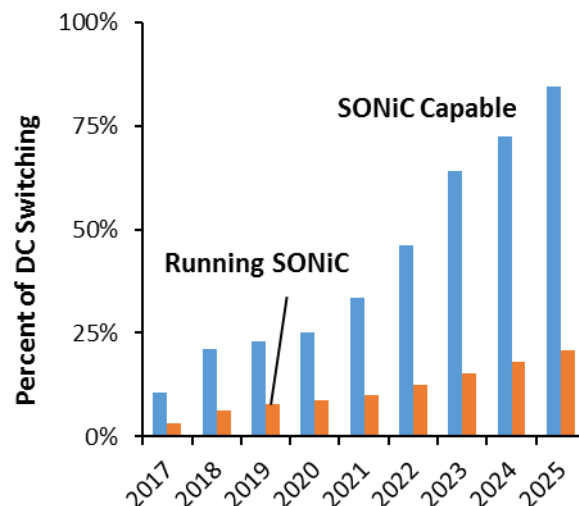
## What is SONiC

SONiC is an open-source network operating system based on Linux and designed to run on Ethernet switches and support different ASIC vendors. Recently, SONiC support has included L3+ Router products as well as new features targeted towards the enterprise.

SONiC competes directly with other third-party operating systems like BigSwitch and Cumulus but is more broadly targeting operating systems from Arista, Cisco, and Juniper.

One of the most significant confusion points in the market is the different ways SONiC can run and what is running today in production at Microsoft.

**Figure 1: SONiC Capable and Running Market Percentage of DC Switching**



## SONiC as an OS vs. SONiC the Controller

Today, SONiC deployments primarily run in two modes. The first is as a proper operating system. In this mode, SONiC runs as the only operating system on the switch. Second, and more common, is SONiC running directly next to another vendor's OS.

While the difference between these two may be subtle, it is crucial and creates great confusion throughout the networking ecosystem.

When SONiC runs as the only software on a switch, it is genuinely the operating system, responsible for all aspects of command and control and all feature support like BGP, telemetry, etc.

When SONiC runs in conjunction with a branded vendor's OS, SONiC operates more like a controller, interfacing more with the broader DC control plane with no responsibility for the switch features. In this scenario, the branded vendor is responsible for features like BGP. For some parts, the difference is significant.

We note that announcements of SONiC support by Arista, Cisco, Juniper, and Nokia fall into this second

use case.

## SONiC Capable vs. Running SONiC

The second area of confusion is around switches that are SONiC capable vs. running SONiC (Figure 1, previous page). SONiC capable switches refer to Ethernet switches with an ASIC that SONiC supports. With future ASIC, that will be the whole market as ASIC vendors add in the necessary support. This is a meaningless metric. All Ethernet switches can be used as paperweights as well. When someone uses this metric, it is vital to take a step back and look at the enterprise market. If SONiC truly got to this size, implied is that the three most prominent branded vendors, Cisco, Arista, and Juniper, would suddenly not be in the market. Somehow, their 20+ years of OS expertise would be entirely replaced. Full SONiC adoption isn't going to happen in the forecast period with a collapse at Cisco, but marketing companies love using SONiC capable.

The metric of running SONiC, as both the OS and controller is more accurate to the competitive displacement and the size of the opportunity for the ecosystem.

## SONiC Members

SONiC partners, as of April 2021, include a broad list of companies ranging from ASIC, white box, branded networking vendors, cloud providers, and some end users. The list consists of Alibaba, Alpha Networks, Arista, Asterfusions, Augtera Networks, Aviz, Baidu, Broadcom, Canonical, Celestica, Centec, Cisco, Comcast, Credo, Criteo, Dell, Delta, DiDi, docker, eBay, Edge-Core, EmbedWay, Facebook, HiWire, Hong Kong University of Science and Technology, Innovium, Insidepacket, Inspur, Intel, Inventec, Juniper Networks, Keysight Technologies, Marvell, Microsoft (And LinkedIn and Metaswitch), Mitac, Nokia, Nvidia, Pegatron, Quanta, Ruijie, SoftIron, Stordis, Target, Tencent, UfiSpace, Wipro, Wistron, XCloud.

Figure 3: SONiC Market Forecast

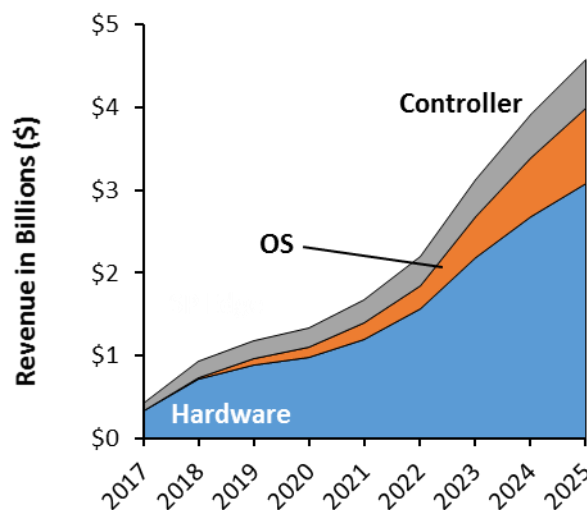
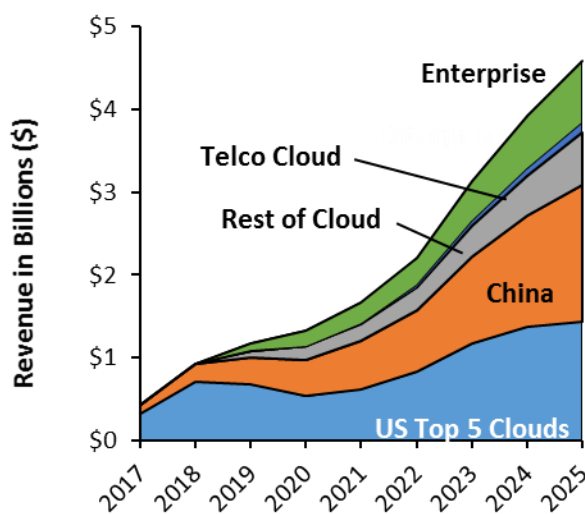


Figure 2: SONiC Market Forecast by Customer Type



## SONiC Forecast

We expect the market for SONiC market to grow substantially during the next several years on growth in China and Microsoft (Figures 2 and 3 and Tables 1 and 2, next page). We are optimistic about the increase in Tier 2 Cloud and Enterprise and will discuss those segments in other sections.

	2017	2018	2019	2020	2021	2022	2023	2024	2025
<i>Hardware</i>	\$326	\$712	\$881	\$972	\$1,202	\$1,559	\$2,180	\$2,683	\$3,085
<i>OS</i>	\$6	\$21	\$76	\$129	\$189	\$290	\$498	\$698	\$902
<i>Controller</i>	\$92	\$192	\$219	\$229	\$283	\$355	\$452	\$534	\$593
<i>Total</i>	\$423	\$925	\$1,176	\$1,329	\$1,673	\$2,204	\$3,130	\$3,916	\$4,580

**Table 1: SONiC Market Forecast**

## Different End Market for SONiC

SONiC adoption is very different in each end-market. SONiC as Microsoft will be the main Cloud driver in the United States and help drive future feature development. China is currently embracing SONiC as an OS option to keep pace with the West and have an OS free of trade-war risk.

## Chinese Market

China is an untouchable market from a western vendor point of view and vendors, and component suppliers should adjust plans and market analysis for the need to bifurcate geographically. In general, China is no longer a market for the West, and vendors within China are leaning inward and have a strong preference for tighter vertical integration.

SONiC sits in a different situation with its open-source nature. We view China as an opportunity for SONiC, but with unsure Western vendor participation. China Cloud providers can embrace SONiC directly as an alternative to Huawei, and H3C OS's that are not designed for the Cloud, or China can integrate SONiC features and code directly into other offers for internal use within China. Both these approaches are positives for SONiC, but have no real incremental revenue opportunities for western vendors.

## The Ecosystem is Key

For SONiC to have widespread appeal amongst enterprises and Tier-2 Cloud, it needs a robust ecosystem of developers and a strong support model.

Feature development is critical, and the current model of vendors hardening and supporting SONiC versions is an excellent first step but does not scale. The industry can't have ten+ vendors, each doing something unique with forks in software becoming abundant. Instead, it needs to look like Linux, where there is one version of SONiC that everyone develops for and supports. Microsoft will ultimately decide and dictate this to the market by either being that vendor themselves or enabling someone else with their tacit support.

Support becomes key, Microsoft will have its internal support, but others don't have the same luxury of thousands of on-demand engineers to fix and troubleshoot a bug. The real revenue opportunity in this space is creating a company like Red Hat that all hardware vendors use. In a way, this will fully embrace the goal of disaggregation as well. Many companies can leverage this for value add features, whether that be testing and integration or additional applications developed with SONiC as a baseline.

## Branded Vendor Ramifications

We view our current forecast as complementary, with much of the SONiC deployments and revenue existing next to branded vendors. If SONiC adoption increases, we expect a strong response from branded vendors as SONiC will move from coexisting to direct competition. Every enterprise win in SONiC, being the OS, is a displacement of a branded vendor account. While there is a potential for this to happen, it will be at a measured pace. Even the Hyperscaler

	2017	2018	2019	2020	2021	2022	2023	2024	2025
<i>US Top 5 Cloud Providers</i>	\$328	\$711	\$683	\$535	\$618	\$829	\$1,170	\$1,374	\$1,441
<i>Chinese Top 3 Providers</i>	\$96	\$214	\$323	\$438	\$581	\$747	\$1,050	\$1,345	\$1,649
<i>Rest of Cloud</i>	\$0	\$0	\$72	\$160	\$211	\$269	\$375	\$477	\$634
<i>Telco Cloud</i>	\$0	\$0	\$5	\$5	\$8	\$23	\$51	\$87	\$118
<i>Hybrid Enterprise</i>	\$0	\$0	\$92	\$190	\$256	\$336	\$484	\$633	\$738
<i>Total</i>	\$423	\$925	\$1,176	\$1,329	\$1,673	\$2,204	\$3,130	\$3,916	\$4,580

**Table 2: SONiC Market Forecast by Customer Type**

deployments of Google and AWS did not displace Cisco for years. SONiC in the enterprise is no different.

### Vendors Future Action

Today, vendors support SONiC as a differentiator and requirement of being in Microsoft RFPs. As SONiC moves beyond Microsoft to the Tier 2 Cloud, we view branded vendors as resistant and pushing back to negate adoption. SONiC is a threat. Vendors with roots in the Cloud see SONiC as an entry into the broader enterprise market and embrace and push the trend. We expect the market to reach a normal competitive equilibrium, but note the market will be more Cloud-like in 2025 across all enterprise verticals.

### Conclusion

SONiC is the most significant risk to branded vendor market share in the enterprise and Tier 2 Cloud during the forecast period. It will change the way all networking vendors embrace disaggregation and Open Networking.

Competition is always a good thing, but the ecosystem should be careful in making sure SONiC is fully supported and capable, not rushed to market. With solid and broad ecosystem support, SONiC will succeed. Without one and a rush to claim support will lead to a bifurcated market and SONiC will stay as niche outside the Cloud Providers.