ESG Brief

Network Predictions for 2020

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Abstract: This brief looks at the key trends and events that will shape networking technologies, suppliers, and customers in 2020.

Overview

As 2019 rolls into the history books, it is time to evaluate how networking has evolved this year and think about what organizations can expect in 2020. This year witnessed the initial deployments of 5G networks, the rollout of WiFi 6, continued mergers and acquisitions, the introduction of new chipsets that enable greater throughput (400Gbps), and greater emphasis on end-to-end networking. It also witnessed underlay and overlay integration and IBN. Additionally, network automation continued to progress, as SD-WAN deployments made more progress on their way to becoming ubiquitous. With talk about being in the midst of a rapidly evolving fourth industrial revolution, I expect 2020 to see WiFi and 5G becoming more complementary, levels of automation across end-to-end networks increasing, the SD-WAN space further consolidating, and management and orchestration becoming more of a focus—especially in cloud/container/serverless environments, where they will be more tightly integrated with security solutions.

Here are my ten predictions for 2020:

1. **Vendors will continue their push to deliver complete, end-to-end network solutions.** With network teams struggling to keep pace with distributed compute environments that span from on-premises data centers to multiple public clouds (IaaS and SaaS) and edge locations, the network is becoming far more complex and much more important to the business. As a result, organizations require higher levels of operational efficiency to ensure positive customer experiences regardless of where their applications or users are located. I expect that network vendors, to simplify these environments, will continue to build out end-to-end solutions via acquisition (like Arista [WiFi], Extreme [DC and WiFi], and Juniper [WiFi]) or through internal development (Arista [Campus], Cisco [IBN extending across its portfolio], Dell [SmartFabricDirector {NSX visibility}], and HPE Aruba [DC/Campus/Branch portfolio]) to streamline operations and provide holistic visibility and simplified end-to-end management.

2. **SD-WAN will continue its drive toward ubiquity—but market consolidation looms.** Driven by both service providers and managed service providers, SD-WAN growth will continue its dramatic trajectory. As organizations shun legacy hub and spoke architectures in favor of direct-to-internet connections from all locations to accommodate cloud growth (IaaS and SaaS) and move off or augment MPLS networks with broadband connections, SD-WAN adoption will continue to see steady growth. I expect much of this business will come through service providers, since customer organizations need a single point of contact to manage large, complex global deployments. Also, with

more than 40 vendors in this space, which is dominated by a handful of firms, we may see some SD-WAN companies running out of runway, and others getting acquired. Either way, we expect more vendor consolidation to take place in 2020.

3. **Tightly integrated security and SD-WAN solutions will rise.** Along with the increase in SD-WAN adoption, we are seeing organizations deploying new security architectures. In a complex, distributed environment, organizations need to implement centralized security policies that are enforced at the edge. As a result, it makes sense that major security providers (Palo Alto, Zscaler, etc.) will closely partner and integrate with SD-WAN vendors (who can provide enforcement at the edge) to enable single-click provisioning of services while others may opt for even tighter integration and offer both (Cisco and Fortinet). Expect to see robust ecosystems from both SD-WAN and security vendors in 2020 as well as possible M&A activity in this space.

4. **Network automation will be required to overcome complexity.** With the IT pendulum swinging to distributed and edge computing in order to support real-time analytics, network environments are becoming even more complex. As alluded to in my first prediction about end-to-end networking solutions, vendors will offer common OS and management systems that enable them to drive more automation into the network, create more operational efficiencies, and drive higher levels of customer productivity. Moving forward, organizations won't be able to rely on acts of individual heroism, but rather will need to evolve to more automated, self-optimizing, and healing network environments. This would include capabilities such as one-touch or zero-touch provisioning and network policy enforcement, along with anything that can help organizations eliminate time-intensive, manual CLI commands.

5. **Vendors, and their customers, will come to rely on artificial intelligence (AI) and machine learning (ML) in network solutions.** In order to accomplish higher levels of automation across increasingly complex and changing network landscapes, vendors will need to incorporate AI and ML into their solutions to facilitate real-time decisions regarding the network. This will require sophisticated solutions that understand the state of each network device, as well as the context related to the overall network and the applications that rely on it. At this stage, organizations should look for solutions that enable a "crawl, walk, run" approach (from manual with suggestions, through semi-automatic based on suggestions, to full automation). The key is that these solutions will need time to learn customers' environments and understand baseline performance. Keep in mind that IT staff will be needed to provide critical human intelligence to this process, so they should not view this increased use of automation as a threat.

6. **The network is generating a ton of data; analytics solutions will be required to make sense of it.** While much of the intelligence listed in the previous predictions is focused on managing the network, increased use of analytics to interpret massive amounts of data is focused more on managing the business. Organizations will need to take advantage of the data running over their networks to enable change in the business. A great example of this is when NFL stadiums leverage analytics to enhance the game day experience, based on past traffic patterns and application usage. In 2020 I expect this will expand to include new data streams like video traffic and 5G.

7. **WiFi 6 will become mainstream.** As more devices with WiFi 6 support are made available, organizations will start to ramp up their WiFi 6 deployments. WiFi 6 offers greater efficiencies especially for businesses in densely populated areas. In 2019, we witnessed some consolidation in this space, as Arista, Extreme, and Juniper all made acquisitions. Expect to see fully integrated solutions from these vendors in 2020. With enhanced power requirements, many organizations may also be refreshing their wired networks to accommodate the additional power.

8. **5G vendors will look to demonstrate business value for the enterprise.** While 2019 witnessed the rollout of 5G in a number of cities (along with 5G consumer devices), in 2020, I expect to hear more about how 5G is delivering real business value for organizations, in areas like last mile connectivity, SD-WAN primary and backup links, enablement of first responders, video surveillance, and augmented reality for retail and IoT applications. It would be great to even see some tests for autonomous driving of fleet vehicles on selected roadways. Also keep an eye on integration with WiFi solutions.

9. **Use cases will develop to integrate WiFi 6 with 5G.** There has been a lot of hype around 5G and WiFi 6, with many wondering who will win. The reality is that both will prosper in 2020. 5G will provide tremendous benefits, but still struggle to overcome certain laws of physics (mm wavelengths), so I expect to see organizations looking to tightly integrate WiFi 6 and 5G to provide seamless experiences while users traverse into or out of buildings. This is especially true for North American businesses that have BYOD policies and don't want to deploy DAS for each mobile vendor.

10. **Expect network operating systems to be refactored.** The industry will continue to offer a disaggregated network OS, even if it is not used with COTS boxes. We will also see the introduction of modern application OSes, built on containerized platforms and using microservices architecture. We are starting to see startups employ these new architectures and established vendors refactor existing apps to deliver this functionality. The interesting part about deploying network OS as a modern app is that it will require a significant cultural change by the network team. They may currently only do one upgrade per year but with these new apps, may be able to do one every month, week, day, or even hour. Organizations need to think about what sandbox environments could be created to accelerate the adoption of more frequent releases of modern application network OSes.

The Bigger Truth

2020 is shaping up to be another good year for innovation. Given the rapid pace of digital transformation and distributed compute environments, the network will be increasingly important to the business and its ability to deliver positive customer experiences.

The network will be required to be more dynamic and accommodate new architectures, while simultaneously continuing to support the legacy environments. Network administrators will have their hands full incorporating new technology, ensuring adequate levels of security, and keeping costs in line. In that respect, it means that 2020 will be just like every other year, but at an even faster pace.

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