SDN: POWERING THE NEXT GENERATION OF RETAIL NETWORKS

Retailers today are relying on technology to help deliver an exceptional customer experience. Stiff competition from online shopping sites, and a related decrease in foot traffic at malls and shopping centers, are forcing brick-and-mortar stores to find innovative ways to engage customers.

The influx of technology—both customer-facing and operational—into the retail space today demands high-capacity, high-bandwidth network solutions that operate at and sustain peak efficiency. Customers expect services that are based on technology, such as in-store Wi-Fi and mobile checkout, while electronic shelf tags, video surveillance, point-of-sale systems, and other technologies are helping streamline the back office.

As beneficial as these technologies are, however, their bandwidth-intensive nature is stressing traditional networks to the point of inefficiency. Meeting expectations requires constant connectivity and the ability to handle peak traffic loads with ease. From the analytics engines that power personalized marketing campaigns to inventory control systems that track and reorder inventory in real time, retailers need networks that are highly available and highly efficient.

To meet the needs of today's technologies and prepare for what lies ahead, networks are undergoing a transformation. The proprietary hardware of yesterday is being replaced by open technologies that are not only less expensive, but also customizable to meet multiple needs and support new applications and services. Software-defined networking (SDN) is helping make this possible.

Regardless of their size or industry, organizations are adopting SDN to meet the needs of the increasingly bandwidth-intensive applications and services that they provide to both their customers and their employees. Retailers, too, are realizing the benefits of using SDN to build better networks at lower cost.

According to research from TBR, SDN will compose nearly 40 percent of global enterprise network infrastructure revenue, roughly $12.7 billion, by 2020.[1] Allied Market Research, meanwhile, forecasts that the global SDN market will reach $132.9 billion by 2022, with a compound annual growth rate of 47 percent between 2016 and 2022.[2]

BENEFITS OF SOFTWARE-DEFINED NETWORKING

Software-defined networking is fundamentally changing the way networks are built. Its benefits are many, ranging from agility and cost savings to efficiency and security. In particular, SDN offers four benefits of interest to retailers:

Standardization: Siloed IT systems and infrastructures provide an incomplete view of data, which increases inefficiencies, hampers service delivery and employee productivity, and ultimately impacts customer satisfaction. An SDN overlay on existing networks can align what previously could not be integrated, providing accessibility for all systems and all data regardless of where it resides.

Cost Savings: SDN does not require proprietary hardware to run. Its architecture decouples the network intelligence from the hardware and creates "dumb switches" that are managed from a central controller. These switches can be industry-standard servers or existing hardware controlled via SDN controllers. This helps retailers save money and experience SDN's value proposition, while gradually migrating to an SDN environment.

SDN-WAN UTILIZES OPEN-SOURCE TECHNOLOGIES AND PROVIDES A LEVEL OF INTELLIGENCE TO THE NETWORK THAT DOESN'T EXIST IN TRADITIONAL WANS, ENABLING SMARTER, MORE EFFICIENT ROUTING OF TRAFFIC.

Streamline Operations: SDN centralizes controls for better management of the entire network. Because the intelligence of the network is located in a separate SDN controller, rather than at each point in the network, provisioning and management becomes a more centralized and holistic endeavor. Network administrators can manage both physical and virtual switches, as well as other network devices, from one central controller. That equates to less downtime and more stable networks, as there is less room for error in provisioning new equipment.

Security: SDN not only centralizes the management of the network in one controller, it also centralizes security. The SDN controller can distribute security and policy information consistently throughout a retail environment, ensuring all points on the network are secure. What's more, SDN can make it easier to collect network usage information, which could help companies better detect anomalous behavior that could point to a security breach or outright attack.

SD-WAN: A MORE INTELLIGENT NETWORK

Much of the growth of SDN adoption will include SD-WAN, a next-generation solution designed to simplify complex networks, increase control and visibility, reduce costs, and deliver consistent network and application performance across a distributed enterprise. SDN-WAN utilizes open-source technologies and provides a level of intelligence to the network that doesn't exist in traditional WANs, enabling smarter, more efficient routing of traffic.

The application-aware nature of SD-WAN enables IT administrators to determine the most intelligent path for their applications, and to push, manage, and update policies for optimal application and network performance across their business. What's more, SD-WAN is centrally managed, so all provisioning and changes to the network and applications are done from one location, reducing the amount of time and manpower necessary to manage the network.

SD-WAN is being adopted at a nice clip. Research firm Gartner predicts that by the end of 2019, 30 percent of enterprises will have deployed SD-WAN technology in their branches, up from less than 1 percent at the end of 2015.[3]

EXAMPLES OF SDN USE IN RETAIL

SDN is proving its value in a number of vertical markets, and the retail space is no exception. A growing number of retailers are adopting software-defined networking to address a range of issues, from increased bandwidth needs to better network control.

Fashion retailer The Gap Inc. is one such example. The company has adopted software-defined networking to connect its stores to one another on its corporate network. Using software-defined routers installed at each location, the company has streamlined the provisioning and management of its networks at each location, while increasing network security and providing each location with about 10 to 15 times the bandwidth it had previously. Additionally, the software-defined approach is about 50 percent less expensive than traditional wide-area networks, according to the Open Networking User Group.[4]

COMPREHENSIVE AND UNCOMPROMISED CONNECTIVITY IS KEY TO ENSURING RETAILERS CAN SERVE THEIR CUSTOMERS IN THE MANNER THAT TODAY'S TECHNOLOGY-CENTRIC CUSTOMERS HAVE COME TO EXPECT.

As more companies invest in and harness the power of big data analytics, software-defined networking is providing a fast conduit to collect, analyze, and act upon the insights culled from the data. Valuable retail merchandising data, such as which colors, styles, and brands of clothing are more popular in certain regions, for example, can help retailers better manage both front-end and back-end operations. Inventory can be managed at a more granular level and automatically scheduled for transfer to meet demand. Such information also can help retailers better forecast future style trends by region or season.

Marketing efforts, too, can benefit from the speed and intelligence afforded by software-defined networking. Mobile apps, geofencing, and location-based marketing are more effective when data is collected and distributed quickly—coupons, promotions, and other incentives pushed to the customer at just the right time increases the likelihood of the customer choosing to shop at a given location.

SDN IN RETAIL: THE NETWORK IS THE KEY

Software-defined networking holds the promise of greater efficiencies at lower operating costs. However, as with any other technology, the network is critical in delivering on that promise. Retailers need a highly reliable, secure, and flexible network. SDN and SD-WAN technologies can complement their existing network, delivering unprecedented network visibility and centralized control to optimize network and application performance and security for all locations. The ability to combine SDN with high-speed broadband delivers a new, cost-effective business model for adding broadband, and creates intelligent IP VPN connections to accommodate the growing need for bandwidth as services become even more customer-centric.

Comprehensive and uncompromised connectivity is key to ensuring retailers can serve their customers in the manner that today's technology-centric customers have come to expect.

Cloud computing, big data analytics, mobility, the Internet of Things and other next-generation technologies are enabling true digital business transformation in the retail sector. A solid and flexible network foundation is imperative.

CONCLUSION

Delivering uncompromised connectivity can be costly and complex for many retailers, yet the customer experience is critical for brick-and-mortar stores to remain relevant. Smart organizations work with a network service provider that can deliver both the SD-WAN and high-speed broadband connections that are essential to meet evolving customer-centric requirements.

The emphasis on technology in providing a truly customer-focused retail experience is forcing many retailers to re-evaluate and transform their legacy networks. Software-defined networks hold the promise of lower cost, greater flexibility, and easier management for organizations of all size, while being able to support the high-bandwidth dynamic nature of business applications today and in the future.

1 "Enterprise SDN Market Landscape," research report, TBR, November 2016, http://tbri.com/analyst-perspectives/press-releases/pgView.cfm?release=13890

2 "SDN Market Report," research report, Allied Market Research, June 2016, https://www.alliedmarketresearch.com/software-defined-data-center-market

3 Andrew Lerner, "Predicting SD-WAN Adoption," Gartner blog, Dec. 15, 2015, http://blogs.gartner.com/andrew-lerner/2015/12/15/predicting-sd-wan-adoption/

4 Rachael King, "Gap Connects Stores Over the Internet With Software-Defined Networking," The Wall Street Journal, Nov. 5, 2015 https://blogs.wsj.com/cio/2015/11/05/gap-connects-stores-over-the-internet-with-software-defined-networking/