SDN: POWERING THE NEXT GENERATION OF FINANCIAL SERVICES NETWORKS

The financial services industry, faced with mounting pressure from external forces, such as competition from FinTech companies and a more demanding client base, is working to become more customer-centric in its approach to business. However, the need to safeguard sensitive customer and business information and ensure compliance with government regulations can stymie such efforts.

For a number of financial services firms, the answer to their quandary lies in the right type of networking infrastructure—one that can provide the necessary security and be intelligent, flexible, and agile enough to support the applications and services that power customer-first experiences. The proprietary hardware so prevalent in traditional networks can't provide what financial institutions need; a growing number of organizations, therefore, are turning to software-defined networking (SDN).

The Open Networking Foundation (ONF), a technology organization dedicated to furthering the adoption of software-defined networking, defines SDN as "... an emerging architecture that is dynamic, manageable, cost-effective and adaptable, making it ideal for the high-bandwidth, dynamic nature of today's applications. This architecture decouples the network control and forwarding functions, enabling the network control to become directly programmable and the underlying infrastructure to be abstracted for applications and network services."[1] Programmability, agility, and vendor-neutrality are just some of the benefits of SDN.

Companies of all sizes and industries are utilizing SDN as a way to increase the efficiency and intelligence of their networks while reducing complexity. The benefits of SDN are myriad, and all serve to accommodate the next-generation services many organizations want to adopt or have already adopted, including cloud computing and virtualization.

According to research from TBR, SDN will compose nearly 40 percent of global enterprise network infrastructure revenue, roughly $12.7 billion, by 2020.[2] 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.[3]

Specific to the financial services sector, SDN offers intelligence to make networks more responsive and secure, no matter where data resides, on-premises or in the cloud. Provisioning and

management of network resources are handled centrally, ensuring all systems are up-to-date and meet compliance. Security rules are implemented and enforced from a centralized management system to ensure the integrity and security of sensitive financial information.

SDN IN FINANCIAL SERVICES: BENEFITS

Cloud computing, big data analytics, the Internet of Things, and even mobile devices are changing customer expectations regarding the services financial institutions should provide, as well as the way these organizations interact with their customers. These technologies also are having a profound impact on the performance of traditional networks, which has led to the creation of new-generation networks that can meet the needs of today's applications and services and address the challenges of tomorrow's technologies.

As a network infrastructure technology, SDN offers numerous benefits ranging from agility and cost savings to efficiency and security. In particular, SDN offers benefits of interest to financial institutions, including:

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Centralized provisioning and management: Software-defined networking separates the intelligence of the network from the data, enabling network administrators to manage the devices on a network from one central site. Using an SDN controller, organizations can provision and manage all of their network resources in all locations, including branch offices, which can save time and money by reducing the amount of manpower needed at each facility. What's more, updates to the network, including those affecting regulatory compliance, can be delivered to all network devices with the push of a button, ensuring all network elements are current and compliant.

Better security control: Central management also benefits the security of the network, with SDN controllers providing a central point of control to distribute security and policy information consistently. As more devices are added to networks, ensuring each has the proper security controls can become challenging. By centralizing the management of security for all devices on the network, however, financial institutions can ensure their networks—and the devices connected to them—are secure and compliant.

What's more, SDN can make it easier to collect network usage information, which could help organizations better detect anomalous behavior that could a security breach or outright attack.

Lower operating costs: Because many routine network administration issues can be centralized and automated using software-defined networking, banks and financial institutions that adopt SDN can save on manpower costs. Central management means tasks are completed more quickly and with a lower risk of error, further reducing network administration overhead, especially in banks and financial services firms with multiple locations.

Lower hardware costs: The open-source nature of SDN enables companies to repurpose their existing hardware for software-defined networking, as all the intelligence lives at the controller. This not only can help organizations save money – it also provides them with a smooth path for migration.

Application performance control: Centralized management also gives organizations control over data traffic, which can help ensure that applications perform as expected. More critical data can be prioritized for immediate delivery over applications that are not considered mission-critical. The ability to shape and control data traffic ensures the right services are delivered first.

SD-WAN: BRINGING MORE INTELLIGENCE TO THE WAN

For companies that have branch offices or multiple locations, SD-WAN extends the benefits of SDN across a distributed enterprise. SDN-WAN utilizes open-source technologies to provide 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. Plus, all security policies are managed centrally, enabling IT administrators to implement security updates to all devices on the entire network quickly and easily, ensuring compliance at all times.

An SD-WAN overlays traditional or hybrid WAN infrastructures and automatically locates the software or hardware nodes at each location and in the cloud. Then, based on policies defined by the operator, the SD-WAN steers the traffic along the best path and selects the best means to ensure data moves along the fastest route.

SOFTWARE-DEFINED NETWORKING HOLDS THE PROMISE OF GREATER EFFICIENCIES AND GREATER SECURITY AT LOWER OPERATING COSTS

EXAMPLES OF SDN USE IN FINANCIAL SERVICES

SDN is proving its value in a number of vertical markets, and financial services is no exception. A growing number of institutions are adopting software-defined networking to address a range of issues that include the growing need for more bandwidth and better network control across all business locations.

Citi is one example of a financial services firm using software-defined technology. The company's data centers use a software-defined architecture, and its network is now virtualized using a cloud-scale IP network fabric, on top of which are software-defined virtual network overlays and a software-defined storage fabric. Citi has deployed its big data, NoSQL and NewSQL data services, grid computing, virtual desktop infrastructure, and private cloud services on the new architecture. The result is a network powerful and agile enough to handle the load of millions of transactions per second, at lower infrastructure and labor costs—all while increasing customer service and, ultimately, customer satisfaction.[4]

SDN IN FINANCIAL SERVICES: THE NETWORK IS THE KEY

Software-defined networking holds the promise of greater efficiencies and greater security at lower operating costs. However, as with any other technology, the network is critical in delivering on that promise. Financial institutions need a highly reliable, secure, and flexible network.

SDN and SD-WAN technologies can complement their existing networks, 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 creating intelligent IP VPN connections to accommodate the growing need for bandwidth.

Comprehensive and uncompromised connectivity is key to ensuring banks and other financial services firms meet compliance and better serve their customers. Cloud computing, big data analytics, mobility, the Internet of Things, and other next-generation technologies hold the power to drive business transformation in the financial services sector. A solid and flexible network foundation is imperative to support these game-changing technologies and take advantage of new business opportunities.

Delivering uncompromised connectivity can be costly and complex for many financial institutions. Smart organizations work with a network service provider that can deliver a carrier grade SDN platform, SD-WAN and high-speed broadband connections that are essential to meet evolving financial services requirements.

CONCLUSION

The growing popularity of next-generation technologies and services, such as big data and analytics, necessitate the transformation of legacy networks to support them. Software-defined networks hold the promise of lower cost, greater flexibility, and easier management for organizations of all size. In the financial services sector, SDN can meet the demands of next-generation technologies through a network that provides flexibility, agility, security, and compliance in the service of a truly customer-first experience.

1 "Software-Defined Networking (SDN) Definition," Open Networking Foundation, https://www.opennetworking.org/sdn-resources/sdn-definition

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

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

4 Greg Lavender, "At Citi, Software-Defined Architecture Delivers," The Wall Street Journal, Dec. 2, 2015, http://deloitte.wsj.com/cio/2015/12/02/at-citi-software-defined-architecture-delivers/

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