SUPERCHARGING PAYMENTS WITH SECURE SD-WAN

Whitepaper

TNS

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1. SD-WAN: Key Takeaways

Top 3 SD-WAN Key Takeaways

1. Retail Has Changed

This shift towards omnichannel commerce has fundamentally changed the retail market, with the online and offline channels merging. This means that retailers need access to tools and connectivity that is in excess of what traditional solutions, such as MPLS, have offered.

2. SD-WAN Has Come of Age

SD-WAN has matured as a solution, to the point where it is now viable for use. The addition of built-in security features has made SD-WAN a viable successor to MPLS. The ability to de-risk PCI obligations is a major enabler.

3. Retailers Need to Choose Solutions that Match Their Goals

When assessing the highly varied SD-WAN market, retailers need to choose the right vendor. This means thoroughly assessing security credentials and understanding geographic reach, to ensure that connectivity contracts cover essential areas.

To find out more about cutting-edge SD-WAN solutions, contact TNS today.

https://tnsi.com/tns-secure-sd-wan/

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2. The Need for Digital Transformation

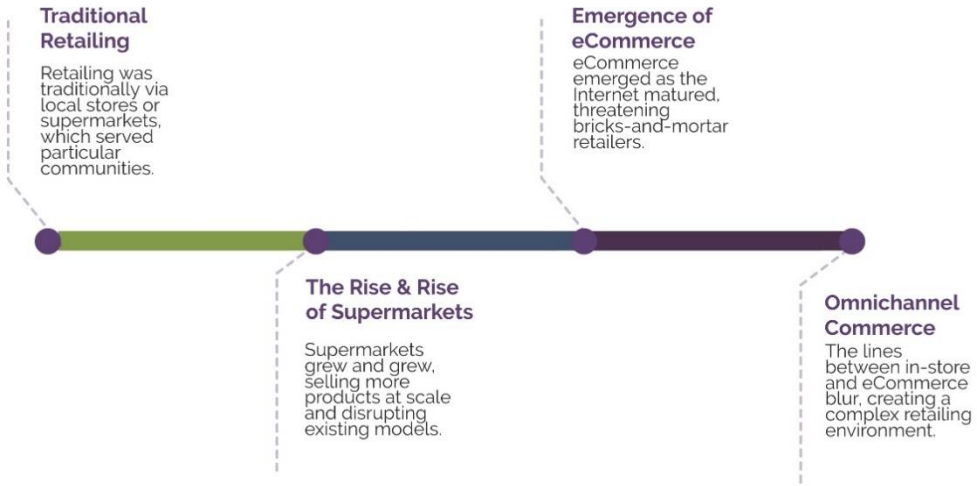
2.1 Introduction

Over the past few years, the retail market has been evolving rapidly, with numerous repercussions for the payment systems in service across the world. This section will examine how the market is changing and what problems this causes retailers.

2.1.1 The Evolution of Retail

Retail has fundamentally changed over the past few years, with the concept of omnichannel commerce becoming a powerful force. The journey of retail can be seen in Figure 2.1.

Figure 2.1: The Evolution of Retail



Source: Juniper Research

We will now examine each of these stages and analyse what they mean for payments.

i. Traditional Retailing

Under this stage of the market, card payments were rapidly adopted by retailers. This was fairly simple in payments terms, requiring a relationship with an acquirer. There was no need under this model for complex payment solutions. Management of the solution was simple and no value-added services were needed.

ii. The Rise & Rise of Supermarkets

As supermarkets have evolved and gained huge market share, they have also grown massive and complex store portfolios. This means that many supermarkets will have even more highly intricate payment infrastructures than other already complex retailers, which will have required complicated networking solutions to achieve. Connectivity uptime is a big requirement under this model. Value-added services add difficulty, with loyalty schemes, for example, requiring POS integrations.

iii. Emergence of eCommerce

With the emergence of eCommerce, many retailers have been looking to increase efficiency, in order to better compete. Many retailers have also launched their own eCommerce operations, requiring highly complex payment systems which include both online and offline features.

iv. Omnichannel Commerce

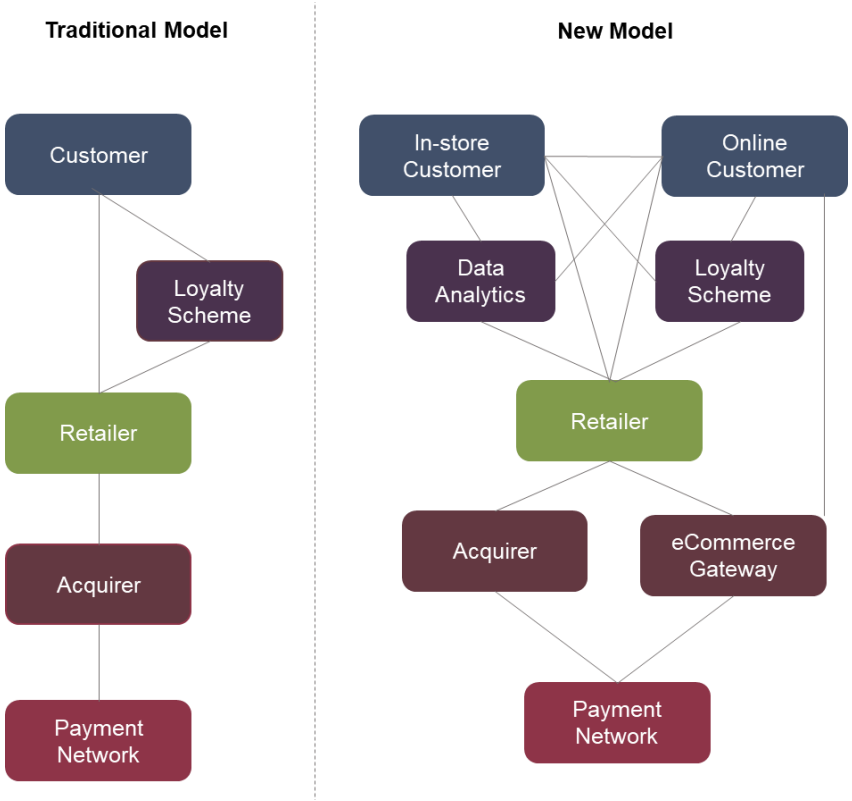
Under the current model, omnichannel commerce has emerged as a major trend, which is having big impacts on the market. Customers no longer want a simple in-store transaction, they want options such as click and collect, curb side delivery, buy-now-pay-later and others. The offline and online shopping experiences have become merged, meaning that payments systems have as well. In addition, stores have begun to shift to an in-store experience model, with features like free customer Wi-Fi leveraged for data analytics. This means that networking requirements are highly complex, requiring extensive management and near-perfect levels of connectivity uptime.

2.1.2 The New Retailing Model

In Figure 2.2 to the right, we can see that the new model is fundamentally different from traditional retail, creating a number of implications for retailers and service providers. If anything, Figure 2.2, despite the complexity of the new model outlined, is still a simplification. Different entrants in the chain can hold multiple roles and more value-added services are available, such as data analytics and loyalty solutions being from the same vendor, or the payment gateway offering loyalty systems.

Added onto this complexity is also regional differences. In certain regions, requirements will be different. For example, China is highly weighted towards eCommerce transactions, whereas in the UK and US, click and collect is popular. On top of this, individual regulators will have different levels of rules around retail, mandating certain levels of connectivity redundancies for example. Taken together, this creates a highly complex picture for retailers.

Figure 2.2: Traditional Retailing vs New Model



Source: Juniper Research

Coupled with this is the pressure that the COVID-19 pandemic has created on many retailers. This had led to many retail market insolvencies and job losses, due to reduced consumer spending and national lockdown conditions. This has had the effect of exacerbating the existing challenges

in retail, which were already mounting up. As a result, retail is more complex and has less margin for error than ever.

2.1.3 Implications for Retailers

This added complexity has several major implications for retailers. Firstly, that they will struggle to manage this level of complexity in-house. Traditionally, retailers have taken much of the control over managing their systems in-house, with teams focused on networking and making all the different systems work together.

As the complexity of the market has increased, this purely in-house method is no longer viable. Under this new model, greater control does not equal greater capability or flexiblility.

Retailers, therefore, must consider the merits of outsourcing/moving to a managed services model. These models will enable retailers to achieve the capabilities they want, without deploying massive internal resources, which they can ill afford, to achieve these goals.

2.1.4 Implications for Payment Networking Systems

In order to meet the challenges of the new way of retailing, payments networking vendors must focus on offering systems that have a number of key capabilities:

- Flexibility: Systems that are rolled out must be highly flexible and customisable, in that they can meet the very variable requirements of different retailers around the world. They must also be able to deal with common occurrences, such as new regulations or reconciling systems following mergers and acquisitions.
- Very High Uptime: When managing payments, reliability is a must. When a customer makes a payment, that payment must go through. This means that services must have a very high uptime (99.99%+), supported by well-developed redundancies and failover processes.
- Cost Efficiency: With the rise of eCommerce and situations such as the pandemic, retailers must be able to keep costs low, meaning a cost-efficient service is a priority.
- Security: As payments are involved, services provided must be subject to the highest levels of security, in order to meet requirements such as PCI DSS.
- Insight but Not Total Control: Systems must offer retailers usable insights on how systems are being leveraged, but this does not need to burden them with management or too much data.

It is Juniper Research's belief that these requirements are best met by an effective transition to SD-WAN systems, which can meet the evolving needs of the retail market. SD-WAN systems will be explored in greater depth in the following section.

3. Supercharging Payments with SD-WAN

3.1 Introduction & Definitions

Juniper Research defines SD-WAN or software-defined networking in a wide area network, as decoupling the networking hardware from its software control mechanism, allowing for optimisation.

SD-WAN operates as a fabric over the top of connectivity methods, enabling retailers to virtualise the network infrastructure. This means that retailers have much greater flexibility in how to utilise their connectivity, and unlocks new services, such as customer Wi-Fi, that were difficult to operate under conventional networking solutions such as MPLS.

SD-WAN is a technology that is growing in importance across multiple verticals, as it offers the potential to improve efficiency and processes across a number of fields, particularly in retail. There have been concerns around the use of payments under an SD-WAN system, but modern capabilities, such as those offered by TNS Secure SD-WAN, can cater to these challenges effectively.

3.2 SD-WAN as a Solution

SD-WAN is essentially a fabric, that covers all connectivity requirements end-to-end. This means that SD-WAN can optimise connectivity that is used, bringing major benefits to users.

3.2.1 Cloud as the Default

SD-WAN as a concept is very much borne out of the cloud age. Among many other businesses, in modern retail, Internet-connected services are numerous. Many of these processes are no longer on-premises and have been migrated to the cloud at various points. As such, the requirement is for the retailer's networking infrastructure to support these integrations with no additional complexity.

3.2.2 Complexity of Modern Networking Requirements

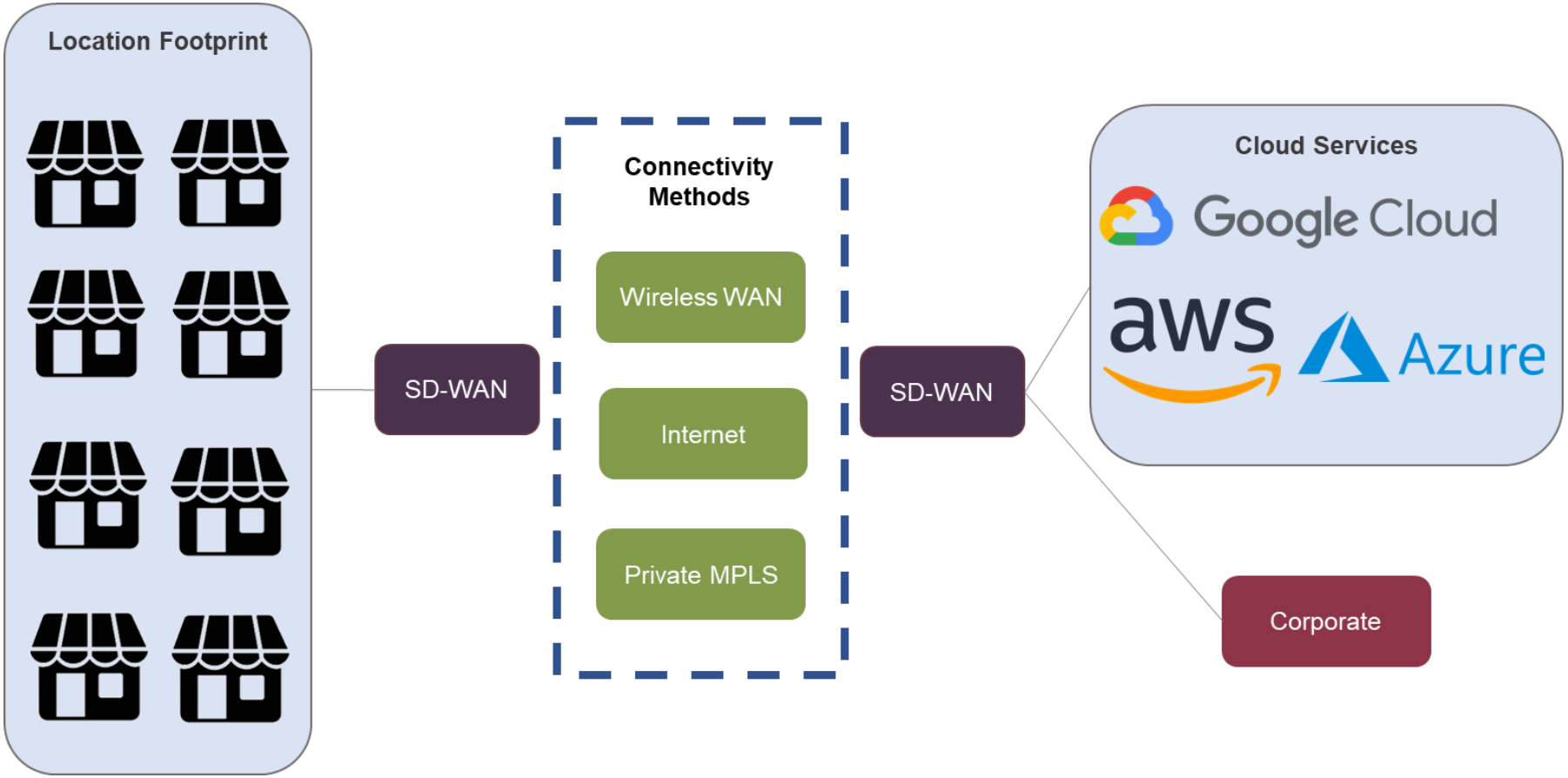
Modern networking requirements are also highly complex. A retailer may have many different locations, with Walmart, for example, having around 11,500 locations worldwide, Tesco with around 7,000 worldwide, and ExxonMobil having more than 11,000 service stations worldwide. Many of the locations will be in different countries and areas, with different regulatory and business requirements.

As such, this footprint is extraordinarily complex and time consuming to manage from a connectivity point of view. By integrating an SD-WAN solution, retailers can better manage these highly complex requirements.

3.2.3 Complexity of Connectivity Methods

The other layer of complexity is that connectivity methods can vary throughout a retailer's operations. Retailers may be using private MPLS, wireless WAN, fixed-line Internet connectivity. Overall measures to simplify connectivity must encompass all of these methods and enable their optimisation and management. Traffic must be routed through the correct areas, whilst maintaining robust uptime and security.

Figure 3.1: SD-WAN Concept



Source: Juniper Research

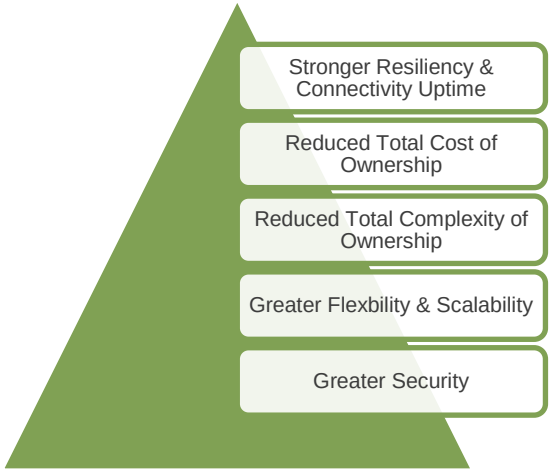
3.3 Benefits of SD-WAN Deployment

This section will explore the largest potential benefits of SD-WAN deployment in the retail environment, both for the retailer and the end user. It is worth noting here that not all SD-WAN services are created equal. To achieve many of these benefits, retailers must choose the right vendor.

3.3.1 Retailer Benefits

While SD-WAN does have benefits for end users, its biggest benefits will be felt by the retailers themselves. These benefits are explored in Figure 3.2 and below.

Figure 3.2: SD-WAN Benefits for Retailers



Source: Juniper Research

i. Reduced Total Cost of Ownership

Under a SD-WAN-enabled model, there are numerous ways in which the approach can be used to reduce the total cost of ownership for retailers. By supporting complex requirements under current systems, retailers are spending a large amount of in-house capabilities in networking, as well as accessing different forms of connectivity.

By introducing SD-WAN, retailers can outsource the management of their systems and improve the quality of services, reducing the total cost of ownership, whilst improving the actual service delivery. Retailers can also realise cost reductions through less excess data usage, improved router distribution and simplified admin, compliance and security.

ii. Reduced Total Complexity of Ownership

In a similar vein to reducing costs, reducing complexity is the primary aim of SD-WAN deployment. Current processes are complicated, insofar as operating many different systems and creating a fully working network is very challenging.

SD-WAN changes this equation by massively simplifying the process. Using SD-WAN reduces the cost of security, compliance and vendor management, passing these responsibilities onto the service provider. This can provide a retailer with a highly valuable service, which much less time and effort required to manage the service.

iii. Stronger Resiliency & Connectivity Uptime

By leveraging SD-WAN's capabilities, retailers can enjoy much higher levels of resiliency, as well as improved connectivity uptime. By using multiple connectivity carriers under one agreement, retailers will have

reduced risk of carrier outages. Providers will continuously monitor services, ensuring any problems are dealt with seamlessly. By choosing the vendor with the right geographic footprint, retailers can be sure that services will be available across large footprints.

iv. Greater Flexibility & Scalability

By utilising SD-WAN, retailers are accessing a highly flexible solution. SD-WAN can be deployed using any number of different connectivity types and legacy infrastructures. It can orchestrate different elements to provide a reliable service.

SD-WAN also allows highly scalable deployment. SD-WAN can be rolled out in much faster timescales than traditional solutions, allowing retailers to scale quicker.

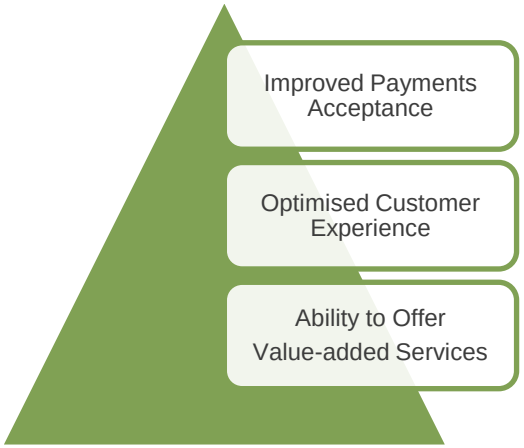
v. Greater Security

SD-WAN solutions, where combined with security features in one service, can offer secure Internet connectivity, which can effectively mitigate against hacking and ransomware attacks. This can be achieved by offering next-generation stateful firewalls (including IP SEC VPN tunnels), anti-virus features, URL filtering and SSL packet inspection. These capabilities need to be backed up with regular firmware updates, to ensure any vulnerabilities are found and resolved. Adopting SD-WAN also allows retailers to de-risk their PCI DSS (Payment Card Industry Data Security Standard) obligations, as SD-WAN services from certain vendors meet many of the obligations under the standards. However, not all SD-WAN solutions offer these capabilities 'out of the box', with some vendors offering security as an add-on service. Retailers should prioritise vendors with strong credentials by default.

3.3.2 Customer Facing Benefits

While the main benefits of SD-WAN are operational ones which improve efficiency when deployed, there are also benefits in ways that are customer facing. These will be explored here.

Figure 3.3: Customer Facing SD-WAN Benefits



Source: Juniper Research

i. Improved Payments Acceptance

One of the major benefits of the use of SD-WAN in payments networking is that it will enable strong payments acceptance. SD-WAN can support online eCommerce gateways, ATMs, POS terminals, tablets for digital payments, cash registers, payment-enabled fuel pumps and more. By enabling cloud access, SD-WAN can facilitate other payment methods, such as POS finance or digital buy-now-pay-later, which are critical to providing a strong experience for users.

ii. Optimised Customer Experience

As discussed in section 1, a major driver for change is how retail is evolving. As such, SD-WAN can be a critical enabler of omnichannel commerce. By breaking down walls between different networks, connectivity types and data silos at large organisations, SD-WAN can enable online and in-store systems to effectively communicate, enabling a customer experience suitable for the rapidly changing nature of retail.

iii. Ability to Offer Value-added Services

By moving to the flexible SD-WAN platform, retailers can offer value-added services to their users. One of the best examples of this is free customer Wi-Fi. This offers a major customer benefit and can be a significant part of stores as destinations strategies. Offering customer Wi-Fi can enable an easy switchover from in-store to eCommerce where items are not in stock, or can enable mobile checkout options.

Customer Wi-Fi deployment can also be highly beneficial to retailers. Retailers can monitor usage and track location to understand the flow of footfall around stores, which can be very useful in understanding the customer journey.

3.3.3 Conclusion

When examining the benefits of SD-WAN, it becomes clear that its adoption enables a generational shift in capabilities for retailers over existing technologies, making it a critical technology that many retailers can adopt. By offering a simple, overlay solution that is managed end to end, retailer can reduce not only the total cost of ownership, but also the total complexity of ownership. This simplicity and freeing up of resources will be critical in enabling retailers to evolve their propositions to keep pace with retail market change.

3.4 SD-WAN vs MPLS

When discussing the merits of SD-WAN, it would be remiss not to discuss its most frequent comparison with MPLS.

Before diving into the comparison, it is worth noting that MPLS and SD-WAN are not mutually exclusive. SD-WAN's ability to operate as a fabric across connectivity types means that it can work with MPLS connections, and this is a likely frequent occurrence, as SD-WAN is designed to work with legacy infrastructure.

Some advantages of using SD-WAN versus MPLS are explored below:

3.4.1 SD-WAN can be More Cost Effective

By adopting SD-WAN solutions, a multi-point connection can be made via ordinary Internet connections, rather than relying on individual MPLS connections. This can lead to a big cost saving, as well as creating a simpler overall proposition.

3.4.2 Secure SD-WAN has Stronger Security Credentials

As a fundamental technology, MPLS has strong security credentials, in that it provides a secure connection between branches and data centres through a private connection. However, MPLS does not add any security credentials into the mix, other than its default security by design.

By contrast, SD-WAN, when offered as part of a secure solution, offers security as a key feature, providing analytics, IPSEC tunnelling and other elements. This means that if the right provider is chosen, security can be positively influenced.

3.4.3 SD-WAN is More Suitable for a Cloud World

In today's retail and payments environments, cloud is a fact of life, with many POS applications being cloud-based, as well as virtually all software sold on a SaaS basis in a B2B environment. As such, retailers must use a system that supports cloud as a native feature. This is something that SD-WAN is designed to do, but MPLS does not support in the same way.

3.4.4 Conclusion

MPLS is not a bad solution, it serves a specific need and has underpinned many services. Indeed, MPLS still has a role to play as part of the retail market, orchestrated by an overall SD-WAN capability. However, we will begin to see a migration from MPLS to SD-WAN over time, as retailers and other users recognise the vast benefits that come with SD-WAN adoption.

3.5 Key Considerations for SD-WAN Deployment

Outlined below are a number of key factors when considering an SD-WAN deployment.

3.5.1 Choose a Vendor with the Right Security Credentials

As we outlined earlier, SD-WAN only offers built-in security management from some vendors; this is not necessarily a feature by default. Retailers should ensure that they choose the right vendors, who can offer high grade security capabilities as part of their basic services.

3.5.2 Select the Right Partner for Your Geographic Footprint

One of SD-WAN's biggest advantages is that it can unite operations with a broad georgaphic footprint, enabling insights and service provision at a higher level than existing solutions. However, in order to offer this, SD-WAN vendors must have the connectivity agreements in place with local vendors. Not only this, but they need several agreements in order to offer the kind of resilience that retailers need. As such, carefully evaluating vendor reach is critical.

3.5.3 Plan Your Digital Transformation Strategy Around SD-WAN Capabilities

While SD-WAN can be a powerful accelerator of digital transformation, it does not generate digital prowess in and of itself. SD-WAN must be a considered measure within a wider digital transformation strategy, or else retailers will not see the returns on investment that they seek.

4. TNS Secure SD-WAN Case Study

4.1 TNS Profile

4.1.1 Corporate

Founded in 1990, TNS (Transaction Network Services) is a provider of networking and integrated data services to leading organisations in the global payments and financial sectors, as well as providing extensive telecommunications network solutions to service providers.

TNS manages some of the largest real-time data communication networks in the world, enabling industry participants to simply, securely and reliably interact and transact with other businesses, to access the data and applications they need, over managed and secure communications platforms. TNS' existing footprint supports millions of connections and provides access to critical databases. TNS' network securely blends private and public networking to enable customers to utilize a single connection for 'one-to-many' and 'many-to-many' connections over a global platform.

TNS is privately held and does not release financial information. Key executives at TNS include: Mike Keegan (CEO); Dennis Randolph (CFO); Henry Graham (Vice Chairman); Mark Cole (Chief Network Officer); Jim McLaughlin (General Counsel & Secretary); Bill Versen (Chief Product Officer); John Tait, (Managing Director, Payments).

TNS has a global reach, with offices in Brazil, US, France, Germany, Ireland, Italy, Spain, UK, Australia, Hong Kong, India, Japan, Malaysia, New Zealand, Philippines, South Korea, Singapore, Taiwan and Thailand.

4.1.2 Key Clients & Strategic Partnerships

- Key clients for TNS include AT&T, Barclays Capital, Fiserv, US Cellular, Goldman Sachs, CardTronics, Sprint, Nasdaq, Barclaycard, Verizon and Global Payments.
- In October 2020, TNS announced the launch of its Secure SD-WAN solution, in partnership with Fortinet, a prominent US-based cybersecurity company. The solution leverages hardware from Fortinet, leveraging its strong credentials to secure the solution.

4.1.3 High-level View of Offerings

TNS Secure SD-WAN is TNS' SD-WAN solution, which builds upon TNS' strong pedigree in the payment industry. TNS Secure SD-WAN is part of the wider TNS Link solution.

TNS Secure SD-WAN combines PCI compliance, global connectivity, network security and specialist hardware to create a payments networking solution for branch retail locations.

TNS Secure SD-WAN offers branch networking with integrated security and PCI DSS compliance, as well as more connectivity options to lower costs and improve performance. The service is available as a fully-managed solution with vital monitoring insights, as well as the ability to lower total cost of ownership by simplifying operations.

i. Key Statistics

- TNS Secure SD-WAN boasts a connectivity uptime standard of 99.99%, which offers the resilience customers need.
- TNS Secure SD-WAN offers the potential for significant OPEX reduction, compared with traditional networking solutions.

ii. Key Features

- TNS Secure SD-WAN is fully managed, which can reduce the cost of security, compliance and vendor management.
- The solution uses multiple carriers, reducing the risk of service outages.
- The service offers cost reduction through less excess data, router distribution, admin, compliance and security. It also removes the cost of router configuration, testing and repairs.
- TNS Secure SD-WAN can reduce PCI scope and lower operating costs.

iii. Security

- TNS Secure SD-WAN offers secure Internet connectivity, mitigating hacking and ransomware attacks. This is supported by IPSEC tunnelling, as well as anti-virus protection with anti-malware and spyware.
- These credentials are backed up by URL filtering and SSL packet inspection, as well as dynamic policy management and regular firmware updates.
- TNS solutions have PCI DSS certification.

iv. Improved Customer Experience

- TNS Secure SD-WAN enables retailers to expand in-store services like customer Wi-Fi, manage and prioritise data routing, as well as easily increase capacity with Internet connectivity.
- This solution enables retailers to widen payment acceptance, and also supports modern cloud apps in-store.
- The service also enables prompt customer troubleshooting.