Let’s reimagine the shopping experience

Get Started

Microsoft

vmware

The best customer engagement is still driven from the store

There is a lot going on in retail! Whether it is curbside pickup or using augmented reality to try new clothes, consumers expect personalized omni-channel service. Retailers need to reimagine the shopping experience.

To deliver a great customer experience, retailers are turning to technology – leveraging modern applications and cloud/edge services. To deliver this, a high-performing network is foundational.

It's not like the old days with manual cash registers, when you could get by if the power went out. Today retailers rely on secure connectivity and compute regardless of store size or location - their stores can lose valuable business and credibility if either of these are lost.

Retail technology shifts from cost center to profit center

Retail marketing used to be focused on getting people into your store: people would walk in, browse the merchandise and purchase. Now, the buyer's journey is very different: retailers need to lead people into the store, cross-promote to them inside the store, connect with them via multimedia channels, and be there any time and anywhere the buyer might decide to purchase.

Customer satisfaction is a differentiator, so after the purchase retailers must ensure seamless fulfilment and return processes in order to gain repeat business.

Therefore, retail CIOs are now tasked not just with cost-optimization, but also with revenue creation.

Technology is at the forefront of this transformation.

- 88% of retail executives reported that they have increased investment in digital-first experiences, according to VMware Retail Executive Pulse, June 2021
- 73% of retail executives report that their organization has faced at least one major security breach, according to VMware Retail Executive Pulse, Sep 2021[1]

CIOs must guide and support the business in deploying a modernized technology foundation to create new value streams for competitive advantage.

1. Source: VMware: VMware Q2 Executive Pulse

Retail store of the future drivers

Let's take a look at the integration and spending on technology for the store-of-the-future, where retail and technology will become even more inseparable.



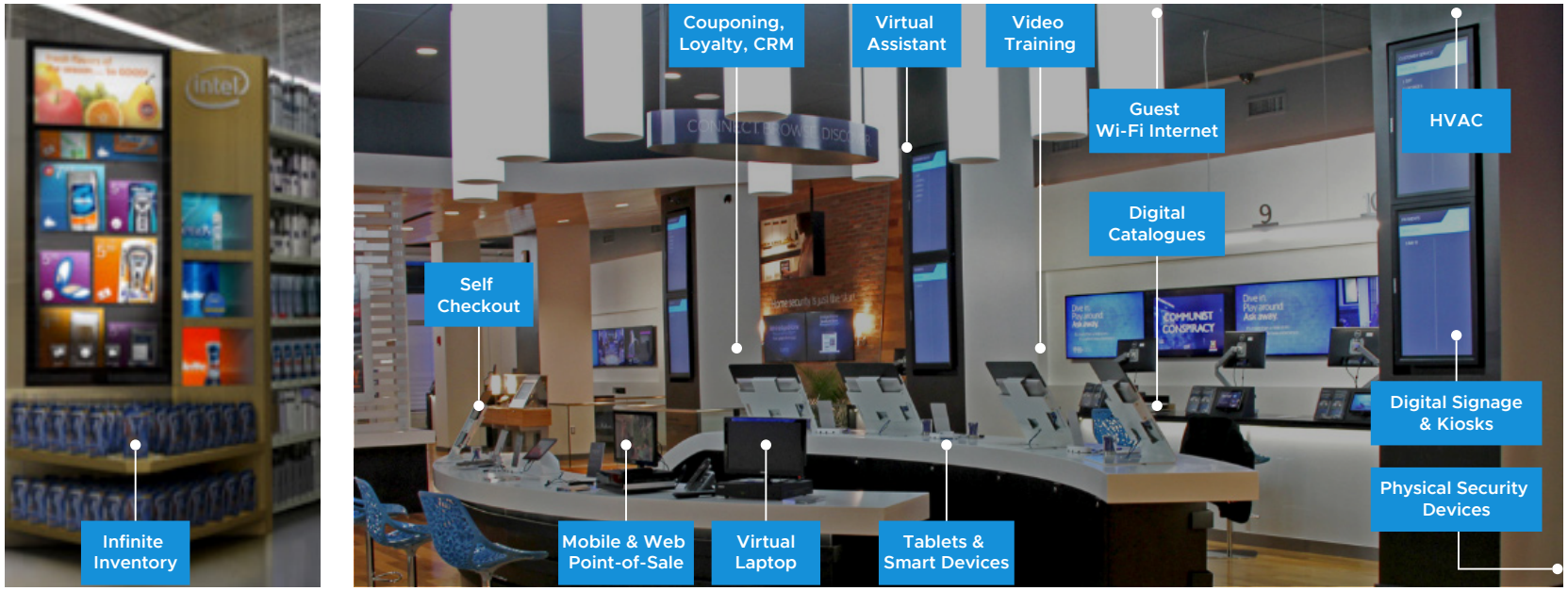


Cloud	Video	UC	IoT	Wireless
• eCommerce • Loyalty Apps • POS	• Merchandising • Empoyee Training • Video-Assisted Sales	• VoIP • Collaboration • Customer Service	• Beaconing • On-Demand Couponing • Smart Shopping Bag	• Line Buster • Instant Inventory Check • Guest Wi-Fi
Applications are being run from the Cloud	Video is the preferred sales and training delivery method	UC services are the preferred communications method	Devices are conected and sharing data	Wireless is the preferred connectivity method

Security

Retail store of the future features

To support digital transformation the retail store is becoming increasingly complex to maintain. In the brick and mortar store you not only have to carry physical inventory, but you also must present it well. The space must be approachable and pleasant, in order to provide a modern omnichannel experience.



"Stores providing unique in-store experiences will thrive."

To become a retail hub, the modern store must be teeming with technology that helps support a user friendly and engaging shopping experience. Stores that provide unique in-store experiences will thrive. The retail store of the future must embrace features such as:

- Self-checkout using a smartphone
- Simple guest Wi-Fi access
- Mobile and web point of sale
- Digital signage and catalogs
- Digital coupons redeemable on a mobile device
- Customer loyalty programs
- Physical and device security, including payment card industry (PCI) compliance
- Virtual assistant for customers
- Video training for employees

It is no surprise that the role of technology in retail is shifting from a cost-center (supporting systems for logistics, point of sale (POS), ordering) to a profit center (multimedia, omnichannel, video, voice, text, and IoT).

In-store retail workers must be equipped with the right tools, now

Store associates, managers and those responsible for store fulfillment need access to the right tools to provide customers with a great in-store experience:

- Store associates can utilize mobile devices and applications to help customers source goods and to order out of stock items for store or home delivery.
- Store managers can use tools for managing and scheduling their teams as well as using common communication tools to engage store associates.
- Store fulfilment can tie the back of house and front of house communications together when they're fulfilling orders for delivery or pickup. Like store associates, they need to be more connected and be able to access co-workers, in other work areas of the business, with ease.
- Engagement goes beyond the customer as well, to the employee themselves. Mobile devices and applications should also be used to help make them feel more connected to the broader organization, giving them access to training, open positions, employee benefits, extra shifts etc.

.

In-store POS systems need a facelift

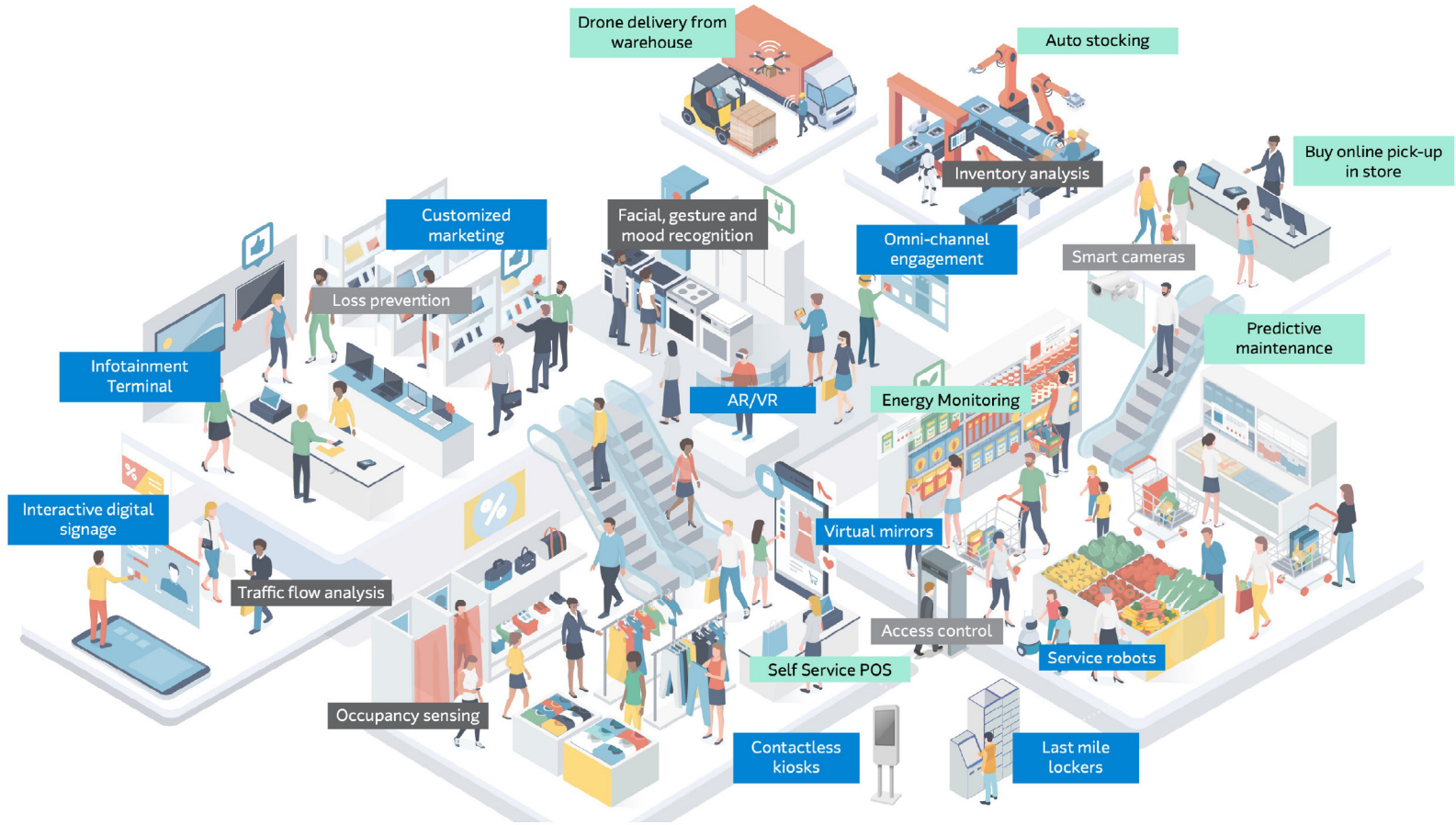
Behind-the-scenes in an economy where customers expect instant service online or off, virtualizing the point-of-sale (POS) system can help optimize back-office processes that contribute to friction, as well as inject a level of agility never before seen from POS. Leveraging virtual desktop infrastructure (VDI) with POS can help retailers comply with critical standards and regulations while also providing customers with a high-quality user experience through on-screen interactive functionality.

Retailers are investing in their POS and self-checkout systems. According to IDC's May 2021 Global Retailer Survey, retailers identified "POS/payment/self-checkout" applications as an important factor in driving implementation of in-store edge computing.

By running systems in the cloud, such as VMware Horizon on Azure, technicians can perform routine patching, troubleshooting, and repairs remotely instead of traveling to individual stores, saving time and expense.

Source: IDC: How Retailers Use Edge for the Greatest Benefits Both Inside and Outside of Stores

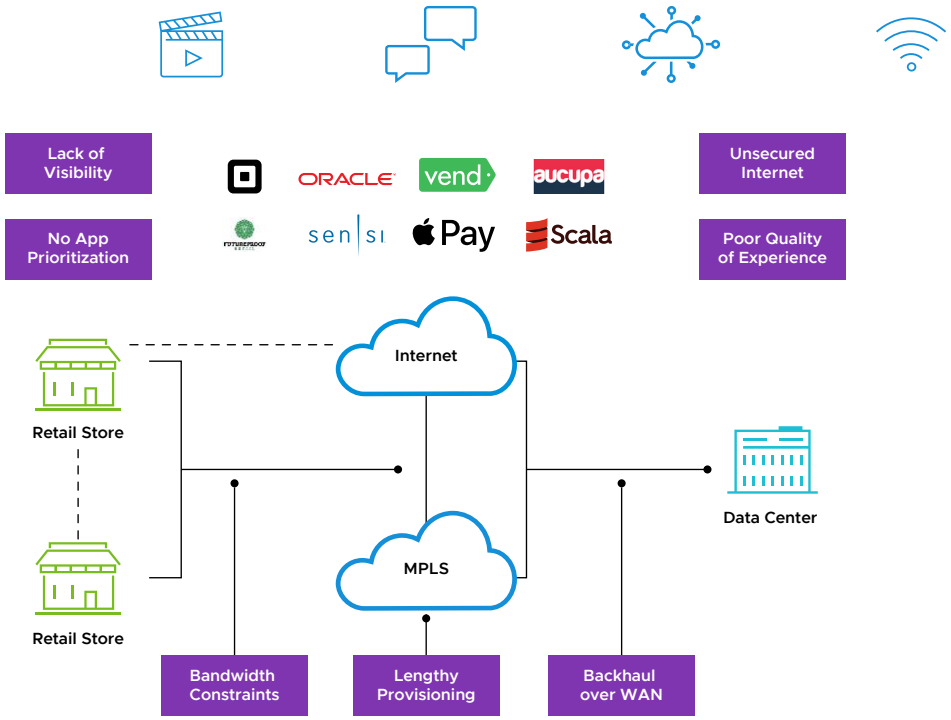
Technology is enabling personalized omni-channel experiences



vmware® Microsoft

The current network cannot meet the evolving needs of retail

There are some challenges in attaining the right network design for retailers. Advanced applications and engaging features will not help if the underlying network architecture cannot keep pace with the technological advancements in the retail store.



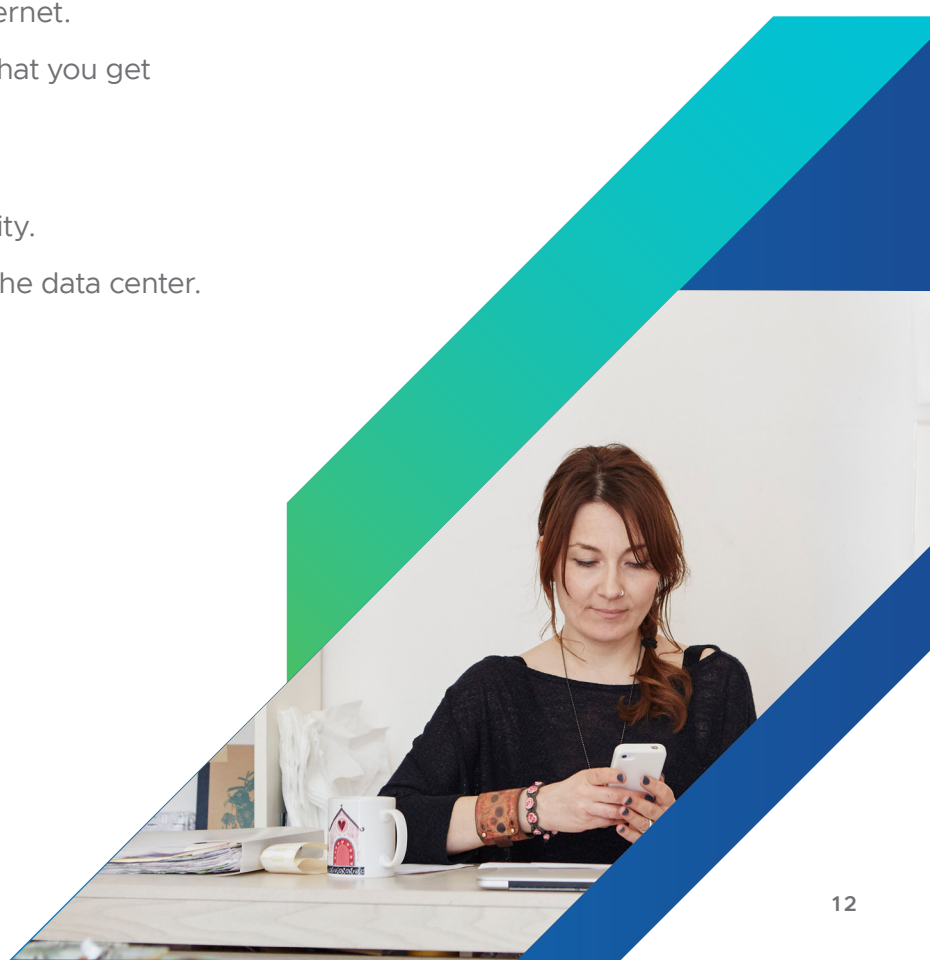
There are many challenges that retailers face, including:

- Poor quality of experience (QoE) due to the inability to apply business policies to the network.
- Unsecured internet leaving the location open to intrusion.
- Bandwidth constraints that limit the quality of multimedia applications or that impact application performance – for retailers working in the store or from their home.
- Lengthy provisioning times for circuits that can delay store openings.
- Lack of visibility into application performance.
- No app prioritization, meaning the business-critical transactions could be impacted by non-critical traffic.
- Backhauling to the data center over the WAN using expensive links with limited bandwidth.
- Point of sale and self-checkout systems are becoming more bandwidth intensive and require low latency connectivity.

Retailers need a modern network (Hint: VMware SD-WAN)

The answer to all of the common network challenges in retail is to change the network to one that is more responsive. In a modernized network, retailers need:

- Application traffic prioritization to ensure critical data gets through and provide a guaranteed quality of experience.
- Built in security and the ability to chain to external services for secured Internet.
- The ability to combine connectivity links (Broadband, LTE, MPLS) so that that you get maximized bandwidth.
- Rapid provisioning from a centralized orchestrator.
- Application performance management tools to provide 360-degree visibility.
- Hosted gateways to provide a direct link to the cloud with no backhaul to the data center.



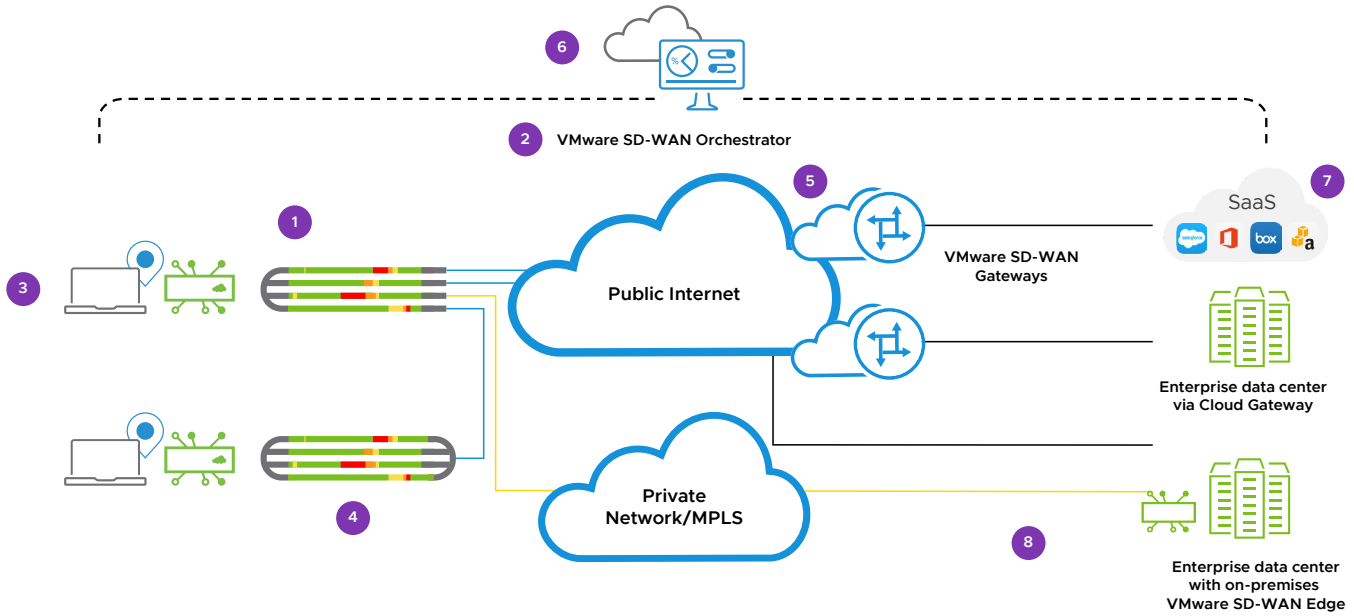
vmware® Microsoft

What should retailers look for in an SD-WAN solution?

SD-WAN needs to deliver the framework and features that address today's network requirements.

It needs to create a virtual overlay on your existing network by connecting Edge devices that sit in your retail stores to hub devices in the data center or cloud, where your applications are hosted. These capabilities are provided by VMware SD-WAN™, a service of VMware SASE™, and make your network ready for the needs of today's retail store.

1. Assured performance of all critical retail apps over any transport
2. PCI Compliance with PCI-Certified SD-WAN
3. Service insertion for Security services
4. High availability through WAN circuit aggregation
5. Multitenancy multiple retail locations are co-tenants
6. Enterprise-wide visibility into application usage and performance
7. Secure SaaS and IaaS access directly from the branch without the need to backhaul to data center
8. Reduced security exposure to threats with network traffic segmentation



Assured application performance

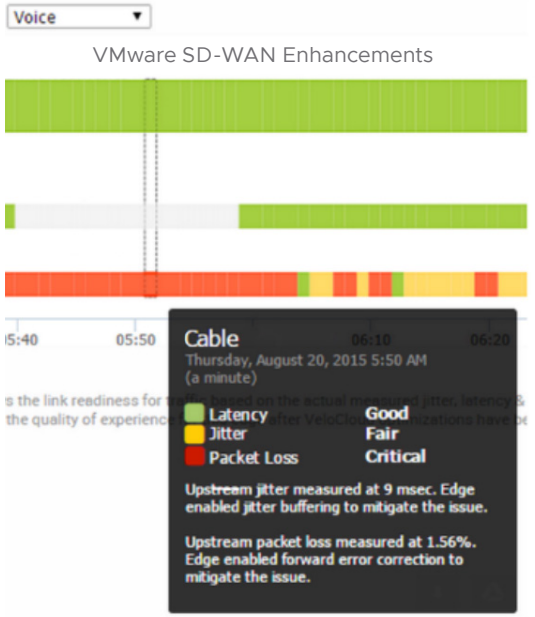
For application performance, VMware SD-WAN provides continuous link monitoring, auto-detection of provider and auto-configuration of link characteristics, routing and QoS settings. VMware Dynamic Multipath Optimization™ (DMPO) technology delivers sub-second protection against service drops to improve application availability. It remediates link degradation through forward error correction, activating jitter buffering and synthetic packet production.

How it works

For a retailer that relies on VoIP for their business and has a lot of phone conversations whether in the store or working from anywhere, voice service is critical. If it fails, their business is impacted. DMPO monitors the link quality constantly and uses dynamic per-packet steering to send traffic to the best available link.

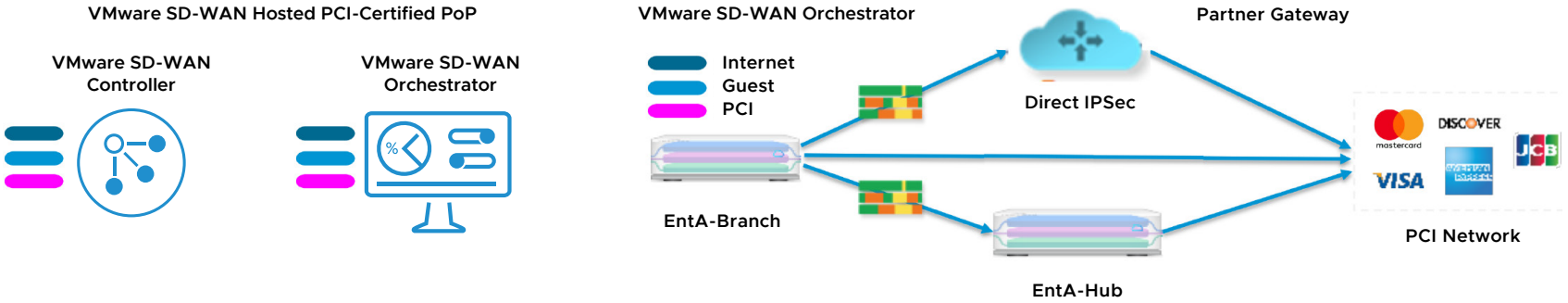
On-demand remediation fixes any problems with the signal. For one retailer, MPLS links were preferred for voice, but the link failed. They had a backup link using cable, but it experienced reduced connectivity conditions. VMware SD-WAN remediated the single cable link cable with no impact to the business.

Remediation uses a jitter buffer to mitigate the jitter. It uses policy-based QoS when packet loss is detected on the line and then it turns on forward error correction and starts duplicating and retransmitting packets



Security and PCI compliance

SD-WAN can assist retailers with the payment card industry data security standard (PCI DSS). VMware SD-WAN ensures PCI compliance in a simple, efficient, and cost-effective manner. VMware SD-WAN is the only solution offering a PCI-certified, cloud-delivered SD-WAN and is validated by the PCI Security Standards Council and Coalfire, an industry certification organization.



Orchestration

- Multienant
- TLS 1.2
- Role-based access contol/Radius
- 2-Factor Authentication
- Event and firewall logs/APIS
- Built-in certification server

Data-Plane

- IPsec with AES 256
- PKI
- Local Access Control
- Segmentation for hosted Controller

VMware SD-WAN is ready for enterprise on-premises or cloud PCI audits and is certified for PCI DSS 3.2. The hosted VMware SD-WAN Orchestrator and Controllers are available with a PCI certification or an Attestation of Compliance (AOC), which demonstrates that a business has performed the appropriate self-assessment.

Retailers can present the VMware SD-WAN AOC to simplify their own audit process. VMware SD-WAN has a full set of security features needed for PCI compliance in the data plane and management. It provides firewall virtual network firewall (VNF) for Intrusion Protection Section (IPS), and single sign-on (SSO) with OpenID connect support. Retailers benefit from a PCI AOC to help pass and simplify the PCI audit and know that solution components are PCI compliant. This means that you can use VMware SD-WAN with confidence in your PCI environment.

Distributed services insertion

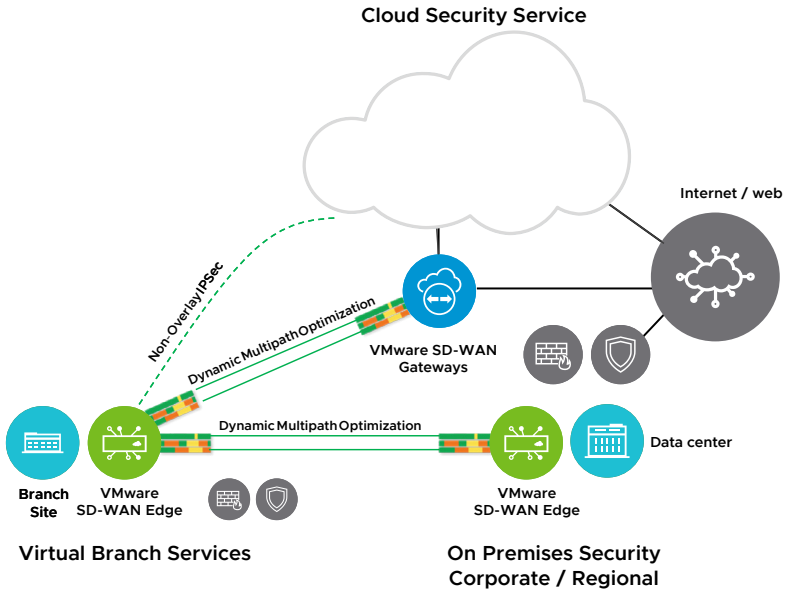
An important part of a security strategy is the ability to use outside services. VMware SD-WAN makes this easy with a service chaining capability that directs traffic to cloud hosted security services, such as web firewalls and URL filtering services. With this feature you can transparently forward select traffic to a cloud-based security service based on business-policy definitions without any branch-by-branch or application-based configuration required. Features include:

- DMPO that delivers application performance and reliability to cloud
- Single-click application-aware policies for granular service insertion
- Automated tunneling that eliminates site by site configurations

VMware SD-WAN Dynamic Multipath OptimizationTM delivers application performance and reliability to cloud

Single-click Application-Aware Policies for granular service insertion

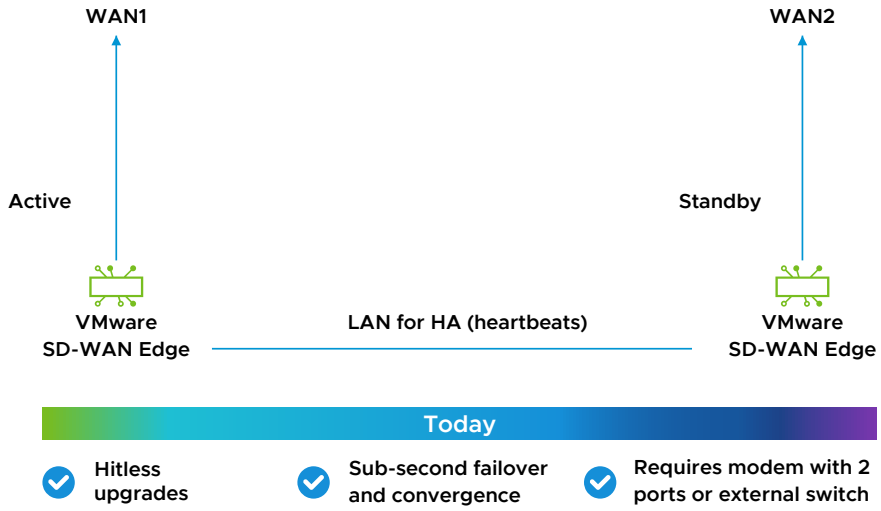
Automated tunneling eliminiates site by site configurations



High availability

VMware SD-WAN Edge devices can be configured in high availability (HA) pairs to maintain business continuity and resiliency. In this setup, one Edge becomes standby and one Edge is active. VMware SD-WAN is always measuring the quality of each link to select the best path. If an issue happens on the active Edge, the switch-over is sub-second, so that the store experiences no downtime.

Standards-based, flexible options are used for configuration of the HA feature, which works with existing VMware SD-WAN devices. This eliminates the L2 switch/router requirement on the WAN, as the Edge device can replace it.



Standards-based flexible options for High Availability

Works with existing devices

Eliminates L2 Switch/Router requirement on WAN

Sub-second stateful failover with VeloCloud Only Edge HA

Multitenancy

VMware SD-WAN enables an increasingly common multitenant site use case. Often networks need to serve more than one tenant. In retail, this could be a store-in-store or a pop-up store. Multiple retail locations can be co-tenants in a store-in-store model. What this means is that the manager of this shared space can offer each tenant a portal view of their own network segment. Each tenant has different business applications and priorities that are supported by per tenant QoS and dynamic application policies providing for different bandwidth utilization and application prioritization.

This model supports charging tenants by their respective use of the shared WAN circuits. The multitenancy features of VMware SD-WAN provide for:

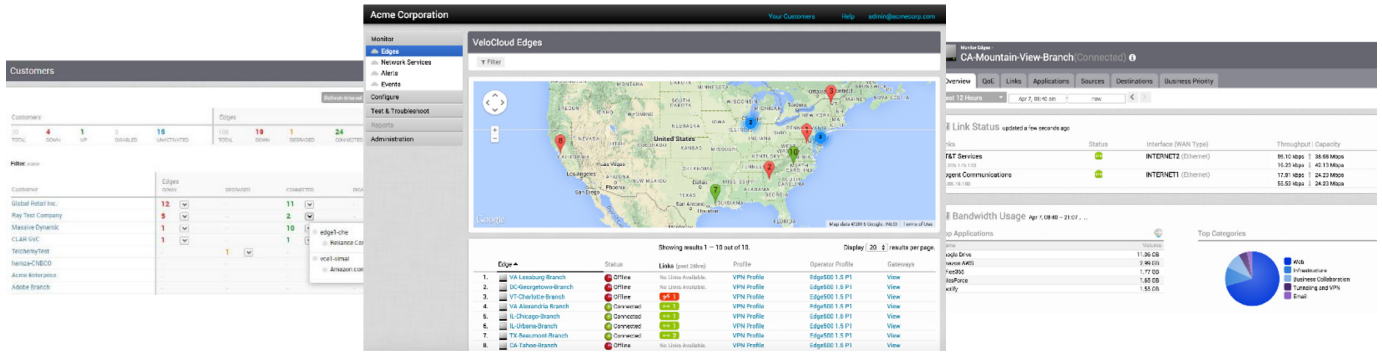
- Policy and management separation – each tenant network can be managed separately.
- Multitenant orchestration – features for each tenant can be orchestrated separately.
- Voice, data, internet – traffic for each managed per-tenant.
- Multitenancy and segmentation – the network can be segmented per-tenant.
- Per tenant QoS – can be applied to ensure quality of service per-tenant.
- Dynamic Multipath Optimization – can be applied per-tenant for application performance management.

Deployment, management, monitoring and analytics

The VMware SASE Orchestrator provides a console for your entire SD-WAN solution. It enables zero-touch provisioning of new sites and branches to rapidly bring up new branches. The Orchestrator provides for simple configuration of devices and policy management of application traffic. It also provides ongoing visibility into network and application performance and agile troubleshooting of issues.

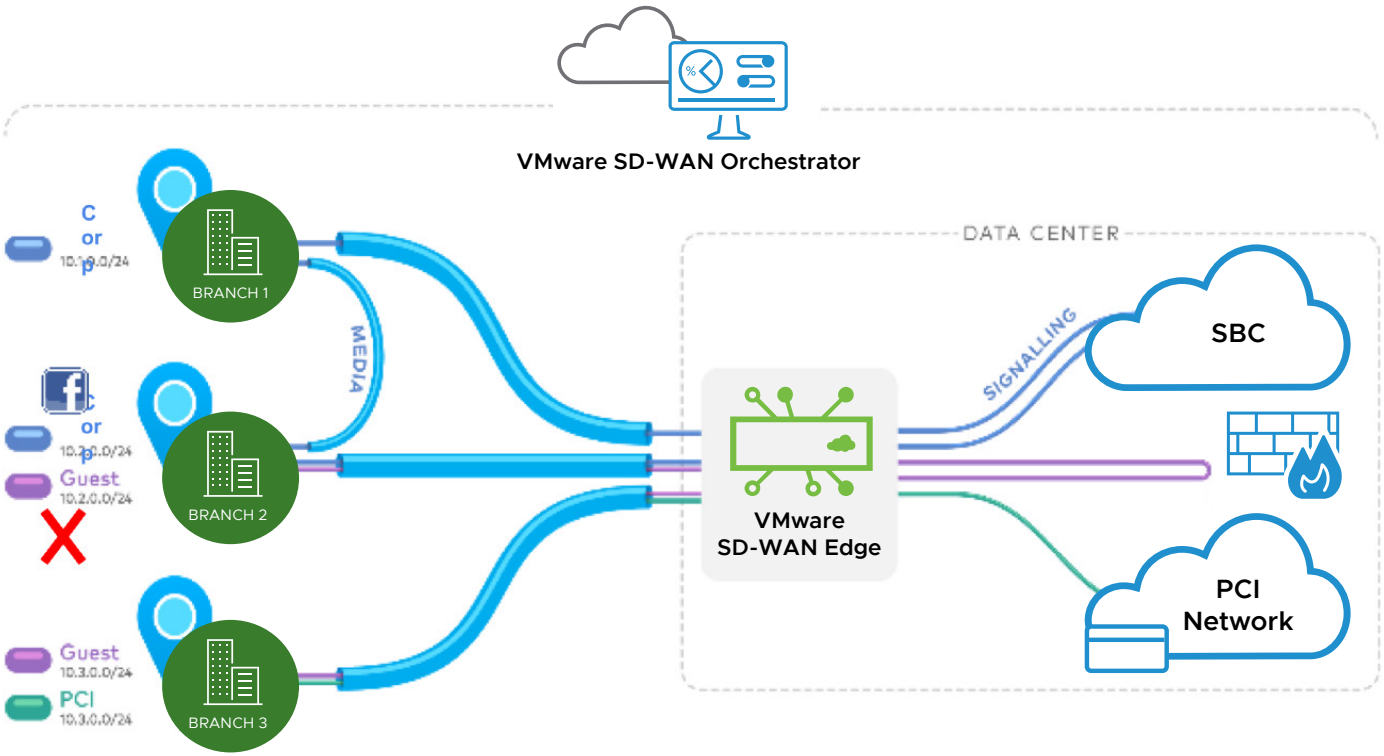
Making sure that applications are performing as needed and being able to troubleshoot and fix issues is critical to running applications over the WAN.

VMware SD-WAN continuously computes a VMware SD-WAN Quality Score to assess performance of critical voice, video, or data applications at any given time with the ability to alert IT staff. This analysis provides administrators a comprehensive before-and-after view into application behavior on individual links and the VMware SD-WAN enhancements made.



Network segmentation

Segmentation is the process of dividing the network into logical sub-networks using isolation techniques on a forwarding device, such as a switch, router, or firewall. Network segmentation is essential when traffic from different organizations and/or data types must be isolated. While there are many benefits to segmentation, implementing it has been difficult using traditional methods.



Segmentation is critical for retailers and ensures that traffic is isolated and protected. VMware SD-WAN makes it easy to keep data traffic isolated and secure. The segmentation features of VMware SD-WAN include:

- **Simple management interface -** to segment the network into PCI traffic, guest traffic, and corporate traffic.
- **Segment-aware topology -** different VPN topologies can be enabled for each segment.
- **Isolation & overlapping IP –** network address translation (NAT) supports multiple networks.
- **Cloud & on-premises –** segments can be extended to the cloud from the branch office.
- **Scalable roll-out –** segments can easily be added as needed.

Segmentation is an important tool for security in the enterprise. With segmentation:

- Guest traffic can be segmented from corporate traffic, and PCI traffic further isolated.
- Each segment can have its own topology (i.e. dynamic B2B for voice, but backhaul guest internet traffic to central firewall).
- Multiple stores can be on the same network.

Using VMware SD-WAN, segmentation is simplified with a global segment ID. Neither complex firewall rules nor IPSec tunnels per VLAN are required.

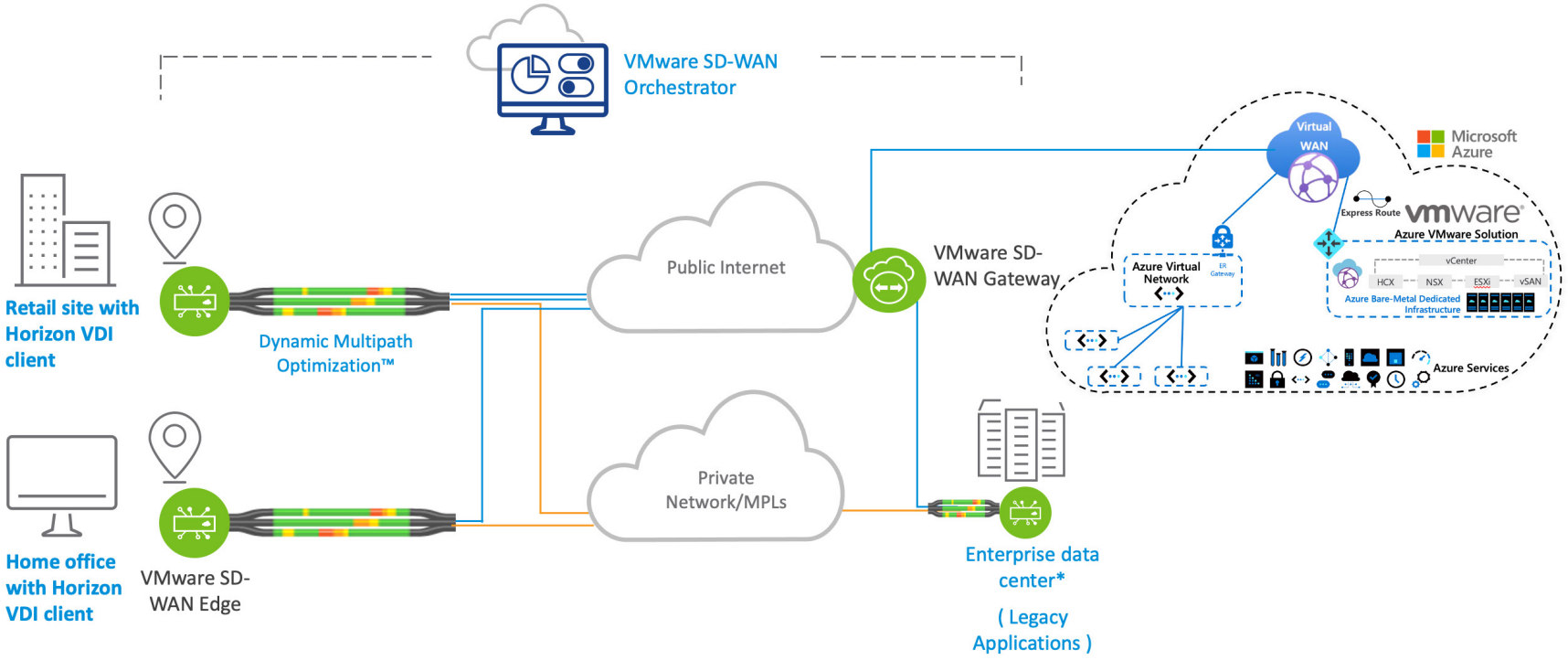
POS gets a facelift with Horizon on Azure (VDI) and a low-latency networking fabric

Retailers that use VMware Horizon on Azure for solutions such as virtualizing the POS systems with VDI should be especially interested in VMware SD-WAN, because it provides significant benefits to virtualized applications and desktops.

In their report, "VDI and DaaS Demand the Enterprise Architects Rethink Their Network Architectures", Gartner says that "Customers deploying VDI and DaaS should consider deploying SD-WAN to increase useful capacity and resilience." Gartner specifically calls out the WAN as a key part in virtual application delivery, but it also matters to voice quality, video quality, and other applications. Real time applications such as voice, video and VDI are the ones that are most impacted by WAN quality and require a low latency, low loss connection.

Source: Gartner - VDI and DaaS Demand That Enterprise Architects Rethink Their Network Architectures

VMware SD-WAN & Horizon on Azure



vmware Microsoft

VMware Horizon on Azure is one of the 3,000+ applications that the VMware SD-WAN deep application recognition feature can identify. It recognizes VMware Horizon traffic and applies a specific policy to it, such as priority, network service link steering, and service class. The benefit of this feature is that VMware SD-WAN can ensure always-on availability of the VMware Horizon application, for the best possible end user experience. It can also provide insights into the delivery of the application across the WAN, which will help with network visibility and troubleshooting.

In a test conducted with Horizon VDI hosted on Azure, home users with a single WAN connection who accessed a 4K training video over the internet suffered from a choppy experience with a 5% packet loss on the legacy WAN infrastructure. The same content viewed by users on VMware SD-WAN infrastructure experienced choppiness in the video when the packet loss approached 15% over the WAN infrastructure. Similar observations were made with 1080p video where the quality suffered at 10% packet loss for legacy WAN when compared to the quality impact when the packet loss gets closer to 20%.

While this test example is in relation to home users, video on POS systems or devices in retail environments are exposed to the same levels of packet loss vulnerabilities. The pronounced difference in user experience is due to the dynamic remediation capabilities of VMware SD-WAN. The SD-WAN Edge is constantly checking the status of link, recognizing Blast Protocol traffic related to VDI session, and sending forward error correction (FEC) notification to the SD-WAN Gateway. The Gateway applies FEC to ensure packets are replicated and sent towards the affected SD-WAN Edge.

IaaS / SaaS access

Because so many applications for the retail store are hosted in the cloud, easy access with high performance is a necessary part of an SD-WAN solution. VMware SD-WAN Gateways are an important part of the VMware SD-WAN infrastructure that provide access to Software as a Service (SaaS) applications and cloud infrastructure. These hosted Gateways terminate connections from the Edge devices and direct traffic over high-speed links to the applications.

The VMware SD-WAN Gateways are hosted in points of presence (PoPs) close to the applications for the best performance. The Gateways also provide access to cloud platforms. VMware SD-WAN has a built-in service that enables connection to the top cloud provider services such as Microsoft 365 and Microsoft Teams.

Streamline access to key information all in one app with Microsoft Teams

- Give frontline workers a single destination for shifts, news, tasks, and resources configurable to your business needs with Microsoft Teams.
- Consolidate most-used features as pre-pinned apps in a secure and convenient mobile interface through Power Apps.
- Customize the homepage to reflect your organization's look and feel.
- Easily customize employee landing page with retailers' look and feel, and give workers everything they need in one place.

vmware® Microsoft

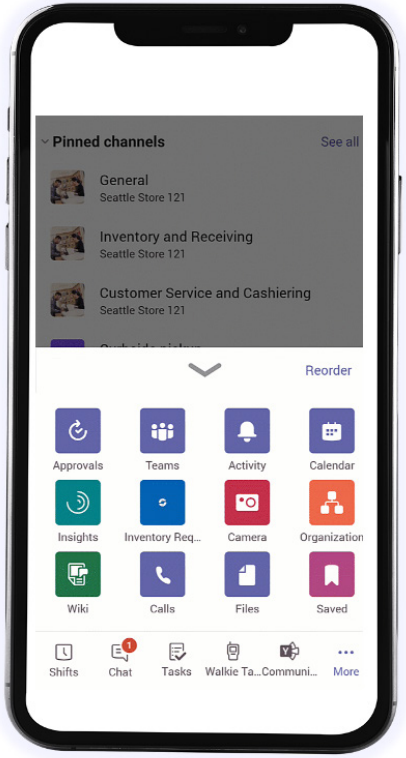
Microsoft Teams speeds up customer service with instant voice communication

Speed up customer service with instant voice communication

- Turn employee- or company-owned Android smartphones and tablets into a walkie talkie.
- Get better and more secure performance than analog radio without the hassle of crosstalk or eavesdropping—and with broader range that works over Wi-Fi or cellular data.

Users connect to a native, built-in Walkie Talkie app and communicate via channels in which they're members

VMware SD-WAN: a Microsoft 365 Network Connectivity Partner enabling retailers with high quality performance of teams.



"To optimize performance and experience for our customers, Microsoft invested heavily in its global network, which peers with thousands of ISPs in hundreds of sites worldwide. We are also deploying highly distributed application front doors, which deliver application experiences like Microsoft 365 in closest possible proximity to end users and with minimum latency. Because of that, allowing users to get to Microsoft's network as quickly and as directly as possible and be served by the closest Microsoft 365 front doors is a key principle to achieve best performance and most optimal user experience. VMware SD-WAN with capabilities like DMPO along with distributed cloud gateways, is enabling customers to implement Microsoft 365 connectivity principles with ease. It helps improve network quality and performance of Microsoft 365 and do this by simply using local Internet connections directly from the branch office."

– Konstantin Ryvkin, Partner Architect at Microsoft

vmware® Microsoft

Customer: luxury clothing retailer, Brooks Brothers

- 500 global locations
- Known for exclusive customer experience that relies on in-store online shopping and simplified management.

Before cloud-delivered SD-WAN

- Network outages resulted in lost sales.
- Legacy infrastructure inhibited the roll-out of in-store online ordering application.

After cloud-delivered SD-WAN

- Removal of traffic backhaul resulted in seamless application performance.
- High-bandwidth availability supports in-store online browsing.

Customer: Carhartt

- 5,300 associates worldwide, 350 Virtual Desktops
- Premium workwear brand with a rich heritage of developing rugged products for workers on and off the job.

Before cloud-delivered Horizon on Azure

- Carhartt's continued growth strained its aging IT infrastructure – several outages per year
- Needed to upgrade its SAP environment, which catalyzed a migration to Microsoft Azure

After cloud-delivered Horizon on Azure

- Eliminate the need to use VPN with its virtual desktops
- Lack of hardware issues
- Improved user experience

Customer: large convenience store chain

- 1,000+ Locations, 28,000 employees, PCI segmented traffic.
- Customer benefitted from segmenting PCI traffic and device consolidation at the retail location for increased customer data protection.

Before cloud-delivered SD-WAN

- Lack of ability to easily segment sensitive traffic.
- Expensive point products at each retail location.
- Lack of centralized automated management.

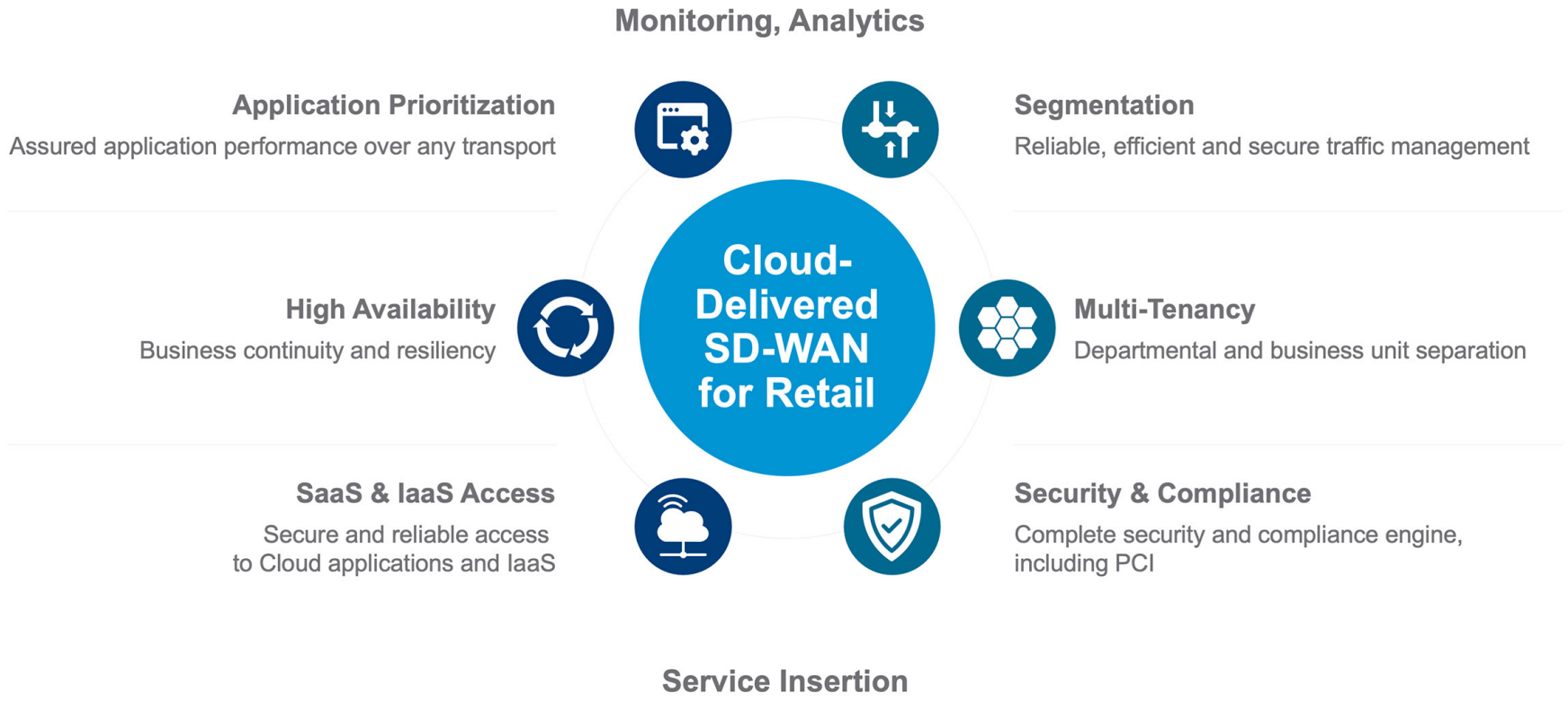
After cloud-delivered SD-WAN

- Segments including guest Wi-Fi, PCI zones, and Internet traffic (digital signage, music)
- Device consolidation with VMware SD-WAN Edge running Palo Alto Networks firewall as VNF.
- Centralized and simplified management.

Bringing it all together

VMware SD-WAN provides a complete solution for the retail store of the future.

For more information see, **www.velocloud.com**.



vmware® Microsoft

Experience the next-generation SD-WAN

VMware offers the industry-leading SD-WAN solution with VMware SD-WAN. SD-WAN is evolving from a connectivity infrastructure that solves many legacy WAN problems to a service platform that addresses organizations' changing requirements at the edge.

Begin Your Journey

Learn more about VMware SD-WAN>

Start your free trial>

Join us online:

Microsoft

vmware®