Retail industry realizes the benefits of adaptive networking

Adaptive networking in the retail sector

WHAT IS ADAPTIVE NETWORKING?

Retail IT executives see digital disruption taking hold in their operations. Across the e-commerce boom, sophisticated customer analytics, augmented reality, and beyond, changes are coming faster, shifting network needs in unpredictable ways. Retail IT executives' response is to turn to practices known as "adaptive networking" that are secure, flexible, and easy to scale and that deliver on performance.

Adaptive networking components include software-defined WAN (SD-WAN); hybrid networks that merge internet virtual private network (VPN) and MPLS VPNs; flexible bandwidth, particularly bandwidth on demand; dynamic WAN ports into data centers and clouds; and network functions virtualization (NFV). Retail companies are especially drawn to hybrid networking to help meet the accelerating pace of their IT needs (see Figure A).
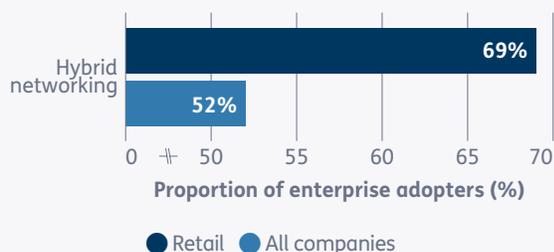
HYBRID NETWORKS DELIVER FLEXIBILITY AND SECURITY COMPLIANCE AT COMPETITIVE COSTS

The retail industry consists of companies that distribute and sell finished goods to businesses and consumers. Whether operations are brick and mortar or born in the cloud, sprawling franchises, or exclusive luxury brands, retail IT executives must digitize and make processes more efficient to streamline costs and sustain margins. The retail business is both volatile and cyclical by nature. IT executives need to be practical and work tactically. Retail has a reputation for constantly driving to keep down costs. While controlling cost is important, most retail IT

departments are not driven by cost-cutting. They prioritize security and compliance, efficiency and flexibility, and efforts to grow the business (see Figure B).

The retail industry has some unique challenges. Financial transactions and customers' identities must be protected. The industry must comply with

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Figure A: Retailers embrace hybrid networking

- Hybrid networking: 69% (Retail), 52% (All companies)

Proportion of enterprise adopters (%)

● Retail ● All companies

Source: Ovum

Figure B: Top retail industry IT department goals

- **33%** Security and compliance
- **31%** Grow the business
- **20%** More efficient, faster response

Source: Ovum

commercial standards such as PCI DSS as well as government-set privacy regulations such as the EU's General Data Protection Regulation (GDPR). Serious data breaches can be devastating: they force an expensive emergency response, tarnish the business's image, and make the company vulnerable to lawsuits. Another issue faced by retailers is that brick-and-mortar stores do not have on-site IT staff. Any new in-store technology must be easy to install, robust enough to be autonomous for extended periods, and flexible enough to be maintained and reconfigured remotely. Retailers also support franchise models, where the corporate office has limited control over

Hybrid networks let IT departments take advantage of the best qualities of MPLS VPNs and Internet connections.

stores. This can fragment the technology infrastructure and complicate operations.

Retailers make use of the range of adaptive networking practices. Figure C shows a sample of applications used by the retail industry and how they benefit from adaptive networking.

Figure C: Retail IT applications and their adaptive networking solutions

Application	Adaptive networking solution
Private and public guest Wi-Fi allows in-store devices to tap a secure environment for wireless transactions, while customers benefit from guest internet access. Device connectivity generates analytics about customer in-store behaviors and can trigger targeted promotions.	**SD-WAN** helps keep private in-store networks and public guest internet domains separate, each with its own performance template and security policies. **Hybrid networking** can send applications over available MPLS and internet access that is best suited in terms of cost, performance, and security.
The **seasonality** of major holidays, back to school, and special sales events such as tax holidays requires temporary extra resources. Stores also regularly run special **reporting and analytics** projects. **On-site inventory** audits, for example, remove damaged goods and reconcile discrepancies.	Retail transactions do not consume much bandwidth. But image transfer, digital signage, kiosks, and store tablets can benefit from **flexible bandwidth**, expanding capacity to handle peak customer volumes. Flexible bandwidth to cloud can help ensure online shoppers always have enough bandwidth for a positive experience.
Augmented reality and **mass customization** allow buyers to place orders for durable goods they might "test drive" at home or in the store. Products are assembled in the models and colors and with the features the buyer wants. **Edge compute** can meet the most demanding present and near-future retail applications for real-time augmented reality and virtual reality.	With **flexible bandwidth** to the cloud, retailers can ensure 3D-augmented-reality objects load quickly onto shoppers' mobile devices. Flexible bandwidth can ensure a responsive experience as digital shopping shifts to new approaches such as augmented reality and virtual reality.
Omnichannel contact centers support customers through their preferred means including voice, video, text, or chat. **Customer relationship management** (CRM) software keeps records of past customer transactions and interactions.	**SD-WAN** helps prioritize IP-based voice and video applications to assure a high-quality customer experience. **Flexible bandwidth** can manage changes in contact center loads to ensure spare capacity is always available for more sessions.
Companies set up **pop-up stores** and **tiered stores** in temporary locations and in smaller buildings not served by fiber. Each store location is limited to working with readily available connectivity options.	**Hybrid networking** takes advantage of every means of network access available at each store. Hybrid networks enforce basic rules such as restricting wireless traffic. By combining hybrid networks with **SD-WAN**, stores can optimize their available bandwidth options with granularity, setting and enforcing individual policies for store applications.
Operational analytics tools let the business turn data into useful intelligence. The business may mix internal data with data from external sources including partners and franchises to make better-informed business decisions. Today's analytics tools are leading to more intelligent **artificial intelligence and automation** to increase the effectiveness and efficiency of retail operations.	**Hybrid networking** optimizes traffic across secure MPLS and internet options to wherever the retailer chooses to run analytics, whether in its own data center or in a cloud environment. **Flexible bandwidth** between data centers and cloud resources helps quickly upload analytics tools and return results. Flexible bandwidth also supports big traffic bursts when drawing on data sets that reside in different locations, for example, to access partner franchises' siloed data.

Source: Ovum

The sector leads all other industries in acceptance of hybrid networking: 69% of businesses use the technology today. Hybrid networks let IT departments take advantage of the best qualities of MPLS VPNs with Internet connections, dedicated networking, fixed broadband services, and wireless broadband failover. The IT department can merge private MPLS and public internet VPNs, trading off cost, performance, and network security on a site-by-site basis.

The retail sector relies on a range of applications across areas including enterprise software, internal IT operations, and custom software. Other types of applications also supported include e-commerce and point of sale transactions. While these applications are critical, they represent a smaller part of retail companies' total traffic.

Retailers rely on enterprise software including supply chain, inventory management, resource planning, and logistics; accounting and tax compliance; workforce scheduling; and customer relationship management. IT operations represents internal traffic related to reporting, management, control, and maintenance. This applications traffic is critical for assets that the IT department monitors and manages remotely. Retailers frequently also maintain their own customer

Figure D: Key retail industry applications

#1 Enterprise software

#2 IT Operations

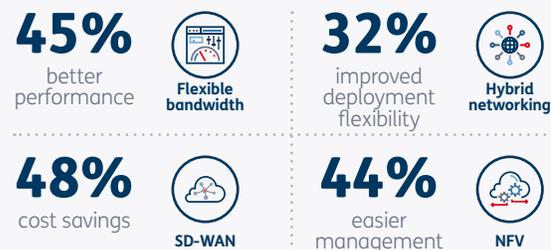**#3** Custom software

Source: Ovum

applications, whether legacy transactions and payments, or cutting-edge scripting that links customer analytics with personally targeted promotions.

Retailers also expand into other categories of applications. Private store Wi-Fi and guest Wi-Fi internet access are fast-rising services for brick-and-mortar retailers. Internet of Things (IoT), new digital applications, and analytics tools help with inventory and logistics and can track and improve customer experiences. Figure D shows the retail industry's top-ranked applications by category.

RETAIL COMPANIES HOME IN ON ADAPTIVE NETWORKING FLEXIBILITY, RESILIENCE, INCREASED SECURITY AND COST SAVINGS

When it comes to the overall benefits of adaptive networking, retail IT executives most value flexibility. Retail decision-makers want to add locations faster, make network changes quicker, improve their applications performance, ensure impermeable security, and reduce their dependence on legacy infrastructure. The sector leads the industry in adoption of hybrid networking, though the retail industry makes use of the full range of adaptive networking tools including SD-WAN, NFV, and flexible bandwidth to endpoints and clouds. Figure E summarizes the top benefits realized by companies that have adopted each of these adaptive networking elements.

Figure E: Biggest adaptive networking improvements realized by retail IT departments

45% better performance — **Flexible bandwidth**

32% improved deployment flexibility — **Hybrid networking**

48% cost savings — **SD-WAN**

44% easier management — **NFV**

Source: Ovum

Based on the feedback from retail IT executives, Ovum makes the following recommendations:

- Retailers that have not yet adopted hybrid networking should review the technology. Surprisingly, retail IT executives on average do not realize huge new benefits from hybrid networking. The top gain is an average **32%** increase in **deployment flexibility**. Much of the retail sector already mixes dedicated services with fixed broadband and wireless access. For these businesses, hybrid networking is a progression, not a revolution.

Retail decision-makers want to add locations faster, make network changes quicker, and reinforce their security measures.

- Retailers can expect a range of benefits if they adopt SD-WAN, and these benefits pair well with hybrid networking. The retail sector is concerned about moving to SD-WAN because of the work involved in swapping out on-premises equipment. But retailers that take the plunge note big gains led by **cost and operational savings**, with a **48%** average improvement. They also see gains in **deployment flexibility** (**43%**) and **ease of management** (also **43%**).

The retail sector already mixes dedicated services with fixed broadband and wireless; hybrid networking is a progression.

- When they adopt flexible bandwidth, retailers note their biggest gains are in **network performance**, which improves by an average of **45%**. IT executives also reap other benefits from flexible bandwidth, including a **38%** improvement in **resilience and security** and a **34%** improvement in **cost and operational savings**.

- Though retailers are not leaders in NFV adoption, this is another area where early adopters have seen many benefits. Retailers experience an average improvement in **ease of management** of **44%**, an average improvement in **security and network resilience** also of **44%**, and an average **38%** improvement in **network performance**.

- Retailers realize much higher value when they combine adaptive networking practices. Any one adaptive networking technology helps the business. But two or more elements used together multiply the benefits.

USE CASE: RETAIL CTO USES HYBRID NETWORKING TO KEEP MPLS RELIABILITY AND BENEFIT FROM BROADBAND ECONOMICS

About 18 months ago, a large US clothing retailer with a 500-store presence embarked on its hybrid networking journey. The retailer swapped out dual T1 circuits to its stores in favor of a T1 primary and broadband secondary access. The company has now begun moving to all-broadband access for some sites, while holding onto its MPLS core. "We are replacing our remaining T1 MPLS circuits and a myriad of backup alternatives with dual DSL circuits. In cases where we couldn't get a second wired link, we now use cellular backup. Our primary WAN connectivity protocol remains MPLS."

Hybrid networking gives the business higher throughput at lower costs. "Since the start of this project, in most of our stores we have multiplied bandwidth throughput roughly by an order of magnitude. From an access cost perspective, our DSL cost is about 60% of what we paid for the T1s." The company also used the shift in hybrid networking to deploy in-store Wi-Fi, initially for internal use but with

guest Wi-Fi internet in mind for the future. Rather than deal with managed wireless infrastructure and services on its own, the company chose to source managed Wi-Fi services with SD-WAN capabilities from a service provider. The retailer's service provider partner manages both devices and physical applications.

The retailer's IT department goal is to increase efficiency and reduce costs, ideally while improving operations. "Our overall IT priority right now is to drive out cost. A stable environment is table stakes, then the balance is progressive technologies and cost. We have been able to successfully do both at times, but the balance is on driving out costs. In situations where we can improve the technology or improve the experience, we also try to take advantage of that."

→ Click here to find out more about how CenturyLink can help your retail organization with adaptive networking

NEXT STEP: BUILDING YOUR OWN ADAPTIVE NETWORK STRATEGY

In its survey research, Ovum finds most enterprises do not have a formal adaptive networking roadmap. Instead, IT executives treat adaptive networking as an ongoing, iterative, and interactive process. They investigate the solutions and services available, what the business can gain from each approach, and how, together, they deliver increased benefits to the business. IT executives set the organization on the right path to adaptive networking, reevaluate their options regularly, and make necessary adjustments.

Ovum's survey research finds organizations benefit most if they combine adaptive networking elements to build a solution. But enterprises do not have to revamp their operations completely to start seeing results. Organizations report benefits even from small changes. For example, the enterprise might add network virtualization in just a few places to add missing functionality. Or the organization might add bandwidth on demand to relieve a few key points in the network that need rapid scaling to deal with unpredictable traffic changes.

An adaptive networking solution is not built in a vacuum. The enterprise needs to have a dialog with service providers to understand what adaptive networking aspects they support and how they fit together elegantly. A complete solution to support enterprise applications meshes together provider services and vendor platforms into a unified solution. A strong partner will support a broad portfolio of adaptive networking services that fit together for this unified approach: a flexible, scalable network that is overseen by network intelligence and underpinned by network security. With a strong partner, the organization can add more adaptive networking practices where and when it needs them and benefit from platform synergy as it regularly reassesses progress, adds more pieces, and deepens its use of these practices over time.

WHY CHOOSE CENTURYLINK AS YOUR ADAPTIVE NETWORKING PARTNER?

Ovum sees CenturyLink as a major US and international provider of advanced networking services. The company is an innovator across the adaptive networking services spectrum. CenturyLink was a pioneer in national US bandwidth on demand down to the access port in 2012, including network intelligence tools and user controls over class of service. The company has extended its network intelligence tools to end locations and PoPs across its global network, covering North America, Europe, South America, and Asia. The company's global Cloud Connect service boasts one of the world's most far-reaching footprints connecting global data centers and cloud services.

CenturyLink debuted NFV-based commercial services in 2015 and launched its SD-WAN service in 2016. For both, the provider took a different approach from its peers. Its first virtualized network service comprised centralized firewalls designed to serve as flexible gateways between enterprises' own networks, their data centers and cloud services, and the public internet. With SD-WAN, CenturyLink took an open approach.

The company engaged the industry with well-defined packages and price plans at a time when most service providers kept their SD-WAN offers tightly under wraps.

CenturyLink understands both network and enterprise IT challenges. The company is a provider of managed services for cloud, big data, and hosted business applications. Enterprises use CenturyLink tools to enhance their DevOps and applications lifecycle management. The company adds a portfolio of managed security services to protect and support its network and IT services.

CenturyLink offers a Dynamic Connections feature that lets organizations rapidly set up private port connections from their data centers to private clouds and hyperscaler platforms including AWS, Google Cloud, and Microsoft Azure. Since its initial launch of NFV services, the provider has extended its NFV portfolio to enterprise sites. CenturyLink delivers the overall platform, orchestrates and manages individual network functions.

Appendix

RESEARCH METHODOLOGY

This document sources data from an enterprise survey on adaptive networking conducted by Ovum and sponsored by CenturyLink. Ovum conducted 320 telephone and voice interviews of US-based enterprises across seven vertical industries, including 45 organizations in the retail sector. Ovum questioned qualified enterprise IT executives about their experiences, in terms of realized benefits and improvements, from their adoption of adaptive networking technologies.

IT executives were asked both to estimate business improvements from individual adaptive networking practices and to estimate benefits from their net adaptive networking practices. Enterprise improvement claims presented in this document are based on averaged results of respondents qualified to provide meaningful answers based on their experiences.

Additional information about the retail sector comes from Ovum's own Enterprise Network Services survey of 423 respondents (including 52 organizations in the retail sector) and from qualitative discussions with enterprise IT executives about their networking plans and challenges.

OVUM CONSULTING

We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Ovum's consulting team may be able to help you. For more information about Ovum's consulting capabilities, please contact us directly at consulting@ovum.com

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Adaptive networking described in this paper is a separate term from the Adaptive Network™ by Ciena. Service providers use Ciena's Adaptive Network to build and operate platforms and infrastructure elements. Adaptive networking is an umbrella term representing agile, flexible enterprise platforms and services.

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