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DEPLOYING AN AGILE PLATFORM FOR ENTERPRISE MANAGED SERVICES

The needs and priorities of enterprises are changing. How should Communications Service Providers respond?

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Preface

The document has been prepared by independent research firm STL Partners, and commissioned by Juniper Networks. It is based on STL Partners' continuous research programme into the future telecoms operator and how to get there.

Mentions or allusions to companies or products in this document are intended as illustrations of market evolution and are not intended as endorsements or product/service recommendations.

Executive summary

The communications and networking needs and priorities of enterprises worldwide are evolving, as they continuously innovate to remain relevant in an increasingly competitive market and serve the growing expectations and demands of their end customers. These enterprises are increasingly looking to become 'digital': there is growing adoption of cloud services, demand for watertight security, performance and reliability, and a drive for greater productivity and cost savings.

Many enterprises are looking for future-proof IT solutions that will support them on their journey, but managed service providers are not yet able to address all their concerns. Communication service providers (CSPs), whose traditional managed service portfolios are often inflexible, are in a particularly weak position to serve enterprises who want to try new services and scale up and down quickly. There is need for change.

Our proposed approach is to introduce a 'virtualised managed services delivery platform', where managed services are software-based, in contrast to the hardware-based functions of the past. This means:

- Adoption of virtualised and programmable infrastructure: Use of Network Functions Virtualisation and Software-Defined Networking (NFV/SDN) and distributed computing technology to build highly-automated, virtualised infrastructure which can be configured quickly and easily.
- Adoption of cloud business practices and platforms: Agile business practices, such as DevOps, and a strong focus on data-centric product development and innovation.

For the enterprise customer, benefits of this approach include: agile introduction of new services; greater flexibility, visibility and control of their services; openness; and performance at scale.

A common question among CSPs looking to deploy such a platform is what service or function they should make available to customers first. One option is software-defined wide area networking (SD-WAN), which was the most widely-deployed virtual function among CSPs in 2017. SD-WAN is an improvement on traditional wide area networking (WAN) solutions because it is cloud-based, flexible, and – because there is no need for expensive dedicated routing hardware – less capex intensive.

SD-WAN can be deployed as a point product solution with its own dedicated equipment, sometimes bundled with security functions. However, if it is instead launched as a tenant service on a virtualised managed services delivery platform, it can potentially be provisioned alongside any number of different services and network functions, according to the customer's needs. It therefore represents a good starting point for CSPs looking to build a future-proof managed service portfolio.

CSPs looking to adopt a virtualised delivery model will encounter many challenges, and must answer many complex questions. However, with proper consideration, these can be overcome, and CSPs will open themselves up to significant new revenue opportunities and a more favourable cost structure than with traditional managed services.

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Evolving enterprise customer needs

In a world where 'digital transformation' is the theme of the day, the needs and priorities of businesses – from microenterprises to multinational corporations – are changing. Businesses can no longer afford to sit back and plan at length; instead they must be able to innovate and pivot quickly to meet the increasingly high demands of customers worldwide. This shift in emphasis manifests itself in various ways. Some examples are listed below:

Figure 1: How enterprise customer needs are evolving

Trend	Description
Growing cloud adoption	Enterprises are looking towards cloud-based products and business models for increased agility, scalability and flexibility as well as reduced costs. Demand for connectivity, previously for site-to-site or site-to-data-centre, has moved in recent times towards site-to-cloud.
Demand for watertight security	Faced with growing volumes of cyber-attacks and data breaches, enterprises are strongly aware of the importance of robust security and compliance to increasingly onerous data privacy regulations.
More outsourcing to partners	Enterprises are looking to hand non-core functions to third parties, freeing up resources to focus on key competencies.
Changing customer expectations	Enterprises' own customers' (consumers or other enterprises) demands and expectations are also changing. Enterprises will need to be ready to meet them – fast.
Performance & reliability remain paramount	Many enterprises are putting greater focus on performance metrics and demanding services that are reliable and available 24/7/365.
Focus on the bottom line	Enterprises are under ever-increasing pressure to drive cost savings, including reductions in upfront capital expenditure and avoiding inflexible commitments to ongoing operational costs. Alternative cost structures are growing in popularity.
Support more flexible working and virtual teams	Dispersed teams need to function effectively regardless of location. With space premiums at an all-time high, many enterprises are looking to use office space more flexibly.
Drive for faster decision-making and greater productivity	Enterprises need to do more – quickly and cost-effectively. They are increasingly looking to use insights from real-time analytics, machine learning and automation to streamline processes.

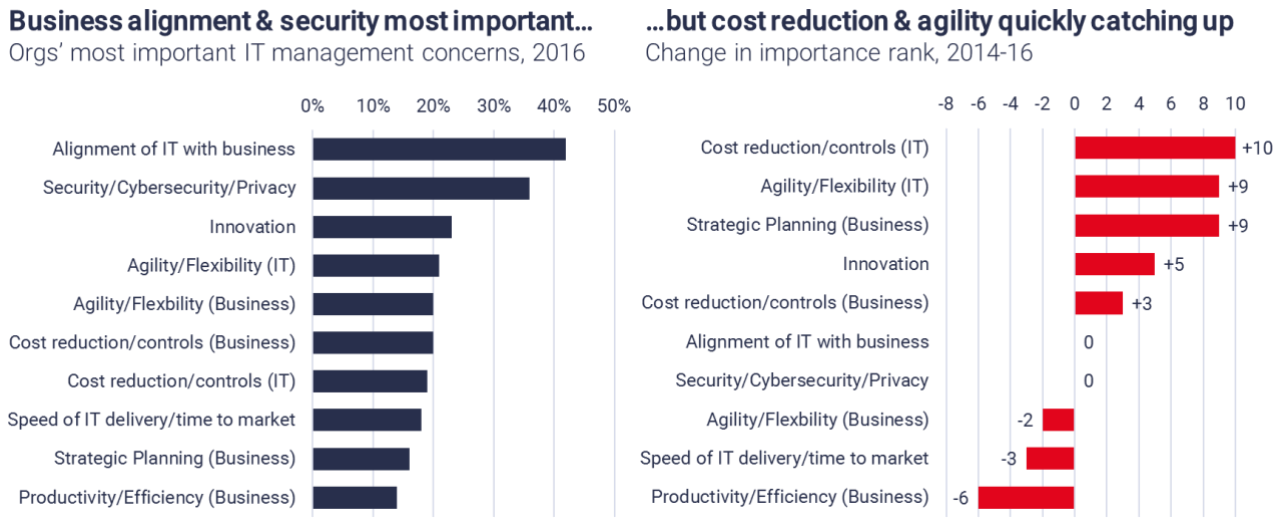
Source: STL Partners

Understanding these trends is of utmost importance to any service provider that sells products or services to enterprises. For managed service providers (MSPs), particularly communication service providers (CSPs), understanding and reacting to the changing needs of their enterprise customer base is especially important,

given that most, if not all, enterprises around the world rely on some form of managed services to support their day-to-day operations. Failing to react would constitute an enormous lost opportunity.

A recent survey brings these trends to life in the context of IT management. IT directors' most common concerns are ensuring alignment of their IT with the needs and strategic direction of their business, and maintaining robust security and privacy measures. However, in recent times, there has been a marked increase in concern about reducing costs, ensuring agility and flexibility, and driving innovation:

Figure 2: IT management concerns are shifting



Source: SIM IT Trends; STL Partners analysis

The need for change

The simple fact is that many enterprises are undergoing substantial transformation in order to remain relevant to their own customers, and are looking for future-proof IT solutions that will support them on their journey. The difficulty is that no existing managed service provider is able to meet all the criteria that a customer might set. System integrators, for example, are strong at building bespoke solutions that are well-aligned to customers' business and existing applications, and include a range of different options, but they are less flexible in commercial terms, and typically slow to deliver. Security providers, on the other hand, can offer fast installation of well-tested products that scale well – but this is achieved primarily through offering non-bespoke, off-the-shelf solutions that do not tend to be based on open standards.

As shown in Figure 3, CSPs are currently in a particularly weak position to address their customers' changing concerns. Traditional CSP managed services, such as WANs or firewalls, tend to be off-the-shelf solutions, with old-school pricing models and fixed contracts that often penalise or discourage customers from making changes. This model does not play well with customers looking to try new services and scale up and down quickly.

Figure 3: No single MSP is ideally placed to meet changing enterprise needs

		Enterprise customer concerns				
		Aligned to business and applications?	Open, with a range of options?	Flexible commercial terms (PAYG, elastic)?	Fast installation, MACD and repair times?	Reach and reliability at scale?
Managed service provider types	System integrators & IT Outsourcers	High	High	Low	Low	Med
	Managed Security Service Providers	Med	Low	Med	High	High
	Communication Service Providers (trad. approach)	Low	Med	Low	Low	Med
	Cloud Service Providers	Med	Low	High	Low	Med
	Data Centre Providers	Low	High	High	Med	Low
	Software-Defined Overlay Providers	Med	Low	Med	Med	Med
	Boutique (Local) Managed Services Providers	High	Med	Med	Med	Low

High – well positioned as core competence Med – credible capabilities Low – not seen as a strength

Source: STL Partners

It is clear that all MSPs, and CSPs in particular, will need to change in order to continue to remain relevant to their enterprise customers in the future. It will be necessary to adopt a new model for managed services that addresses evolving customer needs in a manner that is both productised and easy to scale. The question is: what does this model look like?

The answer involves transformation: from both an infrastructure and business practice perspective.

Delivering managed services on a virtualised platform

Our proposed approach to offering future-proof managed services to enterprise customers is to introduce what we term a 'virtualised managed services delivery platform', upon which CSPs can introduce a new breed of managed services (or network functions) that are software-based, in contrast to the hardware-based functions of the past. These virtual managed services (VMS) or virtual network functions (VNFs) can be hosted either on universal customer premises equipment (uCPE), or run from a centralised cloud.

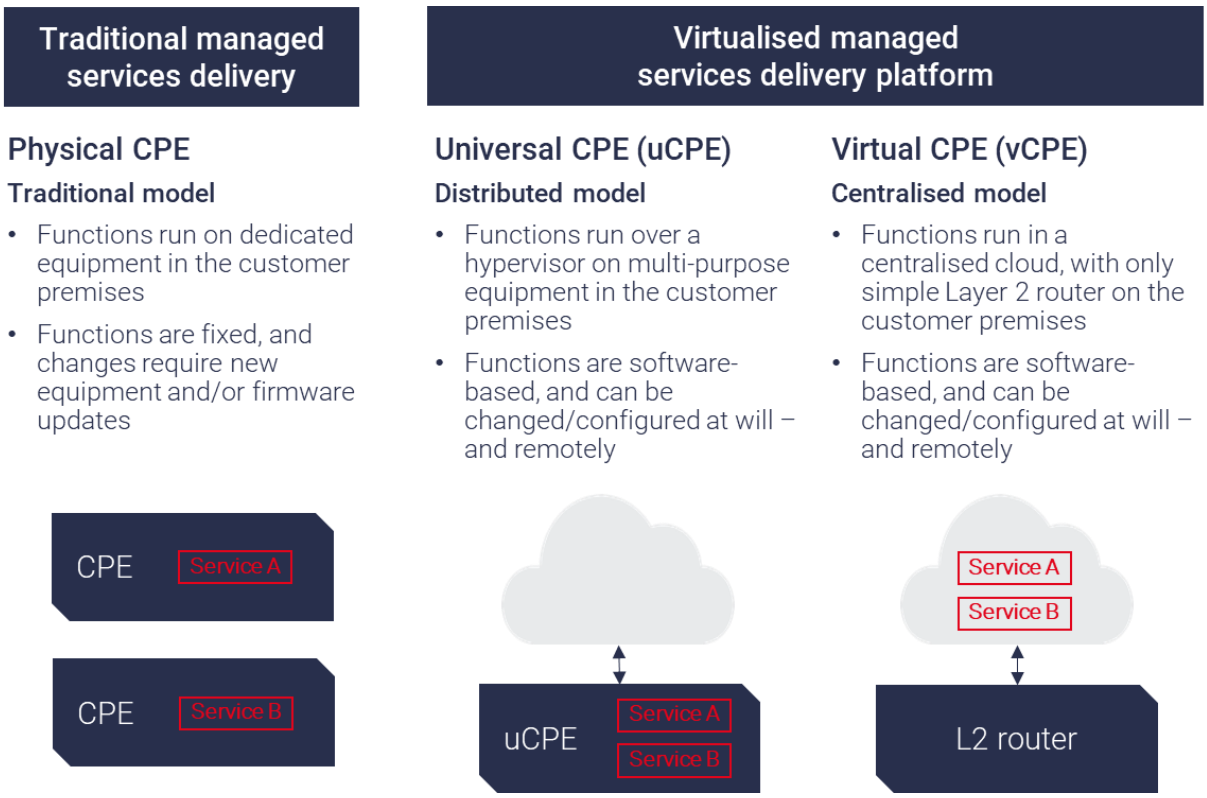
This represents a fundamental shift in the way that CSPs build and offer managed services. It involves major change on two fronts:

- Adoption of virtualised and programmable infrastructure: CSPs will make use of Network Functions Virtualisation and Software-Defined Networking (NFV/SDN) and distributed computing technology to build highly-automated, virtualised infrastructure which can be configured quickly and easily. Hardware will be readily programmable, appliance-based services will be virtualised, and systems will be open to third-party VNF integration via APIs.

- Adoption of cloud business practices and platforms: CSPs will leverage their virtualised infrastructure to build flexible and automated service platforms, which enable agile service innovation. This involves adoption of agile business practices, such as DevOps, and a strong focus on data-centric product development.

Together, these two components are the principle building blocks of the virtualised managed services platform, upon which CSPs can introduce a new breed of managed services (or network functions) that are software-based, in contrast to the hardware-based functions of the past, and ultimately empower innovation.

Figure 4: Running services and functions on a virtualised platform, versus on traditional customer premises equipment



Source: STL Partners

The decision to adopt a distributed or centralised model (or even a hybrid approach) will largely depend on individual CSP business strategies and their customers' requirements. Regardless of which is chosen, both of these approaches offer several advantages over the traditional model.

For CSPs, delivering managed services on a virtualised platform represents an opportunity to improve upon the weak position that they find themselves in currently (Figure 3) while ensuring they are prepared for unpredictable change in the future.

The key benefits from an enterprise customer point-of-view are as follows:

1. Agile service introduction: VNF-based services can be developed more quickly, cheaper and with a greater deal of customer-centricity than traditional managed services. This is for two reasons. First, CSPs' internal shift to an agile product development model means that new, innovative functions can be trialled and brought to market more quickly (and cheaply) than in the past. Second, the software-based model removes much of the need for truck roll to deploy physical CPE every time a customer makes an order. With a virtualised platform, the ordering process is greatly automated, and services can be delivered with minimal human intervention.

2. Flexibility, visibility and control: VNF-based services allow enterprise customers to scale up with much more flexibility than before. Software-based delivery enables instant contract moves, adds, changes and deletes (MACD) and easy integration with existing services, functions and systems. If CSPs adopt

flexible, cloud computing-style pricing and delivery models, customers are able to test new functions with ease.

3. Openness: A properly-implemented virtualised managed services platform enables easy third-party VNF integration, without locking the CSP to a particular technology vendor. CSPs are able to onboard new VNFs from multiple vendors, and test and deliver the services and functions they enable, without the need to invest in new equipment. In turn, this allows them to offer a wider choice of best-of-breed services to their enterprise customers.

4. Performance at scale: Hardware-based solutions are static by their nature, requiring upfront investment in the entire platform, regardless of whether you intend to use all of its functionality. A virtualised platform offers the opportunity to scale dynamically, starting only with the functions you need from both a capacity and scale perspective. Moreover, VNF-based services are typically designed to work together and perform predictably, even at scale. Software allows for easy reconfiguration and the ability to scale up and down easily to meet peaks and troughs in demand – this is impossible with current physical solutions.

This is a strong value proposition on paper – but what does it look like in practice? On the following page, we present two case studies. These are based on examples from real-life companies and show how a CSP-provided virtualised managed services solution can overcome many of the challenges that enterprise customers encounter with traditional managed services.

Figure 5: Case study – Fast-moving consumer goods player embracing the cloud

Situation	Goal
Established fast-moving consumer goods player with global footprint Facing structural decline in traditional markets: • Need to re-organise both functionally and geographically • Declining demand for traditional products in traditional marketplaces -> need to grow existing products in new markets and new products in existing markets	Re-organise and re-deploy • Become leaner, more responsive and more geographically dispersed • Adopt SaaS/cloud apps: CRM (e.g. Salesforce.com), productivity suites (Office 365), VoIP (Skype for Business – no desk phones).

Challenges under traditional model	Difference with virtualised platform	How this is achieved
Multi-year contract with high cancellation clauses	"Elastic" pay-as-you-go cloud pricing model	VNF licenses aligned to SP's pricing to enterprise
More new commitments required with perception of supplier lock-in	No new commitment for new services devices	Licensing; open platform; automation
Limited range of CPE, therefore insufficient time to introduce new ones	Fast and lower cost onboarding of new (to SP) services	Open platform; automation; agile development model
Significant lead times for installation and commissioning, even current portfolio	Initial installs require truck-roll but automation enables zero-touch thereafter	Centralised and distributed cloud
Slow, expensive and unresponsive: leads to customer frustration & dissatisfaction	Provides flexibility and control, with more choice for customers over time	More choice over time to meet changing customer needs and requirements

Figure 6: Case study – European merger

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Established fast-moving consumer goods player with global footprint Facing structural decline in traditional markets: • Need to re-organise both functionally and geographically • Declining demand for traditional products in traditional marketplaces -> need to grow existing products in new markets and new products in existing markets	Re-organise and re-deploy • Become leaner, more responsive and more geographically dispersed • Adopt SaaS/cloud apps: CRM (e.g. Salesforce.com), productivity suites (Office 365), VoIP (Skype for Business – no desk phones).

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Source: STL Partners

SD-WAN: a good first service?

A common question among CSPs looking to deploy a virtualised managed services delivery platform is what service or function they should make available to customers first. There are many potential options, including but not limited to: managed security services (firewalls, antivirus, etc.), managed WiFi solutions, managed unified communications (UC), managed retail services, and so on.

There is no one service that should be adopted over others. An individual CSP will need to weigh up its market, capabilities and existing customer base when making its choice. However, some existing options are already gaining traction in the marketplace. Over the following pages we explore the growing demand for software-defined wide area networking (SD-WAN), and why we believe it is a strong candidate for a CSP's first VNF-based service. We argue that, while SD-WAN can be deployed as a point product solution, as some CSPs have already done, there are several advantages to launching it with a virtualised platform instead.

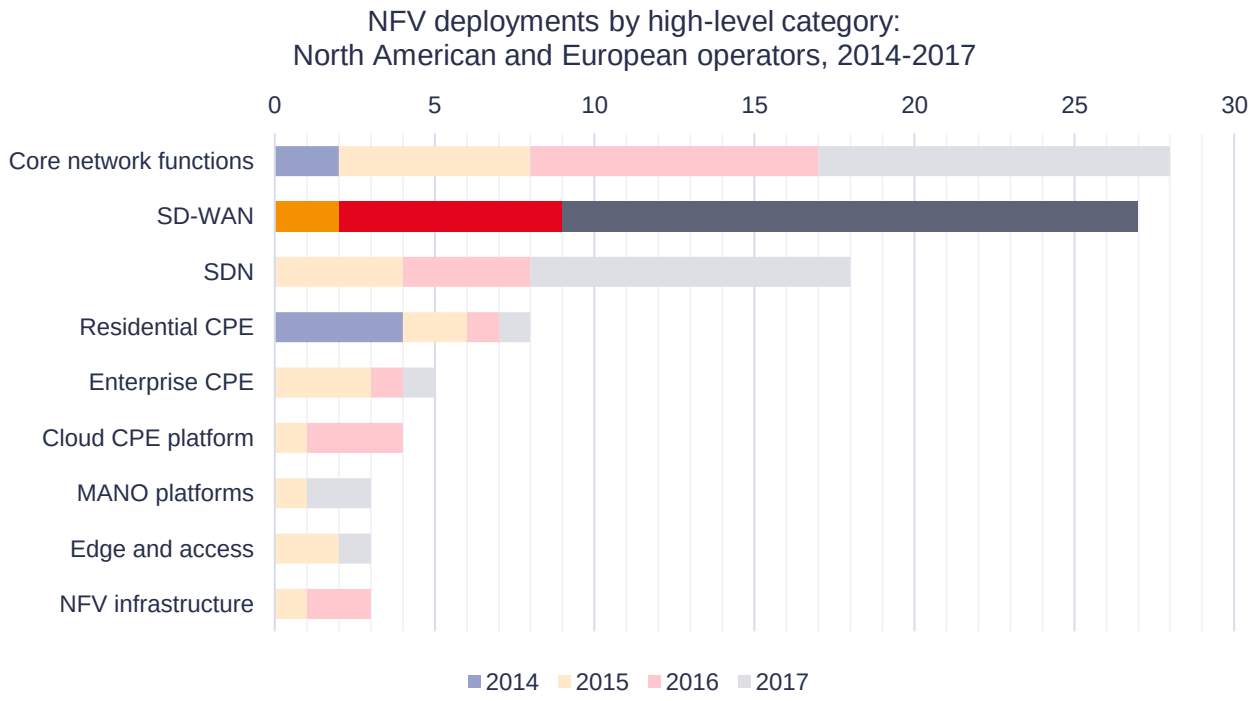
SD-WAN adoption as a market trend

At STL Partners, we have been tracking live deployments of virtualised infrastructure and associated services by CSPs since 2014, and have written extensively about the trends we have seen among early adopters[1].

As might be expected from the network-focussed operator community, much early activity has been targeted on the virtualisation of core network functions, rather than on deploying externally-facing services. However, in 2017, we have seen an explosion in the number of operators marketing software-defined wider area networking (SD-WAN) solutions to their enterprise customers. This is by far the fastest growing area of VNF-based services:

[1] For more information, see the January 2018 issue of our NFV Deployment Tracker and recent related reports.

Figure 7: SD-WAN is the fastest-growing NFV deployment category among CSPs



Source: STL Partners

What is SD-WAN, and why the demand?

SD-WAN, in a nutshell, is the application of software-defined networking (SDN) technology to wide-area network (WAN) connections, such as those used to connect enterprise networks that are separated by geography.

WAN is, of course, an established and widely-adopted mode of networking that allows enterprises across the world to relay data between employees and locations. Traditionally, it has been built using dedicated hardware and expensive leased lines or traffic-routing mechanisms such as Multi-Protocol Layer Switching (MPLS).

SD-WAN improves on traditional WAN by managing the networking hardware with a software based controller, which can be hosted in the cloud. This makes it simpler to manage and operate the network, as equipment can be controlled and configured from afar through software – without the need to send engineers onto the site.

SD-WAN is a great example of a service that addresses many of the emerging enterprise customer needs that we listed in Figure 1. It is cloud-based and flexible. Capacity can be scaled up and down quickly, and on demand. Through the use of software management portals, much of the technical complexity involved can be automated or hidden from the end-user. Without the need for expensive routing hardware, it requires less capital expenditure than traditional WAN solutions. In addition, it opens up the possibility for businesses to use low-cost Internet connectivity to partially – or entirely – replace their existing MPLS connections. There is opportunity for CSPs to bundle it with Internet connectivity to extract further revenue.

It is no surprise, then, that the CSPs we speak to tell us that their enterprise customers have been actively asking for SD-WAN solutions. Their customers understand what the service does, how it benefits them, and want it quickly.

How does SD-WAN fit into a virtualised managed services platform?

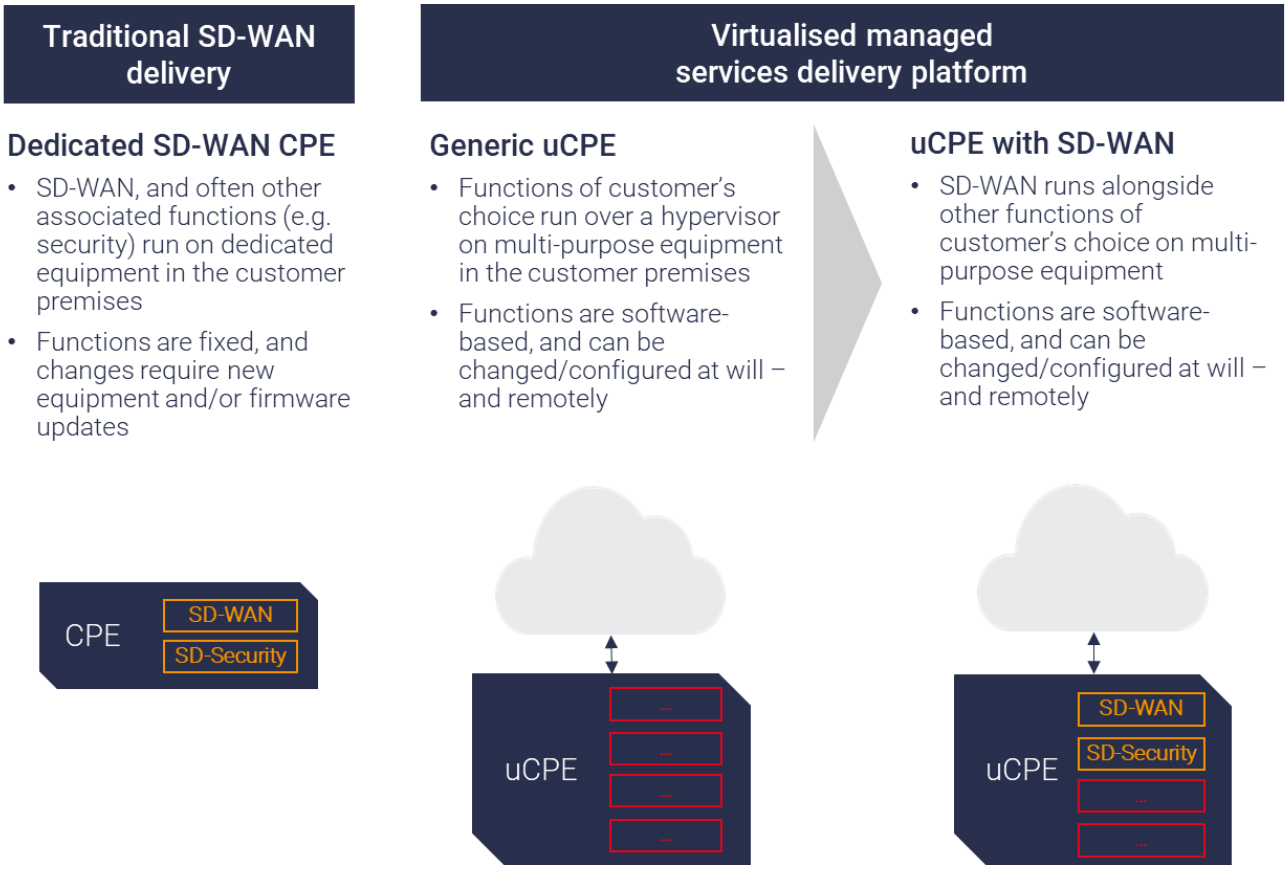
SD-WAN was first touted as a specific virtualised managed service. However, as the market has developed, it has evolved to become something different. Most in-field deployments of SD-WAN use dedicated equipment which is controlled centrally by orchestration software running in the cloud. Connections between sites are defined by a topographical map of the network, rather than by point-to-point connections.

Since SD-WAN alone is not considered sufficiently secure for many enterprise applications, a large proportion of vendors offer it with 'baked-in' software-defined security functions (such as firewalls) or bundled with third party software-as-a-service (SaaS) security solutions. These are typically delivered as a point product, pre-installed on CPE, ready to be switched on or off as the customer requires.

We believe that point solutions have a place in the market, but they are by design subject to many of the limitations encountered with traditional, physical managed services. Available functions are largely constrained to those that are preloaded on the CPE. While it may be possible to update the firmware, this cannot be done in real-time in response to specific customer demands. Therefore, while a point solution might address a customer's existing set of needs, it will be difficult to change tack if those needs evolve in the future.

If service providers are to truly future-proof their deployments, they may do better to look beyond SD-WAN itself, and instead consider it as just one of a portfolio of services that could be delivered over uCPE on the generic virtualised managed services platform we described above. Figure 8 shows how this would look, in comparison to the traditional method for delivering SD-WAN:

Figure 8: Traditional SD-WAN, versus SD-WAN delivered on a virtualised platform



Source: STL Partners

The key benefit of delivering SD-WAN over a virtualised platform, rather than with dedicated SD-WAN routers, is that it enables the CSP (and its customers) to provision other functions or services on top of the core networking functionality, and change and configure these at will, from afar. These services could be the security functions that are typically offered alongside SD-WAN, or they could be something else entirely, be that a network function or otherwise. Examples might include, but are no means limited to, managed Wi-Fi, print servers, firewalls, VPNs, or even functions that have not yet been invented. In essence, if the right SD-WAN solution is selected, CSPs will enable enterprise IT managers to centrally provision, monitor and operate IT services across all of their locations – what some have termed software-defined branch (SD-Branch).

This model is far more flexible than the 'point solution' approach, and seems an obvious choice for CSPs looking to provide SD-WAN as part of a wider, future-proof managed services portfolio. However, it will be necessary to help product development teams understand that SD-WAN is just one of many VNF-based services – many not available yet – that could potentially be enabled by this new platform.

What next for CSPs?

It is not enough to accept that CSPs must move towards a virtualised delivery model if they are to remain relevant in managed services. Regardless of whether SD-WAN is chosen as a first service, or something else, there are many challenges to meet and questions to answer along the way.

First, there is significant technological investment required in order to deploy the necessary virtualised infrastructure to support a virtualized managed service delivery platform. This takes time and money, and requires buy-in from throughout the organisation to be successful. Even once this is complete, taking VNF-based services to market is complex, and requires CSPs to take a wholly different approach to that used with traditional managed services.

Questions to consider include, but are not limited to:

- How do we transition from the traditional managed services model to delivering services on a virtualised platform? Should VNF-based services be introduced to our portfolio alongside traditional managed services, or should we stop selling the traditional products entirely?
- How do we migrate existing customers? Do we switch all existing traditional contracts to the new model, or start by identifying high-fit customers for an early trial?
- What proposition do we take to customers? Do we sell VNF-based services as an improved evolution of traditional managed services, or do we emphasise the benefits of an innovative, future-proof virtualised delivery platform?
- What approach do we take to sales and commissioning? Does adoption of cloud pricing models conflict with existing sales processes and commissioning structures? How do we ensure sales teams both understand the new model, and are motivated to drive it with their customers?
- How do we approach new product development? A virtualised platform enables us to build, test and launch new products much quicker than before, but how do we ensure these new products are relevant and will meet customer needs?

These challenges are significant, but not insurmountable. With proper consideration, and in partnership with vendors, customers, and others, CSPs should be able to overcome these problems and take compelling VNF-based services to market on a virtualised delivery platform. CSPs should begin this process now - and by doing so, they will open themselves up to significant new revenue pools, and a far more favourable cost structure than with traditional managed services.

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