

Connecting the adaptive enterprise.

Agile, automated
network platforms
that are consumed
as a service.

verizon 

Enabling the adaptive enterprise



Massimo Peselli
SVP Global Enterprise
Verizon Business Group

Enterprises are becoming more dispersed. Operations, ecosystems and supply chains span the globe. Employees can be anywhere, and that increasingly includes outside the company's offices, stores and plants. And customers can be virtually anywhere, prospects too.

To make this extended organisation possible, companies are shifting to cloud-based services. Software as a Service (SaaS) applications like Microsoft 365, Google Workspace and SAP, to business systems running on Infrastructure as a Service (IaaS) or Platform as a Service (PaaS) are enabling businesses to be more responsive to customers.

Moving to the cloud has enabled organisations to be more flexible, adopt new business models and develop new ways to attract, serve and retain customers. This was vividly illustrated in 2020 when the global economy was disrupted by COVID-19. Businesses that had their core systems in the cloud were able to shift focus to online sales and service, empower employees to work from home and adapt supply chains more quickly.

Verizon was one such company. On March 23, 2020, we went from having 4,000 employees working from home to about 115,000. And with stores forced to close, we were able to retask 15,000 retail employees to help deal with the increase in demand for telephone support and help setting up teleconferencing services. That wouldn't have been possible a few years ago.

As this mode of working becomes the norm, the strategic importance of connectivity is growing. Companies have relied on their wide-area networks (WANs) for years, but the definition of responsiveness has changed, dramatically.

It used to be acceptable for it to take days or weeks to implement configuration changes. Taking hours to resolve issues was just how things were. IT would wait for users to complain and then initiate a largely manual fault-finding and resolution process. And managing application performance often meant throwing more resources at any problem.

That's not acceptable when the business relies on thousands of connected devices; when a drop in performance can lead to lost business within minutes; or when one day there might be thousands of users in the office and just dozens connecting remotely, and the next day it might be the other way around.

In this paper we will present Verizon's vision for the future of connectivity. The enterprise network of the future will be agile, automated and consumed as a service. It will enable unprecedented flexibility and create new ways to interact with employees, partners, customers and the "things" around us. We call it Network as a Service (NaaS).

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Who is this report for?

The goal of this paper is to give anybody with an understanding of the challenges facing today's enterprises an introduction to the future of enterprise networking. The only pre-requisite is a basic understanding of business technology.

It should be of interest to any business leader whose responsibilities include service delivery, customer experience, productivity, business planning, or risk assessment and contingency planning.

The future of the network is a topic that's most pressing for those leading or working in large global enterprises, but it's relevant for any organisation. And that encompasses all industries. If you're in retail you'll be painfully aware of the need to find efficiencies and create new business models. If you're in manufacturing, it's got a name: Industry 4.0. From healthcare to financial services, transformation is crucial and that means that the network is, too.

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The problem with networks



Time and time again we hear that networks are inflexible, difficult to manage, complex to secure, cost too much and hamper business agility. It doesn't have to be like that."

Leon Platts, Managing Director, Global Integration Solutions, Verizon Business Group

There's an old adage that the network is guilty until proven innocent. As we increasingly rely on the cloud in every aspect of our lives, connectivity becomes more important. It's frustrating, especially during a lockdown, if you can't access Netflix. It's much more serious when an outage or performance issue hits your business applications.



Not flexible enough

"Why is network configuration so hard?"

Changing network configurations can involve a lengthy and complex process. Businesses expect to be able to adapt their network as easily as they can update their smartphone.



Not responsive enough

"Our needs change fast. Why don't networks?"

Adding new services and adapting to changing business demands can take days or even weeks. That's like writing a cheque when there's a line of people queuing behind you.



Too difficult to secure

"My apps are in the cloud, why isn't my security?"

Cloud isn't going away. Remote working isn't going away. Network security is still fixated around extending the perimeter. Businesses have moved past there being a perimeter.



Too costly to run

"I can buy applications as a service, why not network?"

Companies have grown used to buying storage, compute and other IT as a service. Businesses expect to pay for services as they use them.

The technical bit (feel free to skip ahead)

It isn't necessary to understand all these terms to understand the concepts in the paper, but some readers may find a bit more detail useful.

Multi-protocol label switching (MPLS)

Not long ago, MPLS was the next big thing and companies couldn't wait to adopt it. In recent years it's come in for a lot of criticism, but it's still a foundational technology in most enterprise WANs.

One of the biggest innovations of MPLS was greater control of quality of service (QoS) across the network. Network administrators could prioritise some applications over others.

This helped improve the end-user experience. Fluctuating lag, jitter, is very noticeable when streaming video. Even delays of tens of milliseconds can make the experience unpleasant. Whereas, does it matter if an email takes a couple of minutes to arrive?

It wasn't just employees that saw the benefits. Applications drive interactions with customers, whether it's the contact centre agent looking up details or managing service delivery. So network performance problems can directly affect customer satisfaction.

Network QoS is even more important now than 15 years or so ago when MPLS became available. Not only can poor service frustrate users, it can directly impact the customer experience and lead to lost business or damaged loyalty.

SD WANs can be built without MPLS connections, but they are still important to delivering high-performance and reliability.

Software-defined networking (SDN)

SDN is not a network protocol like TCP/IP or Ethernet. It's an approach to managing networks separately from the hardware that actually handles the data traffic. With SDN, decision making is moved to a virtual control plane and physical networking devices, such as routers and switches, are abstracted.

This means that IT teams can manage the network through software. This enables more centralised network management, greater visibility of performance and issues, more granular control of security, improved traffic prioritisation and the ability to provision, and re-provision, resources more quickly.

An SDN network has an orchestrator that provides end-to-end visibility over the whole deployment, from the "last mile" connections to the network core.

With SDN, changes, including the deployment of new services and addition of new sites, can be achieved in hours or days instead of weeks and months. Greater visibility and the ability to implement changes quickly can also accelerate problem solving. Issues can be identified and fixed much more quickly than with older network models.

SDN is the foundation for fully autonomous, self-healing networks. As AI/ML solutions emerge, they can be easily integrated within the SDN architecture. This makes it a platform fit for future.

Network functions virtualisation (NFV)

Traditionally network functions have been associated with specialised, dedicated, proprietary hardware. You had firewall boxes, WAN accelerator boxes, and many more. Deploying a new service often involved a truck roll and all the admin and delays associated with that. And even when it arrived the device needed to be hooked up to the network. More expertise required, more opportunities for things to go wrong and more time elapsed.

With NFV, network functions, such as routers and firewalls, are replaced with virtual network devices that can run on industry-standard hardware. One "white box" at a branch could host multiple virtual network functions (VNF), including intrusion detection and WAN acceleration. Additional functions can be added "over the air" and functions removed when no longer needed.

The "power" of the VNF device can be dynamically shared between functions. So you could decide to scale down one function to meet demand for another. It's like being able to send a message that turns your tumble dryer into a dishwasher. Unfortunately, that isn't possible.

Technology is complex. Using it shouldn't be.

Most people don't think of an iPhone as complex, but think about what lies underneath that friendly user interface. There's a custom-designed chip optimised for artificial intelligence (AI), five radios, a custom ultra-wide band chip, a 3D "TrueDepth" camera for facial recognition (and three other cameras), an accelerometer, a gyroscope, a magnetometer, over 10 million lines of code and much, much more.

Global networks are complex too. We expect them to enable thousands of applications, transfer enormous amounts of data across vast distances in milliseconds, prioritise the most time-sensitive data and reroute automatically if there's a problem. When you really think about it, how could they not be complicated?



Less than two-fifths of IT leaders believe that their network is well aligned to meet the demands of digital business.¹

A lot of highly sophisticated technology – both hardware and software – goes into creating a reliable, high-performance network. In the past, much of that complexity was exposed to the user. Performing even relatively mundane tasks required mastery of arcane command-line instructions. That's changing.

Find out more

NaaS isn't a technology, it's a model for consuming and paying for connectivity enabled by technologies like software-defined networking and network-function virtualisation – you don't need to understand these technologies to read this paper, but there's more detail on page 5 for those that want to know more.

For a more technical introduction to the technologies behind NaaS and the attributes it delivers, read our paper [Creating a dynamic, cloud-ready network](#).

From tile to carpet

Networking is no longer just an issue in the server room – where those even exist anymore. The topic has made it to the boardroom. Or if it hasn't, then the company has a problem.

That's not to say that the business leadership understands or cares about the detail. Nor should they need to, any more than they should have to worry about the company's tax reference numbers or cleaning supplies orders. But they are deeply invested in getting the company's network right – even if they don't know it.

The network matters

It matters because if the network isn't working right, the consequences can run all the way from day-to-day operations to the organisation's strategic plans. The company's ability to keep its promises and achieve its potential depends on the network. And we haven't even got into security yet.

Some marketing is hyperbole. Do you really believe that tissues have been getting softer year-on-year for 40 years? It's worrying to think how rough they must have been. Of course, the reality is that each change has been relatively small and progress gradual.

Every time a new networking technology has emerged, vendors have touted its greater efficiency and agility. These weren't hollow promises. One of the reasons that MPLS was such a game-changer was that it enabled companies to integrate various types of connectivity to make better use of their resources, simplify management and deliver a better end-user experience.

The need for agility isn't new

Some providers talk about how businesses need their network to be more dynamic as if it's something that they've only just figured out. The truth is that businesses have always wanted their network to be more responsive to their needs. And engineers and product managers at service providers around the world have been working on delivering improvements for years.

But as well as gradual improvement, sometimes a game-changing development comes along. And SDN is one of those step changes.

Let's put a few things straight.

We know that we're not the new kid on the block. And as a market leader that's been around for a while, we'd expect to come in for some criticism. After all, networking is a competitive market.



“Telcos lock you into expensive last-mile options.”

Companies that don't own network often criticise those that do. A common accusation is that telcos lock customers into their own last-mile solution, rather than let them choose.

Poor last-mile service can lead to a poor overall experience both for those using the applications running over the network and those that have to manage it.

Our deep relationships with local internet service providers (ISPs) around the world enable us to negotiate good deals for our clients. But we don't dictate to customers how they should buy their last-mile or tail circuits. If you think that you'll get a better price or better service by dealing direct, we'll work with you to make it work.



One downside of switching to managing your own last-mile connections is the burden of managing more broadband providers, typically four to five times more.”

Debika Bhattacharya, Senior Vice President,
Verizon Business Group



“Legacy companies suffer from legacy problems and just cannot deliver agility.”

Many new-to-the-market providers seek to differentiate themselves by saying that their newness gives them an advantage. They say that more established companies are hampered by inflexible contracts with original equipment manufacturers (OEMs). This, they claim, leads to long lead times on equipment, resulting in rollout delays.

It's become common to portray companies that own network as monolithic obstacles to progress. We disagree.

We're big and we're established, we'll accept that. But being big doesn't mean you can't be agile and creative. Nobody accuses Apple or Google of being too big to innovate. And sometimes that size comes in useful.

As a major customer for companies like Aruba, Cisco, Ericsson, Juniper, Nokia, Silver Peak, Versa Networks and many more, Verizon is able to negotiate better delivery times and other terms for our clients.

During the COVID-19 pandemic the scale of our relationships with key hardware vendors came to the fore. We were able to get hold of devices where others couldn't.



“Traditional network companies are all about SLAs, not real-world measures like application performance.”

Many newer entrants to the market have lovely dashboards with pretty charts. Only they, (they claim), can show you how applications are performing and what the actual user experience is like.

Hands up, we've been around for ages. But there are benefits to owning and managing the physical network over which SD WAN services are provided. And there are many benefits of decades of experience and scale.

We measure application performance and website availability as well as other important things like network reliability and latency.

We go beyond the network and can even run synthetic transactions on key business applications, including ones in the cloud, to measure the actual experience users are having. In many cases, this enables us to spot problems before they've reached the point where users have even noticed them.

Our history and scale have enabled us to build an enormous database of what “good” looks like. This allows us to assess the normal variations in traffic and performance and accurately identify when there's a problem – not just a blip in demands.

When there is a genuine problem, we can identify exactly where the problem is. We can tell you whether it's in the SD WAN, the underlying physical network, a local access (last mile) circuit, a particular server, the operating system, or even a specific application or function.

Simply, our experience and data enable us to spot problems quicker. And because we own the underlying network, we're also able to resolve more problems more quickly – often before anybody even spots them.

But we're not content with that. We're investing millions in improving our tools and increasing automation within our network to provide better information and faster issue resolution.

Another benefit of all that data is that it enables the creation of machine learning (ML) models. Verizon has already implemented several key AI/ML capabilities into our operational environment. This includes using natural language processing (NLP) – similar to what Amazon Echo or Apple Siri uses – to analyse trouble tickets and help us to spot patterns and correlations between issues. Digging deeper and identifying the root cause enables us to cure the problem, not just alleviate the symptoms.



“Carriers are consumers rather than creators of technologies like SD WAN.”

This is one of our favourite criticisms. The idea, we think, is that carriers only sell products built on technologies that others have developed. The implication is that companies like Verizon aren't able to offer best-in-class service.

Verizon's list of firsts and contributions to industry-standards bodies shows what nonsense this is. We've been at the forefront of developing new technologies like SDN, 5G and many, many more.

5G – which shares many aspects of design philosophy with SDN – is now available and already transforming networking. Combined with multi-access edge computing, it is enabling radically new business processes. Back in 2015, Verizon created the 5G Technology Forum (5GTF) to spearhead the development of the 5G ecosystem. This group brought together leading players, including Ericsson, Intel, Samsung and Qualcomm to accelerate the development of the 3GPP 5G New Radio (NR) standard, which was released in December 2017.

As well as spending heavily on our own R&D, we also invest in promising new technology companies through [Verizon Ventures](#).

And as the owner of one of the world's largest and highest-performing networks, we'd argue that we have much more control over quality of service than overlay providers that must rely on numerous carriers.

We are also a consumer of the network services that we offer. Verizon has a huge network of retail stores. The Verizon family includes some of the world's biggest media brands, such as Yahoo! and Aol. There's also RYOT, a pioneer in immersive media. Being a consumer of network services gives us even greater insight into the challenges that businesses face.



Our strategic relationship with Verizon continues to create value for businesses supporting a growing distributed mobile workforce and the accelerated adoption of cloud services.”

Scott Harrell, Senior Vice President and General Manager, Cisco Intent-Based Networking Group²



“Legacy network companies can’t deliver the cloud performance needed.”

Many so-called “cloud native” SD WAN vendors say that network companies can’t deliver on their cloud performance promises because they aren’t co-located with all the relevant cloud service providers – like Amazon Web Services (AWS), Microsoft Azure and Google Cloud Platform.

Really? If “cloud native” providers want to make who’s best at delivering SD WAN a competition about partnerships with cloud service providers, bring it on.

Verizon works closely with companies like Google, IBM, Microsoft, Salesforce and many more. We don’t just rent space in their data centres – in fact, in many cases we actually provide them with services.

We’re so much more than customers or members of their partner programme. We have deep strategic ties. That’s why we’re often first to announce ground-breaking new services. For example, in 2020 we were first to partner with AWS to integrate its Wavelength edge computing service with our 5G network.

And our partnerships don’t stop there. If you asked the leaders of companies like Apple, Cisco, Ericsson, IBM, Google, Juniper, Microsoft, Oracle, Nokia, Samsung, SAP, Wandera and many more about their relationship with Verizon they’d talk about our close ties. If you asked about some of the companies levelling this accusation, they’d say, “Who?”



“Carriers offer too many options.”

Many of our competitors accuse companies like Verizon of presenting companies with too many options. They claim that they make it easier by offering fewer options.

We’re all for simplicity, but not at the expense of our customers having to compromise.

Few companies have as much experience building enterprise networks – either in the number of years or the number of customers.

One thing that we’ve learned over thousands and thousands of projects is that enterprises come in a virtually unlimited range of shapes and sizes. And the challenges they face and their strategies vary too.

They say that even a stopped clock is right twice a day. And there probably are businesses that a “one size fits all” solution might work for. But what about when that business grows or decides to change its strategy?

We know that businesses want a solution that’s neither too big, nor too small. And they want options for when circumstances or plans change.

Our platform-based approach means that we can integrate components from different hardware providers and various types of connectivity. This means that we can offer solutions more closely aligned with a customer’s needs. It also means that we can simplify the transition to the new network and take future changes – including mergers and acquisitions, and other disruptions – in our stride.

Next we’ll look at how Verizon’s network platforms enable the adaptive enterprise.

Better application performance and user experience

There's little more frustrating than calling support only to be told that everything looks OK. The stats don't really matter if users or customers are experiencing issues. In the old days when an application started to run slowly, companies threw more bandwidth or compute at the problem. With applications in the cloud and users distributed far and wide this approach doesn't work anymore.

App delivery in a multi-cloud world

Traditionally, building IT infrastructure involved the purchase of specialised hardware and installing it in company-owned facilities, or perhaps co-locating it in a third-party's data centre. This made it difficult and costly to adapt as requirements changed.

Virtualisation, running multiple virtual machines on a single physical machine, helped improve utilisation and responsiveness. It also set in motion a series of advances that led to cloud computing.

You don't have to be an IT expert to have heard of cloud computing. And you probably make use of it every day. It's highly likely that you use SaaS applications like Microsoft 365, Google Workspace and SAP. And if any of your company's core business systems aren't running on IaaS or PaaS, there's probably a plan in place to move them – or replace them with something that does.



While cloud has enabled greater agility, its benefits are limited if connectivity isn't just as fluid. IT needs the flexibility to deploy any application, to any user, anywhere, at any time.

Scott M. Lawrence, Group Vice President EMEA,
Verizon Business Group

Companies need a multi-cloud-ready network that can connect to any cloud provider (IaaS, PaaS or SaaS) with minimal effort.

Visibility and control

With an SD WAN, organisations can connect to multiple cloud service providers easily and securely. New services can be created much more quickly, enabling more innovation and greater responsiveness when something unexpected happens.

And once connections are made, SD WAN makes it easy to prioritise traffic to provide better experiences for your users – both employees and customers. The amount of IT time spent resolving application performance issues should be lower and user satisfaction higher.

SD WAN should also give much greater visibility into the performance of the network and the applications running on it. This makes troubleshooting problems easier and faster. And any changes needed to resolve issues can be automated.

The golden ticket

In the future, AI/ML models within the network will devour the enormous amounts of data generated – not the data the network carries, but the metadata about the traffic flows – to constantly improve cognitive models. The identification of potential impediments to application performance and their resolution will become increasingly automatic and invisible.

Things will just work.

Find out more

Learn more about getting the network you need for the future – more quickly and with lower risk – in our paper [Creating a dynamic, cloud-ready network](#).

Just the prescription for personalised shopping experiences

In December 2020, Verizon Business and Walgreens Boots Alliance (WBA) announced a multi-year strategic partnership. As part of this agreement, we will deploy NaaS to more than 9,000 Walgreens and Duane Reade retail locations across the US.

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WBA's digital transformation is focused on modernizing and digitizing our company to provide customers with seamless and personalized shopping experiences, whether in-store, online or in the palm of their hand.

We continue to enhance our business systems and processes both internally and with industry-leading partners to meet the changing needs of Walgreens' customers and boost productivity across our workforce. Verizon's 20 years of experience in this space will help transform our network in the US and also serve as a foundation for our future digital innovations.”

Mike Maresca, Global Chief Technology Officer,
Walgreens Boots Alliance

Greater agility and less admin

30%

Through 2024, enhancements in digital workplace infrastructure processes driven by analytics and automatic remediation capabilities will refocus 30% of IT operations efforts, from support to continuous engineering.³

Businesses have got used to computing resources being on tap. IT, or anybody with a credit card, can spin up a new server in minutes. But it can still take days or even weeks to provision network services. And it often involves a lot more skills than that employee with a credit card has.

Why does automation matter?

Everybody is hunting for new ways to eke out a bit more performance. And with customer experience increasingly dependent on business systems, even a minute of downtime can be a disaster.

Switching to SD WAN can give organisations greater control over their network configuration. This includes the ability to make more changes themselves, without having to go through a service provider's service desk or ticketing system.

This could put more strain on the in-house IT team, but that's where automation comes in.

Faster and with fewer errors

Because SDN and NFV make network functions and configuration virtual, changes can be automated. You can add, remove and configure services like firewalls and load-balancers from your desk. No waiting for deliveries or finding space to store stuff. No need to worry about site access and plan for hours of downtime so things can be unplugged. The network is built by dragging and dropping the components you need into place at the time you want them.

This can enable faster activation of new services, reduced management overheads and faster resolution of issues. SD WANs can also help improve monitoring by enabling you to see further into the network. This can help you to understand the dependencies between applications and users that the network needs to support. Knowing

how the network is being used can not only help spot problems more quickly, it can also improve planning for the future too.

One of the main areas of development is the creation of smart connectors (APIs) to enable integration of network management tools with the service management platforms that IT already uses. Instead of having to learn and log into a proprietary SD-WAN portal, DevOps will be able to manage network features through the same "single pane of glass" they use for other IT services.

Towards the self-driving network

The next step is moving towards connecting business rules to network configuration changes. When companies reach the "Automatic" stage of maturity, they will be able to think about their networks in terms of business logic not configurations. Sophisticated network orchestration tools will handle the detail.

In a few years' time you'll be able to jump into an on-demand self-driving car, it'll know where you want to go through integration with your messaging and calendar apps. Likewise, you'll be able to buy your network on an as a service basis and AI-based models will take inputs from all aspects of the business to configure the network to your needs.

Neither of these concepts are very far away.

Find out more

Read our paper [Automation: From software-defined to self-driving](#) to learn more about network automation.

More resilient and secure

Today, security in a typical enterprise consists of numerous point solutions: physical, virtual and delivered as a service. There are hardware devices at branches, perhaps cloud-based virtual devices at smaller branches, services like distributed denial of service (DDoS) protection and quite likely staff augmentation including security operations centre (SOC) services.

Network and security are coalescing

We said earlier that you can't achieve the full benefits of cloud without a more adaptable network. Well, you can't achieve an agile network if your security isn't agile. Or at least you can't achieve a secure agile network.

Think about it. What's the point of being able to provision a new circuit in hours or minutes if provisioning security takes days? You could use it, but that would be like giving somebody the keys to a new car and telling them that the seatbelts and airbags will turn up next week.

Network and security are critically entwined and must be considered together. Just as one unsafe vehicle on the road is a threat to everybody else, one unsafe circuit or ineffective security service can be a threat to the whole network and the company's entire security posture.

Zero-trust network access (ZTNA)

Look behind you. Applications run in on-premises data centres and users predominately sit within the building. In those days, trust was a whole lot easier. The perimeter was secured by VPNs, firewalls, and other security devices on the edge. Once inside, users were largely free to wander around. As apps have moved to the cloud and users have become nomadic, that model no longer works.

The ZTNA approach is based on eliminating the idea of "once and done" authentication. User credentials – including a hard-to-crack password and biometrics or a one-time token – are just the start. A ZTNA solution should enable organisations to set minimum security standards for devices – so, say, an employee on an unpatched laptop won't be allowed in, even with the right password. And even when somebody is admitted, they don't have an "access all areas" pass. Resources are hidden and only accessible through a trust broker. Even though you have access to one resource, you can't even "see" other resources.

Secure access service edge (SASE)

SASE is also not a security technology. It's an architecture – originally proposed by Gartner, a leading research and advisory firm – that is designed for the mobile-first and cloud-first world.

It reflects the decentralised architectures that companies now operate, or are moving towards. It integrates network and security services into a single, distributed, cloud-centric solution that protects all traffic, applications and users. It encompasses ZTNA, cloud-access service-broker (CASB), data loss protection (DLP) and much more. Don't worry if you don't understand all those names and initialisms, they aren't essential to understanding the concept.

The SASE approach helps organisations deploy, manage and scale infrastructure securely. Its flexibility makes it easier for them to scale their security infrastructure as they grow, without having to reconfigure the central architecture. This model also enables organisations to support on-premises and cloud-based applications without needing to have separate infrastructure as with conventional proxy- and software-defined perimeter-based solutions.

As network security and network management converge, it's been suggested that SASE may replace SD WAN as the name for the type of architecture described in this paper.

Find out more

We're not going to go into the importance of cybersecurity here, we're taking that as a given. But if you'd like to know more about the threats, take a look at some of our highly regarded [security publications](#).

More for your money

You may have noticed that there's one key topic that we haven't addressed yet, cost. It's obviously an important topic, especially at times like this when cash is tight for many businesses and the need to invest in innovation is urgent. NaaS can deliver savings through greater efficiency, reduced management burden and closer alignment with the business's needs. But beware false economies.



From capex to opex

The move to cloud has created a shift in mindset, from build to rent. Why go through the pain of building your own compute or storage and then be stuck with it when the business's needs change?

Moving from owning to renting is a growing trend. It's not just IT services like compute and storage that have been transformed. NaaS brings a cloud-like commercial model to networking.

Gone are the days of lots of on-site hardware and with it the need for large upfront capex investments. This frees up funds for the business to invest in innovation and other imperatives.

This includes reducing the barriers to trying new things. Whether it's setting up a new business or trying a new digital-first business process.



Pay for what you use

The move to cloud has created a shift in mindset, from build to buy. Why go through the pain of building your own compute or storage and then be stuck with it when the business's needs change?

Pay as you go (PAYG) has been a familiar way of buying a mobile phone for many years. It's now also commonplace when buying software and cloud-based services like compute and storage.

The ability to turn on new resources, or scale up existing ones, rapidly wouldn't be quite as attractive if it were much more expensive than traditional models. But because the cloud model makes better use of resources, providers are able to offer competitive pay as you go options.



Cut waste, not corners

Companies should take advantage of less expensive internet services where performance is less critical. But it could be a false economy if it leads to troughs in application performance or resilience issues.

One of the benefits often associated with the move to SD WAN is swapping MPLS connections for less expensive internet access. In many cases that can deliver a perfectly adequate service and save money.

But there's a reason why "you get what you pay for" is a cliché. SD WAN performance, and hence mission-critical application performance, can take a hit if the throughput, latency and resilience of the underlying connections isn't up to scratch. Broadband connections cannot provide the control over quality of service that you get with an MPLS circuit.

There's still a place for MPLS in many enterprise's networks. A provider that has more than one option in its toolbox can help companies to identify where they can make economies and where performance and resilience needs demand greater investment.



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Realising the adaptive enterprise is utterly dependent on being able to connect people, things and applications; securely and reliably. To be offline is to be dead in the water. Come rain or shine, pandemic or Black Friday, companies need to be able to create, gather, store and process data. And when things change, they need their infrastructure to adapt. Fast.”

Sampath Sowmyanarayan, President, Global Enterprise, Verizon Business Group



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For most organisations, digital transformation isn't about disruption, it's about survival. Companies that aren't actively driving the automation of business processes, reduction of costs and customer experience improvements risk obsolescence.”

Tony Judd, Managing Director –
UK & Ireland, Verizon Business Group

Choose wisely.

This paper was compiled without a single face-to-face meeting. We used a combination of video-conferencing and collaborative editing in a shared online document. Things would probably have been different if it weren't for the COVID-19 pandemic, but this way of working isn't an aberration, it's a glimpse into the future. The office isn't dead, but in the future we'll go there for a purpose, not just because it's a weekday.

Businesses are still reeling from the impact of the lockdowns around the world. It's not like we didn't know that a pandemic could happen. It was a known unknown: A possibility, but one that seemed such a distant possibility it could be the next guy's problem. COVID-19 was a wake-up call. Many organisations realised that not just their operations but even their business models weren't as robust as they thought. That's forcing many to rethink.

Digital transformation isn't easy. And the stakes are high. Attempting digital transformation without an agile, adaptive network in place would be like trying to win the 400 M backstroke with a server rack tied around your ankles.

Network transformation can be, well, transformative. It can help the whole organisation to be more agile and enable capabilities that you can't even imagine yet. But the consequences of getting it wrong can be just as dramatic.

It would be great to be able to start over, but few IT leaders have the luxury of being able to whip out the black card and buy a whole new infrastructure. The reality is that companies need to incorporate existing investments and minimise disruption to operations as they build the infrastructure that they need for the future.

Our progressive transformation approach recognises that there's no quick fix to digital transformation of a large company – and anybody who says that there is may have another agenda. Put simply, we help our clients deal with shifting needs and bumps in the road.

We couldn't do that without our network. Of course it can connect people and things. And of course it's robust and secure. We're also making it smarter, more application-aware, every day. We can do this because we've invested US\$145 billion over the last 20 years to re-engineer it from the core to the edge. This has created a platform not just for 5G, multi-access edge computing and the other technologies that you need today, but also what comes next.

The next crisis you face may be more local. It might be a disruptive new market entrant or the imposition of new tariffs or trade restrictions. It could be a result of climate change or changes in consumer behaviour.

Sadly, we know that another crisis probably isn't too far away. Companies need to be prepared to react and adapt no matter what the cause is.

On the plus side, companies will be stronger for the changes ahead. And agile, adaptive networks will have a major role to play in achieving this constantly evolving "new normal".

The choices you make today will matter for years to come. Choose wisely.

70%

In 2019, long before COVID-19, PwC found that 70% of organisations had experienced at least one severe crisis in the preceding five years.⁴

Find out more

Learn more about SD WAN, Network as a Service, automation and the business benefits they offer.

Get started >

- 1 Cisco, [2020 Global Networking Trends Report](#), 2019
- 2 Cisco, [Verizon Business expands Cisco relationship with SD-WAN managed service offers](#), February 2021
- 3 Gartner, [Predicts 2021: Infrastructure Operations and Cloud Management](#), October 2020
- 4 PwC, [Global Crisis Survey 2019](#), 2019

