BT

Dispelling the myth: future networks
Achieve a smarter digital future
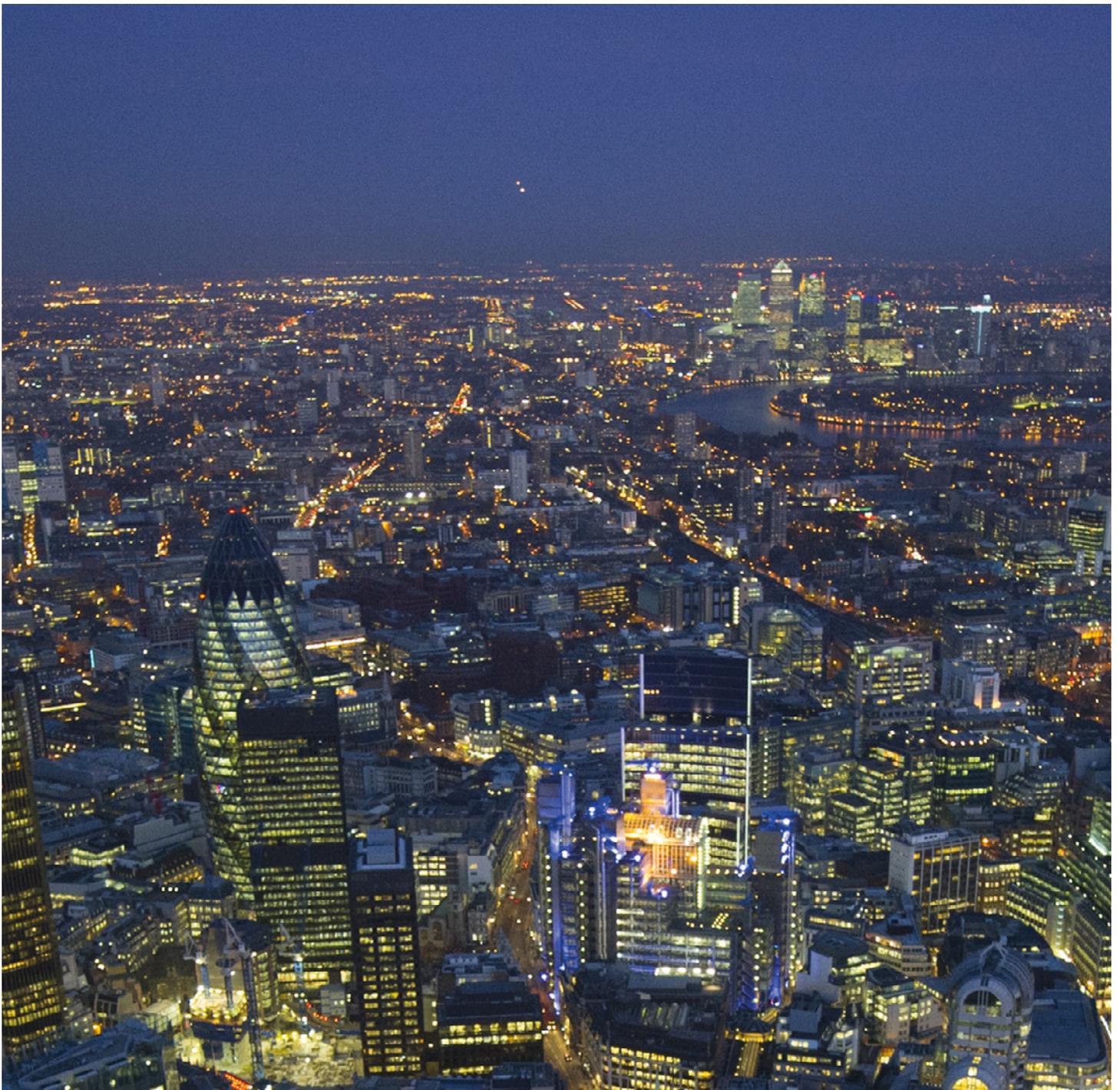
Contents

1. What is a smarter digital future?

Going digital is a big priority for today's businesses. It has the potential to lower costs, improve customer experiences and operational efficiency, and create new business models.

CIOs are facing new technology challenges and choices. Moving over to new platforms like the cloud. Supporting global connectivity (including mobile platforms). Securely managing and making sense of the ever-increasing amount of data. It all needs focus.

Plenty of CIOs know their organisations need more flexibility and agility to succeed. And they're already taking advantage of cloud-based IT services and applications. But it can be much harder to get an infrastructure in place that delivers the rapid response, easy collaboration and constant innovation the digital business needs.

A smarter digital future is created by building and managing networks that are fit for the digital age – more flexible, affordable, easier to manage and secure.

This paper looks to dispel some of the myths that surround such networks, and explain how BT Intelligent Connectivity delivers smarter networks. Networks that help you transform your business and meet your challenges – today and in the future.
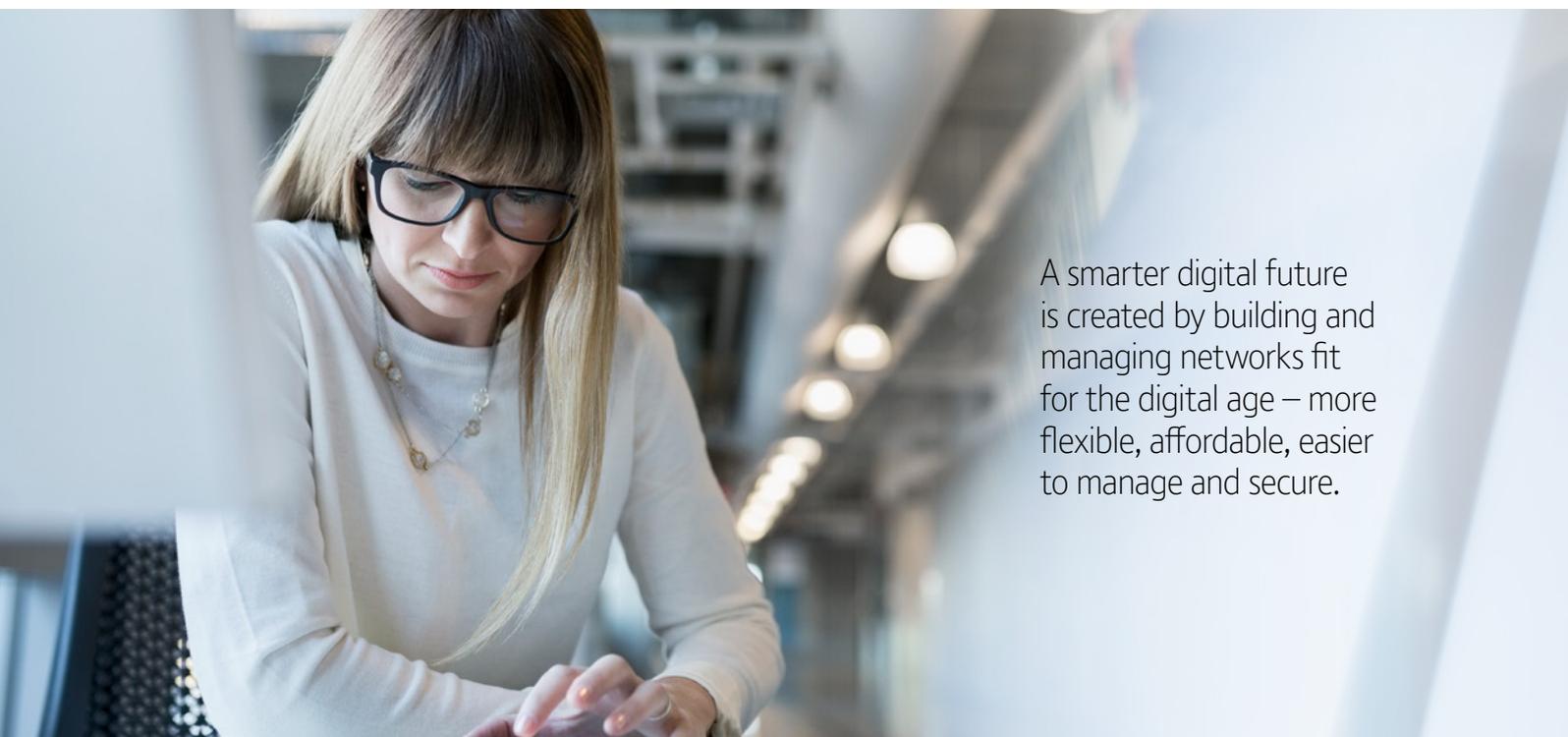
A smarter digital future is created by building and managing networks fit for the digital age – more flexible, affordable, easier to manage and secure.

2. Why should you change your network?

Easier to embrace the cloud

Cloud is the business model of the future. For all organisations. Cloud services help you work faster, safer and smarter – and all while cutting costs. Newer organisations can quickly set up shop based purely on the cloud, without being held back by traditional ICT models. More traditional organisations can use cloud services alongside established ICT practices to get a competitive edge and move quickly into new areas or markets. It lets new areas of the business move ahead quickly as they make the most of new cloud services.

Less ICT spend

We're all greedy for bandwidth. And demand continues to grow year on year thanks to large-scale use of cloud services. It drives people to look to cheaper internet services, potentially compromising quality for cost. Improving the efficiency of your network can give you more bandwidth, that flexes as you need it to, for less.

More flexibility and agility

Businesses today are dynamic. And the cloud just adds to their speed and agility. They can turn on new services across the globe, in new geographic areas and new markets, simply and quickly. But network resources are typically out of sync with cloud capabilities. Referred to as the 'longest pole in the tent', they set too long a timeframe for delivery to new markets. Customers want a way to bring new locations or branches online in much shorter timeframes. New applications, like Machine-to-Machine (M2M) and Internet of Things (IoT), are putting more pressure on existing network infrastructures, plus there's a need for tighter security and management of end devices.

Copes with increased demand

Everything from higher-quality imaging to hungrier applications puts pressure on the networks, whether they're public or private. With on-demand services difficult to deliver effectively, customers could see their network costs growing without becoming more flexible.

Launches new business applications

As businesses transform, they typically develop new applications on cloud platforms. And, quite rightly, they want to introduce these new applications in an agile, secure way without impacting existing business applications.

3. Customer challenges

As more applications move to the cloud, businesses push into new and wider geographies and quality is diluted by hybrid.

How do you get from where you are now, to where you want to be?
While it's clear that digital is now a boardroom priority – and indeed, for many, an imperative – everyone's at a different stage and transforming at different speeds. Wherever you are on the journey, it's crucial to have the right technology and service underpinning your digital strategy. One that's flexible, agile, intelligent, cost effective and secure.

Do you really know what applications you're running?
As the move to the cloud happens, organisations get a bit of a reality check on the actual number and complexity of the applications their business is running. Most choose to run an application rationalisation programme at this point. This usually shows a need for greater visibility of specific applications, their performance and the customer or user experience. The problem is that tools in this area have been unrelated, expensive and can't act on the information they provide. Plus, as more applications move to the cloud, businesses push into new and wider geographies and quality is diluted by hybrid. All this means there's a real need for an integrated toolset. One with better application visibility, that can help put corporate polices on application use into effect.

Lack of security control in the cloud, regulatory/compliance issues, and lack of cloud usage visibility.

Do you understand the policies and regulatory regimes you need to operate under?

More and more personal data is travelling across cloud infrastructures and potentially unsecured mobile devices. So legal frameworks and regulations are quickly being put in place to protect customer data from exposure. New regulation encourages organisations to build in security by 'design', not by 'default', but business strategy doesn't always fall in with security strategy. This means there can be potential gaps and vulnerabilities. CIOs don't always know exactly what makes up their corporate IT estate, They end up spending more time maintaining existing systems than searching for new solutions. And, of course, many are held back by vulnerable legacy IT.

Do you know how to secure your data and its usage?

CIOs still face three key concerns around cloud: security; regulatory and compliance issues; and lack of visibility over how it's being used. As the digital world continues to grow, and traditional security perimeters start to vanish, there's also the worry over the safety of critical and personal data. As shadow IT becomes more widespread, it brings a greater risk from insecure cloud services and applications. Moving to the cloud means that people will need to work harder to protect business and customer data, regardless of where it's stored, or where it travels to. Especially as they now need to comply with new regulatory requirements, such as GDPR.

It's also really important that organisations are able to make sense of their data in real-time. More devices and data mean we're more vulnerable to attack. But if you always know what's happening, you can take action straight away to protect critical assets and data.

4. Taking steps towards building a smarter network

Building a network infrastructure that will support cloud services today and in the future can be a complex task. But it doesn't have to be done all at once. Businesses should take some fundamental steps now. The technology's already there to support them.

Step one

Hybrid networking
One of the first steps you can take is to start moving towards a hybrid networking environment – blending quality of service bandwidth with internet bandwidth. It's the most cost-effective way of dealing with the growing demand for bandwidth. You can use the range of tools available – either traditional (appliance based) or virtual – to route your applications by the right path. It means you can choose either quality or non-quality routes, depending on what you're doing. It puts you in control, so you get the appropriate quality at the right time of day, month or week.

For example, hybrid networking could help you offload certain non-priority traffic, so your ERP system can have more bandwidth to crunch the numbers at the end of the month.

Our hybrid solution combines a leading private network with a leading internet solution. That way you get the perfect balance of performance and agility, security, scale and cost.

Step two

Cloud Connect access
Cloud is here and centre stage, bringing benefits to nearly every organisation. 90 per cent of our largest customers are planning or already using multiple cloud services. So we know our Connect services can help you seize the opportunities on offer faster than ever.

BT Cloud Connect provides pre-provisioned infrastructure, with in-built security, in 13 cities in nine countries. It links to leading cloud Software as a Service (SaaS) providers and Infrastructure as a Service (IaaS) providers. This means you'll be able to quickly connect your cloud environments to your corporate networks using either IP or MPLS bandwidth. And you can rest assured that the service has security and acceleration services built in as virtual functions.

Step three

SD-WAN

The amount of data moving around networks is growing rapidly. The lines between business and personal are blurring. We all have multiple devices and use them to connect to applications wherever we are. And that puts a strain on networks.

If your organisation is struggling to get critical applications performing at their best, it's likely you're not getting the most out of your network.

Organisations supporting global, remote or branch networks should start to categorise their sites into types. Looking at specific applications, business processes, worker types and personas. With this information, we can build a picture of the network you need.

We have started to build hybrid infrastructures with Cloud Connect access that give people access to their cloud-based services. And we can show you how an SD-WAN solution could simplify your current locations and bring you a more lightweight and feature-rich solution. SD-WAN gives you the ability to connect quickly and securely to base over either quality, internet or 4/5G. It means new sites can be up a nd running, and generating revenue, much quicker than traditional site builds. In many cases, it can give you the data analytics for dynamic traffic routing and prioritisation. So, it's vital to make sure the SD-WAN tools work with your other cloud usage and management tools. That's why we'll work with you to complete end-to-end diagnostics.

Step four

A Network Function Virtualisation (NFV) strategy

NFV is an initiative to move network services that traditionally need hardware, to virtual machines and functions instead. And it's something that you should be thinking about and planning for now.

Have a look at the shelf life of your existing estate and work out which of your appliances are heading towards their 'end of life'. See if it's possible for your existing estate to run virtual CPE capability. We can deliver this through our Agile CPE portfolio. For example, some routers can run blade server cards which can cope with smaller numbers of virtual network functions. The main challenge is to balance the cost of the device with enough processing power to cope with your future needs.

We've already taken significant steps to deliver NFV/SDN and SD-WAN with our Intelligent Connectivity services. For example, our Managed Service strategy provides cloud acceleration and cloud security, giving customers a speedy, secure connection to their cloud apps. And, depending on location (distance from our edge network) and access (typically fibre), it might also be possible for capability to be hosted within our network. These are just a few ways in which you can move gradually to a more virtual network.

5. Business benefits of future networks

When organisations transform their network into a smarter network, what benefits do they see? Having set up a hybrid network using our Intelligent Connectivity, our customers find they gain:

Flexible infrastructure

A secure, flexible infrastructure that supports their current and future moves to the cloud. They find it easier to keep up with the set-up, take-down, moves, adds and changes of cloud vendors too. And, as the organisation moves more services to the cloud, the infrastructure will be able to flex to handle the extra load.

Simplification

Customers can simplify site IT and telecoms domains with a combination of SD-WAN and NFV. New sites can have a simpler build from the beginning, while existing sites can add in a combination of SD-WAN and NFV capabilities depending on the site size and type.

Speed and agility

Using SD-WAN and NFV, customers can set up new sites, shut down old sites and re-configure their network much faster. SD-WAN devices can quickly connect through Ethernet/MPLS, Internet or 4/5G, and be configured centrally.

There's potential for new branches to be up and running, and generating revenue, in weeks rather than months. And, as NFV matures, we'll be able to deliver the x86 hardware to customers, then add, remove or upgrade network functions from a central location. For example, in a BT managed service, virtual acceleration devices could be dragged and dropped in order to boost a network connection that's running unexpectedly slowly.
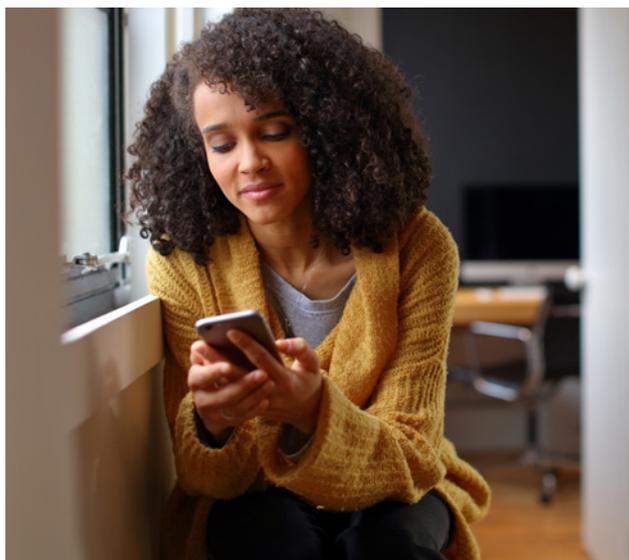
Secure and compliant

Using the internet will only ever increase the need for security. It also makes it more of a challenge to comply with new legislation, such as GDPR, that's being put in place to protect sensitive customer data. There are major financial penalties for breaches, and personal consequences at board level if companies haven't taken the right preventative steps.

Moving to a hybrid WAN environment requires a complete re-think of the security architecture. This includes its scope, as well as any controls that the company has in place at network, application, user and device levels – because there are so many internet points and remote access gateway needs.

Companies need to understand their existing security landscape and develop a new security strategy to deliver those controls. A well-designed and robust network architecture, with security at its foundation, is needed. It will protect you from threats coming from both outside and inside your organisation. But it also needs to operate without losing performance and be flexible enough to support your evolving business.

Using a big data analytics service to monitor that network, the endpoints, security controls, users and applications is a good idea. Combining that with third-party intelligence information will help you spot those threats, so that you can act quickly to pre-empt attacks before they happen, or identify and respond in real-time.

Reduction/simplification of ICT skills

With centrally controlled automatic connections and updates, companies don't need such a high number of skilled staff. SD-WAN solutions can be quickly and simply installed; they'll auto-discover and connect back to base. And if you've got a simplified branch infrastructure, you won't need so much expertise at remote or branch locations.

NFV solutions will ultimately be able to deliver virtual functions, reducing the need for truck rolls and cutting the need for expertise at remote sites. Plus, staff will no longer have to manage the commands to control the network themselves. For example, as part of our managed service, we can poll sites on a regular basis, proactively looking for pinch points or application bottlenecks. And when we find them, we can assign more bandwidth for application traffic or re-route it to a higher quality of service.

Cost effectiveness

Hybrid networks give you a cost-effective way of dealing with the growing demand in bandwidth. By expanding internet capability, typically provided locally at all sites, you can route application traffic effectively in line with the agreed SLA.

For latency sensitive or real-time applications, for example voice and video, you'll have the appropriate quality of service bandwidth. Offload lower-priority traffic to the internet and flex the two routes during peak times.

Hybrid also gives you a more cost effective way to achieve resilience, and SD-WAN and NFV solutions give you greater management and control of the network – with fewer people.

Agreed service levels

With our Intelligent Connectivity, you get a range of on-board capabilities that help you see your traffic profiles and application data clearly. These enhanced management capabilities mean we can manage specific business processes far more accurately for you, and give you greater service levels.

Innovation

More customers want M2M connectivity, and there are more and more IoT endpoints. And that's fine. SD-WAN networks can quickly and easily build over-the-top capability for these new services. SDN overlays can also give you persistent connectivity for your devices, as well as the appropriate security alternative to IPSec networks.

6. Why BT?

We're the best partner for you, now and into the future.

BT has deep experience of the networking business. Our portfolio strategy is a powerful combination of cloud services, IT integration skills, global network and professional security expertise. It means our customers can connect easily and securely to the applications and data they need, regardless of where they're hosted or where our customers are based.

We were there at the beginning of several generations of new communication technologies, and SDN/NFV is no exception. We worked on its creation and continue to develop the technology in partnership with other global telcos and leading IT vendors to make sure it delivers for our customers.

Now, with our new secure and resilient networking vision and our Intelligent Connectivity roadmap, we're helping CIOs bring the flexibility and agility of the cloud to their global communications infrastructure. So they can build a business that flourishes in the digital age.

7. Appendix: network technologies defined

Virtual CPE (V-CPE)

This is usually the first step towards replacing appliance-based network functions, such as routers and firewalls, on customer sites. It's often blade server technology in existing appliances that are able to run a Virtual Network Function – things like a firewall or acceleration capability. As services mature, the capability is more likely to be a generic x86 PC hardware device. Depending on how much high-speed fibre there is, these devices could be located in service provider nodes at the edge of their network (usable now for limited virtual functions).

Network Function Virtualisation (NFV)

These are virtual versions of traditional appliance-based network functions. Things like firewalls, routers, acceleration devices and application management capabilities. They'll sit on Virtual CPE, usually either as blade servers in traditional appliances or on generic x86 hardware platforms on customer sites. Or, depending on fibre access, they can be at the service provider edge node.

Software Defined Wide Area Network (SD-WAN)

This lets you build your network, or part of it, in the cloud. It works over cellular, internet or traditional WAN (Ethernet/MPLS) and lets you route particular applications as you want to, to make sure your network is always efficient. It's typically in a hybrid environment, with low or zero touch installation, and is controlled and managed from a central function. With a range of on-board tools, you'll be able to see what's happening on your network. You can also allocate or change application priorities easily. It's well developed and deployable in the market.

Software Defined Network (SDN)

This lets you programme your network from a central control, so you can proactively increase or decrease bandwidth as you need to. It has been used in data centres and high-speed fibre networks, and is now being deployed within the core of most Network Service Providers. This technology will allow the same, or similar, flexibility in the wide area as the cross-connect does within the data centre.

Offices worldwide