

TalkTalk
Business

SD-WAN

**IS IT RIGHT FOR
YOUR BUSINESS?**



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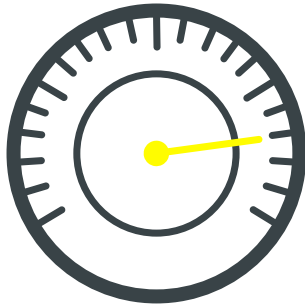
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01

WHAT IS SD-WAN?

Before we dive into the world of network transformation, cloud computing and SD-WAN, let's first orientate ourselves with a run-through of the basics. If you're already fairly tech-literate, you may find this introductory section to be skippable – so feel free to rejoin us in a [later section](#).

So: SD-WAN is short for software-defined wide-area network. A wide-area-network (WAN) is a telecommunications network that extends over large geographical distances. Think of a nationwide retail business, for example, with a WAN that connects together its shops, warehouses, data centres and offices. Data traffic is sent back and forth across this WAN, and its seamless flow plays a vital role in keeping the business running smoothly.

Traditionally, a WAN was defined and controlled by hardware. Usually, these pieces of hardware were MPLS routers – metal-cased boxes with rows of blinking lights. (MPLS, if you're wondering, stands for 'multi protocol label switching'.) But with businesses increasingly moving from hardware-based to cloud-based computing and storage, WANs are now moving to the cloud too. This next generation of cloud-based WANs are not defined and controlled by hardware, but by software – hence, SD-WAN.

An SD-WAN is 'overlaid' across several connectivity technologies – such as fibre or broadband internet, 4G or 5G – to create a private network. Once up and running, an SD-WAN is capable of adjusting bandwidth levels across all of its connection points in order to keep large amounts of traffic flowing smoothly. These adjustments can either be automated by AI or machine learning; controlled by the business's IT team; or overseen by a specialist third party.



SD-WAN adjusts bandwidth levels in order to keep large amounts of traffic flowing smoothly"

Its interface provides far greater visibility of, and control over, the network than a traditional WAN set-up. SD-WAN was purpose-designed to be highly adaptive, and to meet the demands of agile businesses. It also reduces network complexity and operational costs, too.

We'll go deeper into the reasons underpinning the current trend for migration from traditional WAN to SD-WAN later in this paper. But, for the moment, just know that they are myriad and far-reaching.

This decade is already seeing seismic changes in the way that companies of all sizes think about their computing needs, ambitions and responsibilities. SD-WAN is at the forefront of these changes. And, for the foreseeable future, it's set to stay there.



SD-WAN

A BRIEF HISTORY

The development of SD-WANs began during the 2000s, when the earliest attempts were made to take the network tasks normally performed by hardware – that is, transferring data from node to node – and have them instead performed by cloud-based software.

As web connection speeds accelerated, allowing internet-based software to become more sophisticated, SD-WAN shifted from fledgling concept to concrete reality. In April 2013, the Open Networking User Group (ONUG) – comprised of technology leaders from global enterprises – held its biannual conference at UBS headquarters. As ever, the group's aim was to hear solutions for use cases that no suppliers, as yet, were addressing.

Jim Kyriannis, Program Director for Technology Architecture at New York University, was one of the conference's guest speakers. He presented a use case entitled 'Branch Office Has Multiple Paths to Headquarters'. This use case – and its suggested solution – piqued the interest of ONUG members, and Kyriannis was asked to present it again at the group's next biannual conference, hosted at the JPMorgan Chase headquarters. This time around, he retitled his presentation to match the name he'd given to the use-case's solution: 'SD-WAN'.



In 2015 just 1% of businesses had migrated to SD-WAN"

At JPMorgan Chase, ONUG members heard, in all, nine use cases from guest speakers. They then took a vote on which of these ONUG would throw its support behind. Kyriannis's SD-WAN presentation won by a landslide, and led to the swift formation of the ONUG SD-WAN Working Group. This world-beating team then collaborated with 17 vendors on SD-WAN proof-of-concepts – and the rest is computing history.

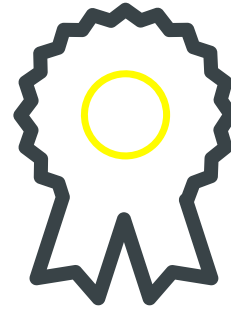
In 2015, just 1% of businesses had migrated to SD-WAN. But the idea spread fast, and migration rates were so exponential that **Gartner, at the time, accurately predicted** that SD-WAN would be adopted by 30% of enterprise-level companies within just four years.

By June 2020, 49% of UK businesses had migrated to a cloud-based SD-WAN, or were preparing to do so over the coming 12 months. Understandably, Covid-19 greatly accelerated adoption of SD-WAN. With workforces scattered and networks overstretched, SD-WAN provided businesses of all sizes with newfound levels of visibility, flexibility and control over their traffic, allowing them to keep day-to-day operations running smoothly.

In June 2021, the Office for National Statistics **published a report** showing that, post-Covid, 85% of remote UK workers wanted a hybrid approach of both home- and office-based methods. Even if only half of those workers end up getting their wish, for most UK businesses SD-WAN adoption is a case of when, not if.



02



WHAT ARE THE KEY BENEFITS OF SD-WAN?

There are several areas in which a well-designed SD-WAN solution will outpace traditional WANs. Here are the four most important.

Control and Visibility

SD-WAN offers admins full visibility of their network – across a variety of connections, from broadband to 5G – viewed through a single ‘pane of glass’. After years of working – or, in many cases, guess-working – with the complexity of a traditional WAN, this newfound vantage point can feel hugely empowering.

Bringing newfound clarity, an SD-WAN interface provides statistics relating to areas such as utilisation, availability, downtime and traffic type. It also offers total hands-on control over every corner of the network. And because SD-WAN is transport agnostic, it can terminate MPLS, DIA or cellular connectivity, effortlessly and instantaneously.

Security

A next-generation firewall (NGFW) solution ensures end-to-end protection across an SD-WAN. Utilising far more thorough inspection techniques than first- and second-generation firewalls, NGFWs match signatures and check packet payloads in order to rigorously root out threats such as malware or exploitable attacks.

And because an SD-WAN portal offers admins heightened control over access, content and application usage, they can make rapid and lasting changes to protect their networks.

User Experience

An admin's user experience with SD-WAN will be markedly different to that which they've previously known with traditional WAN. Using an SD-WAN portal – and the all-seeing 'pane of glass' view it affords them – an admin can deploy policies, blocklists and whitelists to optimise the flow of traffic across the network and between geographical locations. Alternatively, management of the SD-WAN can be handed over to a third-party service, freeing up resources even further.

IT teams need no longer remain on the backfoot, firefighting issues as and when they arise. SD-WAN grants them the time and headspace they need to move forwards and achieve their wider business ambitions.

Cloud-First

The pandemic exposed IT faultlines in organisations across the globe. This, in turn, greatly accelerated technology leaders' drive to enact digital transformation within those organisations. **As Kiran Desai, Wipro's Global Head of Cloud and Infrastructure writes for Forbes**, "[the pandemic] has turned up the urgency of adopting digital business models and creating networks of the future that are robust, resilient and capable of supporting new and unpredictable forms of business."

With cloud-first strategy at its core, SD-WAN has a central role to play in this worldwide transformation programme.





03

WHAT IS HYBRID SD-WAN?

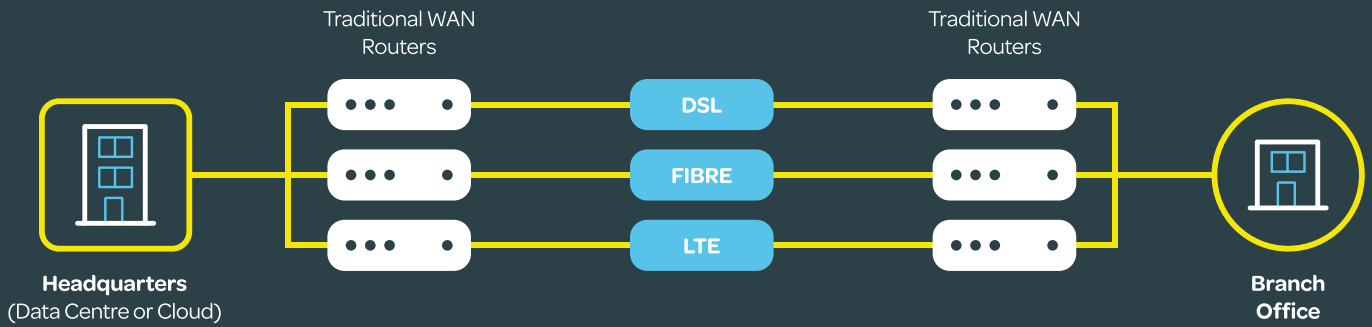
We've established what SD-WAN is, and the ways in which it differs to traditional WAN. Hybrid SD-WAN is something different again, however. Sitting at the crossover point between WAN – that is, a network built around contemporary MPLS hardware – and SD-WAN, it offers more than the sum of its parts. It's neither a compromise nor a stopping-off point en route to full SD-WAN, but its own fully-formed network and transformation strategy.

The hybrid model uses a combination of traditional MPLS and dedicated internet access (DIA) connectivity, overlaid with SD-WAN. Each geographical location within a network features an MPLS line and a DIA line; the SD-WAN dictates which path, of the two available, is taken by individual traffic types.

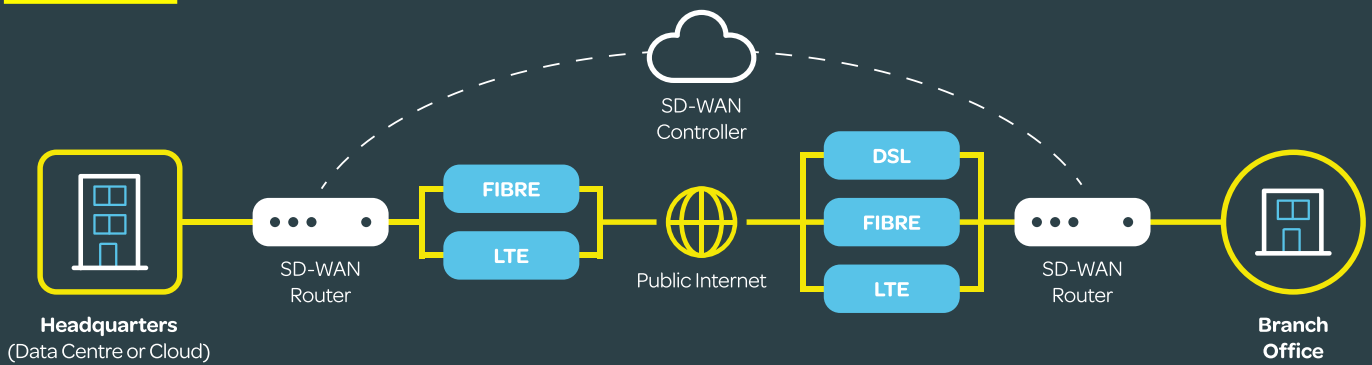
Path selection for traffic can be based upon real-time, automated monitoring of latency and errors occurring over a link. This two-pronged, asymmetrical optimisation allows for rock-solid, bottleneck- and latency-free connectivity. What the hardware can't handle, the DIA can, and vice versa.

For many organisations, however, there's an even more advantageous way to deploy hybrid SD-WAN: With the DIA line handling 'everyday' traffic – guest WiFi connections, for example – the MPLS line is freed up to focus on handling traffic that requires the superior security that comes with a hardware-to-hardware, cloud-free connection. If your organisation handles sensitive traffic that needs to be kept clear of the internet – and its endless in-roads for hackers – then hybrid SD-WAN can keep this information safe in the private cloud, while keeping less 'valuable' data flowing quickly and seamlessly over the public cloud.

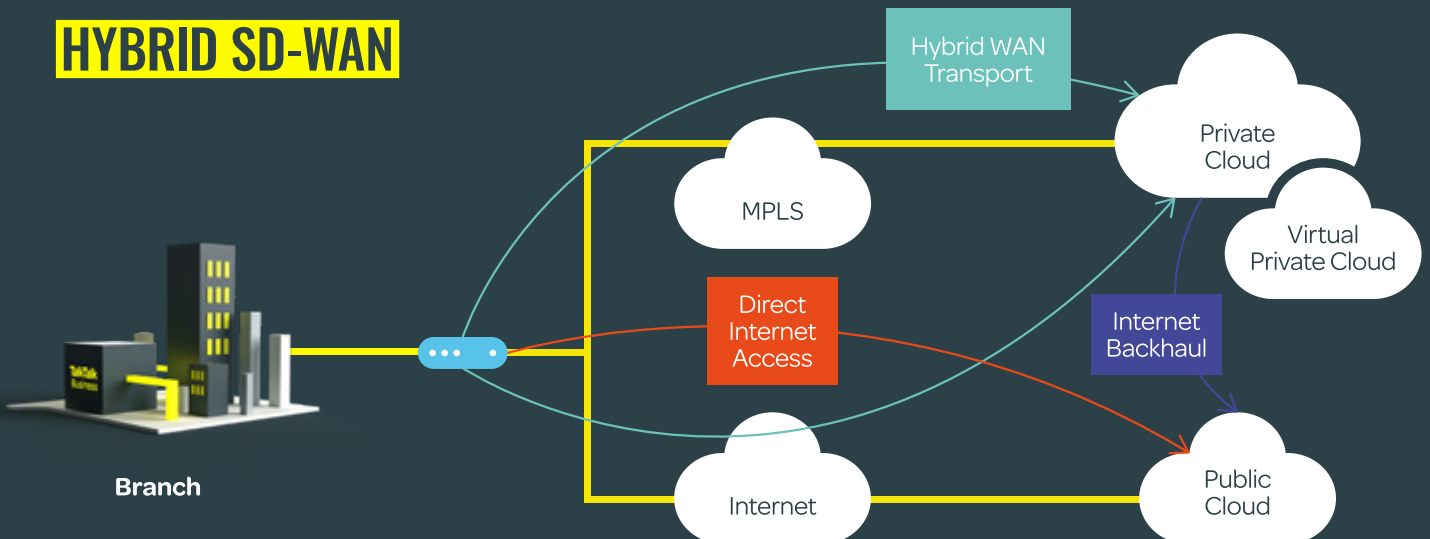
TRADITIONAL WAN



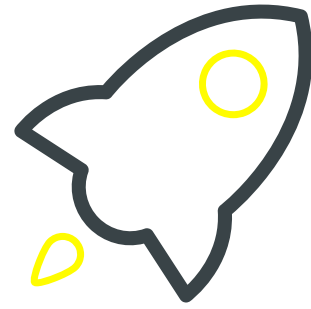
SD-WAN



HYBRID SD-WAN



04



WHAT ARE THE KEY BENEFITS OF HYBRID SD-WAN?

Migrating from a WAN model to a hybrid SD-WAN model offers all the advantages of 'standard' SD-WAN, but with a few differences.

Control and Visibility

As with standard SD-WAN, the hybrid model offers admins full visibility of their network through a single 'pane of glass'. That network, however, obviously looks markedly different to the cloud-only architecture of standard SD-WAN.

With hybrid SD-WAN, an admin has granular control and visibility not only of traffic routed via DIA, but via MPLS too. They're able to redirect traffic back and forth between the two, or send traffic first to the private cloud (via MPLS) and then have it forwarded on to the public cloud (via internet backhaul).

Security

If security is of existential importance to your business, this is where the hybrid SD-WAN model might be your best option. With standard SD-WAN, the DIA connections used are fully encrypted, and as such are completely safe for most businesses to send the majority of their traffic across. But for particularly sensitive traffic – confidential financial information, for example – the cloud-free MPLS connections of hybrid SD-WAN provide extra peace of mind. Within sectors where privacy laws forbid certain forms of information being transmitted via the cloud, retaining these MPLS connections may feel essential.

By combining hybrid SD-WAN with a secure-access service edge (SASE) model, you create a network that's as impenetrable as it is flexible. As a cybersecurity concept, SASE is less than half-a-decade old, but it's already establishing itself as the preeminent model for the new era of cloud-based networking. In Gartner's **'2021 Strategic Roadmap for SASE Convergence'** report, the research group predicted that, globally, "by 2024, at least 40% of enterprises will have explicit strategies to adopt SASE, up from less than 1% at year-end 2018."

Put simply, SASE is a convergence between wide area networking and network security services. SASE replaces a network security stack with a single service model, delivered via cloud. As such, SASE reduces complexity, increases control and visibility, and offers a powerfully coherent defence against any and every threat. And instead of having your security focused on one centralised point, it's evenly distributed, via cloud, across every geographical location in your network.



SASE offers a powerfully coherent defence against any and every threat"

As Gartner's report on SASE states, "SASE capabilities are delivered as a service based upon the identity of the entity, real-time context, enterprise security/compliance policies and continuous assessment of risk/trust throughout the sessions. Identities of entities can be associated with people, groups of people (branch offices), devices, applications, services, IoT systems or edge computing locations."

Just as SD-WAN and hybrid SD-WAN both represent the next generation of network architecture, SASE represents a similarly cloud-based leap forwards in network security.

User Experience

By migrating to hybrid SD-WAN, admins will find themselves in full control of a far more resilient, efficient and readily scalable network. They get the reliability of hardware routers, and the flexibility, affordability and sustainability of DIA.

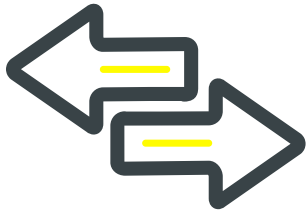
Deploying a managed service to oversee the hybrid SD-WAN will further free up time and resources – two things that few admins would ever complain about having an overabundance of.

Cloud-First

Thousands of UK businesses – from SMEs up to enterprises – are in the process of migrating to the cloud. For most of them, there are simply too many financial and logistical arguments for making the move – and too few against – for them to consider otherwise. Working in the cloud, for most companies, is cheaper, faster, more flexible and more environmentally-friendly.

For businesses wary of going ‘all in’ on cloud-first, hybrid SD-WAN represents a balanced way in which to migrate. Hybrid SD-WAN isn’t a tentative step, however, but a destination in its own right.





05

SD-WAN, HYBRID SD-WAN, AND SHIFTING BUSINESS TRENDS

So how and why does SD-WAN fit in with the current direction of global business?

The increasingly widespread adoption of SD-WAN – and hybrid SD-WAN – is part of a global boom in digital transformation. Post-Covid, companies are now preparing for what leading market intelligence firm IDC refers to as the “next normal”. In a **December 2020 report**, IDC estimated that global investment in digital transformation would top \$6.8 trillion between 2020 and 2023, and that 70% of organisations will have expanded their use of digital technologies by 2022.

Going one further, IDC’s report also states that companies who accelerate their digital transformation will rapidly start to outpace immediate competitors who do not accelerate their own adoption of new technologies and services.

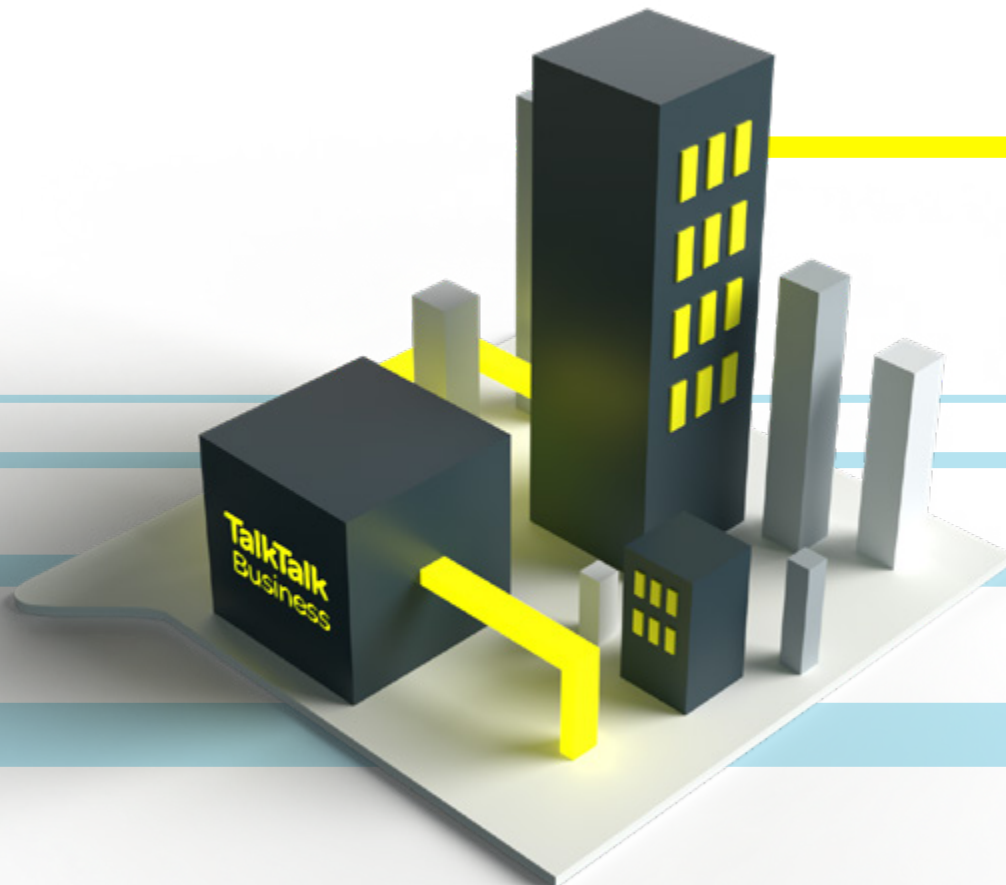


70% of organisations will have expanded their use of digital technologies by 2022"

It's near-inevitable that the vast majority of these digital transformations would have occurred at some point in the coming years anyway. But the unexpected reshaping of our day-to-day working lives has been a key catalyst for the acceleration of these programmes. A **July 2021 report** from Statista found that "44% of UK workers aged between 30 and 49 stated that they are working from home as of June 2021."

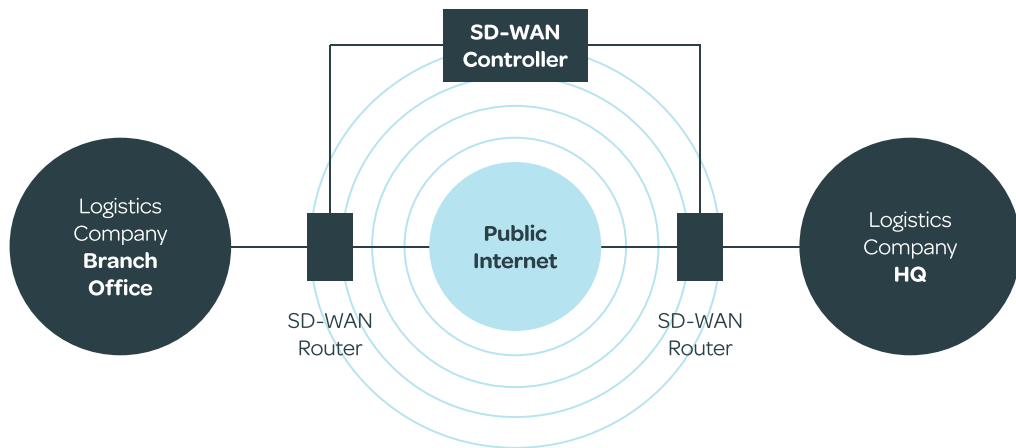
What does this seemingly permanent shift towards remote and hybrid working mean for network architectures? "The network edge, in the form of remote workers, will change traffic patterns, demand new network security services and simultaneously demand enhanced user experience," **writes Kiran Desai**, Global Head of Cloud and Infrastructure Services at Wipro – India's ninth largest employer.

"Now," Desai continues, "combine this demand for futuristic networks with the rising importance of applications and a cloud-first approach, microservices and APIs, the demand for voice and video, and the proliferation of IoT endpoints. It is easy to see why the traditional multiprotocol label switching (MPLS) technique will be replaced by software-defined wide-area networks (SD-WAN). MPLS cannot meet the radical change in demands. SD-WAN can." As, too, can hybrid SD-WAN.



06

SD-WAN CASE STUDY: GLOBAL LOGISTICS ORGANISATION



Operating internationally and partnered with TalkTalk Business for its UK operations, this enterprise-level logistics organisation recently migrated its vast network from MPLS to SD-WAN.

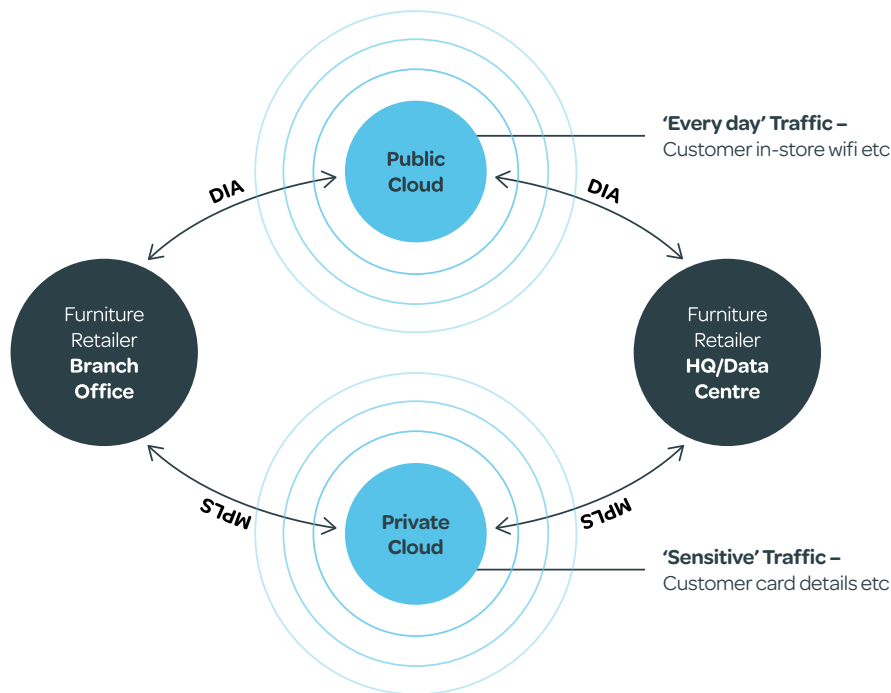
As investigations into the benefits of migrating to SD-WAN continued, further positive outcomes revealed themselves. The business would no longer struggle with the time zone and language-barrier issues that arise from dealing with an overseas help desk. Using Forcepoint firewalls with SD-WAN functionality, they'd have far greater control over their security. And with massively increased bandwidth into sites, SD-WAN offered far greater resilience than MPLS.

SD-WAN also better suited the company's ongoing expansion plans. Installing MPLS in new sites was proving costly and time-consuming. Expanding SD-WAN to new sites, however, was markedly less so.

In short, then, SD-WAN simply offered far greater returns for far lower investment.

HYBRID SD-WAN CASE STUDY:

UK FURNITURE RETAILER



A longstanding TalkTalk Business customer, this leading homeware and furniture retailer is currently undertaking an ambitious network transformation journey. Its eventual destination is a fully meshed network, giving every node – in every one of their many locations – a direct connection to every other node.

By making the move to SD-WAN, this retailer's network has already become more dynamic, scalable and agile. The enterprise can now effectively compete within a retail sector that continues to blur the lines between digital and real-world shopping – even when it comes to big-ticket purchases such as furniture. They've gained new on-premise access, a powerful switching core, and leading-edge firewalls and security appliances. The network is faster, tougher and more readily visible than ever.

And by retaining an MPLS element to their network – thereby creating a hybrid SD-WAN model – they keep sensitive information, such as customer credit-checks, away from prying eyes. Meanwhile, day to day network use – such as customer WiFi in retail stores – is kept flowing smoothly across the public cloud.

TalkTalk Business has also been able to facilitate a full ethernet rollout across the retailer's nationwide network, providing the speed they need to keep pace with, or pull ahead of, the competition.

07



SD-WAN: WHY TALKTALK BUSINESS IS YOUR **PERFECT PARTNER**

If either SD-WAN sound like they might be the smartest way forward for your organisation, then TalkTalk Business will be too. Here are just a few reasons why.

BESPOKE, MANAGED SOLUTIONS

Every business is different, which is why we avoid studiously relying on 'one-size-fits-all' solutions. Our expert teams will help you get the most out of SD-WAN or hybrid SD-WAN by identifying exactly what it is that you need – and don't need – to get your business ready to face the future.

We'll establish the devices best suited to the needs of each of your sites. And once you're set up, we don't simply wish you goodbye and good luck. Depending on your needs, we offer bespoke tiers of managed service, ranging from solely fixing any issues that arise, right through to fully overseeing your new network, 24/7.

A WEALTH OF EXPERIENCE

We have over 20 years of experience in supporting UK businesses. Unfailingly at the cutting edge of communications technology, we have the flexibility to meet your current needs and the foresight needed to keep your organisation attuned to future innovations. We'll work with you to identify whether SD-WAN or hybrid SD-WAN is right for your business. And if neither is the answer to your current and future goals, we'll identify what is.

It's little wonder that more than 180,000 businesses have chosen us to handle their telecommunications needs.

INDUSTRY-LEADING SASE

Working in partnership with Cisco Meraki, TalkTalk Business is proud to offer a comprehensive SASE package to keep your new network blanketed in protection from edge to edge.

RELIABILITY & FLEXIBILITY FOR BUSINESSES OF ALL SIZES

We've invested over £600 million in our far-reaching, future-proof network – and it shows. More than 95% of the UK is covered by our Next Generation Network, which offers 99.995% reliability, while our exclusive partnerships with alt-net providers means that we can offer Full Fibre connectivity on a scale to grow with you.

THE BENEFITS OF GOING DIRECT

By opting for TalkTalk Business for your SD-WAN or hybrid SD-WAN solution you enjoy all the plus points of going direct. As the network owner, TalkTalk Business can offer in-life contract changes, direct engagement through a single contact point, brand-agnostic agility and having to navigate multiple contracts.

STRESS-FREE SERVICE

We're here to provide ongoing, attentive support as you make the move to SD-WAN or hybrid SD-WAN. TalkTalk Business's expansive team of UK-based customer service professionals is always on hand to guide, troubleshoot and advise.

Over 90% of calls made to our service centre are resolved within that first conversation – which means you get to save time and sidestep the frustration you may have experienced with other providers.

And for more long-term support, there's your personal account manager. They'll work to truly understand your business, your needs and your ambitions. They're here to make your day-to-day easier – and your future brighter, too.

LET'S TALK

If you're interested in discussing the opportunities for digital transformation that SD-WAN represent, we'd love to speak with you **03301 733 996**. Alternatively visit www.talktalkbusiness.co.uk

