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# NOT ALL INTERNET SERVICES ARE CREATED EQUAL: CHOOSING THE RIGHT UNDERLAY FOR YOUR WAN

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July 2022

An IDC Analyst Connection sponsored by

Tata Communications

IDC #EUR149429022

# Not All Internet Services Are Created Equal: Choosing the Right Underlay for Your WAN

Questions posed by: Tata Communications

Answers by: Jan Hein Bakkers. Senior Research Director, European Infrastructure and Telecoms

## Q. Why is the underlay network important in SD-WAN deployments?

SD-WAN has been grabbing most of the headlines in recent years as the cornerstone of WAN transformation, but that does not mean organisations can simply forget about the underlying transport network, which can be internet, MPLS, Ethernet or any form of connectivity. In fact, in a typical SD-WAN deployment, more than 80% of WAN spending will relate to this so-called underlay network, as opposed to the overlay SD-WAN functionality. SD-WAN enables organisations to optimise their use of the available underlay connectivity, but it does not remove their limitations. Even using multiple access connections will not change this simple fact. This means issues related to predictability, availability and latency in the underlay will impact the performance of the network as a whole, the applications running over it and ultimately the end-user experience.

Many successful online platforms clearly understand this. They typically leverage the ubiquity of the internet to let their customers access their services at a nearby cloud datacentre, while their service delivery and performance are ensured by a sophisticated architecture that combines public and private connectivity, including direct interconnection, content delivery networks and private backbones.

As organisations strive to become "future enterprises" that succeed in a digital-first world, their network is set to become more mission critical than ever. Cyberthreats drive the importance of network security, downtime will increasingly translate directly into lost revenue, and the emergence of real-time use cases will propel more stringent latency requirements, while IDC research predicts that traffic volumes will double between 2021 and 2025. Choosing the right underlay is a vital building block of IDC's "future network" — an application-centric network that supports the right end-user experience for each application and user and delivers better security, flexibility, scalability, manageability and cost effectiveness.

## Q. What are the potential pain points of an internet-only approach?

The role of internet access in WAN architectures is growing. As they try to cope with increasing traffic loads, organisations leverage it as a lower-cost alternative to private networks. They also use it as a local break out to a growing range of public cloud applications to avoid the "trombone" effect of traffic going through a limited number of corporate datacentres. At the same time, the internet also has its drawbacks as a WAN transport network, and organisations considering an internet-only approach will need to be mindful of a number of potential pitfalls.

Internet access is a best-effort solution, with unpredictable performance, no control over its routing and no end-to-end service-level agreement. And this is where the risk lies. Degraded connectivity will impact application performance and ultimately business outcomes. This can be illustrated by the example of a furniture store that uses a cloud-based application to design a room in 3D. A slow and faltering experience will leave a prospect unimpressed and could result in a missed opportunity.

It's important, however, to distinguish between different types of internet access. Broadband services are cost effective, but networks are typically contended, while support levels are limited and restore times in case of an outage can take days. Dedicated internet access services provide dedicated bandwidth and better support levels and restore times, but no latency or packet delivery guarantees, while prices will be much closer to those of private network solutions.

## Q. How can organisations make the most of internet access as part of their WAN?

Organisations will rely on the internet for a growing proportion of their connectivity needs, but they will need to carefully consider the pros and cons of these different forms. Deploying hybrid access — consisting of multiple access connections of different technologies — can improve performance and availability. But this does not eliminate the best effort limitations of the internet or support the restrictions of lower grade services.

We are now seeing the proliferation of a new breed of premium internet offerings that aim to address these limitations. Adding features such as deterministic routing or direct peering with key public cloud service providers, they can improve the performance of key applications. Organisations should scrutinise how beneficial this can be to their specific profile in terms of applications and geographic coverage, and assess whether they cover last-mile performance and ensure end-to-end improvement. When evaluating business broadband, organisations should prioritise operational resilience and consider service availability and restoration times, which can vary widely between providers and depend on the relationship with local access partners.

In spite of the growing use of internet access in WAN architectures, internet-only will be more the exception than the norm. In IDC's *2021 European Enterprise Communications Survey*, only 6% of organisations expected their WAN to become completely internet based in the next 12 months. Instead, IDC expects most organisations to use a hybrid network that combines public internet with private networks.

## Q. What are the key trends in WAN connectivity?

The proliferation of SD-WAN is accelerating the deployment of hybrid access, which means more organisations are deploying two or even more diverse access connections per site to drive resilience and performance. Demand for access bandwidth is ever increasing, and is being met by the proliferation of next-generation access networks. Fibre — dedicated as well as shared — will displace copper connectivity. At the same time, wireless will increasingly be used to complement fixed connectivity. The proliferation of 5G will drive full fixed wireless substitution, though in Europe the relatively high coverage of fixed networks with better price/performance

will mean this phenomenon will be more limited for the foreseeable future and subject to local circumstances.

Cloud networking is becoming increasingly important and its focal point is shifting from providing connectivity to a cloud provider to providing connectivity between clouds or leveraging a cloud provider's backbone at the heart of the WAN. IDC research shows that 36% of European organisations expect to leverage the private fibre backbones of major cloud providers as a key part of their WAN architecture. They will increasingly seek to integrate these with other forms of connectivity.

## Q. How can organisations optimise their use of underlay connectivity?

As organisations compete in an increasingly digital-first world, their business depends more and more on the performance of their network connectivity. Many organisations are looking to SD-WAN to address their needs, but that's only part of the equation, as it needs to go hand in hand with a strong underlay network. Organisations have a wide and growing range of private and public connectivity options at their disposal — MPLS, Ethernet, cloud WANs and various levels of public internet connectivity. To prepare for future demands they should carefully map the benefits and drawbacks of these solutions onto the requirements of every location, user type and application, which should include factors such as bandwidth, availability, latency and security.

Based on this evaluation they should choose a pragmatic mix of public and private networks that optimises performance and cost across these vectors. At the same time they need to think broader than just price and bandwidth. They need to consider the hidden cost of managing multiple providers, particularly across different countries. They should also assess the risks associated with longer restoration times and different support levels, and realise these may be subject to the depth of the operational relationship between a provider and its local access partners.

## MESSAGE FROM THE SPONSOR

Tata Communications' IZO Internet WAN is aimed at enterprises introducing cloud services into their existing IT and networking architecture and for businesses that are looking to cost-effectively extend their global reach to new markets. With predictable and dependable network services offering access to more than 150 geographies, IZO Internet WAN offers high-quality internet services and consistent network experiences over various service options including broadband internet. It enables seamless data transfer from branch offices to datacentres, from branch offices to clouds and across multiple clouds for enterprises. This gives enterprises simple and agile management of their global and regional networks. IZO Internet WAN caters to all industries, including manufacturing, IT, ITeS, services, retail and BFSI. Launched in 2014, IZO Internet WAN created a new category of enterprise WAN to offer predictable performance and end-to-end SLA among internet locations. For more information on IZO Internet WAN, please visit the product page or www.tatacommunications.com.

## About the Analyst

Jan Hein Bakkers, Senior Research Director, European Infrastructure and Telecoms

Jan Hein Bakkers is responsible for IDC's research in the European enterprise communications and collaborations domain, which spans fixed voice and data connectivity, wide area networking (WAN) services, and unified communications and collaboration. His areas of expertise include internet access and WAN services, such as private IP and Ethernet. His research focuses on WAN transformation and the role that high-growth areas such as SD-WAN and cloud connectivity play within that.

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