

THE IMPACT OF SOFTWARE DEFINED NETWORKING ON WIDE AREA NETWORKS

How Software Defined Networking will affect the current WAN paradigm is one of the hottest topics in the world of networking. Mark Holmes, EU Business Development Manager at Dimension Data, explains;

I want to start by sharing the thoughts of Raoul Tecala, Global Business Development Director at Dimension Data on why and how "Wide Area Networks" (WAN) strategies are being challenged by the emergence of Hybrid WAN architectures, utilising "Software Defined Networking" (SDN) and specifically on the current WAN cornerstone technology Multiprotocol Label Switching (MPLS).

Are hybrid Wide Area Networks the nail in the coffin for MPLS?

A maturing Internet and the increasing adoption of cloud computing are changing the face of data management and delivery for good. Organisations are gradually moving to a more dispersed data model because not all workloads need to be hosted in a single, centralised facility anymore. Data sets can now be divided among owned or hosted data centres across a wide geography, as well as across different cloud providers situated, potentially, anywhere in the world.

R&E connectivity was, in most cases, provided by a dedicated, wide area network (WAN). In the great majority of cases, this network was based on multiprotocol label switching (MPLS) technology. MPLS networks are still popular today, however, as R&E increasingly uses dispersed services, several other connectivity alternatives may make sense from a cost and efficiency standpoint. Working together as a hybrid WAN, these alternatives

may not only save on connectivity costs, but also provide greater capacity and performance. So does this spell the beginning of the end for MPLS as we know it?

Adding up the numbers

One of the main problems that a dispersed data model causes for the traditional

MPLS WAN is application performance. For example, there's the issue of "tromboning". This occurs when remote users access their cloud-hosted applications via the NREN network to the institution, and then back out over same connection to the cloud provider. Depending on the physical location of the cloud service provider, potentially thousands of miles could be added to the round-trip time, which could cause application performance degradation. Applications that run on dispersed data centre infrastructures can therefore become slow and cumbersome to use. In addition an institution's connection is being used on both the inbound and outbound route for traffic that doesn't need to go anywhere near the university resulting in the need for expensive upgrades.

By tuning the routing of each application's traffic via the best available channel NRENs can deliver the necessary quality of service. In addition, organisations may improve overall network availability thanks to the real-time selection of diverse routes, where each link can serve as a backup for the other.

Slowing the process

Despite the obvious benefits, there are still factors holding organisations back from the immediate adoption of a more cost-effective hybrid WAN strategy. Most NRENs have large investments in services and equipment which ties them to using the MPLS in the short to medium term. Adding alternatives to the connectivity mix would only add to their cost. The overall conclusion is that MPLS probably won't die out completely, but it will certainly need to be far more cost-competitive in order to survive. MPLS will probably also become just one of several ways in which organisations connect, rather than the only or most important way.'

Knowing what's on your network

To take advantage of the cost benefits offered by alternative connectivity models, Tecala advises to start with an understanding of the applications you have running over your network, and what traffic volumes and patterns they create in terms of their peaks and troughs. With this application traffic information, you can design a hybrid network that utilises the types and amounts of connectivity that's right for your environment. A hybrid WAN enables you to take a real-time, application-centric approach to network traffic management. But you also need to design the environment more carefully by picking the right primary and backup recovery routes, so that you're able to use the network effectively and with confidence,' concludes Tecala.

So my summary of what Raoul is saying here is that "yes" there are significant cost and performance opportunities in adopting SDN, however it is not just a simple case of replacing your current WAN services. Effort must be invested in addressing the "service operations architecture" to encompass SDN facets including that of software engineering. Software engineering itself will play a significant role in "tuning" networks not only to specific applications but even down to single client instances. The "security architecture" will have to evolve to ensure continuity and integrity of the agreed risk profile and to meet ongoing governance obligations.

SDN is now in its 2nd level of maturity, enterprises are and have adopted the technology. They have realised the potential and are benefiting from it. The vendor landscape is moving a pace with best in breed start-ups being acquired by large scale traditional players who have ambitions to take SDN to scale.

How Dimension Data can help

Today's digital service models are built on information technology that provides greater strategic value. Our services-led approach creates efficiencies and optimises your IT, for better outcomes. Through our global reach of world-class people, process and platforms, we maximise your existing infrastructure. We help you drive and manage your innovation through our enterprise-grade consulting, technical and support, and managed services. Delivered efficiently, reliably, and consistently anywhere in the world by people who care.

Dimension Data's services strategy is built around four pillars, which are: Consulting, Technical, Support, Cloud and Manage. By using this model we are able to offer value at every stage of the lifecycle from inception through to implementation and operation.

Consulting Services:

Leveraging our consulting services and technology expertise can accelerate your network transformation and innovation strategies. We help you create and execute strategies to unlock opportunities, optimise processes, and uncover cost savings. Our expert security consultants can help you to secure your technologies by putting the right policies, processes, and architectures in place. Our Architecture Consulting Services can use existing and estimated future application traffic patterns to design a technology architecture for your organisation.

Technical & Support Services:

We help you maintain your environment through our technology and support services, proactively supporting and accelerating your network optimisation.

Cloud Services:

Our network-centric, highly secure private and public cloud services meet today's service and IT challenges, speed up development and transformation, and lower costs. They also mitigate risks by providing secure, responsive, high-availability infrastructure which can respond to unexpected demand. We deliver our cloud services on our fully managed delivery platform, hosted within your data centre or ours, the Managed

Cloud Platform comprises industry-leading hardware and software, coupled with virtualisation technology, operating system software, and CloudControl. CloudControl is - our cloud management system which provides operational control and automation of cloud resource provisioning, orchestration, administration, and billing.

Managed Services:

Our managed services help you with the operations of your technology environments. We provide you with technical expertise, service consistency, and flexibility across multiple vendors, technologies, and geographies. Reduce your overheads and improve efficiency by leveraging our scale, methodologies, and high levels of standardisation.

Dimension Data and GÉANT

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