

## Defining Tomorrow's Network: Are You Prepared?

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Digital transformation is turning out to be a double-edged sword for businesses across the world.

There is no doubt about its positive impact. From improving productivity and efficiency and reducing costs, to boosting innovation and even opening new markets, the adoption of technology is helping businesses to unlock growth like never before.



However, it is also presenting new challenges, especially for those managing the IT infrastructure.

While digital transformation has taken on many different forms, there are some common threads that help to explain the critical new challenges that IT organizations face in delivering on the needs of their users in today's world.

Perhaps most importantly, the early successes of digital transformation set a new bar for user experience. Uber and Amazon top the list, but there is a long list of others that have created an expectation for all of us that we can get what we want, when and where we want it. And we can do so through software that is intuitive, easy to use and available on any device. Wow, what a bar. And once that bar was set, all that expectation of the consumer experience was promptly placed on IT.

An advertisement for the Pipeline Innovation Awards. It features a collage of images: a red carpet, an award ceremony with people in formal attire, and a close-up of an award trophy. The text includes 'Pipeline INNOVATION AWARDS' in the top left, 'Be Recognized as a Top Industry Innovator' in the center, 'EXCLUSIVE SPONSORSHIP PACKAGES AVAILABLE' in a red box at the bottom left, and a 'CLICK HERE' button in a yellow box at the bottom right. At the very bottom, there is a grey bar with the text 'Click this ad for more information' and two circular icons.

The emergence of the cloud played a big role in delivering on these new experiences. It drove new expectations for speed and agility supported by the automation that new cloud environments demanded. Start-ups could get quick and easy access to nearly limitless capacity of compute to crunch massive amounts of data to derive insights and deliver recommendations. With this speed and power, the market was able to deliver broadly on the "what we want" and the "when we want" (and, implicitly, as fast as we want) parts with ease. The cloud environment brought horizontal scale as well, enabling the delivery of a great experience by getting close to the user anywhere in the world, to any device.

Armed with cloud as a big part of the answer and a rapidly growing set of expectations among their users, many companies jumped on the digital transformation bandwagon and started to explore how they, too, could deliver more insight, better experience, anywhere, anytime and as quickly as possible.

# What Changed?

Much of the early push for digitization landed on the data center. Or, more precisely, on the application and data center teams to deal with these new challenges of how to deliver the right applications, with the right experience (intuitive, high performance, etc.) leveraging the best that the private cloud (company data center) or public cloud could offer.

As with any market transition, the primary driver is only the beginning: as the application and data center challenges were solved, key new challenges for IT emerged.

First, and perhaps most simply, the increase in utilization of applications from SaaS providers as well as the move of internal apps to public clouds fundamentally changed the traffic flow for the enterprise. No longer is there really a need for users to be pulled back through a DC over a costly leased private circuit. They can access these applications over the Internet directly to the cloud app.

Second, the environment expanded rapidly. No longer was there only one DC to secure and a set of users connecting in an office or in a retail store to the corporate network. Now there was a data center (private cloud), at least one, if not many, public clouds hosting data or applications, usually more than one software application delivered as a service (think Salesforce.com, Office365) and users bringing two or more devices to work. Wow, what a lot to manage – and, more importantly, secure.

And last, once you can figure out a way to secure all this, how do you ensure, across all that complexity, that the user experience that drove this transformation to begin with can be delivered?

## It is all about the users

To address these challenges, the traditional Wide Area Network architecture must change. This is where Software-Defined WAN (SD-WAN) presents a great opportunity for businesses. To understand why, it is important to understand that the core of SD-WAN is to bring centralized software control to the WAN. As with other software transitions, this has the powerful impact of bringing comprehensive visibility and control into a single pane of glass, so to speak. That single-pane-of-glass concept is not only good for users who configure, deploy and manage the WAN, but it also means that the infrastructure itself can understand and react dynamically to the conditions it interprets. So what?

Deployment goes much, much faster. That branch that used to take months to get up and running? Lead time is now down to weeks or days. This includes sending and plugging in physical hardware. Are you running a virtual environment? Is your router already in the branch? Are you using LTE? Now we can deploy in hours. When you transition from box-by-box, site-by-site configuration to a define-once, deploy-everywhere model, things simply go remarkably faster. The benefits of this are not just for deployments but hold true for the regular configuration changes and new service deployments that are more integral to day-to-day operations.

You can easily configure the WAN to support the shifting traffic patterns – whether it is enabling your users to get directly to those SaaS applications without consuming costly leased bandwidth or segmenting your R&D traffic from your general corporate users.

Even more exciting, combining the software control with deep analytics (think machine learning and artificial intelligence) enables the WAN to dynamically adapt to conditions that it observes. Historically, we were fairly constrained to link failure as the trigger to change a path. Today we can ask a ton of new questions and take action. Is a path simply degraded or not good enough to make that video call a good experience? Reroute to a higher-performing link or reduce non-critical traffic to improve the quality. Do you want to change the policy to prioritize a new application or type of traffic? Configure once and deploy instantly. Is Office365 running slowly (even though the network is working fine)? Move the user to a closer Microsoft point of presence or a different application instance that is higher performing. All dynamically, all without user intervention. This means happy,

productive users.

Perhaps most importantly, security improves – and will improve dramatically if you choose to converge security capabilities into SD-WAN. As with any manual environment, that traditional box-by-box, link-by-link approach to deployment and configuration means user error and inconsistency. A simple slip of the finger on a port configuration can cause performance problems or open security holes. Moving to a software control plane means that policies are consistently deployed without the risk of error. Bringing security capabilities like application aware firewall, URL filtering, intrusion protection and more into that same software control plane brings an even greater asset to an organization to solve the security challenges introduced by the expansion of devices, locations and routes and link types that SD-WAN enables. Software enables us to bring truly advanced threat protection to the expanded attack surface.

There is a lot of hype surrounding digital transformation. As companies look to go digital, however, they need to understand that their network is the foundation of their digital future. A weak one will see their digital efforts crumble as they face increasing demands and are not capable of delivering the experience users expect or providing the security that they need. A strong one, on the other hand, will not only help to meet those demands and enable them to build and scale rapidly, but will also ensure that both sides of the double-edged digital transformation sword are working to their benefit.