SD-WAN: The answer to business networking demands
The new business model, the emergence of the Third Platform, SaaS and Cloud-based applications is raising the bar for traditional data centres as businesses strive to gain increased agility with the new service model of "on-demand software".

The connection requirements of businesses has outgrown the ability of MPLS WAN private services to interconnect remote offices and data centres

SD-WAN technology allows the creation of hybrid networks that join multiple access technologies, such as Internet services, dynamic traffic routing, and real-time connection provision, based on available bandwidth or selected criteria as well as reducing aggregate bandwidth costs.

NetScaler SD-WAN promotes efficient increased network capacity, cost reduction, and better performance as well as better reliability for business critical applications like VDI (including XenDesktop), application virtualization (including XenApp), VoIP, video-conferencing, ERP, CRM and corporate applications without compromise the best of WAN Optimization technology.

NetScaler SD-WAN can join multiple WAN connections to create a single, secure, logical link in order to increase WAN throughput. The logical connection guarantees the reliability of critical application traffic and allows the automatic re-routing of application traffic at packet level, which ensures a constant bandwidth throughput independent of network fluctuations and bandwidth availability. NetScaler SD-WAN allows businesses to integrate MPLS with the added advantage of connection flexibility and low cost broadband.

This technology logically binds MPLS and multiple broadband paths into a single logical path. With virtualization of the WAN, high priority applications are guaranteed to function well, taking full advantage of the bandwidth on all routes. Additionally, critical business processes are protected against network outages.

NetScaler SD-WAN virtual WAN, measures transfer delay between WAN components, monitors WAN performance, MPLS connection health and quality, and uses this information to apply quality of service to the data, route selection, traffic shaping, failover and other functions. It allows organisations to manage priorities for each application. Traffic shaping and dynamic bandwidth reservation are additional methods with which to control quality of service for distinct classes of traffic, as well as packet reordering to further increase MPLS performance.

Juan Rodríguez, Director BDM, Delivery Networks, EMEA, Citrix Systems
From a technological viewpoint, the concept of SD-WAN is simple: the corporate devices at the extremity of the WAN channel traffic to other devices via multiservice or multivendor WAN networks which are centrally controlled, allowing network managers to configure and control traffic based on centralized security policies and rules.

**THE VALUE OF SD-WAN**

SD-WAN uses cloud based software and technology to simplify the delivery of WAN services to remote offices. Software based virtualisation allows network administrators to more easily manage network services through abstraction of higher-level functionality. SD-Wan allows IT and business managers to easily deploy internet-based connectivity, quickly, with quality, security and reliability, with benefits such as ubiquity, better bandwidth and lower costs.

The emergence of new technologies has meant that network traffic in distribu-
sted organizations is manipulated in new ways. Not only do remote users need more bandwidth, notably in areas such as video or media, but also they also now expect immediate access to cloud based and SaaS (Software as a Service) applications such as Salesforce, Office 365, Lync and remote storage, such as Dropbox.

Traditional MPLS networks that carry traffic from remote offices to the data centre cannot offer the low latency and high performance needed to access cloud based applications. In addition, management and security requirements must be taken into account as well as the inherent complexity of remote operations.

**SD-WAN: THE BENEFITS**

So, what are the benefits of SD-WAN to distributed organizations?

They include the following:

- **Business Agility.** The rapid rollout of WAN services to remote offices without the need for on-site IT support. The bandwidth can easily be adjusted (increased or decreased) depending on business needs.

- **Bandwidth savings.** Internet connection is readily available, quick to deploy, and comes at a much lower cost than equivalent MPLS networks. SD-WAN provides the reliability and security benefits of WAN services at “Internet prices”.

- **Architecture optimized for the cloud.** SD-WAN frees you from the traditional inconveniences and constraints of MPLS networks and bundles security, performance and connectivity between cloud and office, which significantly improves the experience for users in remote offices when they use SaaS or cloud-base applications.

**SD-WAN: FACTORS TO CONSIDER**

When evaluating SD-WAN deployment, network administrators and business managers should take into account certain factors:

- It's easy to rollout and administer. A key benefit of SD-WAN is its ease and speed of deployment to remote offices. No need to send IT professionals to the offices.

- Migration to hybrid networks is an option. Most organizations have distributed MPLS deployed in remote offices. Companies can deploy SD-WAN solutions without changing existing networks. Over time, these types of infrastructure can be migrated to more cost effective Internet based ones.

- Automated traffic management. SD-WAN provides the ability to prioritize traffic. The key is to provide network managers with intuitive tools to easily configure priorities automatically, based on the real-time network load.

“Combining the flexibility of XenApp and XenDesktop with the cost effectiveness and efficiency of NetScaler SD-WAN, gives customers anywhere-anytime access for their workforce, promoting productivity and effective working practices”

**CHRISTIAN REILLY, VP AND CTO, WORKSPACE SERVICES, CITRIX**
SD-WAN: Present and future of the enterprise network

In the last decade, two major technological trends have converged and look set to have a significant effect on corporate networks. In the past information technology was centred on PCs, servers and data centres. Now we have virtual computing and it has reached every corner of the IT world.

On the other hand, companies are migrating to centralized networking with the adoption of other trends such as cloud, mobility or IoT networks, which further increases the importance of the corporate network role.

The result is a significant increase in video traffic, on top of that which is generated between various devices and the data centre, the result being, more bandwidth sensitive applications.

In summary, the network has become a strategic asset and the need has arisen to move to software-defined WANs (SD-WAN), which solves the major headaches for network administrators. This new way of looking at the network gives the needed flexibility and responsiveness, together with the control and security necessary on a private network.

The cost versus MPLS

Assuming that the volume of WAN traffic increases by 15% annually, the cost of communications is a factor well worth considering. Especially so, if we consider that the cost in financial terms of MPLS starts, on average, at $90 a month, and in addition changes require an average of 90 days. So it is a more expensive and less flexible alternative than SD-WAN, and usually involves commitment to multiyear contracts.

Meanwhile, SD-WAN is between 3 and 9 times less expensive for these communications as well as being a much more flexible option.

You can see a cost comparison in the following link.
LIMITATIONS OF TRADITIONAL WIDE AREA NETWORKS

Current network architecture is more than a decade old and is therefore not up to today’s challenges, marked by an increase in connected devices, mobility, cloud models, increased security needs etc. The result? The current infrastructure is unable to comply with the security requirements or with current business models which require fast response times, unavailable over an inflexible network – all this makes the evolution of the network a priority not just for the CIO but the entire management structure.

EVOLUTION OF THE WAN

Business needs and market trends drive network evolution. This fact is taking its place alongside traditional issues and is catching the attention of management. And the solution needs to result in an intelligent network, a network that can adapt to business needs – there is no better solution than the Software Defined WAN, conceived not just for the present, but also the future needs of the enterprise. The new network concept must connect users to applications regardless of the desktop device, the connectivity route or whether it is resides in the cloud, whether the services are private or public, and without physical barriers to users who now expect to work with mobility and freedom; Provide a uniform experience irrespective of where the connexion is made; Simplify the management overhead of distributed services, even, ideally, automating them; Integrate security into the network, with multiple layers and multiple control points; Apply prioritization and optimization criteria depending on the data and applications used on the net; Allow applications to be deployed without special network requirements; Provide more visibility to network managers allowing them to eliminate potential conflicts in the network; Rapid provisioning of applications and services in order to maintain the business’s competitive edge; And optimize traffic for cloud and mobility, providing the best user experience. A study of 2014 ZK Research indicates that the customer experience is one of the major concerns of network administrators.

In the Market Guide for Software-Defined WAN, Gartner finds that Citrix has a catalogue of Virtual WAN solutions that will facilitate SD-WAN deployments, many of these, according to the report, primarily in subsidiaries and remote offices. Also, it says that Citrix is a choice for businesses looking to optimize their WAN and dynamic route selection, particularly if they already use Citrix applications.
NetScaler SD-WAN – Citrix’s challenge in the SD-WAN arena

Once we have established why SD-WAN has the edge in organizations with distributed offices and how it is of benefit, let us now showcase the Citrix proposal for software defined WANs and see why it’s a smart move to choose NetScaler SD-WAN.

Traditional WANs were not designed for today’s bandwidth demands. Given this, the WAN solution defined by Citrix’s NetScaler SD-WAN provides high levels of scalability, reliability, and adaptability to cloud environments. Citrix’s offering combines the strengths of other products offered by the company. The product leverages smart WAN technologies, WAN optimization and application management in a unique solution which provides a user experience for users in remote offices and on the move, just as if they were in the company headquarters.

This solution reduces the bandwidth requirement needed to deliver such a user experience, with minimum administration of remote offices, reducing the need for on-site technical support. All this with less financial outlay due significant savings in the remote communications infrastructure.

So, the principle benefits of this solution are:
- Guaranteed business continuity and disaster recovery
- Reduced communication costs
- Improved application performance for mobile users, as well as those in remote branches and offices.

NETSCALER SD-WAN
Chalan Aras, Vice President and General Manager of Citrix NetScaler SD-WAN presents a brief overview of the solution in this video.
“The main role of our channel is to provide advice to its customers”

Justin Thorogood, BDM for Channel Networking in EMEA of Citrix Systems, outlines the key steps for partners to seize the SD-WAN technology opportunity for themselves and their customers.

In the words of Justin Thorogood, “with a third of companies planning to migrate to SD-WAN in two years, the main role of our channel is to provide advice to its customers”. This solution is a disruptive response to a problem they need to solve.

The principal benefit to these partners will be that “implementing SD-WAN will strengthen the position with traditional customers. We can provide a more adaptive user experience that is not influenced by the status of the WAN. The result - provide a great stable customer experience for both virtual and desktop applications”.

To facilitate the work of our partners, “Citrix is putting a comprehensive training package in place. Partners can choose their own level and provide support for their customers, hand in hand with Citrix, for large projects. With large automated rollouts, the partner can be directly involved, even for international projects. In addition, Citrix offers partners its European centres for demonstration to their customers, so they can see this technology in action. And, if requested, we are able to offer a PoC program to partners so that their customers can see it working in a live environment.”

“For a third of businesses planning to migrate, SD-WAN is a disruptive answer to a client need”

Justin Thorogood, BDM Channel Networking, EMEA, Citrix Systems

SD-WAN KEY POINTS

If you want to see the full interview with Justin Thorogood, BDM Channel Networking, EMEA, Citrix Systems, click the image.
The Danish Agriculture and Fisheries Agency improved communications with its fleet using NetScaler SD-WAN

The Danish AgriFish Agency, the agency supervising the Danish agriculture and fisheries industry, is responsible for promoting the growth and management of natural resources in Denmark. It has a fleet of ships overseeing activities in Danish territorial waters.

**THE CHALLENGE:**
Provide mobile connections to sailors

Employees of the agency work where mobile coverage is extremely limited - at sea. They also need access to applications to facilitate their work and communicate with mainland colleagues. To have to sail close to the coast in order to find a more robust connection means diverting from the main area of their inspections, satellite communications being very expensive.

**THE SOLUTION:**
A virtual WAP via satellite and mobile connections

Zentura, a Citrix Partner, proposed a NetScaler SD-WAN solution to the Danish Agency. The SD-WAN automatically selects cellular or satellite links depending on the conditions, so that traffic flows optimally and without manual intervention. Combined with Citrix XenDesktop and XenApp, it provides remote access to applications without performance problems.

**KEY BENEFITS**

- **Provides reliable connectivity at sea.** The users do not have to struggle to stay connected. “Mobile coverage has increased significantly,” says Lund. “We used to be lucky to have signal at 5/8 nautical miles from the coast - now we have coverage over 23 miles from Skagen. As a result, the crew can focus on their inspection tasks, and not on how to maintain a connection”.

- **Simplifies the management and supervision of connections.** NetScaler SD-WAN integrates mobile and satellite connectivity options, using the best in each case. Connectivity changes automatically, depending on the quality, avoiding manual intervention.

- **Improved connection speed and employee satisfaction.** Before, the agency had to choose between low bandwidth with high latency, or more expensive connection options. NetScaler SD-WAN itself chooses the best option, which significantly improves network performance.

**Other success stories**

Of course, this isn’t the only success story where customers have deployed the NetScaler SD-WAN solution.

For example, take HMS, which opted for this distributed application delivery solution.

Likewise, Groupe Promutuel has chosen NetScaler SD-WAN to support a dispersed organization with many remote sites.

Another example is Cornerstone Home Lending. They have speeded up access to their software for users, and at the same time have reduced the time and effort needed in the IT department.

You can find more references to client articles by clicking this link.
SD-WAN: Market Opinion

With a view to helping customers understand the benefits of SD-WAN technology, we wanted to seek the views of Victor Hou, Global Channel Director of Expereo, a company that, over the past 12 years has become a Leader in aggregated internet supply and access (DSL - DIA), SD-WAN, hardware, and professional services worldwide.

Victor Hou says, “when MPLS arrived 14 years ago, it hit the global market like a storm and gave global companies the flexibility, cost reduction and quality, to finally replace Frame Relay networks. In 2016, with SD-WAN and Global Internet Management Services from Expereo, we are seeing the same opportunities for the next generation of hybrid systems and global Internet WAN networking, providing the same level of quality, but with greater flexibility and cost reduction."

For this expert, “When global companies tried to implement SD-WAN solutions, they faced the challenge of providing hundreds of Internet circuits worldwide. This challenge was compounded by the need to also administer the computers and configurations necessary to support SD-WAN. On a global scale, the complexity of enterprise networks increases significantly and becomes very difficult to manage. This is the reason why Expereo has entered into a global partnership with Citrix. Expereo and Citrix together enable global businesses to benefit from fully managed Internet and SD-WAN solutions in more than 180 countries; whether for one location or thousands."

“SD-WAN has enormous potential for customers in EMEA, because broadband and Internet are widely available. Particularly, in regions such as Eastern Europe, Africa and the Middle East, the significant cost reduction can be achieved in partnership with Expereo by means of their global Internet managed services and SD-WAN Citrix NetScaler. Our partnership provides a complete network solution for customers at a reduced cost” concludes Hou.

“Expereo and Citrix together enable global businesses to benefit from fully managed Internet and SD-WAN solutions in more than 180 countries; whether for one location or thousands”

Victor Hou, Global Channel Director of Expereo
Demo centers

The end user briefing is a shared experience between our customers, Citrix Subject Matter expert, and our product teams. This collaborative approach allows for productive conversations that address your company’s unique objectives. Our methods promote goal alignment, technical expertise, and accelerated business success.

During an end user briefing, we provide:

- Customized agendas, targeting your specific challenges and goals
- Personalized presentations from technology specialists, and subject matter experts
- In-depth discussions around Citrix’s vision, strategies, solutions and future innovations as they relate to your business
- Exercise with our MPLS ROI tool
- Live solutions demonstrations

Citrix Demo Centers in Europe

QUALITY AND RELIABILITY WITH SD-WAN
If you want to check the quality and reliability of SDWAN solutions, do not miss this video.