Increase Network Reliability and Reduce Costs with SD-WAN

NetScaler SD-WAN improves quality of service for apps at remote offices and clinics.

Learn how NetScaler SD-WAN can keep your distributed healthcare organization up and running.

Healthcare organizations of all sizes rely on wide area networks (WANs) to connect branch offices and clinics to the datacenter and deliver the critical applications their employees depend on. Maintaining high availability and quality of service is crucial—slow or dropped connections can have an immediate impact on patient care. MPLS typically offers high reliability but only at a high price, and MPLS lines can't be changed quickly to meet changing needs. Citrix offers a more reliable, cost-effective way to support users in every location with SD-WAN.

NetScaler SD-WAN logically bonds multiple, distinct WAN connections into one virtual link with application awareness, dynamically applied network policies and continuous monitoring to deliver traffic over the best-quality path every time. In this way, organizations can increase application reliability and bandwidth utilization while reducing total cost of ownership for branch clinic connectivity.

The need for more flexible, cost-effective branch connectivity

Whether an organization has two locations or 2,000, reliable, flexible and cost-effective WAN connectivity is an absolute necessity. An unreliable network can impair the performance of Electronic Health Record (EHR) apps, XenApp, XenDesktop, voice over IP (VoIP), video conferencing and other critical services for users in branch offices and clinics. To keep the organization up and running, many IT departments invest in costly MPLS lines—and then spend even more money on redundant MPLS or broadband connections for failover, even as this added capacity remains unused in ordinary circumstances. As more bandwidth is needed to support cloud-based apps, rising data volumes, video and other demands, the rigidity, long provisioning timeframes and long-term contracts of MPLS make scaling the network a long, painful and costly process. The problem is especially acute in organizations where MPLS connections are managed centrally at an enterprise level, leaving branch offices unable to deal directly with service providers to adapt to their own local needs.

The high cost and inflexibility of MPLS leads some organizations to consider broadband as an alternative. While broadband is indeed less expensive, by a factor of 3 – 9 times in some locations, it fails to consistently provide the traffic engineering, control and performance offered by MPLS. This is especially problematic given the importance of reliability and performance for critical apps such as VoIP, where even slight jitter can create an unacceptable user experience. What branch offices need is a WAN solution that combines the reliability, performance and control of MPLS with the scalability and affordability of broadband.

How NetScaler solves WAN challenges for remote sites

NetScaler SD-WAN provides a better way to support clinical and business apps in remote locations with WAN virtualization. The solution logically bonds multiple distinct WAN connections—MPLS, Ethernet, DSL or wireless—into a single virtual link for a

more scalable, cost effective and cloud-ready approach to mobile workspace delivery. The encryption of paths between devices provides end-to-end security, and packets are bridged based on application needs and link performance to ensure the best user experience. NetScaler SD-WAN is offered as part of NetScaler Enterprise Edition, an integrated platform for WAN virtualization, optimization and visibility.

NetScaler SD-WAN delivers the most important capabilities for ensuring reliable, high-performance connectivity for business apps to users in branch offices.

Application awareness

Unlike simple load balancers, NetScaler SD-WAN sends packets based on application needs and link performance, not just a destination IP address, and prioritizes application traffic to adapt to congestion. Applications that are sensitive to latency, jitter or packet loss are dynamically allocated to high-performance bandwidth links based on real-time network conditions, with seamless sub-second failover to the next-best WAN path in the event of an outage. Lower-quality paths are used only as much as necessary, and then for lower-priority applications. Continuous monitoring of latency, jitter and packet loss of every WAN connection enables intelligent path selection in real time. In most cases outages are undetectable by employees, even with latency-sensitive applications like VoIP.

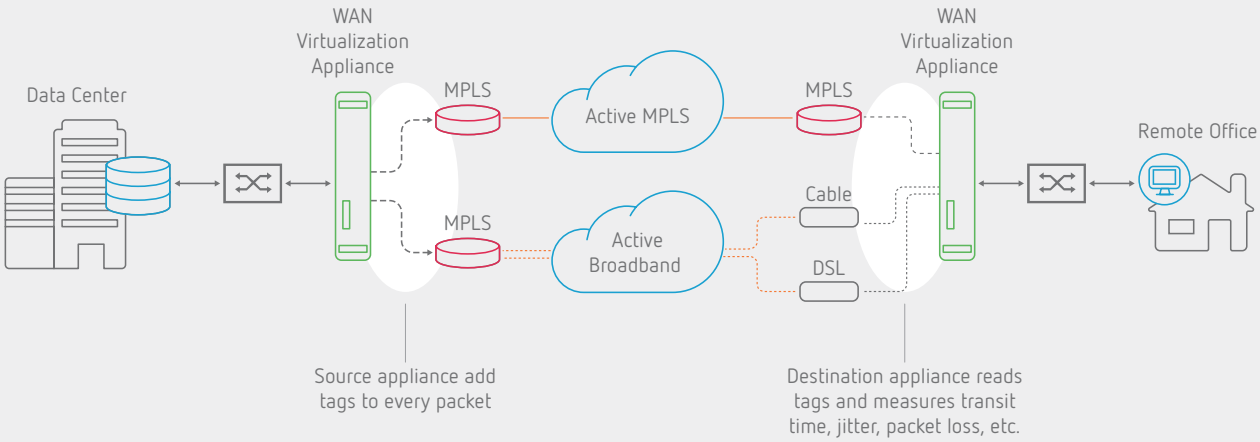
Application aware data segmentation and security

NetScaler SD-WAN is able to provide integrated security, a critical concern for protecting patient records and payment data. Based on either application or source, subsets of data can be segmented and separated from other network traffic. For example, an EHR can have its own virtual network, with separate routing and policies. Similarly, network traffic from users on a clinic guest wifi network can be identified and segregated, and optionally sent directly to the Internet without entering the WAN. And an integrated zone-based firewall can limit or block traffic from specific websites and applications, either by employees or guests.

True path bonding

Going beyond path selection, NetScaler SD-WAN bonds paths together to enable higher throughput and better efficiency. By

Figure 1 **NetScaler Virtual WAN appliances measure transit time, jitter and packet loss, then create a "map" of the performance and health of all paths in the WAN. This information is used to select the most appropriate paths for different types of traffic. Broadband connections can now be used actively for all applications.**



bonding multiple paths for application traffic, NetScaler SD-WAN mitigates performance issues affecting any individual path and increases utilization for better cost efficiency. To further reduce wasted bandwidth, NetScaler SD-WAN can seamlessly pool active and backup link capacity for ongoing use.

Traffic visibility for ICA and other business apps

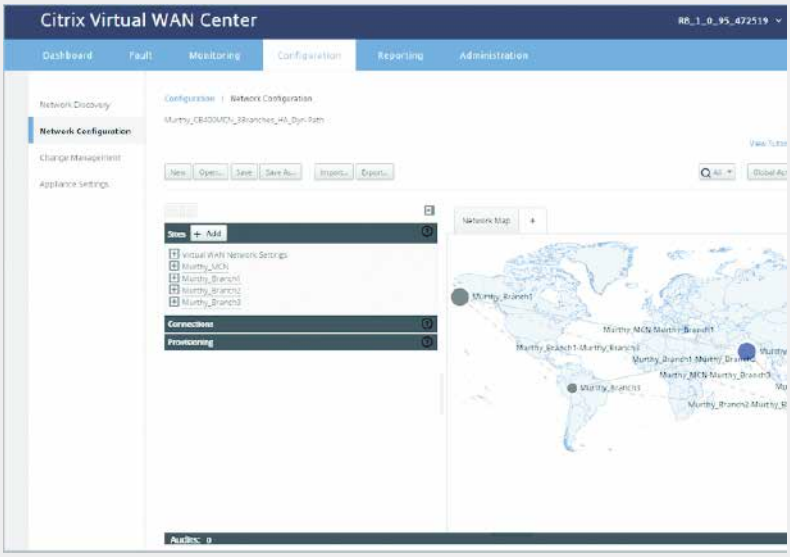
Application performance issues for branch users can lead to time-consuming troubleshooting among the user and the network, client and server infrastructure teams. NetScaler SD-WAN helps IT zero in on root causes quickly and accurately to avert problems and reduce helpdesk calls through enhanced network diagnostics and reporting. A single console lets IT manage and monitor application traffic including ICA as well as MAPI, CIFS, HTTP, Citrix ShareFile, NetApp and other protocols over the WAN. AppFlow captures metrics on session usage, trip time and other real-time and historical information for Layers 4 – 7 to help IT understand what is happening at the application level. Import this data into NetScaler Insight Center to visualize application performance, generate performance reports and create customized analytics for troubleshooting.

Better reliability at a lower cost for clinical apps

Increased app reliability

By reducing latency, lossiness and jitter and preventing outages, NetScaler SD-WAN ensures a high-quality branch office user experience for critical apps such as VOIP, VDI, video conferencing, EHR and app virtualization solutons. Even the degradation or failure of an app's primary path won't result in a brownout or outage, as the solution prioritizes traffic and reorders packets for the most sensitive and critical apps to maintain quality of service. As a result, IT can deliver uninterrupted user productivity using any mixture of MPLS and broadband connections—even when the quality of the individual paths are not uniformly high.

Figure 2 Virtual WAN Center: Centralized, aggregate dashboard.



Better utilization

NetScaler SD-WAN eliminates the need to reserve broadband connections for backup and allows all bandwidth connections to be available at all times. With more capacity available, it is easier for IT to support variable and growing volumes of traffic between branch clinics and the datacenter without having to overspend or leave bandwidth unused.

Lower TCO

Allowing broadband connections to deliver high-priority application traffic with the same reliability and quality of service as MPLS, NetScaler SD-WAN lets organizations expand their network capacity to branches using low-cost, flexible broadband connections. Some locations can even dispense with MPLS entirely and build high-quality WANs using broadband links alone. In fact, the industry analyst firm Gartner anticipates that SD-WANs can reduce the cost of WAN ownership and operation by at least 40 percent thanks to lower expenditures on hardware, software and support for WAN equipment in remote clinics.

The Citrix Networking Solution

NetScaler SD-WAN is part of a comprehensive networking solution that provides the highest level of visibility and most flexible security for XenDesktop and/or XenApp delivery. In addition to NetScaler SD-WAN, Citrix NetScaler, an industry-leading application delivery controller (ADC) improves the resiliency, performance and security of enterprise, SaaS, mobile and virtualized applications, including Citrix XenApp and XenDesktop. Further, NetScaler Unified Gateway provides secure remote access from any device for apps deployed in the datacenter or in the cloud.

Next steps

To learn more about using NetScaler SD-WAN to enable reliable, cost-efficient connectivity for clinics and branch offices, please refer to the following resources:

The Watershed customer video

Rehab Management customer example

NetScaler SD-WAN demonstration video

Gartner Market Guide for WAN Edge Infrastructure

Citrix Whitepaper: Managing IT at Multiple Clinics

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