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# Improve Cloud Application Experience and Reliability with Citrix Managed SD-WAN

Today, a Managed Service Provider (MSP) with cutting-edge solutions can help make a major impact in all areas of the business, including output and revenue. The right partner can even impact a company's ability to enter new markets with innovative solutions.

## Introduction

IT organizations are increasingly challenged to provide quality of service (QoS) for applications hosted at cloud data centers. The trends toward mobility, video, and the cloud have increased bandwidth requirements for branch offices and exaggerated the poor performance of applications that are sensitive to the lower quality of WAN links.

Internet traffic models project that business WAN bandwidth will increase, on average, 20 percent per year. The trends point to the requirements for more bandwidth at the branch, with a focus on branch-to-internet performance. As a result, a solution is needed that can address the need for more bandwidth and a more reliable and cost-effective WAN. SD-WAN is such a solution.

While many organizations want to benefit from SD-WAN, they don't always have the resources to design and manage the networks. As a result, many service providers are looking at offering SD-WAN as a managed service. The service optimizes branch office links across the WAN while reducing operational expenses and increasing operational efficiency.

Service providers that host applications and provide data center services for their customers can provide a better QoS by offering SD-WAN as a service for those customers. Many Citrix Service Provider partners offer an SD-WAN service to improve availability and performance of their hosted Citrix Virtual application services.

This white paper explains business drivers for using a managed software-defined WAN service, how the service works, and benefits for customers of the service.

## Business Drivers for a Managed SD-WAN Service

Approximately 80 percent of enterprise employees work outside of headquarters, and, not surprisingly, branches consume 70 to 90 percent of business resources. Branch office workers need reliable access to hosted applications, and IT departments want to lower costs.

Businesses can gain these benefits from a managed SD-WAN service:

- Increased reliability and better performance of application delivery
- Increased productivity of employees due to reduced application downtime
- Reduced capital outlay and management overhead for SD-WAN
- Reduced risk and cost by using service provider's expertise and facilities

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- IT allowed to focus on core business needs due to outsourced context operations
  - Greater flexibility by using the Citrix partner resources so they can scale their apps as needed

### Managed SD-WAN Service Description

A managed SD-WAN service optimizes the availability of connections and applications across the WAN, thereby enabling enterprise organizations to confidently offer applications to the branch office from service provider data centers. Table 1 lists the main service benefits.

#### Service Components

A managed SD-WAN service combines hardware, software, and services:

- Citrix SD-WAN appliances are deployed at each branch office, and a core device is placed in the data center where application services are hosted.
- Central management system is deployed on a server in the data center and managed locally or remotely by the service provider.
- Services include assessment, design, and installation; 24-hour monitoring and management; performance reporting through an online customer portal; and equipment maintenance.

#### Phased Approach

A Citrix partner (a service provider) introduce the managed software-defined WAN services in phases, offering core services to key customers first, and then adding features and offering the service to a broader range of customers.

**Phase 1:** Phase 1: The service provider introduces a value-added service for existing subscribers to its hosted application services. The core SD-WAN appliance is deployed in the service provider data center, co-located with the Virtual application services. The end point SD-WAN appliance is deployed in each of the participating branch offices of the customer. A basic set of SD-WAN features are implemented to enhance the hosted Virtual application services.

**Phase 2:** The service provider enhances the SD-WAN services with additional features to improve the performance of additional applications and adds monitoring and reporting with guaranteed service levels. This service appeals to enterprise customers that want to access additional hosted applications as well as to small and midsize businesses that want to outsource their data center operations.

**Phase 3:** The service provider offers additional managed network services in conjunction with its SD-WAN service, such as WAN optimization, security and firewalling, and router replacement, as well as reporting on service quality. The SD-WAN service is also offered to enhance other services such as server hosting, managed storage services, and business continuity services.

### Benefits of the SD-WAN Service for Enterprise Customers

A managed software-defined WAN service enables enterprises to experience many advantages. Major benefits include:

- Increased reliability and better performance of application delivery
- Increased productivity of employees due to reduced application downtime
- Reduced capital outlay and management overhead for SD-WAN
- Reduced risk by using service provider's expertise, economies of scale, and facilities
- IT able to focus on core business needs by outsourcing context operations
- Fewer devices to own in the branch office due to combining services on one managed device
- Savings by using lower-cost broadband connections together with other link types
- Improved resilience resulting from the managed service providing 24-hour monitoring

Table 1. Business value of a managed SD-WAN service for enterprise customers

Service Feature	Business Value
Intelligent Path Selection	Provides a higher level of link availability for uninterrupted access to applications
Dynamic Virtual Paths	Provides better branch-to-branch service for latency-sensitive applications
Visibility of App Performance	Provides application performance reporting to ensure SLAs
Centralized Management	Enables the Citrix partner to manage the devices for the customer

Table 2. Additional services and the Citrix technologies that make them possible

Service Feature	Business Value
SD-WAN	Citrix partners offer SD-WAN as a service to enhance their virtual desktop service. This increases link availability and application performance.
WAN Optimization	Citrix partners offer WAN Optimization as a service to complement their virtual desktop service. This enhances the value of the desktop service by increasing link performance.
Security/Firewall	Citrix partners offer security services on the SD-WAN appliance that add security without increasing the number of devices in the branch office
Router Replacement	Citrix partners eliminate the need for the branch office router by configuring routing on the Citrix SD-WAN device without increasing the number of devices to be managed. As a result, the customer avoids having to buy a router.
Tunneling/Segmentation	Citrix partners offer tunneling between various sites so the customer can avoid backhauling traffic through their data center and get direct access to applications in the cloud. This saves bandwidth costs of extra traffic on their data center WAN links.
Management/Reporting	Citrix partners manage the devices and provide reporting on application performance and link utilization, etc. This saves the customer having to manage the devices and provides reports on the value that they are getting from the service.

### Technical Differentiators of the Citrix SD-WAN Solution

**Dynamic routing** enables the Citrix partners to offer a cheaper replacement for the edge router. Support for dynamic routing protocols, DHCP server and relay, IPsec VPN termination, VRF, and GRE tunnel termination makes it an alternative to the traditional branch office router.

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**Stateful firewall** enables the Citrix partners to offer a more complete service with security and path encryption from the same appliance. The built-in firewall allows policies between services and zones, and supports Static NAT, Dynamic NAT (PAT), and Dynamic NAT with port forwarding as well as network path encryption for secure data delivery.

**Centralized management** with SD-WAN Orchestrator and SD-WAN Center simplifies management for the Citrix partners. This allows centralized policy definition across all network services, simplifying the time and effort to turn up a new location on the WAN.

**Zero Touch Deployment** enables CSPs to deploy appliances with zero touch, reducing costs. ZTD is operated by Citrix in the cloud. It discovers new remote office appliances and authenticates and configures them according to data and instructions in the ZTD servers.

**Intelligent path selection** enables the Citrix partners to offer a higher level of link availability. Path assignment is made by packet, adaptation time is in milliseconds, adaptation basis is bidirectional, application optimization is comprehensive and integrated, deep ICA visibility is provided, and over 4,000 enterprise apps are supported.

**Identity tagging** enables the Citrix partners to offer fine-grained SLAs for application availability. Packets are tagged with sequence numbers and info about the packets to follow. Destination appliances can detect path outages after just two or three missing packets. Outage info is shared with all appliances so they can immediately reroute traffic onto the next-best available paths.

**Automated bandwidth detection and control** provides visibility for link performance- enabling SLAs. Automatic bandwidth detection and adaptive bandwidth control provides reporting on the true bandwidth available on each link over time.

**Visibility of application performance with Citrix ADM** enables the Citrix partner to monitor application performance and report on application SLAs. Through its integration with Citrix MAS, Citrix SD-WAN monitors how well applications are being delivered to customers in the branch.

**Support for latency and bandwidth-sensitive applications** enables the Citrix partner to offer VoIP, video conferencing, and virtual desktop services. Packet duplication copies every packet in the session along independent paths. Traffic shaping and dynamic bandwidth reservation provide for managing QoS for different classes of traffic. Packet reordering and loss mitigation offload reordering and retransmission tasks from applications.

**Dynamic virtual paths** enable Citrix partners to offer better branch-to-branch service. Dynamic virtual paths allow direct paths between two branch offices, reducing latency between the locations and reducing backhaul through the data center, which in turn reduces bandwidth costs.

## Why the Citrix Solution for SD-WAN Services is a Good Choice

### All-in-one Solution

A complete, end-to-end solution for software-defined WAN, Citrix SD-WAN is an all-in-one solution that enables Citrix partners to offer multiple branch office networking services from one device with integrated SD-WAN, WAN optimization,

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routing, and firewall. Citrix partners can lower the cost for branch networking by removing the router and firewall as separate appliances and by reducing the amount of support required. Citrix makes it easier for our partners to offer the service.

### **Citrix Managed Service Provider (MSP) Program**

The new Citrix SD-WAN for MSP Partner program has a stringent set of requirements. Participating companies must complete a training program, demonstrate high proficiency in branch to cloud network knowledge and pass a resource audit before being certified as a partner.

It is the preferred program for our SD-WAN customers.

Members of the Citrix MSP program have access to the expertise of Citrix for planning, building, and going to market with their managed SD-WAN service. Citrix provides training for the service provider's technical staff to ensure that they are competent in managing the devices.

### **Citrix Experience**

Citrix is an established vendor with 25 years of history. Citrix has a large customer base including most of the global 2000 enterprises, so we have experience with the largest networks. Thousands of customers use Citrix for application virtualization and can benefit from an SD-WAN that is tuned to improve HDX over the WAN.

### **Conclusion**

Organizations want to have reliable and high-performing access to hosted applications. To achieve this, they need to add bandwidth while maintaining MPLS-like performance and reliability. Service providers address this need by offering a managed SD-WAN service based on Citrix SD-WAN. By using the managed service, customers get better WAN reliability and application availability for a monthly fee without having to deploy or manage the infrastructure.



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