

# The Need for Actionable, Application-Level Visibility

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Leverage Technology & Talent  
for Success

## Introduction

A [recent white paper](#) discussed the need for network organizations that are evaluating SD-WAN solutions to focus on solutions that make their CIOs successful. That paper stated that one way that an SD-WAN can make a CIO successful is by ensuring the performance of the company's business critical applications. The paper pointed out that because it has an application-centric architecture, the CloudGenix SD-WAN solution enables network organizations to ensure the goal of ensuring appropriate application performance.

Being able to easily configure the WAN to ensure appropriate application performance has significant business value. However, in any operational network there will always be issues that cause applications to not perform well. As this white paper discusses, CloudGenix's application-centric architecture provides value to CIOs by enabling network organizations to quickly identify and remedy the causes of degraded application performance.

### The critical role of application level visibility

All SD-WAN solutions provide some level of visibility into network performance. However, CIOs regard network performance as a *means to an end*. The *end* that CIOs want is a level of application performance that enables business processes to run smoothly. Achieving that *end* requires visibility into the performance of both the network and the applications that transit the network. To provide maximum value to a CIO, that visibility must be actionable and whenever possible, it must be automated.

Virtually all SD-WANs, whether they are network- or application-centric collect data on link impairments such as latency, loss and jitter. In a network-centric environment this data is typically used as part of a time-consuming, reactive troubleshooting process. In these environments, the operations group is made aware of a potential problem with the performance of an application by one of several sources, with the most common source being end user complaints. Once the weight of evidence is high enough, the operations group performs a series of tasks, such as going through reports on link quality looking for links with high levels of impairments. If such links are found, and if an alternative link exists, the operations group must manually make changes to the SD-WAN that will cause the traffic to take the alternative link. If the application in question was business critical, this time-consuming process would have a negative impact on the company's business.

CloudGenix's application-centric SD-WAN solution enables network organizations to stop managing application performance in a manual, reactive manner and start managing application performance in a proactive, automated manner. The CloudGenix solution achieves this goal in part because it gives network organizations the ability to simply and easily implement management policies at the application layer.

For the sake of example, assume that Office 365 is a critical business application. Like many contemporary applications, Office 365 is comprised of multiple subtending applications. With the CloudGenix solution, the network organization can set up a policy to move any of the subtending applications to an alternative link if application specific metrics, like initialization or transaction failure rate, are too high, or if there is degradation in the quality of the primary link the applications transit. Because applications respond differently to link impairments, the metrics that identify whether a link is degraded can be chosen on an application-by-application basis.

In addition to the functionality described above, CloudGenix provides a broad range of additional functionality that enables network organizations to effectively manage

application performance. That functionality, which is completely controllable by network organizations, includes the ability to:

- Visualize where a specific user's flow was placed, what policies were applied from a security, path, and QoS perspective, as well as how the system made its decision based on the state of the network and application performance at that point in time.
- Filter applications based on a range of criteria including the applications with the top volume, the top problem areas and the top TCP/UDP flows;
- Take a complex application such as Office 365 and look at the average response time of all the subtending applications;
- Determine if the application can implement the three-way handshake that is necessary to initialize a TCP/IP connection and if so, can it transmit data;
- Measure the end user's application experience using the round-trip time (RTT) of real traffic;
- Identify when factors that are not network related, such as a lengthy server response time (SRT), are causing degraded application performance;
- Continually monitor application flows and move applications to a more appropriate network tier if warranted.

A critical component of CloudGenix's value proposition is that all the application specific metrics, such as RTT and initialization failure rate, are available to inform the system of which path to choose regardless of whether there is another CloudGenix device on the other end of the path. The possible paths include CloudGenix VPN overlays over any WAN transport; direct internet access (DIA); direct to private WAN services, such as an MPLS underlay that is used to connect to a hub location, or to a non-CloudGenix legacy branch site; or a traditional IPSEC VPN tunnel used to connect to a 3<sup>rd</sup> party service; e.g. Zscaler, Palo Alto Global Protect Cloud Service, etc.

### **Summary and Call to Action**

For a network organization to make their CIO successful, they must adopt an SD-WAN that ensures that two critical goals are met. One goal is to ensure appropriate application performance and the second goal is to quickly identify and remedy the causes of degraded application performance.

The CloudGenix solution enables network organizations to achieve those goals because it has an application-centric architecture. Because of that architecture, the CloudGenix solution enables network organizations to implement policies that put applications into network tiers that ensure appropriate application performance. The CloudGenix solution also provides the actionable, application-level visibility and automation that enables network organizations to stop managing application performance in a time-consuming, highly manual, reactive manner and start managing application performance in an automated, proactive manner.