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Benefits of a SD-WAN Development Ecosystem

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Executive Summary

In an era of digital transformation with its reliance on cloud/SaaS based applications and an increasing mobile work force, IT teams are challenged to rapidly adapt to the changing requirements of their organization. Organizations now demand immediate responses to requests for new applications and expect immediate resolution of any performance issues with critical data center or cloud-based applications. IT organizations must improve the agility of their networks, increase automation, and quickly gain insights to support business decisions.

SD-WAN is now an essential part of communications in distributed organizations for access to data center and cloud-based applications. IT organizations are tasked with providing immediate response and remediation to all application performance issues. For maximum benefit, SD-WAN technology must be integrated with existing IT management and security systems. Thus, the extensibility and ability to customize the SD-WAN installation is now essential to distributed organizations.

The ability to integrate and customize SD-WAN systems is driven by two factors. The first is the breadth and depth of the individual supplier's developer/partner ecosystem. The second is the ease of which internal IT teams and associated system integrators can leverage open APIs to customize SD-WAN features to their exacting specifications. By leveraging plain language commands to control the network (intent-based networks), the organization can reduce time for new deployments, rapidly adjust WAN traffic priorities - e.g. to enable the CEO's video live stream, diagnose root cause of issues and hold service providers to agreed SLAs.

It's about provisioning/deployment (reducing time to turning up new sites), speed for changing configuration (adapting to new applications or immediate needs, for instance CEO egocasts), diagnosis of root cause of issues, and keeping providers (MSPs, SaaS vendors) accountable to the SLAs to which they've committed.

To enable rapid customization of its SD-WAN solutions, CloudGenix offers its AppFabric DevOps Ecosystem. It provides open APIs, customized dash boards, software development kits, and open source code scripts. A number of CloudGenix partners and customers, including large retailers and financial services firms, are leveraging the AppFabric DevOps Ecosystem to automate branch deployments, improve visibility, and integrate with existing monitoring/management systems.

The Rise of Network Programmability

The emergence of digital transformation and the related increased use of cloud/SaaS resources continues to place stress on IT organizations. IT must increase the agility of its infrastructure to respond to constantly changing demands. The WAN is now central to an organization's ability to deliver a high quality user experience to its employees.

Automation and flexibility are critical for IT to be able to rapidly adapt its infrastructure to the changing needs of the organization. IT is increasingly adopting software DevOps principals to quickly deploy new applications. As the network becomes software-driven, the DevOps model can be leveraged to provide increased automation, agility and insight into applications performance.

Many networking suppliers now focus their efforts on a software developer ecosystem by providing open APIs and releasing open source code. This developer ecosystem is becoming critical to SD-WAN platforms – as SD-WAN increasingly becomes THE primary access (on ramp) for data center, cloud and SaaS applications. Network programmability enables a wide range of parties beyond customers, including independent software vendors, systems integrators, security partners and managed service providers to enhance or integrate directly with the network platform. It gives IT organizations the power to customize the SD-WAN system to their unique needs.

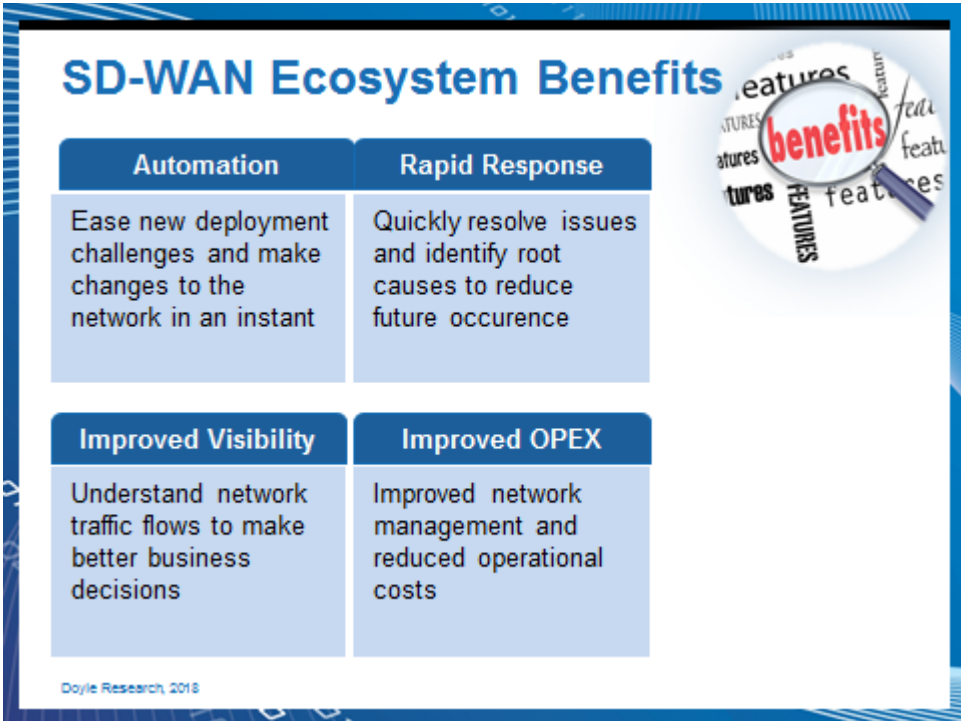
The Benefits of Programmable SD-WAN

In software (DevOps) environments, programmability provides improved automation and the ability to rapidly change or customize an application. In the context of SD-WAN, programmability also delivers the benefits of automation, insight and agility. The best way to highlight these benefits is by providing the specific examples, including management integration, customized dashboards, and new features. Third party providers, including ISVs, SIs and MSP, leverage SD-WAN open APIs to add innovative features, improve user experiences, and integrate tightly with their product sets. IT organizations need management integration and ability to rapidly diagnose and remediate any performance challenges. IT needs tools to understand traffic flows and help to plan for future requirements. Some examples of how SD-WAN platforms can be customized include:

- **Network Monitoring.** Integrated SD-WAN platforms with existing incumbent monitoring infrastructure.
- **Customize Dashboards.** Develop custom dashboards that consolidate configuration and monitoring data from multiple systems
- **Improve Access to Data.** Create query tools to access configuration, status, monitoring data, and alert information.

See Figure 1.

Figure 1



CloudGenix AppFabric DevOps Ecosystem

CloudGenix is a leading independent SD-WAN supplier based in San Jose, CA. Its AppFabric SD-WAN platform is widely deployed at global distributed organizations in many leading verticals, and approximately 10% of Fortune 100 branch offices use AppFabric as their primary WAN infrastructure.

The CloudGenix AppFabric DevOps Ecosystem provides an API-centric suite of components that allow DevOps to rapidly integrate SD-WAN into their existing applications. Built with open APIs, AppFabric can be fully programmed and have data extracted at each layer of the system. This allows DevOps to integrate AppFabric awareness into new and existing workflows, improve agility, reduce cost, and automate infrastructure management, monitoring, and operations. The products that form the portfolio include:

- AppFabric Controller API Platform—provides create, read, update, and delete API access to the entire AppFabric deployment, topology, policies, security, monitoring statistics, events, and alarms
- API Documentation—outlines the syntax and semantics of each of the APIs available, including sample requests, sample code in each language, request structure, and response structure
- Software Development Kits—libraries that can be easily integrated into your existing applications using package management systems already built into integrated development environments (IDEs)
- Open Source Code Samples—examples of how community members have integrated with CloudGenix SDKs and the API directly to streamline management and operations of their AppFabric deployment

See Figure 2.

Figure 2

AppFabric DevOps Ecosystem Components

AppFabric API Controller	API Documentation	Software Development Kits
Full RESTful APIs for create, read, update, delete for all aspects, elements, and data in AppFabric	Exhaustive documentation outlining the syntax and semantics of the API and its use	Libraries that can be easily integrated into your existing app using well-known package managers

CloudGenix Developer Ecosystem

CloudGenix has a robust partner ecosystem including ISVs, SIs, security partners and MSPs – including Adcom, Zscaler, Palo Alto Networks, Symantec, and Wipro. Many of these partners are leveraging the AppFabric DevOps Ecosystem to enhance integration with CloudGenix and to customize their offerings to customers. A couple notable examples are:

- A global MSP has coupled AppFabric SD-WAN with Internet and MPLS connectivity and built a custom network operations center and portal for customer access, giving real-time visibility into how their network and applications are performing, automating collection of relevant data, enabling customized reports, and streamlining the creation of customer trouble tickets.
- A leading ISV focused on digital infrastructure management has integrated with AppFabric to improve its ability to manage WAN devices at the branch. Via both the API and SNMP, it collects performance metrics, monitors link and site health status, and integrates this information in their dashboard, giving customers a top-down view of their infrastructure. This allows the company to diagnose, isolate, and address problems in real-time across the network for fast resolution.

CloudGenix Customer Use Cases

CloudGenix has a number of large customers currently leveraging AppFabric to automate branch network deployment, monitor link status and performance, and integrate SD-WAN data with their customized dashboards.

Some examples of customers that have integrated the CloudGenix AppFabric DevOps Ecosystem include:

- A national retailer with thousands of sites used AppFabric to automate deployment and provisioning of their SD-WAN network. It is able to rapidly deploy SD-WAN at their branch locations with automated ongoing monitoring and management. It is now able to centrally monitor credit card authorization times (a key customer satisfaction issue) and select service providers with the lowest latency while more quickly remediating network problems.
- A company that pioneered the Software as a Service category automated collection and notification when WAN alarms and alerts were generated, helping to categorize service problems, more quickly resolve high priority cases, and automate incident handling.
- A global retailer with hundreds of sites developed a bot for Slack, providing instant notification of alarms along with regularly-scheduled delivery of monitoring data, allowing administrators to issue Slack commands to enact network changes proactively and monitor traffic performance at the store level.

Conclusion and Recommendations for IT Leaders

An increasingly competitive environment is driving organizations to innovate their IT operations to improve product delivery and reduce costs. This digital transformation requires IT organizations to improve their ability to rapidly respond to changing business requirements and quickly deploy new systems. The rise of cloud and SaaS-based applications means that IT is now responsible for delivering non-stop, low latency WAN access for all employees regardless of location.

SD-WAN technologies have become increasingly popular to deliver high speed, cost effective access to public and private cloud applications. As SD-WAN becomes a critical component of the IT infrastructure, it must be integrated with existing management, automation, and operations systems. This provides IT the visibility to respond to changing demands and the ability to resolve performance challenges.

Software-based networking now provides the platform for 3rd party developers and IT organizations to customize the network. The ability to program the SD-WAN platform enables more complete integration with existing management systems. Its benefits include customized dashboards and ability to create query tools to access link status, performance data, and alerts.

CloudGenix has created a powerful platform to enable its partners and customers to easily customize its AppFabric SD-WAN platform. The AppFabric DevOps Ecosystem includes open APIs, documentation, SDKs and open source code examples. The AppFabric DevOps Ecosystem has enabled customers and partners to customize their SD-WAN platform, integrate with existing management systems and create custom dashboards.

Meet the Author

Lee Doyle is Principal Analyst at Doyle Research, providing client focused targeted analysis on the Evolution of Intelligent Networks. He has over 25 years' experience analyzing the IT, network, and telecom markets. Lee has written extensively on such topics as SDN, NFV, enterprise adoption of networking technologies, and IT-Telecom convergence. Before founding Doyle Research, Lee was Group VP for Network, Telecom, and Security research at IDC. Lee contributes to such industry periodicals as Network World and Tech Target. Lee holds a B.A. in Economics from Williams College.