

# LiveAction: The Visibility Assurance Solution for Cisco Intelligent WAN

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# LiveAction: The Visibility Assurance Solution for Cisco Intelligent WAN

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## Executive Summary

With its support of advanced Cisco technologies like Performance Routing and Application Visibility and Control, network performance management vendor LiveAction provides critical visibility and service assurance capabilities to Intelligent WAN (IWAN), Cisco's software-defined WAN (SD-WAN) solution. In general, SD-WAN solutions like IWAN introduce new and powerful technologies that help enterprises reduce costs and improve network performance and reliability. However, to fully take advantage of these technologies in IWAN, enterprises need a visibility and assurance platform that fully exposes IWAN's underlying technologies to the network management team. LiveAction provides that management and visibility layer. It empowers users to provision, monitor, and troubleshoot IWAN and adopt an application-centric, policy-based approach to wide-area networking.

## Introduction

New business and technology trends are changing the way enterprises think about wide-area networking. Until recently, the typical WAN relied upon expensive MPLS links for critical business applications. Internet traffic was backhauled through a data center or regional hub for security scrubbing. Now mobility and the cloud are requiring direct Internet access and budget constraints are prompting enterprises to look for cheaper alternatives to MPLS, such as broadband Internet and LTE.

With its ability to virtualize WAN connectivity and add policy-based controls, SD-WAN technology has emerged to address these requirements. However, SD-WAN presents some management and visibility issues. Enterprise Management Associates (EMA) research has found that only four in ten enterprises believe their existing network performance monitoring tools can fully support software-defined networking (SDN) technologies.<sup>1</sup> Furthermore, 47% of them worry about their ability to manage the frequent change that SDN introduces to a network and 42% have doubts about being able to do proper network capacity planning. Finally, 29% think they will lose visibility into their networks.

Cisco's SD-WAN solution, IWAN, addresses the infrastructure requirements of today's enterprises while Cisco solution partner LiveAction provides a visibility and management layer which empowers IT organizations to engineer and operationalize these new networks.

## Cisco IWAN and LiveAction: SD-WAN with Integrated Visibility and Management

Intelligent WAN (IWAN) is Cisco's answer to enterprises that are adapting their wide-area infrastructure to provide lower cost connectivity and network access to the cloud. Most enterprise network engineers will be familiar with the foundation of Cisco's SD-WAN architecture. Cisco has built IWAN on top of the Application Experience (AX) editions of its popular remote office Integrated Services Router (ISR) series and its head-end Aggregation Services Router (ASR) series. These AX routers represent the latest generation of Cisco's WAN infrastructure product line, which offers enterprises the advantage of deploying a new technology like SD-WAN on a proven, high-performance network hardware platform with advanced features. When it is combined with a Cisco Solution Partner like LiveAction to monitor and manage the network, an enterprise has the foundation of an end-to-end SD-WAN solution.

<sup>1</sup> ["Managing Networks in the Age of Cloud, SDN, and Big Data: Network Management Megatrends 2014,"](#) EMA research, April 2014.

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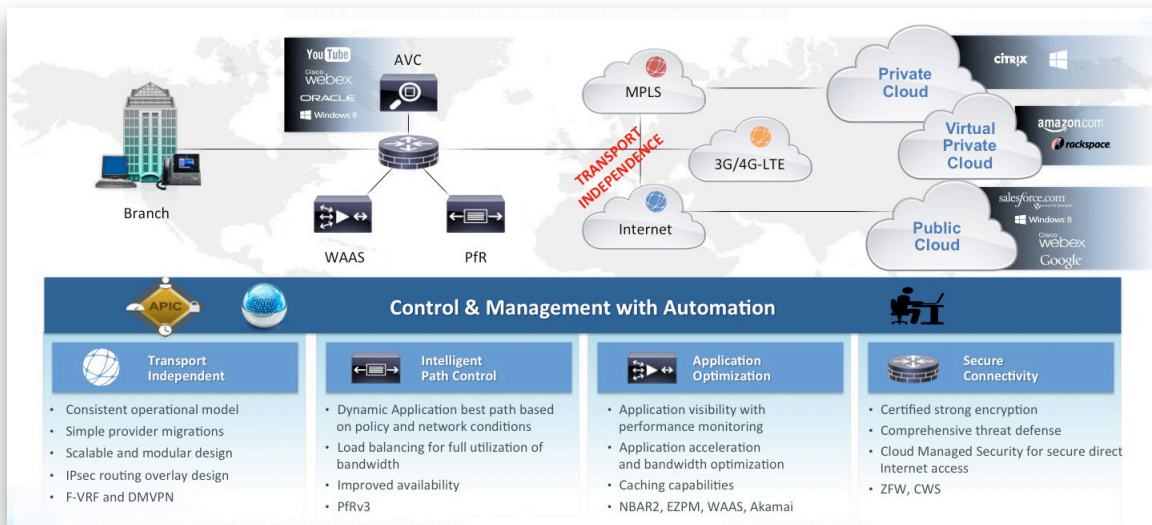


Figure 1. The Cisco IWAN Architecture (Source: Cisco Systems, © 2015, All Rights Reserved.)

Cisco IWAN offers four key advantages.

- **Transport Independence** – In response to the need to leverage lower-cost networks, IWAN offers WAN virtualization features that allow enterprises to use the circuit that best serves the needs of specific applications. With IWAN, enterprises can implement front-door virtual routing and forwarding (FVRF) with dynamic multipoint virtual private network (DMVPN)-based overlays across their all their WAN circuits, regardless of transport type. This abstracts away the physical transport and allows IWAN to execute policies for optimal performance and availability across MPLS, broadband Internet, LTE and any other network connections. With LiveAction, network managers can set policies that allow IWAN to route traffic over MPLS links, the Internet, or even LTE based on application policies and network conditions.
- **Intelligent Path Control** – IWAN’s intelligent path control technology enables these application policies. Enterprises can implement path selection based on packet loss, delay, jitter and user-defined policies. For instance, engineers can establish a best-effort class of traffic in LiveAction that is load-balanced across all available bandwidth, regardless of transport type. And high-priority traffic can be routed over MPLS, which grants it carrier-backed SLAs. In the event of a brownout on the MPLS link, IWAN’s Performance Routing version 3 (PfRv3) can shift this high-priority traffic to alternative transport, such as broadband. Advanced Quality of Service (QoS) can guarantee bandwidth for that high-priority traffic.
- **Application Optimization** – IWAN uses its HTTP visibility to differentiate and optimize application traffic. It integrates the Cisco technologies Network-Based Application Recognition version 2 (NBAR2) and Easy Performance Monitoring (EZPM) into Application Visibility and Control (AVC). AVC serves as both an in-network application monitoring tool and a mechanism for applying QoS policy. IWAN can identify application flows and optimize them. In the case of a video session that has migrated from MPLS to the Internet during a brownout, IWAN can identify that application and dedicate bandwidth on the broadband connection using QoS. IWAN combines AVC with Cisco’s Wide Area Application Services (WAAS) technology to provide additional optimizations, including reduction of redundant data, transport flow optimization, caching and compression.

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- **Secure Connectivity** – IWAN offers secure transport and threat defense technologies to address the need for direct Internet access from remote sites. With Cisco technologies like Adaptive Security Appliance software, IWAN provides integrated network address translation (NAT) gateways, zone-based policy firewalls (ZFW) and cloud web security connectors. LiveAction adds an end-to-end flow-based view of these security elements.

Cisco IWAN with LiveAction enables enterprises to realize significant cost savings by moving from premium WAN connections to less expensive transport without compromising performance, reliability, and security. IWAN enables multiple WAN scenarios, beginning with the traditional dual MPLS architecture, where each site on the WAN has two connections. In the past, one of those MPLS circuits was a backup connection that was rarely used. IWAN virtualizes that connectivity, load-balancing both MPLS circuits so that no bandwidth is wasted.

IWAN also enables a second WAN scenario, a hybrid network described earlier, wherein enterprises utilize one MPLS circuit and one Internet connection at each site. Again in this hybrid scenario, both the MPLS link and the Internet link are used as primary connectivity, with applications flows going over one or the other based on policies and network conditions. EMA research and interaction with enterprises indicate that many enterprises are moving toward this hybrid WAN approach.

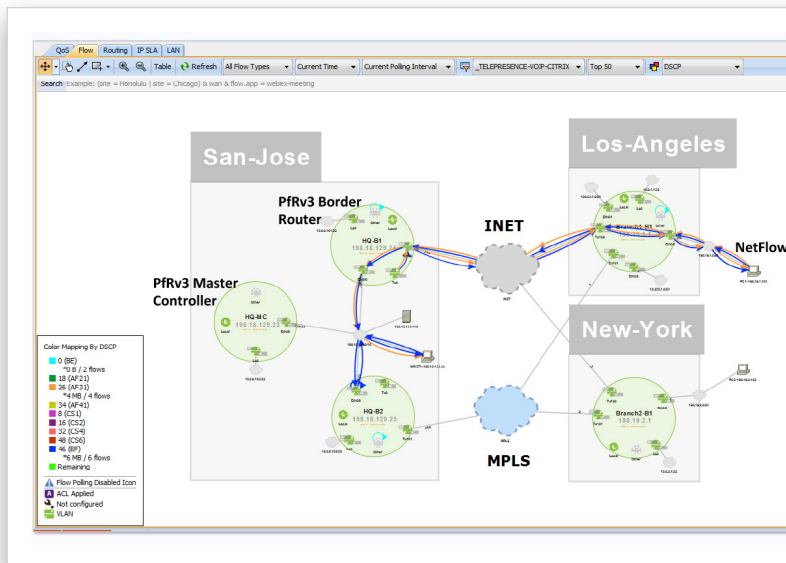
Some advanced users of IWAN may choose to opt for a third network scenario, dual Internet. In this case, the enterprise eliminates MPLS from remote sites and replaces it with multiple Internet connections. IWAN's WAN virtualization and traffic engineering capabilities ensure a degree of enterprise-class connectivity from this dual Internet architecture.

## *LiveAction as the Visibility and Assurance Layer of Cisco IWAN*

LiveAction is a Cisco solution partner and application-aware, network performance management vendor whose support of multiple advanced Cisco technologies enable it to address the visibility and management needs of Cisco IWAN infrastructure. By providing visibility into IWAN's underlying technologies and the benefits they deliver, LiveAction operationalizes IWAN and helps an enterprise measure and prove out its return on investment.

While Cisco IWAN's broad set of advanced technologies give enterprises a lot of options for deploying a high-performing, agile, and affordable SD-WAN, the provisioning, monitoring, and troubleshooting of these new technologies is not easy. IWAN offers no central controller and no comprehensive, native management and monitoring platform. Cisco will soon release APIC-Enterprise Module (APIC-EM), a network service orchestration product that will centralize the provisioning of IWAN; however, monitoring and reporting capabilities are still needed. APIC-EM will coexist with LiveAction's AA-NPM product. While APIC-EM will provide initial, day zero provisioning, LiveAction will continue to provide monitoring and visibility and network managers will often choose to troubleshoot from within the LiveAction interface rather than toggle to APIC-EM.

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## LiveAction Manages IWAN

- Visualize Pfrv3 intelligent path control
- Baseline network and application performance
- Visualize and mitigate application issues with QoS graphical control
- Easily define QoS policies so Pfrv3 can use them to load balance or protect application performance
- Monitor QoS performance
- Accelerate troubleshooting of network brownouts

Figure 2. Managing IWAN with LiveAction

LiveAction is able to provide IWAN provisioning, monitoring, and reporting capabilities by supporting the following core Cisco IWAN technologies: Flexible NetFlow, Network-Based Application Recognition (NBAR2), Medianet, Performance Routing Version 3 (Pfrv3), AVC, DMVPN, Advanced QoS, and High Speed Logging. LiveAction's support of these technologies allow it to manage the entire lifecycle of a Cisco IWAN network.

LiveAction's applicability to IWAN begins with the pre-deployment stage. A network manager can use LiveAction to collect reports on all the top talkers on the WAN, as well as identify unsanctioned applications and end users that he did not know existed on the network. LiveAction can establish network activity baselines with NetFlow to help assess network capacity and evaluate what IWAN-powered policies and configurations will deliver optimal application performance. LiveAction also offers a graphical IP SLA interface for capacity planning.

During the IWAN deployment phase, network managers can use the QoS provisioning features in LiveAction to accelerate the critical applications and enforce policies against unsanctioned applications. LiveAction has a graphical QoS editor for complex configuration and fast identification of misconfigurations. This editor also has built-in Cisco best practices to ensure ideal QoS settings. Network managers can deploy Pfrv3 and QoS to understand multi-homing of various sites and branches in the enterprise.

During the operational phase of IWAN management, LiveAction enables, among other things, bandwidth management. It can visualize Pfrv3 path changes and out-of-policy conditions that trigger these changes. A network manager can extract reports on all important business applications. For instance, LiveAction's support of Medianet, Advanced QoS, and NBAR2 make it easy for network managers to optimize voice and video communications. They can see which users are doing real-time communications and verify that they have the proper class of service for those communications applications.

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Network managers can also use LiveAction to assess the network performance that results from the improvements and adjustments made to IWAN. For instance, LiveAction offers application performance and troubleshooting tools with an end-to-end topology and network flow presentation using NetFlow and NBAR2 visualization. With NBAR2, users can see application-by-application performance metrics. These views are overlaid with graphical reporting on QoS, AVC, Medianet, Performance Routing, and IP SLA. This end-to-end visibility can also extend into the campus LAN and data center edge. Finally, LiveAction can also visualize Cisco Adaptive Security Appliance (ASA) Network Security Event Logging (NSEL) and ASR 1K High Speed Logging (HSL) events to provide some simple security analysis for IWAN.

## *Manage Cisco IWAN Through the LiveAction Interface*

LiveAction provides a graphical user interface (GUI) for IWAN visibility and management. Network managers can access a graphical presentation of all the master controller routers and border routers that comprise an IWAN infrastructure, with health and performance indicators for each router and the individual interfaces on them.

The LiveAction GUI also presents a visualization of application flows through DMVPN tunnels between border routers, with the ability to show the transport that each flow is using. For example, if there is a telepresence session failover from MPLS to an Internet link during a brownout via Cisco Performance Routing, the network manager will receive a visual representation of that change. Armed with this information, the network manager can alert his or her service provider to the network problem. Meanwhile, he can track the performance of that video session on the Internet link and understand how other application flows are impacted by the failover.

One need only right-click on anything in the LiveAction interface to pull up in-depth reports on issues, such as what caused the brownout, which service provider experienced the brownout, and what applications were affected on a network flow with poor connectivity. LiveAction also provides a graphical interface for easy definition of QoS policies so that Cisco PfR can use them to load balance flows or protect application performance during failover.

## **EMA Perspective**

In today's business environment, enterprises have are reevaluating WAN infrastructure. They want flexible and affordable networks that support direct Internet access to cloud services. With its ability to virtualize WAN connectivity and the addition of enterprise-class capabilities for broadband Internet, SD-WAN technology can support these new requirements. However, enterprises are uncertain about the ability of their current network management tools to support SDN.

Cisco's entry in the SD-WAN space, IWAN, offers enterprises an architecture that runs over its industry-leading WAN routers. IWAN uses a number of advanced Cisco technologies, and many enterprises will lack visibility into them with their existing network management toolset. LiveAction is a Cisco solution partner that supports the technologies that underpin the IWAN architecture and provides a critical visibility and management layer. With LiveAction, enterprises can plan, deploy, monitor, and troubleshoot an IWAN network. Network operations teams that are managing WAN should evaluate LiveAction to determine whether it meets their requirements.

## About LiveAction

LiveAction provides worldwide enterprises an IT visibility platform to achieve the best end-user experience possible. LiveAction is focused on providing customers innovative, easy-to-use visualizations, real-time big data analytics for decision-making, and deep integration with routers and switches to simplify network management tasks. LiveAction for Network Experience (LiveNX) and the recently introduced LiveAction for User Experience (LiveUX) accelerate performance and application troubleshooting across any cloud over any network, from the traditional network to the state-of-the-art software-defined network. Learn more at [www.liveaction.com](http://www.liveaction.com).

## About Enterprise Management Associates, Inc.

Founded in 1996, Enterprise Management Associates (EMA) is a leading industry analyst firm that provides deep insight across the full spectrum of IT and data management technologies. EMA analysts leverage a unique combination of practical experience, insight into industry best practices, and in-depth knowledge of current and planned vendor solutions to help EMA's clients achieve their goals. Learn more about EMA research, analysis, and consulting services for enterprise line of business users, IT professionals and IT vendors at [www.enterprisemanagement.com](http://www.enterprisemanagement.com) or [blogs.enterprisemanagement.com](http://blogs.enterprisemanagement.com). You can also follow EMA on [Twitter](#), [Facebook](#) or [LinkedIn](#).

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