Introduction

Business IT needs have evolved, and applications are core to any enterprise IT strategy. Today applications are highly virtualized, run on multiple hypervisors, and are more distributed than ever.

Identifying applications as a critical driver of business success, Cisco introduced Application Centric Infrastructure (ACI) as the industry’s most comprehensive SDN solution. Cisco ACI is designed to emphasize the application as the focal point of infrastructure, enabling an agile, open, and secure architecture, delivering application-based policy automation and management, for physical and virtual networks.

NetBrain Technologies with its powerful visualization and runbook automation technology provides a single pane of glass view of the network which integrates into existing operational workflows such as monitoring and troubleshooting.

Challenge

Transitioning to an “Application-Centric” context and operating a heterogeneous infrastructure with ACI fabric deployed in tandem with legacy networks is a major undertaking. Network administrators used to working with legacy networks find it challenging to transition to an “Application Centric” context and extract the full benefits of Cisco ACI. An effective management solution that enables this transition by aiding teams to understand the applications deployed on the fabric, monitor & troubleshoot associated issues, and validate rapid changes enabled by the ACI architecture will go a long way to address these challenges.
Solution

The NetBrain solution for Cisco ACI offers a simple approach, aiding enterprises to transition to an application-centric data center enabled by Cisco ACI. As a scalable and versatile automation platform, NetBrain integrates with Cisco ACI to provide deep visibility and automation for “Day 2” operational workflows such as monitoring, troubleshooting and visualization of the heterogeneous network. The integration also provides runbook automation, enabling teams to codify solutions to known problems and place these code routines in a monitor executable (Figure 1).

Figure 1. NetBrain for Cisco ACI: Mapping and automation for heterogeneous networks

How it works?

NetBrain utilizes ACI’s open REST API framework to collect network data and feeds into its modeling engine. The resulting data model is used to create network maps dynamically and serves as the foundation for automation and troubleshooting.

Key features

- **Deep Insights in a heterogeneous network**
  Using CLI for non-SDN network and REST APIs for Cisco ACI, the solution brings network constructs into NetBrain modelling engine thereby creating a “digital twin” of the entire enterprise network. This process reduces the entire network into a single searchable database organized and linked in the form of intuitive tree structures. The user not only can quickly filter and locate objects in the ACI fabric and the connected non-SDN network but also import relevant datasets from other management systems via RESTful API and visualize them in a single view to correlate data in a topological context.
• **End-to-end visibility for any application path**
  With NetBrain solution for Cisco ACI, users can trace end-to-end application path traversing across ACI fabric, legacy networks and external network devices obtaining hop-by-hop visibility in the process. Further using “Dynamic Maps” the solution can create Network and Application Centric views of the selected portion of the network enabling better understanding in both contexts. The solution provides powerful visualization to the application flow from both physical and logical perspective helping users to analyze and interpret forwarding decisions at layers 2, 3, 4 and further validate how policies are impacting the application flow.

• **Runbook automation to analyze any network data**
  With the solution, the user can create “Runbook” routines and use them to monitor and automatically execute actions for troubleshooting, security events, change validation and configurations errors within the ACI infrastructure.

**Benefits**

The NetBrain solution for Cisco ACI offers the following key benefits:

• **Improved visibility across heterogeneous infrastructures**
  - Centrally view the Cisco ACI network and its interconnections with the external network.
  - Trace any application path end-to-end, across both the ACI fabric as well as external network devices.
  - Seamlessly visualize physical and logical connections of the ACI network to obtain a clear understanding of different design layers in a highly virtualized environment.

Figure 2. End-to-End Application Flow, Across Legacy and ACI Devices

• **Real-time insights**
  - Superimpose different data sets in a single view to examine the ACI network from different perspectives (e.g., design, physical location, security policy, etc.).
  - Track rapid changes on the Cisco ACI fabric and make quick comparisons against historical data using the periodic benchmark function.
  - Import datasets from Cisco’s APIC controller along with other management systems to correlate and analyze in a visual context.
• Enhanced knowledge management and collaboration across IT teams
  - Team leaders can codify Cisco ACI design knowledge into executable procedures, which arm more junior members of the operational staff to work independently.
  - A visualization serves as a shared console for troubleshooting, where teams can save data and document their findings in network and application-centric contexts.

• Reduced resolution time
  - Automate troubleshooting for known problems using an executable runbook composed of executable and triggered troubleshooting code routines.
  - Automate intensive analysis of performance data—from both the APIC and external data systems—pinpointed to a targeted problem area in a complex data center network.
  - Trigger a “level-zero” troubleshooting diagnosis the moment an incident occurs by integrating the NetBrain Solution for Cisco ACI with a ticketing or monitoring solution.

About NetBrain
Founded in 2004, NetBrain is the market leader in network automation. Its technology platform provides end-to-end visibility across hybrid environments and automation for IT workflows. Today, more than 2,000 of the world’s largest enterprises and managed service providers use NetBrain to automate network documentation, accelerate troubleshooting, and strengthen network security—while integrating with a rich ecosystem of partners. NetBrain is headquartered in Burlington, Massachusetts, with offices in Sacramento, California; Munich, Germany; and Beijing, China. To learn more about NetBrain software, visit www.netbraintech.com.

About Cisco
Cisco designs and sells broad lines of products, provides services and delivers integrated solutions to develop and connect networks around the world. Over the last 30 years, we have been the world’s leader in connecting people, things, and technologies, changing the way the world works, lives, plays, and learns in an increasingly digital world. To learn more about Cisco Application Centric Infrastructure, visit www.cisco.com/go/aci.