NetBrain® for Cisco ACI

Mapping and Automation for Your Application Centric Infrastructure

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. These applications require rapid and continuous delivery, shifting the communication needs within the data center.

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 is an industry leader in network automation. Powered by dynamic mapping and runbook automation technology, NetBrain provides a single pane of glass view of the network which integrates into existing operational workflows such as monitoring, troubleshooting and security.

Challenge

Transitioning to an "Application-Centric" context and operating a heterogeneous infrastructure is a major undetaking. Without effective tooling support, teams lack the ability to understand the applications deployed on the fabric, monitor and troubleshoot associated issues, and validate rapid changes enabled by the ACI architecture. Enterprises are looking for management solutions which enable an effective transition.

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 network mapping and automation for "Day 2" operational workflows such as monitoring, troubleshooting, and security of the heterogeneous network. The integration also provides runbook automation, enabling teams to make Cisco ACI knowledge executable (*Figure 1*).

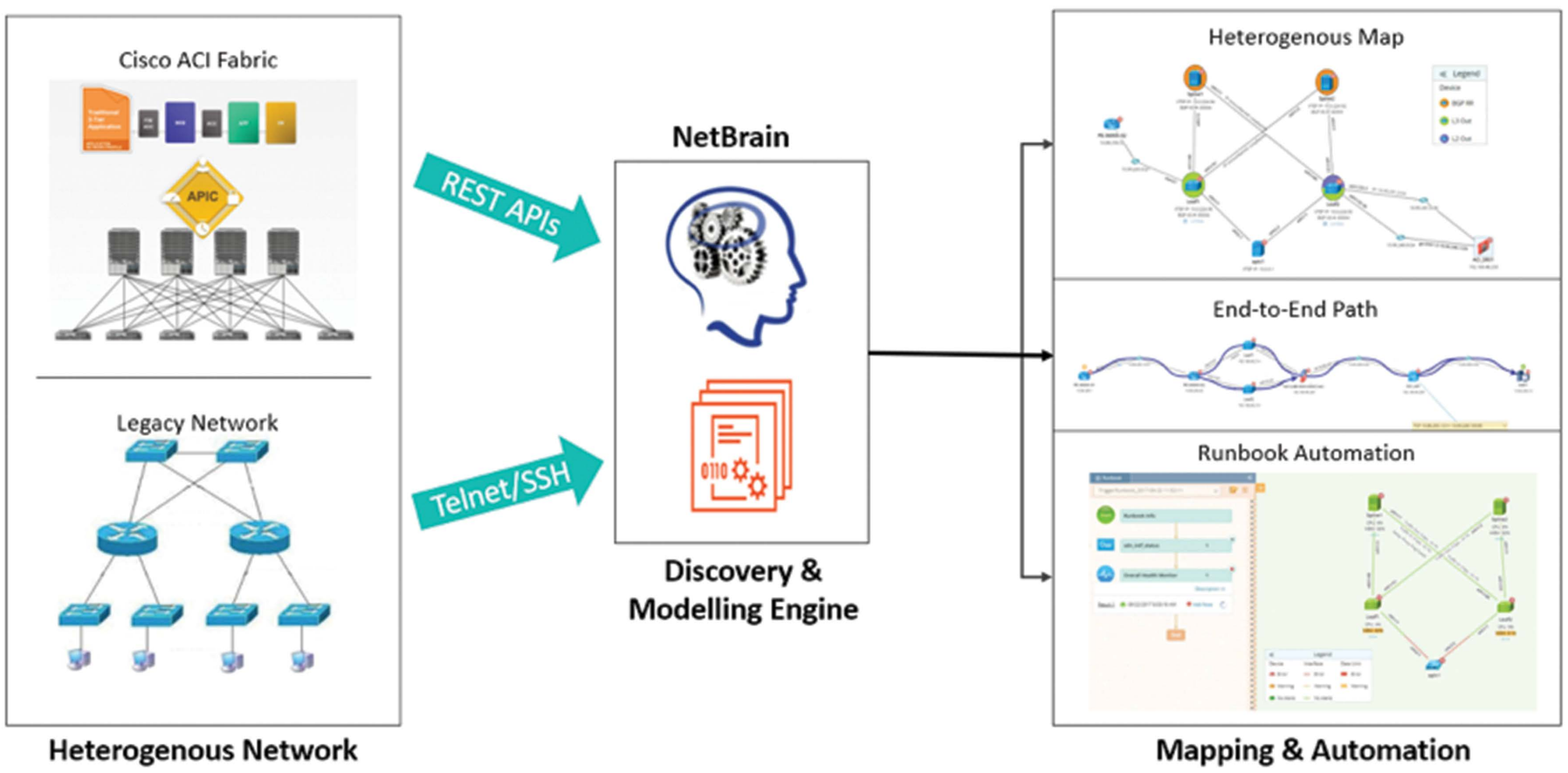

Figure 1. NetBrain for Cisco ACI: Mapping and Automation for Heterogenous Networks

The integration between NetBrain and Cisco ACI aims to equip Network Operations team with deeper visibility and workflow enhancement for operational tasks. NetBrain utilizes the ACI open REST API framework to collect network data which feeds into its deep discovery and modeling engine. The resulting data model is used to dynamically create network maps and serves as the foundation for automation and analytics.

Benefits of the NetBrain Solution for Cisco ACI

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

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

- **Real-time insights and analytics**
  - Superimpose different data sets on top of a map to examine the ACI network from different perspectives (e.g., design, physical location, security policy, etc.).
  - Track rapid changes on the 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 map-driven context.
- **Enhanced knowledge management and collaboration across IT teams**
  - Tribal leaders can codify ACI design knowledge into executable procedures which arm more junior members of the operational staff to work independently.
  - A map serves as a shared analytics console for troubleshooting, where teams can save data and document their findings in the context of the network and application-centric topologies.
- **Reduced resolution time**
  - Codify ACI troubleshooting best practices into Executable Runbooks which guide engineers through troubleshooting procedures.
  - Automate intensive analysis of performance data – from both the APIC controller and external data systems, pinpointed to a targeted problem area in a complex data center network.
  - Trigger a "Tier-0" troubleshooting diagnosis, the moment an incident occurs, by integrating the NetBrain and ACI solution with a ticketing or monitoring solution.

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

Features of the NetBrain Solution for Cisco ACI

- **Dynamic mapping of heterogeneous network**
  - NetBrain's discovery engine creates a "digital twin" of the heterogeneous infrastructure, leveraging CLI automation to discover the non-SDN infrastructure in concert with RESTful APIs to collect and analyze data from the Cisco APIC controller.
  - NetBrain reduces the entire network comprising of ACI and legacy network components into a single searchable database allowing you to query any data point and then map the relevant objects and their relationships.
  - Dynamic Maps provide a flexible representation of both Network Centric and Application Centric views to help you attain a better understanding of the network.
  - ACI objects are organized into intuitive tree structures. Quickly filter and locate any object to understand its place in the ACI fabric deployment
  - Import relevant datasets from APIC and other management systems via RESTful API and visualize them on a single map to correlate data in a topological context.
- **End-to-end visibility for any application path**
  - Discover and map end-to-end application path across ACI fabric, legacy networks and external network devices, and obtain hop-by-hop visibility.
  - Visualize the application flow from both a physical and logical perspective.
  - Automatically analyze and interpret forwarding decisions at layers 2, 3, and 4 to see how policies shape the traffic.
- **Runbook automation to analyze any network data**
  - Monitor and automatically execute actions for troubleshooting, security events or change validation within the ACI infrastructure.
  - Automate data collection and analysis across ACI and non-ACI devices to help validate network configuration and streamline network assessments.
  - Automatically trigger "Level-0" troubleshooting of application-centric issues, at the instant an event occurs.

About NetBrain Technologies

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 https://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.