The Policy Driven Data Center with ACI: Architecture, Concepts, and Methodology (Networking Technology)

By Lucien Avramov, Maurizio Portolani

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Use policies and Cisco® ACI to make data centers more flexible and configurable—and deliver far more business value
Using the policy driven data center approach, networking professionals can accelerate and simplify changes to the data center, construction of cloud infrastructure, and delivery of new applications. As you improve data center flexibility, agility, and portability, you can deliver far more business value, far more rapidly.

In this guide, Cisco data center experts Lucien Avramov and Maurizio Portolani show how to achieve all these benefits with Cisco Application Centric Infrastructure (ACI) and technologies such as python, REST, and OpenStack. The authors explain the advantages, architecture, theory, concepts, and methodology of the policy driven data center. Next, they demonstrate the use of python scripts and REST to automate network management and simplify customization in ACI environments.

Drawing on experience deploying ACI in enterprise data centers, the authors review design considerations and implementation methodologies. You will find design considerations for virtualized datacenters, high performance computing, ultra-low latency environments, and large-scale data centers. The authors walk through building multi-hypervisor and bare-metal infrastructures, demonstrate service integration, and introduce advanced telemetry capabilities for troubleshooting.

Leverage the architectural and management innovations built into Cisco® Application Centric Infrastructure (ACI)

- Understand the policy driven data center model
- Use policies to meet the network performance and design requirements of modern data center and cloud environments

- Quickly map hardware and software capabilities to application deployments using graphical tools—or programmatically, via the Cisco APIC API
- Increase application velocity: reduce the time needed to move applications into production
- Define workload connectivity instead of (or along with) subnets, VLAN stitching, and ACLs
- Use Python scripts and REST to automate policy changes, parsing, customization, and self-service
- Design policy-driven data centers that support hypervisors
- Integrate OpenStack via the Cisco ACI APIC OpenStack driver architecture
- Master all facets of building and operating multipurpose cloud architectures with ACI
- Configure ACI fabric topology as an infrastructure or tenant administrator
- Insert Layer 4–Layer 7 functions using service graphs
- Leverage centralized telemetry to optimize performance; find and resolve problems
- Understand and familiarize yourself with the paradigms of programmable policy driven networks

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Editorial Review

About the Author

Lucien Avramov , CCIE 19945, is a Senior Technical Marketing Engineer at Cisco. Lucien specializes in the Nexus data center portfolio and the ACI. Lucien designs datacenter networks worldwide and has a wide experience in switch architectures, QoS, ultra-low latency networks, high-performance computing designs, and OpenStack. Lucien is a distinguished Cisco Live speaker and former TAC technical leader, he has several industry certifications, authors RFCs at IETF, and owns an active patent. Lucien holds a master's degree in Computer Science and a bachelor's degree in General Engineering from Ecole des Mines d'Ales, France. In his spare time, Lucien can be found hiking, biking, running marathons around the world, and on Twitter: @flying91.

Maurizio Portolani , Distinguished Technical Marketing Engineer at Cisco Systems, focuses on the design of data center networks. He coauthored *Data Center Fundamentals* for Cisco Press, and holds several patents on current data center technologies. He attended the Politecnico of Torino ("Laurea in Ingegneria") and Ecole Centrale Paris ("Diplôme d'Ingénieur") where he majored in Electronics.

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