

ACI Field Engineer Implementation (ACI-FEI)

Course Summary

Description

This four-day ILT course is designed to take Field Engineers and System Architects with no ACI experience and prepare them to design and build an ACI fabric. Students will learn what they need to know to take Cisco switches from the loading dock and build an operational, functioning ACI fabric that includes servers, virtual machines, external networks and service devices.

Specific topics addressed in this course are ACI configuration and basic operations, including rack-and-stack initial installation, application profile configuration, ACI under-the-hood, VMware hypervisor integration, external connectivity, layer 4-7 service device integration, operations and troubleshooting. There are detailed labs for each step of the course.

The curriculum is delivered as Just-In-Time learning, designed to provide Engineers just what they need to know, just when they need to know it. Students are not given training that they are not able to apply immediately. With this production-focused training, the student will be ready for the technical requirements of today. With the included library of curated references, the student is also poised to meet the requirements of the future.

The course provides insight from subject matter experts and over 100 production installations. These subject matter experts have insight because they've been in the students' shoes.

Objectives

During this course, students will:

- Understand ACI architecture and concepts needed to get an ACI fabric into production
- Describe the hardware that makes up ACI
- Install and bring up an ACI Fabric
- Configure foundational Access Policies
- Configure Application Profiles
- Describe ACI fabric operations
- Integrate VMware and other hypervisors with ACI
- Configure Layer 2 and 3 outside connectivity to the ACI Fabric
- Integrate Layer 4-7 service devices with ACI
- Provide fundamental Day 2 fabric support
- Quickly find information on more advanced or detailed ACI features
- Formulate any next steps in their ACI training needs to support their company's business goals

Topics

- ACI Overview
- ACI Fabric Switches
- APIC Overview
- Initial Fabric Configuration
- ACI Connectivity Policies
- Application Modeling and Deployment
- Fabric Operation and Forwarding
- Hypervisor Integration
- Connecting to Existing L2 Infrastructure
- Connecting to Existing L3 Infrastructure
- Integrating L4-7 Services with ACI
- Operating ACI
- Troubleshooting ACI
- ACI Integration with Existing DC Networks

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Course Summary (cont)

Audience

This course is for Engineers and Solution Architects who need to quickly learn how to design and implement more complex ACI fabrics. This can be customer engineers who support a production fabric with multiple hypervisor vendors, Partner engineers who need to design and build a customer fabric with firewalls and load balancers, or any engineer who needs comprehensive, hands-on, production-focused ACI training.

Prerequisites

Before taking this course, students should have the following knowledge:

- Cisco Nexus and Data Center Layer 2/3 Concepts
- Basic Cisco UCS B Series Networking
- Basic VMware administration and networking
- Firewall and Load Balancer Principles
- Basic Management and Security Protocols
- Basic Linux System administration.

Duration

Four days

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Course Outline

- I. *ACI Overview*
 - A. SDN/Overlay Networking Primer
 - B. Cisco ACI Overview and Terminology
 - C. Logical Model Overview
 - D. Concrete Model Overview
- II. *ACI Fabric Switches*
 - A. Nexus 9000 Overview
 - B. Nexus 9000 Models
 - C. Hardware Installation
- III. *APIC Overview*
 - A. APIC Introduction
 - B. APIC Overview
 - C. APIC Installation
 - D. APIC GUI
 - E. Lab: ACI Fabric Discovery
- IV. *Initial Fabric Configuration*
 - A. ACI Initial Configuration Overview
 - B. OOB Configuration
 - C. Network Time Protocol
 - D. Access Policies
 - E. External-facing Interface Configuration
 - F. ACI Pools
 - G. ACI Domains
 - H. Attachable Access Entity Profile (AAEP)
 - I. VPC Configuration in ACI Fabric
 - J. Simplified Interface & Policy Configuration
 - K. Troubleshooting Access Policy
 - L. Lab: Fabric Policy Configuration
 - M. Lab: Configuring ACI Policies and Pools
- V. *ACI Connectivity Policies*
 - A. ACI Logical Model
 - B. Tenant
 - C. VRF
 - D. Bridge Domain
 - E. Subnet
 - F. End Points Groups (EPG)
 - G. Microsegmentation
 - H. Application Profiles (AP) and Contracts
 - I. ACI Quality of Service
- J. Lab: Configuring ACI Forwarding Constructs
- VI. *Application Modeling and Deployment*
 - A. Designing an AP
 - B. Lab: AP
 - C. RESTful API Review
 - D. Lab: Using Postman
 - E. Learning Network Programmability
 - F. ACI Toolkit
 - G. Lab: Configuring Application Profiles via GUI
 - H. Lab: Configuring Application Profiles via Python/Postman
- VII. *Fabric Operation and Forwarding*
 - A. Virtual Extensible LAN (VXLAN) Basics
 - B. ACI Fabric Fundamentals
 - C. Fabric Forwarding
 - D. Endpoint Learning & Lookup
 - E. Fabric Innovations
- VIII. *Hypervisor Integration*
 - A. Virtualization Primer
 - B. ACI Hypervisor Integration Overview
 - C. ACI Hypervisor Integration with VMware
 - a. Integration with VMware VDS
 - b. ACI VMware Configuration
 - D. ACI Integration with Microsoft
 - E. ACI Integration with OpenStack
 - F. OpFlex
 - G. Application Virtual Switch
 - H. Design Considerations
 - I. Virtualization Integration Summary
 - J. Lab: Configuring VMM Integration with VMware DVS
- IX. *Connecting to Existing L2 Infrastructure*
 - A. L2 Extension Overview
 - B. Option A: Extend EPG
 - C. Option B: Extend BD
 - D. Design Considerations
 - E. Lab: Configuring External Layer 2 Connection

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Course Outline (cont)

- X. *Connecting to Existing L3 Infrastructure*
 - A. L3 Integration Overview
 - B. L3 Integration & Configuration
 - C. Shared L3Out
 - D. Multi-Site ACI
 - E. Lab: Configuring External Layer 3 Connection

- XI. *Integrating L4-7 Services with ACI*
 - A. Service Graphs
 - B. Device Packages
 - C. Service Insertion Overview
 - D. L4-7 Services Configuration
 - E. Unmanaged Mode
 - F. Network Services Placement
 - G. Lab: Configuring Layer 4-7 Services

- XII. *Operating ACI*
 - A. APIC Management Access
 - B. Naming Conventions
 - C. Operations Tools
 - D. Firmware Upgrades
 - E. Backing Up
 - F. Lab: Configuration Export

- XIII. *Troubleshooting ACI*
 - A. APIC Troubleshooting
 - B. APIC Troubleshooting Tools
 - C. Visore – The APIC Object Store Browser
 - D. Troubleshooting via the CLI
 - E. Removing Unwanted `_ui_` Objects
 - F. Fabric Recovery
 - G. ACI Backup
 - H. Lab: Troubleshooting

- XIV. *ACI Integration with Existing DC Networks*
 - A. DC Architecture Review
 - B. ACI Insertion Options
 - C. ACI Services Block Strategy