Anypoint Platform Architecture: Application Networks

Summary

An application network connects applications, data, and devices within an enterprise and to external ecosystems using APIs. This instructor-led course teaches experienced enterprise and solution architects how to direct the emergence of an effective application network out of individual integration solutions following API-led connectivity across an organization. It is case-study driven, with the solution architecture and effect on the organization's enterprise architecture for two strategic change initiatives being documented as the course progresses.

This course includes a voucher to take the *MuleSoft Certified Platform Architect – Level 1* exam.

Note: This course is for both Mule 3 and Mule 4.

Note: You can take the two architecture courses in either order, but the suggested order is to take this course first followed by the Anypoint Platform Architecture: Solution Design course.

Duration

3 days in-person or online

Objectives

At the end of this course, students should be able to:

- Conceptualize integration capability delivery holistically according to Outcome-Based Delivery (OBD).
- Advise on the establishment and operation of a Center for Enablement (C4E).
- Select Anypoint Platform deployment options.
- Break down functional requirements into business-aligned, versioned APIs with effective granularity and API data model.
- Direct creation and publication of API-related assets using RAML and Anypoint Platform components.
- Architect for non-functional requirements on the level of API invocations and API implementations using components of Anypoint Platform.
- Architect for specific requirements by augmenting API-led connectivity with Event-Driven Architecture.
- Advise on effective use of the automation capabilities of Anypoint Platform for DevOps, CI/CD, and testing.

Audience

Senior solution and enterprise architects who have experience with common integration approaches (like SOA) and integration technologies/platforms and have basic knowledge and experience with the components of Anypoint Platform

Prerequisites

A basic knowledge and experience with the components of Anypoint Platform from one of the following:

- Completion of the instructor-led *Getting Started with Anypoint Platform* course or the self-study *MuleSoft.U Getting Started with Anypoint Platform* course
- Completion of the instructor-led *Anypoint Platform Development: Fundamentals* course or the self-study *MuleSoft.U Development Fundamentals* course
- Equivalent knowledge and experience with the components of Anypoint Platform to the extent covered in the *Getting Started with Anypoint Platform* course

Prior architecture knowledge and experience including:

- A clear understanding of the concepts and steps involved in developing software for the JVM (usually from experience developing in some JVM-based programming language)
- Recent experience as an architect for a cloud platform software development initiative using any technology stack
- A full understanding of the fundamental ingredients of enterprise integration including interface definitions and contracts; data encoding using XML or JSON; REST APIs or SOAP web services; SQL or NoSQL database access; message-passing using JMS, AMQP or similar; network protocols like TCP/IP, HTTP and HTTPS; single-resource transactions
- Familiarity with the purpose of common components of enterprise and cloud technology architectures including identity providers, load-balancers, and name servers
- Familiarity with basic security concepts including certificates and encryption at rest and in transit

Setup requirements

None

Outline

Module 1: Introducing the Course

- Define Outcome-Based Delivery (OBD)
- Describe how this course is aligned to parts of OBD
- Use essential course terminology correctly
- Recognize the ArchiMate 3 notation subset used in this course

Module 2: Introducing MuleSoft, the Application Network Vision, and Anypoint Platform

- Articulate MuleSoft's mission
- Explain MuleSoft's proposal for closing the increasing IT delivery gap
- Describe the capabilities and high-level components of Anypoint Platform

Module 3: Establishing Organizational and Platform Foundations

- Advise on establishing a C4E and identify KPIs to measure its success
- Choose between options for hosting Anypoint Platform and provisioning Mule runtimes
- Describe the set-up of organizational structure on Anypoint Platform
- Compare and contrast Identity Management and Client Management on Anypoint Platform

Module 4: Identifying, Reusing, and Publishing APIs

- Map planned strategic initiatives to products and projects
- Identify APIs needed to implement these products
- Assign each API to one of the three tiers of API-led connectivity
- Reason in detail about composition and collaboration of APIs
- Reuse APIs wherever possible
- Publish APIs and related assets for reuse

Module 5: Enforcing NFRs on the Level of API Invocations Using Anypoint API Manager

- Describe how Anypoint API Manager controls API invocations
- Use API policies to enforce non-functional constraints on API invocations
- Choose between enforcement of API policies in an API implementation and an API proxy
- Register an API client for access to an API version
- Describe when and how to pass client ID/secret to an API
- Establish guidelines for API policies suitable for System APIs, Process APIs, and Experience APIs

Module 6: Designing Effective APIs

- Appreciate the importance of contract-first API design and RAML fragments
- Opt for semantic API versioning and where to expose what elements of an API's version
- Choose between Enterprise Data Model and Bounded Context Data Models
- Consciously design System APIs to abstract from backend systems
- Apply HTTP-based asynchronous execution of API invocations and caching to meet NFRs
- Identify idempotent HTTP methods and HTTP-native support for optimistic concurrency

Module 7: Architecting and Deploying Effective API Implementations

- Describe auto-discovery of API implementations implemented as Mule applications
- Appreciate how Anypoint Connectors serve System APIs
- Describe CloudHub's features and technology architecture
- Apply strategies that help API clients guard against failures in API invocations
- Describe the role of CQRS and the separation of commands and queries in API-led connectivity
- Explain the role of Event Sourcing

Module 8: Augmenting API-Led Connectivity with Elements from Event-Driven Architecture

- Selectively choose elements of Event-Driven Architecture in addition to API-led connectivity
- Make effective use of events and message destinations
- Impose event exchange patterns in accordance with API-led connectivity
- Describe Anypoint MQ and its features
- Apply Event-Driven Architecture with Anypoint MQ to address specific NFRs

Module 9: Transitioning into Production

- Locate API-related activities on a development lifecycle
- Interpret DevOps using Anypoint Platform tools and features
- Design automated tests from the viewpoint of API-led connectivity and the application network
- Identify the factors involved in scaling API performance
- Use deprecation and deletion of API versions in Anypoint Platform
- Identify single points of failure

Module 10: Monitoring and Analyzing the Behavior of the Application Network

- Describe the origins of data used in monitoring, analysis, and alerting on Anypoint Platform
- Describe the metrics collected by Anypoint Platform on the level of API invocations
- Describe the grouping of API metrics available in Anypoint Analytics
- Make use of options for performing API analytics within and outside of Anypoint Platform
- Define alerts for key metrics of API invocations for all tiers of API-led connectivity
- Use metrics and alerts for API implementations to augment those for API invocations
- Recognize operations teams as an important stakeholder in API-related assets and organize documentation accordingly