# Anypoint Platform Development: Fundamentals

## Summary

This instructor-led course is for developers and architects who want to get hands-on experience using Anypoint Platform to build APIs and integrations. In the first part, students use Anypoint Platform to take an API through its complete lifecycle: design, build, deploy, manage, and govern. In the second larger part, students focus on using Mule and Anypoint Studio to build applications for use as API implementations and/or integrations. It includes a voucher code to take the *MuleSoft Certified Developer – Integration and API Associate* exam.

## Duration

4 days in-person or 5 days online

## Objectives

- Use Anypoint Platform to take an API through its complete lifecycle: design, build, deploy, manage, and govern
- Use Anypoint Studio to build and debug integrations and API implementations
- Connect to databases, files, web services, SaaS applications, JMS queues, and more
- Transform data using DataWeave, the powerful transformation language
- Add application logic and handle errors
- Structure applications to facilitate development and deployment

## Prerequisites

- Experience with Java (preferred) or another object-oriented language
- A basic understanding of data formats such as XML, CSV, and JSON
- A basic understanding of typical integration technologies such as HTTP, JMS, JDBC, REST, and SOAP

*Note: Although students with .NET and other non-Java OOP backgrounds can be successful using MuleSoft technologies, some Java is necessary to leverage all the capabilities of MuleSoft products. See here for Java training resources: https://training.mulesoft.com/javatraining.*

## Outline

## PART 1: API-Led Connectivity with Anypoint Platform

### Module 1: Introducing API-Led Connectivity

- Identify the problems faced by IT today
- Describe what API-led connectivity is and its benefits
- Explain what web services and APIs are
- Explore API directories and portals
- Make calls to secure and unsecured APIs
- Introduce API-led connectivity with Anypoint Platform
- Explore Anypoint Platform

### Module 2: Designing APIs

- Define an API with RAML, the Restful API Modeling Language
- Mock an API to test its design before it is built
- Create a portal for developers to learn how to use an API
- Make an API discoverable by adding it to the private Exchange

### Module 3: Building APIs

- Introduce Mule applications, flows, messages, and message processors
- Use Anypoint Studio to create a flow graphically
- Build, run, and test a Mule application
- Use a connector to connect to a database
- Use the graphical DataWeave editor to transform data
- Create a RESTful interface for an application from a RAML file
- Connect an API interface to the implementation

### Module 4: Deploying and Managing APIs

- Describe the options for deploying Mule applications
- Use properties in Mule applications so they can be easily moved between environments
- Deploy a Mule application to the cloud
- Create and deploy a proxy for an API in the cloud
- Restrict access to an API proxy

## PART 2: Building Applications with Anypoint Studio

### Module 5: Accessing and Modifying Mule Messages

- Log message data
- Debug Mule applications
- Read and write message properties
- Write expressions with Mule Expression Language (MEL)
- Create variables

### Module 6: Structuring Mule Applications

- Create and reference flows and subflows
- Pass messages between flows using the Java Virtual Machine (VM) transport
- Investigate variable persistence through subflows and flows and across transport barriers
- Encapsulate global elements in separate configuration files
- Explore the files and folder structure of a Mule project

### Module 7: Consuming Web Services

- Consume RESTful web services with and without parameters
- Consume RESTful web services that have RAML definitions
- Consume SOAP web services
- Use DataWeave to pass parameters to SOAP web services

### Module 8: Handling Errors

- Describe the different types of exception strategies
- Handle messaging exceptions in flows
- Create and use global exception handlers
- Specify a global default exception strategy

### Module 9: Controlling Message Flow

- Route messages based on conditions
- Multicast messages
- Filter messages
- Validate messages

**Module 10: Writing DataWeave Transformations**

- Write DataWeave expressions for basic XML, JSON, and Java transformations
- Store DataWeave transformations in external files
- Write DataWeave transformations for complex data structures with repeated elements
- Coerce and format strings, numbers, and dates
- Use DataWeave operators
- Define and use custom data types
- Call MEL functions and Mule flows from DataWeave transformations

**Module 11: Connecting to Additional Resources**

- Connect to SaaS applications
- Connect to files
- Poll resources
- Connect to JMS queues
- Discover and install connectors not bundled with Anypoint Studio

**Module 12: Processing Records**

- Use the For Each scope to process items in a collection individually
- Use the batch job element (EE) to process individual records
- Trigger a batch job using a poll
- Use a batch job to synchronize data from a legacy database to a SaaS application

## Setup requirements

- A computer with at least 4GB available RAM, 2GHz CPU, and 4GB available storage
- Internet access to ports 80, 3306, and 61616 (with > 5Mbps download and > 2Mbps upload)
- JDK 1.8
  http://www.oracle.com/technetwork/java/javase/downloads/index.html
- Anypoint Studio with embedded Mule 3.8 runtime
  https://www.mulesoft.com/lp/dl/studio
- An Anypoint Platform account
  http://anypoint.mulesoft.com
- A Salesforce Developer account (NOT a standard account) and API Access token
  https://developer.salesforce.com/en/signup
- Postman REST client app (or some other REST API client)
  https://www.getpostman.com

A detailed setup document can be downloaded from here:
https://training.mulesoft.com/static/public_downloadables/setup/APDevFundamentals3.8_setup.pdf