

Anypoint Platform Architecture: Solution Design

Summary

This instructor-led course teaches experienced solution and technical architects or lead/senior developers to design enterprise integration solutions for the Mule runtime. It builds on prior experience developing and deploying Mule applications and focuses on providing the knowledge to make architecture and design decisions about solutions instead of on implementation details. This is not a development course; students will not be using Anypoint Studio or writing any code.

This course includes a voucher to take the *MuleSoft Certified Architect – Solution Design Specialist* 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 the Anypoint Platform Architecture: Application Networks course first followed by this course.

Duration

4 days in-person or 5 days online

Objectives

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

- Select the best architectural style for a specific integration scenario.
- Architect performant, scalable, reliable, and secure integration applications for the Mule runtime.
- Architect for both on-premises and cloud deployments of the Mule runtime.
- Design effective integration interfaces using RESTful APIs.
- Document integration solution architectures.
- Specify guidelines for automated unit and integration tests.

Audience

Solution and technical architects or lead/senior developers that are focused on designing enterprise integration solutions and have prior experience developing and deploying non-trivial Mule applications

Prerequisites

Experience developing and deploying Mule applications as demonstrated by one of the following:

- Passing of the *MCD - Integration and API Associate (Mule 3)* exam
- Completion of the instructor-led *Anypoint Platform Development: Fundamentals* or the self-study *MuleSoft.U Development Fundamentals* and ideally the *Anypoint Platform Development: Advanced*
- Passing of the *MCD - Integration Professional (Mule 3)* exam

Other development and architecture knowledge and experience including:

- Proficiency in any JVM-based programming language with ability to read procedural, object-oriented, and (ideally) functional code
- Familiarity with threads, thread pools, locks, server/client sockets, JDBC data sources, and connection pools on the JVM
- Proficiency with current software development tools like Git/GitHub, Maven, Jenkins, or similar
- Experience as an architect or lead/senior developer on at least one integration project 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 basic security concepts including certificates and encryption at rest and in transit

Setup requirements

- A computer
- Unrestricted internet access
- A drawing/diagramming tool like one of the following:
 - draw.io : <https://www.draw.io>
 - Lucidchart: <https://www.lucidchart.com>
 - Visio: <http://products.office.com/visio>
 - OmniGraffle: <http://www.omnigroup.com/omnigraffle>
- A tool for defining APIs like one of the following:
 - API designer in Anypoint Platform: <https://anypoint.mulesoft.com>
 - Anypoint Platform requires a minimum screen resolution of 1024x768 and the latest version of Firefox or Chrome or Internet Explorer 10 or newer.
 - API Workbench: <https://apiworkbench.com>

Outline

PART 1: Architectural Styles and Patterns

Module 1: Introducing MuleSoft's Application Network Vision

- Recognize today's challenges for enterprise integration
- Articulate MuleSoft's architectural approaches
- Describe the case study used in the course

Module 2: Reviewing Architectural Styles and Patterns

- Define important course terminology
- Describe SOA, its principles and evolution
- Describe ESBs and their evolution
- Describe microservice architectures
- Recognize different types of design patterns
- Describe patterns important for enterprise integration

PART 2: Integration Application Design

Module 3: Designing RESTful APIs

- Create high-level API designs following REST principles
- Categorize APIs following the API-led connectivity approach
- Avoid common pitfalls in RESTful API design
- Describe how the components of Anypoint Platform support the API lifecycle

Module 4: Planning Integration Solutions

- Describe the difficulties in documenting software architectures
- List the main architectural viewpoints and their elements
- Describe the goals of planning for demand and capacity
- Describe the fundamental approaches to high availability in Anypoint Platform
- Describe the CloudHub technology architecture

PART 3: Implementation Patterns

Module 5: Designing Mule Applications

- Describe the Mule runtime technology architecture
- List the main components of Mule applications
- Choose between processing strategies available to Mule applications
- Describe factors in designing a new Mule application
- Select an approach to modularizing Mule applications
- Sketch a DevOps and CI/CD approach for Mule applications

Module 6: Achieving High Availability and Reliability

- Define reliability
- Describe factors influencing reliable integration solutions
- Describe high availability features in CloudHub
- Describe high availability features in Mule runtime clusters
- Select appropriate transaction management in Mule applications
- Choose between persistency approaches in Mule runtimes
- Apply the reliability patterns in Mule applications

Module 7: Optimizing Performance

- Choose between batch and real-time processing in Mule applications
- Describe options for handling large numbers and sizes of messages
- Design and tune Mule applications for performance, throughput and low latency

Module 8: Considering Security

- Recognize security requirements
- Describe approaches to identity management and authentication
- Describe elements of message integrity and confidentiality
- List API security principles
- Describe the security features in Anypoint Platform
- Describe the purpose feature of CloudHub VPCs
- Choose between available SSL modes
- List aspects of a hardened Mule runtime