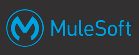
Anypoint Platform Architecture: Integration Solutions

Introductions



- Name
- Company & role
- Experience with integration architecture
- Experience with Anypoint Platform and MuleSoft products
- What do you plan on architecting on Anypoint Platform?
- What do you want to get out of class?

Course logistics

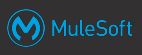
- Time
  - Class is for 5 days, typically from **9 to 5**
  - 1 hour lunch/mid-class break, typically from **12 to 1**
  - **Break(s)** each morning and afternoon
  - Other breaks as desired - just ask!
- We know you have two jobs to do this week!
  - If you have scheduled meetings, please let me know
    - We can try to schedule breaks around them

Introducing the course

There are two architecture courses and certifications

- Anypoint Platform Architecture: **Integration Solutions** and MuleSoft **Certified Integration Architect** - Level 1
  - Drive and be responsible for an organization's Anypoint Platform implementation and the technical quality, governance (ensuring compliance), and operationalization of the integration solutions
  - Work with technical and non-technical stakeholders to translate functional and non-functional requirements into integration interfaces and implementations
- Anypoint Platform Architecture: **Application Networks** and MuleSoft **Certified Platform Architect** - Level 1
  - Define and be responsible for an organization's Anypoint Platform strategy
  - Direct the emergence of an effective application network out of individual integration solutions following API-led connectivity across an organization

The overall course goal



- Within the context of a particular use case, be able to
  - **Understand** and **model** features, options, and tradeoffs to
  - **Select** and document **meaningful** and **useful** design specifications to
  - **Balance**
    - Various project **requirements**
    - Sometimes **conflicting goals** of various technical stakeholders
    - **Other limitations and tradeoffs**

Target audiences for the courses

- **Anypoint Platform Architecture: Integration Solutions**
  - **Solution and technical architects or lead/senior developers**
    - With experience developing and deploying non-trivial Mule applications
    - Focused on designing enterprise integration solutions
    - Experienced in common integration approaches (like SOA) and integration technologies/platforms
- **Anypoint Platform Architecture: Application Networks**
  - **Senior solution and enterprise architects**
    - With basic knowledge and experience with the components of Anypoint Platform
    - Experienced in common integration approaches (like SOA) and integration technologies/platforms

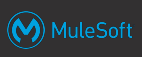
Course prerequisites and training pathways

- Experience developing and deploying Mule applications as demonstrated by one of the following
  - Passing the *MuleSoft Certified Developer - Level 1 (Mule 4)* exam
  - Completion of *Anypoint Platform Development: Fundamentals (Mule 4)*
  - Completion of M*uleSoft.U Development Fundamentals (Mule 4)*
- It is also helpful to have completed one or more of the following courses
  - *Anypoint Platform Architecture: Application Networks*
  - *Anypoint Platform Operations: CloudHub*
  - *Anypoint Platform Operations: Customer-Hosted Runtimes*

Prerequisites: Development and architecture knowledge and experience

- 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

Prerequisites: Integration architecture experience



- 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

At the end of this course, you should be able to

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- Successfully carry out the various **job tasks** required of an integration solution architect to
  - Design integration solutions
  - Operationalize integration solutions
    - Deployment, logging, management, maintenance
  - Design and communicate non-functional requirements
    - Way to organize our thinking about cross cutting concerns that affect many/all applications
    - For example, security, scaling, reliability

Job tasks covered in the class

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- Work with **technical** and **non-technical** stakeholders to translate **functional** and **non-functional requirements** into well documented **integration interfaces** and **detailed implementation designs**
- Guide implementation teams on the choice of **Mule components** and **patterns** to use in the **implementation** of **integration solutions designs**
- Design reusable **assets**, **components**, **standards**, **frameworks**, and **processes** to support and facilitate API and integration projects
- Apply standard development methods covering the **full development lifecycle** (project preparation, analysis, design, development, testing, deployment, and support) to **ensure solution quality**

Job tasks covered in the class

- Design Mule applications for any of the available Anypoint Platform **runtime planes**
- Select the **deployment approach** and **configuration** of **Anypoint Platform** with any of the available **deployment options** (MuleSoft-hosted or customer-hosted control plane and runtime plane)
- Design and be responsible for the **technical quality**, **governance** (ensuring compliance), and **operationalization** of the integration solution
- Advise technical teams on **performance**, **scalability**, **reliability**, **monitoring** and **other operational concerns** of the integration solution on Anypoint Platform

Course outline - Part 1: Designing Integration Solutions

- Module 1: Architecting Integration Solutions
- Module 2: Identifying the Components and Capabilities of Anypoint Platform
- Module 3: Designing Integration Solutions using Mule Applications
- Module 4: Choosing Appropriate Mule 4 Processing Models
- Module 5: Choosing Mule Event Transformation and Routing Patterns
- Module 6: Designing Testing Strategies for Mule Applications

Course outline - Part 2: Designing Operationalization of Integration Solutions

- Module 7: Choosing and Developing a Deployment Strategy
- Module 8: Designing State Preservation and Management Options
- Module 9: Designing Effective and Sufficient Logging and Monitoring
- Module 10: Creating an Efficient and Automated Software Development Lifecycle

Course outline - Part 3: Designing to Meet Non-Functional Requirements

- Module 11: Designing for Transactional Requirements
- Module 12: Clarifying and Designing for Reliability Goals
- Module 13: Designing for High Availability Goals
- Module 14: Optimizing Performance of Deployed Mule Applications
- Module 15: Designing Secure Mule Applications and Deployments
- Module 16: Securing Network Communications between Mule Applications
- Module 17: Documenting Integration Solutions Architectures

Approximate agenda

- Day 1: Part 1 (Module 1 - Module 3)
- Day 2: Part 1 (Module 4 - Module 6)
- Day 3: Part 2 (Module 7 - Module 9)
- Day 4: Part 3 (Module 10 - Module 14)
- Day 5: Part 3 (Module 15 - Module 17)

How the course will work

- Is **case-study driven**
  - Everyone will use the same case study
  - Role play that we all work for **AnyAirlines**
- As the course progresses, different parts of an **integration solution architecture** for a strategic change initiative will be documented
  - Starting with a provided integration architecture template
- **Design tradeoffs** will be evaluated and whenever possible a **best choice** will be decided within the **context** of the enterprise and the particular use case
  - Each student's individual solutions will be compared and discussed as a group
- Light on Business Architecture, heavy on **Application** and **Technology** Architecture

How each module will work

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- Lectures (slides)
  - To provide background **knowledge** and seed group discussions
- Reflection questions
  - **Group discussions** to **reinforce knowledge** and compare and contrast options and best practices
- Exercises
  - Build your **skills** by applying the **knowledge** presented in the slides
  - Provide **hands-on experience** creating an **integration architecture document** for the course case study

How each exercise will work

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- Usually start with a **group discussion** followed by **individual work** to fill in specific parts of the document using **best practices** and **informed decisions**
- You will create design diagrams
  - The course materials are built using LucidCharts www.lucidchart.com
  - End with individual presentations and group discussions
- Some solutions are provided
- There are some **light coding** and **runtime operations** activities
  - Common development, deployment, and management tools and services are either **demonstrated** or you use them in the **hands-on exercises**

Course materials

- Available on MuleSoft Learning Management System
  - http://training.mulesoft.com/login.html
- **Student files** (ZIP)
  - Starting files and documents needed to complete some of the exercises
  - Exercise solutions
  - Reference materials
- **Course slides** (ZIP of PDFs)

At the end of this course, you should get certified!

- After you learn & master the content in this course, get the **MuleSoft Certified Integration Architect – Level 1** certification!
- This class comes with a **voucher for 2 attempts** for the exam
  - You will receive an email on the last day of class instructions to take the exam and a voucher code

Prerequisite setup for the course

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- Sign up for a trial account at http://anypoint.mulesoft.com
- Download and install Anypoint Studio 7 from https://www.mulesoft.com/lp/dl/studio
- Either have Microsoft Word installed on your computer, or have access to a Google Docs account
- Have software to draw architecture diagrams, such as
  - https://www.yworks.com/products/yed
  - https://www.archimatetool.com/download/

Introducing the course case study

The course case study