

# Anypoint Platform Development: Mule 4 for Mule 3 Users

## Summary

This instructor-led course is for experienced Mule 3 developers who want to quickly uplevel their skills to Mule 4. The course is hands-on and focuses on what's new and/or different in Mule 4 and Studio 7.

This course includes a voucher to take a new MuleSoft Certified Developer exam for Mule 4 to be released later this year.

## Duration

3 days in-person or online

## Objectives

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

- Build, configure, and debug Mule 4 applications using Anypoint Studio 7.
- Use and apply the new Mule 4 event model with the new reactive, self-tuning, streaming, and non-blocking Mule 4 runtime.
- Apply new Mule 4 connector operations and features anywhere in a flow and configure new Mule 4 connector listeners as flow triggers.
- Apply new DataWeave 2 code everywhere as the new Mule 4 expression language.
- Transform complex data schema using DataWeave 2, Java, and scripts.
- Write defensive code using MUnit 2, Mule 4 Validators, the new Mule 4 error handling framework, and the new Try scope.
- Use the new Batch Job and Batch Aggregator scopes inline in flows.

## Audience

Mule 3 users with at least 6 months Mule development experience who are currently actively developing Mule applications

## Prerequisites

Experience developing Mule 3 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 (Mule 3)* course or the self-study *MuleSoft.U Development Fundamentals (Mule 3)* course and ideally the *Anypoint Platform Development: Advanced* course
- Passing of the *MCD - Integration Professional (Mule 3)* exam

## Setup requirements

- A computer with 8-16 GB available RAM (16 highly recommended), 2GHz CPU, and 10GB available storage and a minimum screen resolution of 1024x768
- Internet access to ports 80 and 3306 (with > 5Mbps download and > 2Mbps upload)
- The latest version of Chrome
- An Anypoint Platform account  
<http://anypoint.mulesoft.com>
- JDK 1.8  
<http://www.oracle.com/technetwork/java/javase/downloads/index.html>
- Anypoint Studio 7 with embedded Mule 4.1 runtime  
<https://www.mulesoft.com/lp/dl/studio>
- Advanced REST Client (or some other REST client application)  
<http://install.advancedrestclient.com>

A detailed setup document can be downloaded from here: <https://training.mulesoft.com/downloads>.

## Outline

### Module 1: Building Mule 4 Applications

- Use new features of Anypoint Studio 7 including the new Mule Palette, externalized connectors, and more
- Describe the structure of new Mule 4 projects and deployable archives
- Use the new Mule 4 event model to get and set data
- Enrich Mule messages directly in a connector instead of using the Mule 3 Message Enricher scope
- Write inline expressions using DataWeave 2 instead of MEL
- Configure flow performance by configuring max concurrency instead of thread pools in Mule 4

### Module 2: Configuring Mule 4 Applications and Domains

- Create Mule 4 domains using Maven coordinates and use them to inherit all dependencies
- Create and use YAML configuration files to organize properties into hierarchical namespaces
- Add secure properties to Mule 4 applications

### Module 3: Integrating with External Services using Mule 4

- Use one common, unified operations syntax to configure and use all Mule connectors
- Apply both read and write operations for JMS, Database, File, and FTP connectors anywhere in a flow
- Import and integrate with Java libraries
- Use repeatable and concurrent streams with File and FTP connectors
- Use dynamic and parameterized values together in a single database query

#### **Module 4: Writing Defensive Code with Mule 4**

- Build unit test suites for the new Mule 4 event model using MUnit 2
- Build simpler MUnit test conditions with MUnitTools
- Filter messages using Choice routers and private flows instead of Mule 3 Filters
- Use Validators to throw Mule 4 errors instead of Java exceptions
- Throw custom error types built from standard Mule 4 errors

#### **Module 5: Handling Errors and Debugging in Mule 4**

- Catch Mule 4 errors using the new Mule error handling framework
- Distinguish between the behavior of Mule 4 On Error Continue and On Error Propagate scopes
- Use the new Try scope to handle errors for one or more event processors instead of at the flow level
- Catch and handle custom Mule 4 error mappings

#### **Module 6: Transforming Data with Mule 4**

- Use new syntax and features of DataWeave 2 to write expressions and scripts
- Simplify and abstract DataWeave 2 code into reusable functions and modules
- Call static Java methods from DataWeave 2 expressions
- Call Java methods using the new Java module
- Pass in parameters to external scripts from a Mule 4 flow

#### **Module 7: Connecting to and Processing Data Sources in Mule 4**

- Use Mule 4 connector listeners to poll databases and file systems for changes
- Use Mule 4 connector operations to transform and write out data between files, databases, and an FTP server
- Use watermarks and object stores to avoid duplicate message processing
- Concurrently process a collection of data inside a flow using Mule 4 Batch scopes