MuleSoft Certified Developer - Integration and API Associate Exam Preparation Guide

Mule Runtime 3.8
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Preparation guide purpose

The purpose of this guide is to help you understand what knowledge and skills are needed to successfully pass the *MCD – Integration and API Associate* exam. It does not provide that knowledge, but includes information on how to obtain that knowledge.

Exam objective

The *MCD – Integration and API Associate* exam was specifically designed to be a basic accreditation exam *and* an end-of-class exam for the instructor-led *Anypoint Platform Development: Fundamentals* training course and the self-paced *MuleSoft.U Development Fundamentals* course. It assesses core Mule knowledge and development skills, without requiring significant real hands-on experience. In order to pass the exam, you need to have a strong programming background and be able to apply the concepts listed in the exam topics (the *Anypoint Platform Development: Fundamentals* outline) included in this guide. Note, that the exam questions do not necessarily map exactly to the course content; you will need to apply the knowledge acquired in the course.

Preparation recommendations

The best preparation for the exam is to attend the instructor-led *Anypoint Platform Development: Fundamentals* training course or to take the self-paced *MuleSoft.U Development Fundamentals* course. Data shows that people who take one of these courses usually pass the exam and people who do not take one of these courses are unlikely to pass unless they have months of hands-on Mule experience. If you do not take one of these courses, be sure to review the exam topics (the *Anypoint Platform Development: Fundamentals* outline) included in this guide and make sure that you have experience with all the topics.

Required experience

There is no official requirement for the amount of Anypoint Platform experience you need to pass the exam. If you attend the instructor-led *Anypoint Platform Development: Fundamentals* training course or take the self-paced *MuleSoft.U Development Fundamentals* course and have the appropriate programming background, you should be able to pass the exam at the end of class without additional study or experience. If you do not attend one of these courses, you need to obtain the equivalent knowledge and experience.

Intended audience

The target audience for the developer courses and the exam are people that have:

- 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.

This typically maps to roles including:

- Developers (various languages)
- Project Managers
- Solution Consultants
- Technical Architects

- Program Managers
- System Integrators
- Business Architects

Exam cost

If you do not take the instructor-led *Anypoint Platform Development: Fundamentals* training course or the self-paced *MuleSoft.U Development Fundamentals* course, the exam fee is $125 USD per person. If you take one of these courses, the exam is free; it is bundled with the course. You will receive a voucher at the end of class to take the exam.

Exam registration

The exam is administered via the Kryterion Webassessor testing platform. To register for the exam, go to https://www.webassessor.com/home.do?page=PUBLIC&branding=MULESOFT, create a user profile, log in, select Register for an Exam, and select the *MCD – Integration and API Associate* exam. On the payment screen, you will have the option of paying by credit card and/or entering a voucher code.

Exam format

Format: Multiple-choice, open-book, unproctored
Number of questions: 34
Duration: Typically around 30-60 minutes, but up to 90 minutes are permitted
Language: English
Delivery method: Online using the Kryterion Webassessor testing platform
Availability: On demand 24 hours a day, 7 days a week, either immediately upon registration or later at your convenience

Exam pass requirement

A score of 75% or higher is required to pass the MCD – Integration and API Associate exam.

Certification validity

The *MCD – Integration and API Associate* accreditation expires two years from the date of passing.

Exam topics

The topics covered in the *MCD – Integration and API Associate* exam correspond to the topics covered in the *Anypoint Platform Development: Fundamentals* course or the self-paced *MuleSoft.U Development Fundamentals* course. The outline for the course is included here.

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

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