

MuleSoft Certified Developer – Level 1 (Mule 4) DELTA Certification Exam

Summary

A *MuleSoft Certified Developer – Level 1 (Mule 4)* should be able to successfully work on basic Mule 4 projects with guidance and supervision. The *MCD – Level 1 (Mule 4) DELTA* exam validates that a certified *MuleSoft Certified Developer – Integration and API Associate (Mule 3.8+)* has the required knowledge and skills to design, build, test and debug, deploy, and manage basic Mule 4 APIs and integrations. S/he should be able to:

- Use MuleSoft-hosted Anypoint Platform to take a basic API through all the steps of its lifecycle: design, build, deploy, manage, and govern.
- Use Anypoint Studio to build, test, and debug basic Mule 4 integrations and API implementations.
- Use Mule 4 connectors to connect to a range of resources including databases, files, web services, SaaS applications, and JMS queues.
- Perform basic data transformations using DataWeave 2.
- Use Mule 4 event processors to control event flow, handle errors, and process batch records.

Format

- Format: Multiple-choice, closed book, proctored online or in a testing center
- Length: 35 questions
- Duration: 75 minutes
- Pass score: 70%
- Language: English

The exam can be taken a maximum of 2 times, with a 24 hour wait between attempts. After an unsuccessful second attempt, the candidate can only take the full *MCD – Level 1* exam.

Cost

The exam can be purchased with one of the following. Each includes a coupon for one free retake.

- \$250
- 1 Flexible Training Credit
- A voucher obtained by attending the instructor-led *Anypoint Platform Development: Mule 4 for Mule 3 Users* course

Note: This exam requires a previous MCD - Integration and API Associate (Mule 3.8+) certification.

Validity

The certification expires two years from the date of passing.

Preparation

The following resources are available to assist in a candidate's preparation:

- **Instructor-led training: *Anypoint Platform Development: Mule 4 for Mule 3 Users***
 - Recommended as the most effective and efficient method of preparation
 - 3-day class
 - Private and public classes available
 - Onsite and online classes available
 - Includes a certification voucher for this exam
- **Self-study training: *MuleSoft.U Mule 4 for Mule 3 Users***
 - 30+ step-by-step exercises to teach you the basics
 - All content available instantly to be completed at any time and pace
 - Supported by the peer-to-peer MuleSoft training forum
 - Does NOT include a voucher for this exam
- **Self-assessment quiz**
 - 5+ multiple-choice questions for each knowledge section of the exam
 - Identifies strengths and weaknesses
 - Comparable difficulty to the proctored exam
- **Do-it-yourself exercises**
 - 10+ DIY exercises to get experience with and apply the knowledge required for the certification
 - Starting code and solutions provided
 - Can be completed in any order

Topics

The exam validates that the candidate can perform the following tasks.

Note: DEV:443 is the acronym for the instructor-led or self-study version of the Anypoint Platform Development: Mule 4 for Mule 3 Users course. DEV:DIY4 is the acronym for the MCD - Level 1 / Development Fundamentals (Mule 4) Self-Assessment Quiz & DIY Exercises materials.

Accessing and Modifying Mule Events	
<ul style="list-style-type: none"> Describe the Mule event data structure Use transformers to set event payloads, attributes, and variables Write DataWeave expressions to access and modify event payloads, attributes, and variables Enrich Mule events using target parameters 	<ul style="list-style-type: none"> DEV:443 Module 1 DEV:DIY4 Exercise 6-1, 7-1, and 7-2 About Mule Event Set Payload Set Variable About the Transform Component About DataWeave Logger Component Example Enriching Data with Target Parameters
Structuring Mule Applications	
<ul style="list-style-type: none"> Parameterize an application using property placeholders Define and reuse global configurations in an application Break an application into multiple flows using private flows, subflows, and the Flow Reference component Specify what data (payload, attributes, variables) is persisted between flows when a Flow Reference is used Specify what data is persisted between flows when a Mule event crosses a connection boundary Specify what data exists in a flow before and after a call in the middle of a flow to an external resource 	<ul style="list-style-type: none"> DEV:443 Module 1 DEV:443 Module 2 DEV:DIY4 Exercise 7-1 and 7-2 To Configure Property Placeholders for Mule Apps Global Elements Flow and Subflow Components About Flow Ref
Building API Implementation Interfaces	
<ul style="list-style-type: none"> Manually create a RESTful interface for a Mule application Generate a REST Connector from a RAML specification Describe the features and benefits of APIkit Use APIkit to create implementation flows from a RAML file Describe how requests are routed through flows generated by APIkit 	<ul style="list-style-type: none"> DEV:DIY4 Exercise 4-1 Converting a RAML to a Connector Using REST Connect Workflow: Creating Testing, and Implementing an API HTTP Request Configuration Reference: Adding Custom Parameters

Routing Events	
<ul style="list-style-type: none"> • Use the Choice router to route events based on conditional logic • Use the Scatter-Gather router to multicast events • Validate data using the Validation module 	<ul style="list-style-type: none"> • DEV:443 Module 4 • DEV:DIY4 Exercise 9-1 • Choice Router • DataWeave Operators • Flow Control in DataWeave • About Scatter-Gather • Validation Module
Handling Errors	
<ul style="list-style-type: none"> • Describe the default error handling in a Mule application • Define a custom global default error handler for an application and identify in what situations it will be used • Compare and contrast how the On Error Continue and On Error Propagate scopes work • Create one or more error handlers for a flow • Use the Try scope to specify error handlers for one or more event processors • Describe the data structure of the Mule Error object • Map errors to custom application errors 	<ul style="list-style-type: none"> • DEV:443 Module 5 • DEV:DIY4 Exercise 10-1 • Introduction to Mule 4: Error Handlers • About Error Handling • About On-Error Scopes • Try Scope • About the Mule Error • Introduction to Mule 4: Error Mapping
Transforming Data with DataWeave	
<ul style="list-style-type: none"> • Write DataWeave scripts to convert JSON, XML, and Java data structures to different data structures and data types • Use DataWeave functions • Define and use DataWeave variables, functions, and modules • Define and use custom data types • Apply correct DataWeave syntax to coerce data types • Apply correct DataWeave syntax to format strings, numbers, and dates • Call Mule flows from a DataWeave script 	<ul style="list-style-type: none"> • DEV:443 Module 6 • DEV:DIY4 Exercise 11-1 • Data Formats Supported by DataWeave • Defining DataWeave Functions • Creating Custom Modules and Mappings • About DataWeave Variables • Using lookup To Call External Flows • About Type Coercion with DataWeave

Using Connectors	
<ul style="list-style-type: none"> Retrieve data from a Database using the Database connector Create parameterized SQL queries for the Database connector Retrieve data from a REST service using the HTTP Request operation or a REST Connector Use a Web Service Consumer connector to consume a SOAP web service Use the Transform Message component to pass arguments to a SOAP web service List, read, and write local files using the File connector List, read, and write remote files using the FTP connector Use the JMS connector to publish and listen for JMS messages 	<ul style="list-style-type: none"> DEV:443 Module 1 DEV:443 Module 3 DEV:443 Module 7 DEV:DIY4 Exercise 4-1, 8-1, 12-1, and 12-2 Database Connector About the File Connector About the FTP Connector About the JMS Connector
Processing Records	
<ul style="list-style-type: none"> List and compare and contrast the methods for processing individual records in a collection Explain how Mule events are processed by the For Each scope Use the For Each scope to process records Explain how Mule events are processed by the Batch Job scope Use a Batch Job with Batch Steps and a Batch Aggregator to process records Use the Scheduler component to trigger a flow Use connector listeners to trigger flows Describe the features, benefits, and process to use automatic watermarking vs. manual watermarking Use connectors with automatic watermarking capabilities Persist data between flow executions using the Object Store 	<ul style="list-style-type: none"> DEV:443 Module 7 DEV:DIY4 Exercise 13-1 For Each Scope About Batch Job Scheduler Endpoint (Trigger) To Trigger a Flow When a New File is Created or Modified Database Connector Documentation Reference: On Table Row Listener Object Store Connector
Debugging and Troubleshooting Mule Applications	
<ul style="list-style-type: none"> Use breakpoints to inspect a Mule event during runtime Install missing Maven dependencies Read and decipher Mule log error messages 	<ul style="list-style-type: none"> DEV:DIY4 Exercise 6-1 and Walkthrough DEV:DIY4 all exercises

Deploying and Managing APIs and Integrations	
<ul style="list-style-type: none">• Package Mule applications for deployment• Deploy applications to CloudHub• Use CloudHub properties to ensure deployment success• Create and deploy API proxies• Connect an API implementation to API Manager using autodiscovery• Use policies, including client ID enforcement, to secure an API• Create SLA tiers and apply SLA based policies	<ul style="list-style-type: none">• DEV:DIY4 Exercise 5-1 and 5-2• Deploying to CloudHub• Configuring API Autodiscovery in a Mule 4 Application• About Policies• To Apply a Policy and SLA Tier

Delivery methods

The exam is administered via the Kryterion Webassessor testing platform. The exam can be taken in-person at a testing center or online using a web camera.

In-person at a Kryterion Testing Center:

- [Over 1000 locations worldwide](#)
- [Onsite instructions](#)
- [Test-taker guide](#)

Online using the Kryterion Webassessor testing platform:

- Requires a webcam - a laptop webcam can be used, an external camera is not required
- Requires internet connectivity with 1 Mbps upload, 1 Mbps download, jitter <50ms, ping <200ms
- [Check internet speed and reliability](#)
 - Note: Some candidates are expelled from the exam for an unstable connection even after checking reliability with the tool. If you think your connection could potentially be unreliable, we **strongly** recommend scheduling your exam at a test center.
- [Online instructions](#)
- [Test-taker guide](#)

Registration

To register for the exam:

- Go to <https://training.mulesoft.com/webassessor>.
- Create a user profile.
- Log in.
- Select Register for an Exam.
- Select the **MuleSoft Certified Developer– Level 1 (Mule 4) DELTA** exam.

- Select either the Online Proctoring Option or the Kryterion Test Center option.
- On the payment screen, select to pay by credit card or enter a voucher/coupon code.

Note: A fee applies if an exam is cancelled or rescheduled within 72 hours of its scheduled time, even if the exam was purchased with a voucher.

More information

For more information, visit <http://help.learn.mulesoft.com>.