

MuleSoft Certified Integration Architect – Level 1

Certification Exam

Summary

A *MuleSoft Certified Integration Architect* should be able to drive and be responsible for an organization's Anypoint Platform implementation and the technical quality, governance (ensuring compliance), and operationalization of the integration solutions. The *MCIA - Level 1* exam validates that an architect has the required knowledge and skills to work with technical and non-technical stakeholders to translate functional and non-functional requirements into integration interfaces and implementations. S/he should be able to:

- Create the high-level design of integration solutions and guide implementation teams on the choice of Mule Components and patterns to use in the detailed design and implementation.
- Select the deployment approach and configuration of the Anypoint Platform with any of the available deployment options (MuleSoft-hosted or customer-hosted control plane and runtime plane).
- Design Mule applications for any of the available deployment options of the Anypoint Platform runtime plane.
- Apply standard development methods covering the full development lifecycle (project preparation, analysis, design, development, testing, deployment, and support) to ensure solution quality.
- Advise technical teams on performance, scalability, reliability, monitoring and other operational concerns of integration solutions on Anypoint Platform.
- Design reusable assets, components, standards, frameworks, and processes to support and facilitate API and integration projects.

Note: Approximately 10% of the exam is specific to Mule 4.

Format

- Format: Multiple-choice, closed book, proctored online or in a testing center
- Length: 58 questions
- Duration: 120 minutes (2 hours)
- Pass score: 70%
- Language: English

The exam can be taken a maximum of 5 times, with a 24 hour wait between each attempt.

Cost

The exam can be purchased with one of the following. Each includes a coupon for 50% off all retakes.

- \$375
- 1.5 Flexible Training Credits
- A voucher obtained by attending the instructor-led *Anypoint Platform Architecture: Solution Design* course

Validity

The certification expires two years from the date of passing.

Preparation

The best preparation for the exam is to take the instructor-led *Anypoint Platform Architecture: Solution Design* course and to review all the resources included in the exam topics section below. Candidates should be familiar with all of the content in the course and these resources and be able to apply the concepts.

Topics

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

*Note: ARC:DES is the acronym for the *Anypoint Platform Architecture: Solution Design* course.*

Configuring and Provisioning Anypoint Platform	Resources
<ul style="list-style-type: none"> • Configure business groups, roles, and permissions within an Anypoint Platform organization • Select Anypoint Platform identity management vs client management for the correct purpose • Identify common and distinguishing features and usage scenarios for CloudHub VPCs and public worker cloud • Suggest number of Mule runtimes for a Mule application given performance targets and HA requirements • Define a performant and HA deployment architecture for Mule applications in on-prem deployments • Select monitoring options for all available Anypoint Platform deployment options 	<ul style="list-style-type: none"> • ARC:DES Module 6 • ARC:DES Module 8 • <u>Anypoint Access Management</u> • <u>About Identity Management</u> • <u>About Client Management</u> • <u>CloudHub</u> • <u>Mule Runtime High Availability (HA) Cluster Overview</u> • <u>To Export Data to External Analytics</u>
Selecting Integration Styles	
<ul style="list-style-type: none"> • Given a description of an integration problem, identify the most appropriate integration style • When designing an integration solution, select the most appropriate interface/data technology and interface definition language for all integration interfaces 	<ul style="list-style-type: none"> • ARC:DES Module 4 • ARC:DES Module 5 • <u>Enterprise Integration Patterns</u> • <u>About the JMS Connector</u>

<ul style="list-style-type: none"> • Design parts of an integration solution using general message-based integration or event-driven architecture (EDA) using message brokers or streaming technologies • Recognize scenarios where message correlation is necessary 	
Designing and Documenting Enterprise Integration Architecture	
<ul style="list-style-type: none"> • For a given organization and their preferences and constraints, select the most appropriate Anypoint Platform deployment option • Design parts of an integration solution using any SOA-based integration approach • Identify the information that should be included in any integration solution architecture document • Simplify a large-scale enterprise-wide integration architecture so that it can be effectively communicated to semi-technical stakeholders • Identify the persistence mechanism and durability used for watermarks in different Mule runtime deployment options • Identify integrations scenarios for which the use of batch would be beneficial • Design for short or long retries using reconnection strategies • Identify common and distinguishing features and usage scenarios for CloudHub DLBs and public CloudHub LBs 	<ul style="list-style-type: none"> • ARC:DES Module 3 • ARC:DES Module 4 • Deployment Strategies • Mule Object Stores • Managing Application Data Storage with Object Stores • Object Store Connector • Anypoint Object Store V2 • About Batch Processors • Migration Reconnection Strategies • About Reconnection Strategies • About Load Balancers (CloudHub)
Architecting Resilient and Performant Integration Solutions	
<ul style="list-style-type: none"> • Recognize requirements that are best addressed using transactions (single-resource and XA) • Define transaction considerations where needed in a solution design including the requirement for an external transaction coordinator • Specify the connectors that can participate in the different types of transactions • Recognize the purpose of various fault-tolerance strategies for remote calls • Design parts of an integration solution using general batch-oriented integration or ETL to/from files or databases • Determine if horizontal scaling will help a Mule application meet its performance targets 	<ul style="list-style-type: none"> • ARC:DES Module 3 • ARC:DES Module 5 • ARC:DES Module 6 • Transaction Management • XA Transactions • About Batch Processors • Database Connector • About the File Connector • About the FTPS Connector • CloudHub Fabric • Mule Runtime High Availability (HA) Cluster Overview

Handling Events and Messages	
<ul style="list-style-type: none"> • Identify scenarios in which to use different storage mechanisms including persistent and non-persistent ObjectStore, in-memory ObjectStore, cluster-replicated in-memory OS, hashtables, and disk-persisted OS • Select suitable storage mechanisms for IDs (correlation IDs, message IDs, transaction IDs) in Mule applications deployed to CloudHub or on-prem • Use Mule 4 constructs to make effective use of Enterprise Integration Patterns • Use streaming to handle large payloads within Mule applications • Predict the runtime behavior of messages queued internally for processing for load balancing or to achieve reliability • Predict the runtime load balancing behavior of messages sent to the public URL of a Mule application deployed to multiple CloudHub workers 	<ul style="list-style-type: none"> • ARC:DES Module 5 • ARC:DES Module 6 • Mule Object Stores • Managing Application Data Storage with Object Stores • Object Store Connector • Anypoint Object Store V2 • About Mule Components • About Streaming • Anypoint Runtime Fabric
Designing Applications with Anypoint Connectors	
<ul style="list-style-type: none"> • For a given Mule 4 connector (Premium, Select, and MuleSoft Certified), identify its purpose, the network protocol it uses, and whether it supports incoming or outgoing types of connections • Specify the requirements that would require the use of domain-level connectors • Specify when a Mule application would require persistence and select an appropriate persistence solution • Identify possible failures when a component (such as an API client) invokes a remote component (such as an API implementation) 	<ul style="list-style-type: none"> • ARC:DES Module 3 • ARC:DES Module 5 • Connectors and Modules (for Mule 4) • Shared Resources • Mule Object Stores • Managing Application Data Storage with Object Stores • Object Store Connector • Anypoint Object Store V2 • Let's Talk About Resilience
Designing Networks for Anypoint Connectors	
<ul style="list-style-type: none"> • For a given connector, recognize whether it will typically connect to/from an external system across organizational boundaries • Use transport protocols and connectors correctly and coherently when and where applicable • Match protocols with networking constraints and API layers • When incoming and outgoing HTTPS connections with mutual authentication are used, identify what certificates are needed in what stores in different environments 	<ul style="list-style-type: none"> • ARC:DES Module 6 • ARC:DES Module 8 • Connectors and Modules (for Mule 4) • About TLS

Handling Integration Implementation Lifecycles	
<ul style="list-style-type: none"> Identify the Anypoint Platform components where various types of API-related assets and artifacts are maintained or published Recognize the advantages and disadvantages of storing and managing properties in properties files in Mule applications For a given API or integration, identify the steps that need to be taken in order for testing to occur 	<ul style="list-style-type: none"> ARC:DES Module 3 ARC:DES Module 5 Create and Publish an API Spec or API Fragment Secure Configuration Properties MUnit
Implementing DevOps	
<ul style="list-style-type: none"> Specify the purpose of various MuleSoft products in the area of DevOps/CI/CD Identify differences, advantages, and disadvantages of DevOps based on deployable Mule applications versus container images Formulate an effective source code management strategy including branching and merging Specify testing strategies that use both mocking and invoking of external dependencies 	<ul style="list-style-type: none"> ARC:DES Module 5 MUnit Maven Support About the Mule Maven Plugin Learn Kubernetes Basics
Operating and Monitoring Integration Solutions	
<ul style="list-style-type: none"> Specify the type of metrics for API invocations and API implementations that can be monitored with Anypoint Platform Identify metrics and operations exposed by default via JMX Identify differences in monitoring and alerting between customer-hosted and MuleSoft-hosted Anypoint Platform Identify ways of transmitting IDs between components in remote interactions and capture this in the interface design of the remote interaction 	<ul style="list-style-type: none"> Viewing API Analytics JMX Management To Export Data to External Analytics Tools (Hybrid)

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 Integration Architect – Level 1** 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 you attempt to cancel or reschedule your exam within 72 hours of your scheduled time, even if you purchase your exam with a voucher.

More information

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