



Daml Certification Syllabus

Daml Solutions Architect

January 2021



Introduction

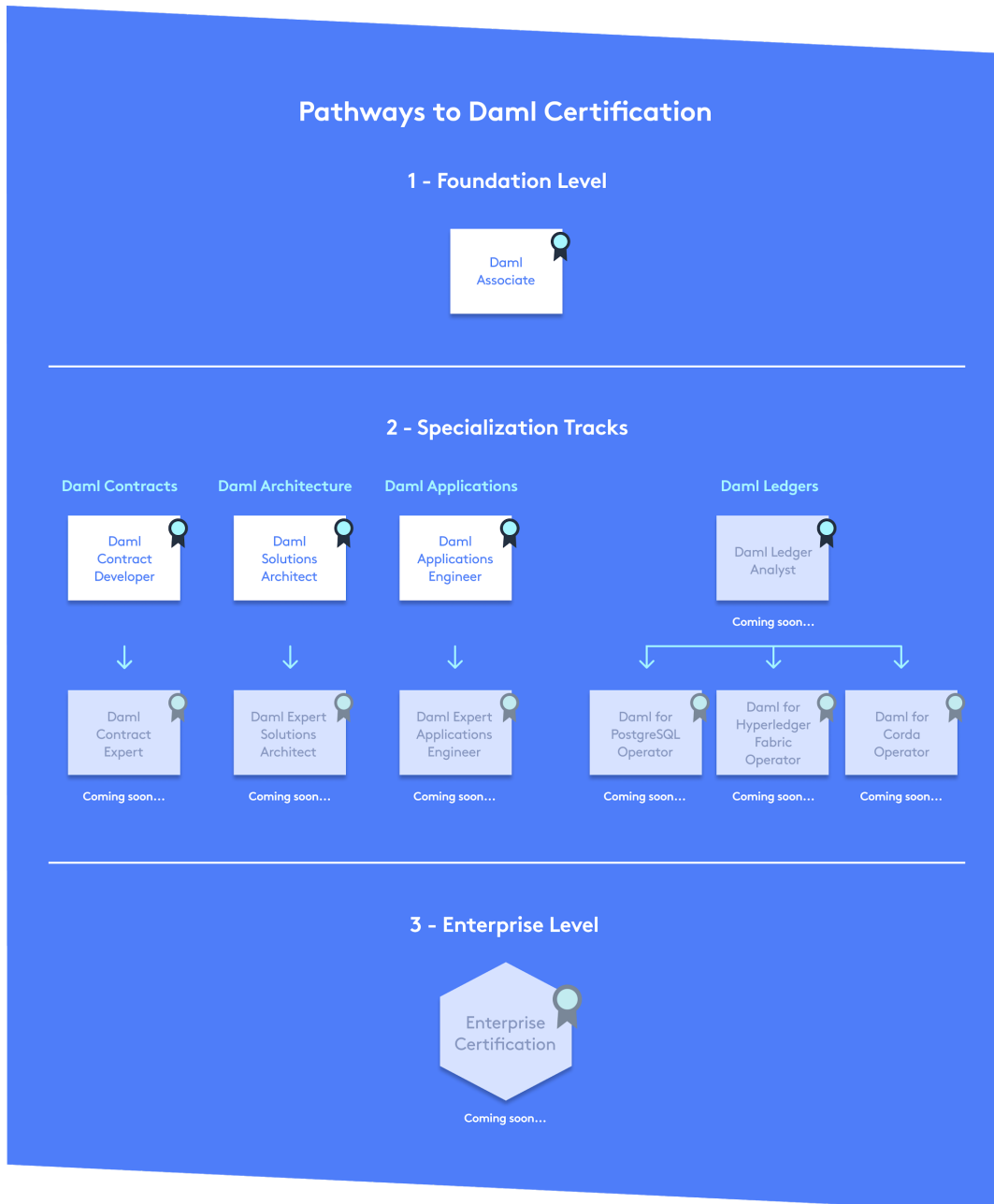
Daml Solution Architect Exam

This first exam in the Daml Architecture track tests you on the basics of designing a full stack Daml solution. You will be tested on important components and interfaces, what they can be used for, and how they can work together. This exam samples from multiple levels of a Daml solution: the distributed ledger, the process of authentication and authorization, and the APIs and libraries available to build applications interacting with the Daml code.

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Daml-Certification Program

The Daml Architecture track tests your skill in building a full Daml solution. The track cover the topics of understanding the responsibility of every component in a Daml solution, selecting the right components for the different functionalities including Daml contracts, UI components, Daml connect components, Ledger integration components, and finally integrating these components into a complex solution.



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Prerequisites

- Daml Associate Certification
- General understanding of event-driven software architectures and asynchronous workflows
- Basic understanding of the architecture of distributed Daml ledgers
- Basic understanding of public-key cryptography and PKI

Exam Outline

Exam Organization

The exam takes approximately 90 minutes to complete and will be conducted online at the time of your choosing. It is expected that candidates will use the [Daml documentation](#) and SDK as aids during the exam.

The 30 exam questions will be separated into 3 main topics. The total score on each topic counts as a percentage of your final score as shown below. Each topic will be scored separately, with all questions for a topic having the same weight.

The exam score will be the total of the topic scores. To be Daml-certified, you must have a total exam score of 70%.

Exam Topics

Distributed Ledger Technology Basics (33%)

- Properties of a Daml ledger
 - Similarities between a Daml ledger and a relational database; structuring data
 - Key differences between a Daml ledger and a relational database; restrictions of the ledger
 - Key differences between a distributed ledger and a centralized ledger
 - Relationship between the set of active contracts and the list of transactions
- Daml Participant Nodes
 - Functionalities of the Participant Nodes
 - Trust assumptions for a Participant Node
 - Relationship between Daml parties and Participant Nodes

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Ledger Authentication and Authorization (25%)

- Mapping application users (identified by e.g. email) to ledger parties and the following components involved in the process: Authentication service provider, Ledger, APIs, application or UI
- The use of access token (request, compose, issue, send, forward, verify) by the following components: Authentication service provider, Ledger, APIs, application or UI
- Authentication process
- Use of access token in ledger authorization

Ledger Interaction (42%)

- Supported APIs, bindings, and libraries
 - Main functionalities of the different APIs, bindings, and libraries
 - Connecting APIs and components
- gRPC Ledger API
 - Components exposing the Ledger API
 - Updating the content of a Daml Ledger
 - Main functionalities of the Ledger API services
- JSON API
 - Main features
 - Interaction with the gRPC Ledger API and with the application / UI
- Purpose of command deduplication

Example Questions

Correct answers are marked in **bold**

Immutability of the Daml ledger

Select the consequence of the immutability property of Daml ledgers.

- The ledger is a read-only database because its content cannot be updated or extended in any way
- **The ledger content can be modified via transactions such that previously committed transactions remain intact**

Hosting a Party

Select all that apply for hosting parties by Participant Nodes.

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- A participant can host multiple parties
- A topology can be configured such that each participant hosts exactly one party
- The same party can be hosted by multiple participants
- A party does not need to be hosted by any Participant Node in order to commit a transaction

User Authorization

Which component decides whether an application user (identified by e.g. email) has the right to submit commands on behalf of a given Daml party to the Ledger?

- **External authentication service provider (such as Identity and Access Management System or Token Issuer)**
- Participant Node
- Daml Assistant
- Daml Driver

Functionalities of the Ledger API

What functionalities does the Ledger API offer?

- Authentication
- Cloud deployment
- **Command submission**
- **Transaction view**
- **Package management**

JSON API Functionalities

Select all functionalities offered by JSON API:

- Inspect transactions
- **Fetch parties by identifiers**
- **Fetch active contract by key**
- **Create new contracts**