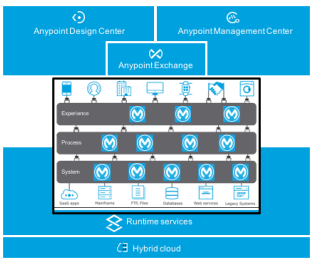
Module 2: Introducing Anypoint Platform

At the end of this module, you should be able to

- Identify all the components of Anypoint Platform
- Describe the role of each component in building application networks
- Navigate Anypoint Platform
- Locate APIs and other assets needed to build integrations and APIs in Anypoint Exchange
- Build basic integrations to connect systems using flow designer

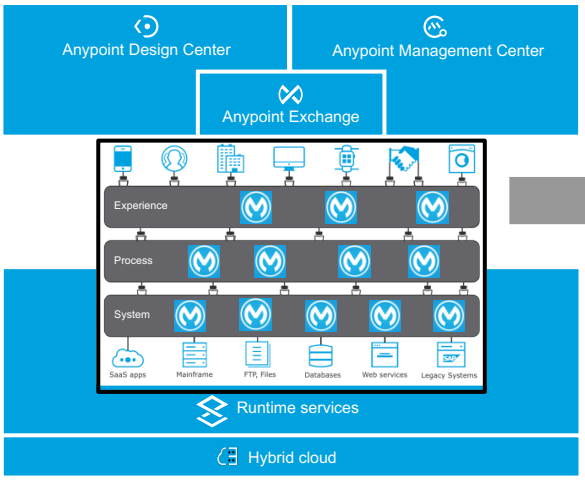


Introducing the components of Anypoint Platform

Anypoint Platform uniquely enables the building of an application network

MuleSoft

Anypoint Platform



Application network

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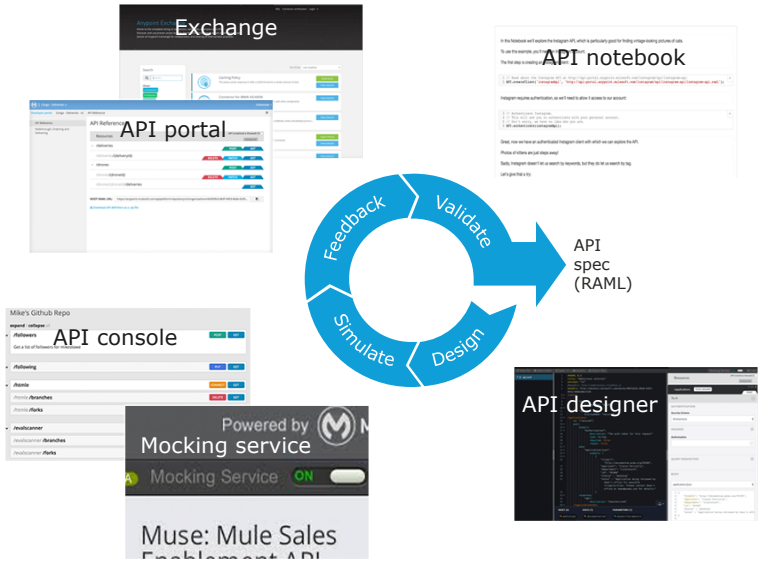
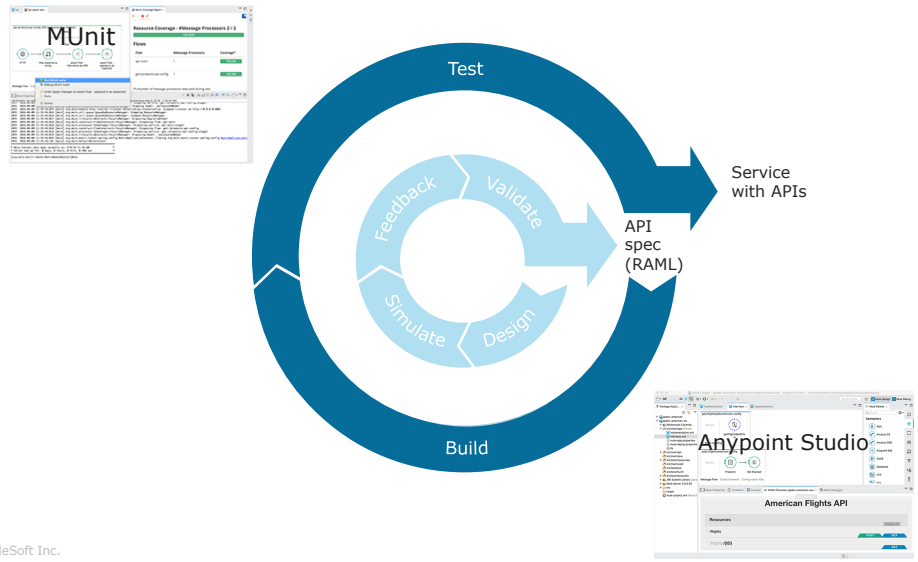
API development cycle: API specification

MuleSoft

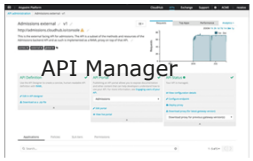


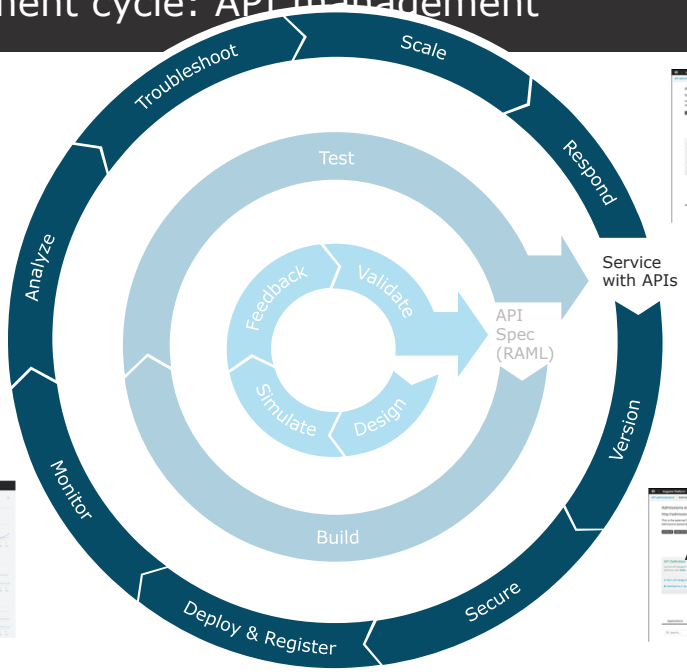
API development cycle: API implementation

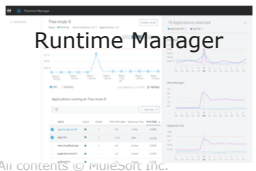
MuleSoft

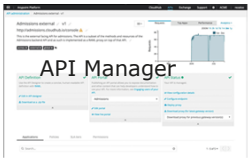


API development cycle: API management

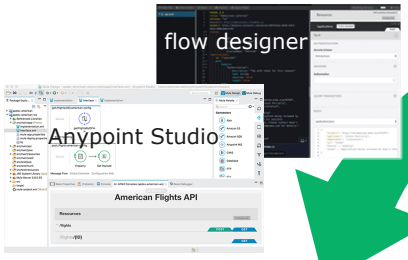


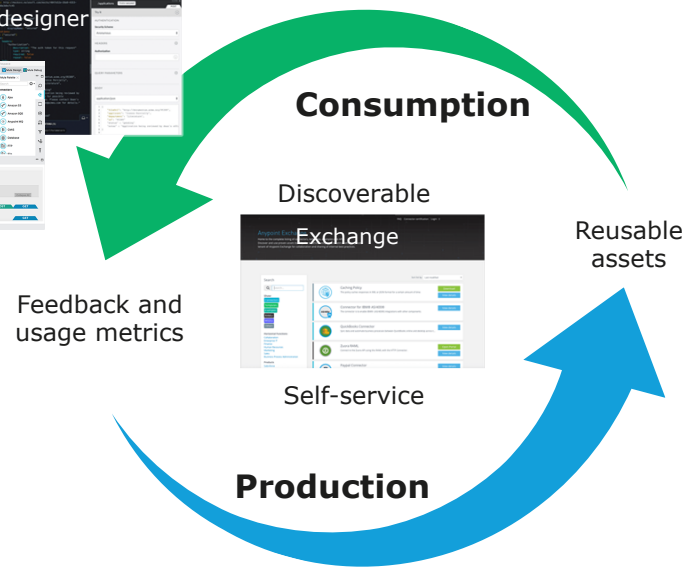




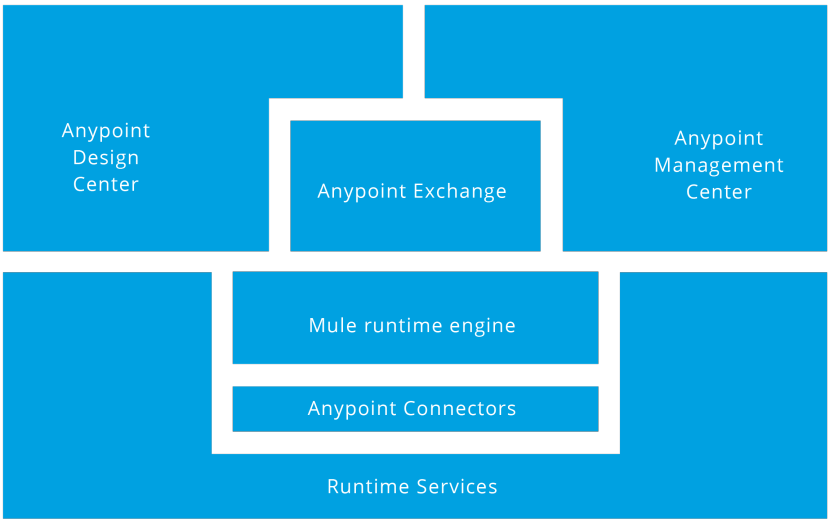


API lifecycle: Discovery and consumption





Anypoint Platform: The components



Anypoint Platform

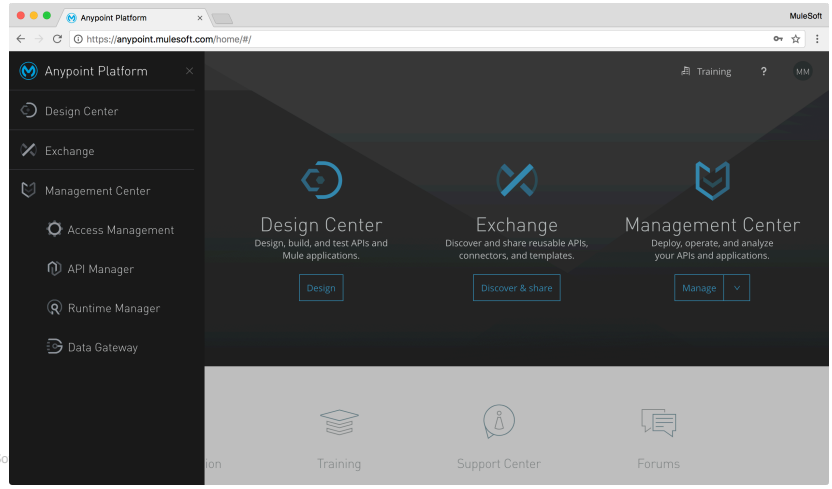
- **A unified, highly productive, hybrid integration platform that creates a seamless application network of apps, data, and devices with API-led connectivity**

- A collection of runtimes, frameworks, tools, and web applications
  - **Tools and frameworks** for building applications
  - **Mule runtime** for running applications and applying policies
    - MuleSoft-hosted in the cloud or customer-hosted (on-prem or in the cloud)
  - **Web application** for
    - Discovering and learning about APIs and other assets
    - Building integration applications that consume APIs
    - Deploying, running, managing, and monitoring applications
    - Defining and managing APIs

Anypoint Platform: The web application

MuleSoft

- MuleSoft-hosted in the cloud at anypoint.mulesoft.com
- Customer-hosted as part of Anypoint Platform Private Cloud Edition



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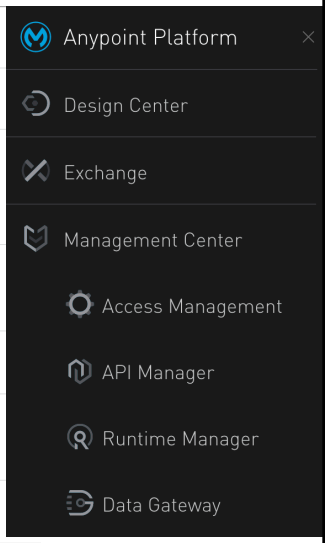
Core functionality of the web application

MuleSoft

API designer	Designing APIs
flow designer	Building integration apps that consume APIs
Exchange	Sharing, discovering, and exploring all the resources needed for your integration projects including creating public portals
API console, mocking service, API notebook	Testing and simulating APIs
Access Management	Managing users
Runtime Manager	Deploying apps to the cloud or on-prem Managing and monitoring applications
API Manager	Managing and monitoring APIs



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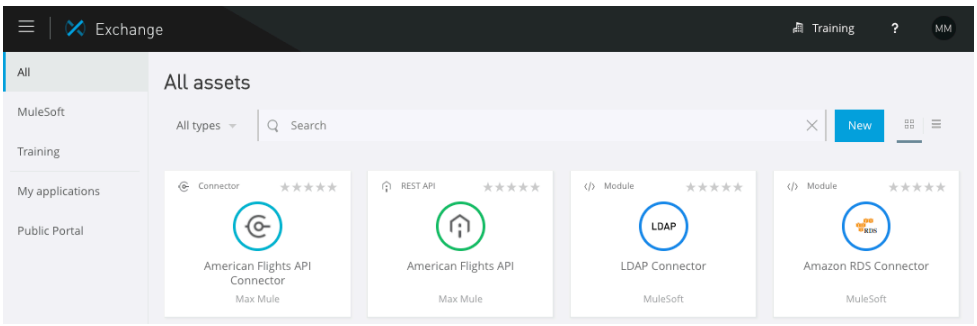
Introducing Anypoint Exchange

Anypoint Exchange

MuleSoft

- A library of assets
- The central repository that is critical to the success of building an application network
- Ensures assets are published somewhere they can be discovered and reused



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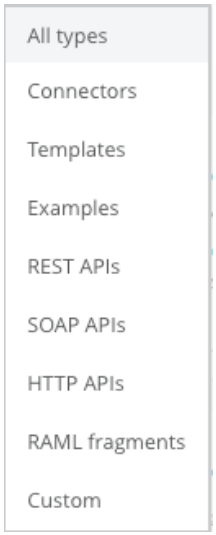
What does (and should) Exchange contain?

MuleSoft

- MuleSoft-provided **public** assets available in all accounts to all users
  - You can work with MuleSoft to get APIs and connectors certified and added
- **Private** content only available to people in your org
  - Assets added by anyone in your org are added to your private Exchange
- Your organization should populate it to contain everything you need to build your integration projects
  - Including APIs, connectors, diagrams, videos, links, and more

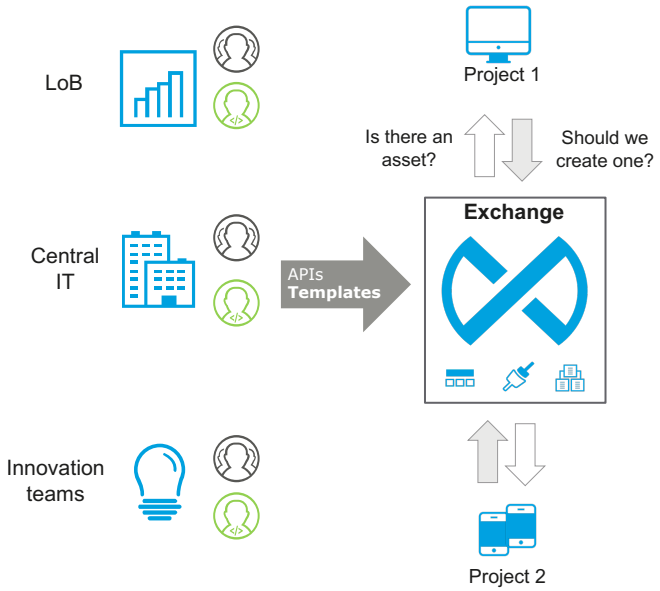


REST APIs and API portals in Anypoint Exchange

MuleSoft

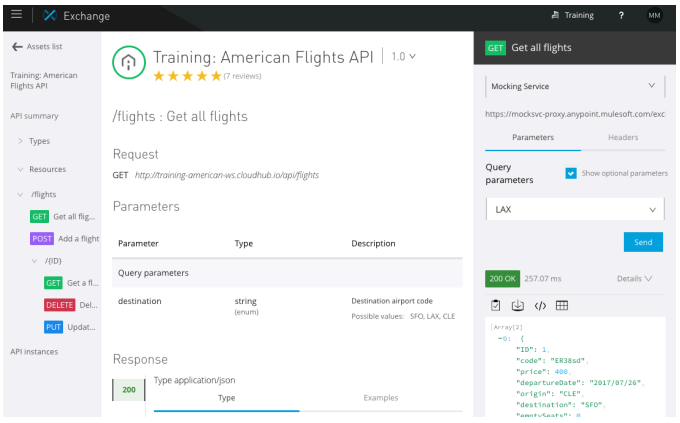
- **API portals** are automatically created for REST APIs added to Exchange
- An API portal has
  - Auto-generated **API documentation**
  - An **API console** that provides a Postman-like experience for consuming and testing APIs
  - An **automatically generated API endpoint** that uses a **mocking service** to allow the API to be tested without having to implement it
- API portals can be shared with both internal and external users

Using Exchange: Success of C4E in action



Walkthrough 2-1: Explore Anypoint Platform and Anypoint Exchange

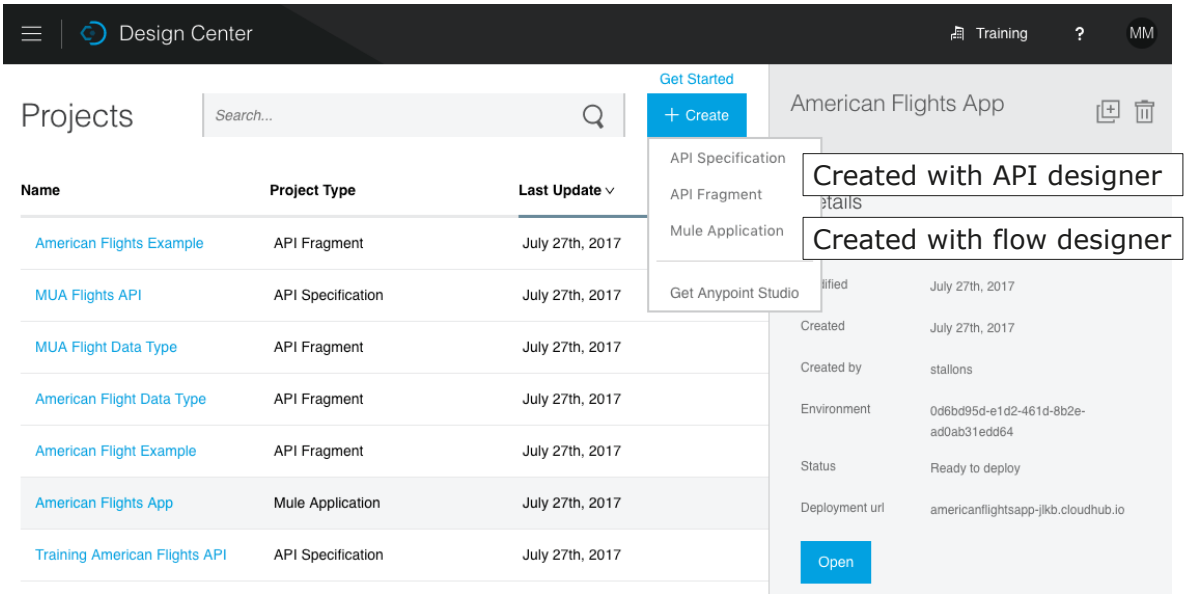
- Explore Anypoint Platform
- Browse Anypoint Exchange
- Review an API portal for a REST API in Exchange
- Discover & make calls to the Training: American Flights API



Building integration applications and APIs with Design Center

Design Center anatomy

MuleSoft



Design Center applications

Application	Purpose	In this course	Additional courses
flow designer	Web app for building integration apps that connect systems and consume APIs	2 WTs	• Anypoint Platform: Flow Design
API designer	Web app for designing, documenting, and mocking APIs	Module 3	• Anypoint Platform: API Design
Anypoint Studio	Desktop IDE for implementing APIs and building integration applications	Module 4 In Fundamentals: Modules 6-13	• Anypoint Platform Development: Fundamentals • Anypoint Platform Development: Advanced • Anypoint Platform Development: DataWeave

Both flow designer and Anypoint Studio create Mule applications

- **Mule applications** can be created
  - Visually using flow designer or Anypoint Studio
  - By writing code (primarily XML) using Anypoint Studio (or other tools)
- Under the hood, Mule applications are Java applications using Spring
- Mule applications are deployed to a **Mule runtime**
  - Mule runtimes can be MuleSoft-hosted in the cloud (CloudHub) or customer-hosted in the cloud or on-prem

Mule is the runtime engine of Anypoint Platform

- **A lightweight Java-based enterprise service bus (ESB) and integration platform** that allows developers to connect apps together quickly and easily, enabling them to exchange data
  - Acts as a transit system for carrying data between apps (the Mule)
  - Can connect all systems including web services, JMS, JDBC, HTTP, & more
- **Decouples point-to-point integrations** by having all (non-Mule) apps talk to the bus (to a Mule runtime) instead of directly to each other
- **Can be deployed anywhere**, can integrate and orchestrate events in real time or in batch, and has universal connectivity
- **Enforces policies for API governance**

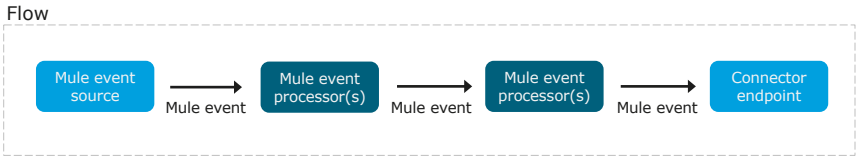
Mule runtime editions and versions

- There are different **editions** of the Mule runtime
  - Community edition (CE): Open-source
  - Enterprise edition (EE): Hardened code line with support and additional capabilities
    - Support, additional connectors, batch, caching, security, templates, and more
- There are different **versions** of each Mule runtime
  - 3.7.X, 3.8.X, and more
- **Flow designer** uses Mule 4.0.X EE (an early access version of Mule 4)
- By default, the latest **Anypoint Studio** uses Mule 3.9 EE
  - You can install other versions and select which one to use

Mule 4 applications and flows

MuleSoft

- Mule applications receive events, process them, and route them to other endpoints
- **Mule applications** accept and process a **Mule event** through a series of **Mule event processors** plugged together in a **flow**

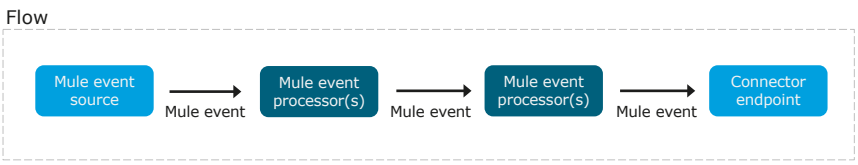


- An application can consist of
  - A single flow
  - Multiple flows
  - Multiple flows connected together

What's in a typical Mule 4 flow?

MuleSoft

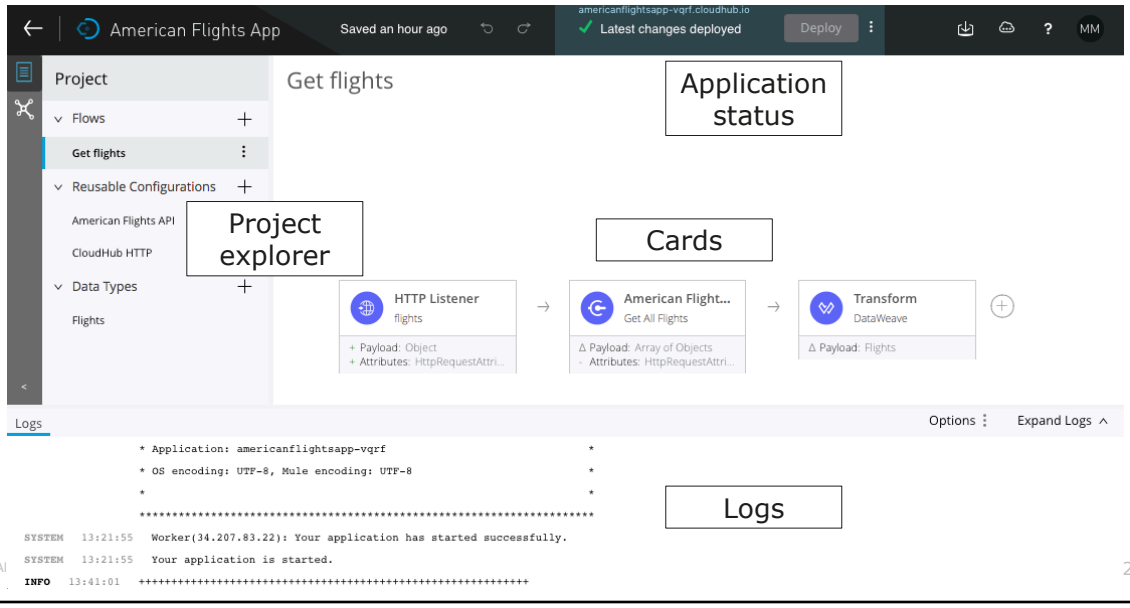
- A **Mule event source** that initiates the execution of the flow
  - Can be triggered by an event like
    - A consumer request from a mobile device
    - A change to data in a database
    - The creation of a new customer ID in a SaaS application
- **Mule event processors** that transform, filter, enrich, and process the event and its message



Creating integration applications with flow designer

Flow designer anatomy

MuleSoft



Running flow designer applications

MuleSoft

- When you create a Mule application project in Design Center
  - A new application is created and opened in flow designer
  - **The application is deployed to a MuleSoft-hosted Mule runtime (called a CloudHub worker) in the cloud and started**

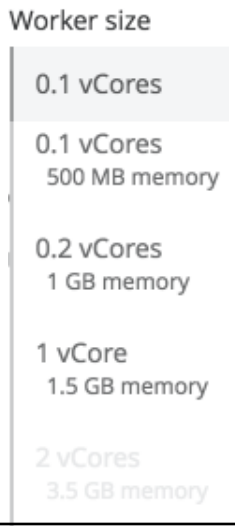
MuleSoft-hosted runtime

- When you make changes to the application in flow designer and are ready to test it
  - You need to redeploy and restart the application

CloudHub workers

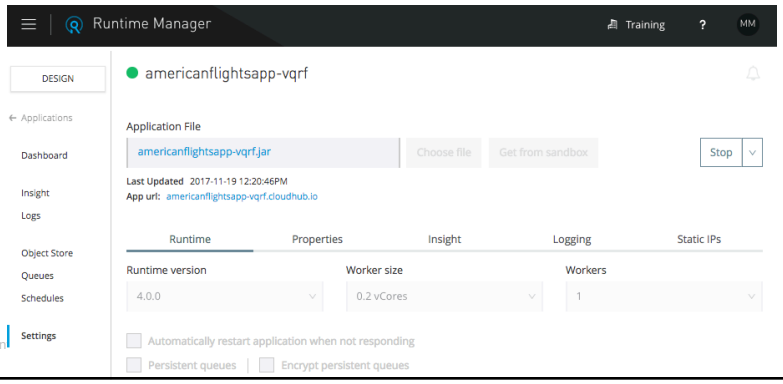
MuleSoft

- **A worker is a dedicated instance of Mule that runs an app**
- Each worker
  - Runs in a separate container from every other application
  - Is deployed and monitored independently
  - Runs in a specific worker cloud in a region of the world
- Workers can have a different memory capacity and processing power
  - Apps can be scaled vertically by changing the worker size
  - Apps can be scaled horizontally by adding multiple workers
- There are workers in different environments
  - Design (for flow designer apps only), Sandbox, Production..
  - Apps can be promoted from one environment to another



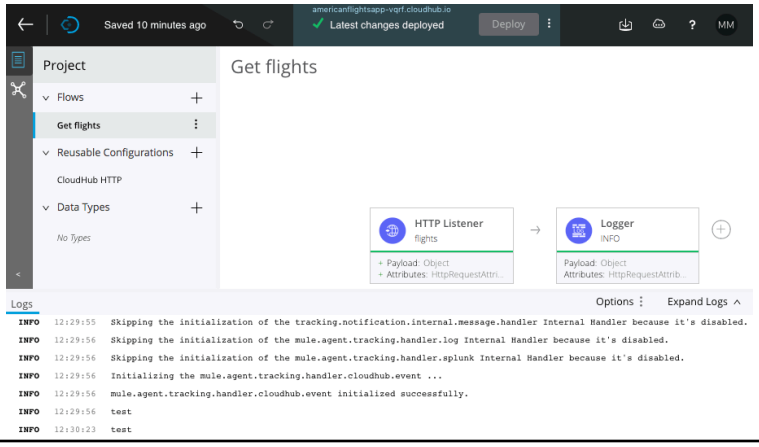
Flow designer applications

- Are automatically deployed to the **Design** environment
  - Worker runtime version set to **Mule 4.0.X**
    - Flow designer apps can only be built using Mule 4, currently an early access version
  - Worker number is set to **1**
  - Worker size is set to **0.2**



Walkthrough 2-2: Create a Mule application with flow designer

- Create a new Mule application project in Design Center
- Create an HTTP trigger for a flow in the application
- Add a Logger component
- Deploy, run, and test the application
- View application info in Runtime Manager



Accessing, querying, and transforming data

Accessing and modifying Mule 4 event data

MuleSoft

- The data that passes through flows in the app
- Metadata contained in the message header
- The core info of the message - the data the app processes
- Metadata for the Mule event - can be defined and referenced in the app processing the event

Transforming data with DataWeave

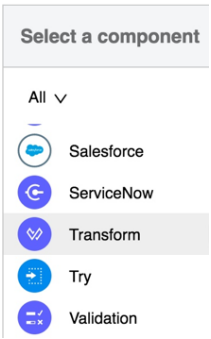
MuleSoft

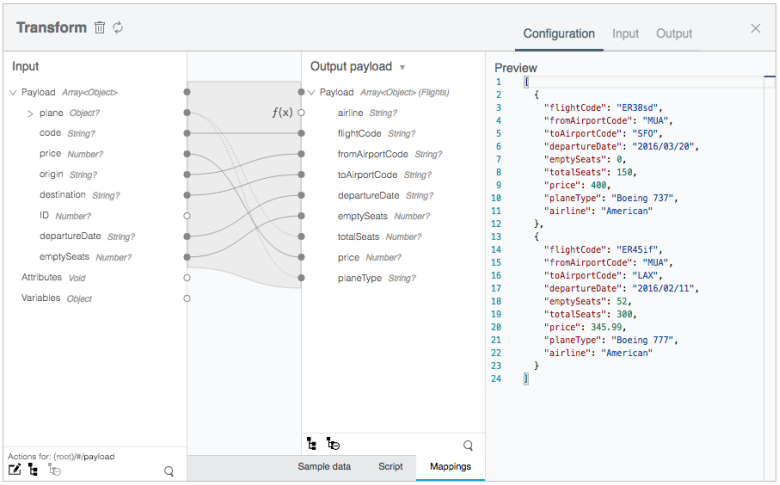
- DataWeave 2.0 is the expression language for Mule to access, query, and transform Mule 4 event data
- A JSON-like language that's built just for data query and transformation use cases
  - Full-featured and fully native framework
- Fully integrated with flow designer (and Anypoint Studio)
  - Graphical interface with payload-aware development

The Transform component

MuleSoft

- Has input, output, and preview sections with both drag-and-drop and script editors

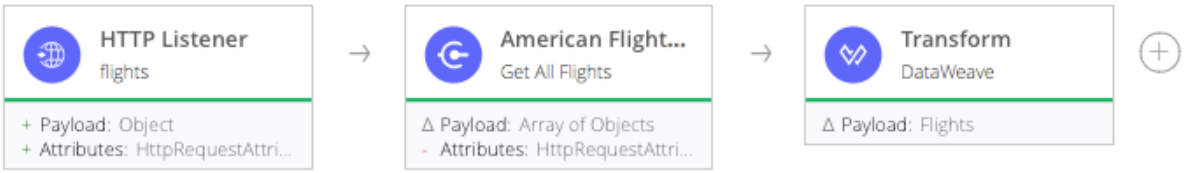




Walkthrough 2-3: Create an integration application with flow designer that consumes an API

MuleSoft

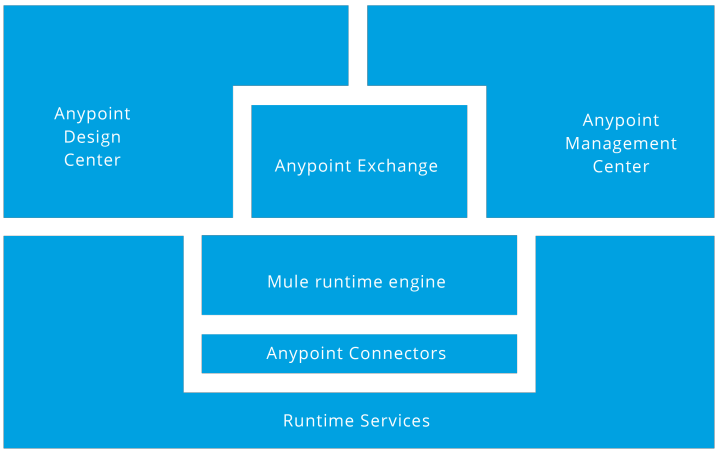
- Examine Mule event data for calls to an application
- Use the American Flights API in Anypoint Exchange to get all flights
- Transform data returned from an API to another format



Summary

Summary: Anypoint Platform

- **Anypoint Platform** is a unified, highly productive, hybrid integration platform that creates a seamless **application network** of apps, data, and devices with **API-led connectivity**



Summary

- Use **Anypoint Exchange** as a central repository for assets so they can be discovered and reused
  - Populate it with everything you need to build your integration projects
- Use **flow designer** to build integration applications
  - These are Mule 4 applications that are deployed to a Mule runtime
  - To learn more, take the 1-day *Anypoint Platform: Flow Design* course
- **Mule runtimes** can be MuleSoft-hosted in the cloud (CloudHub) or customer-hosted in the cloud or on-prem
- **DataWeave 2.0** is the expression language for Mule to access, query, and transform Mule 4 event data