



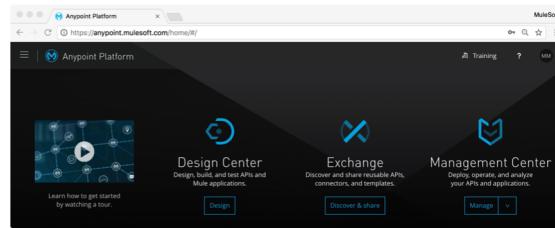
Module 2: Introducing Anypoint Platform



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



- Describe the benefits of Anypoint Platform and MuleSoft's approach to be successful with it
- 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



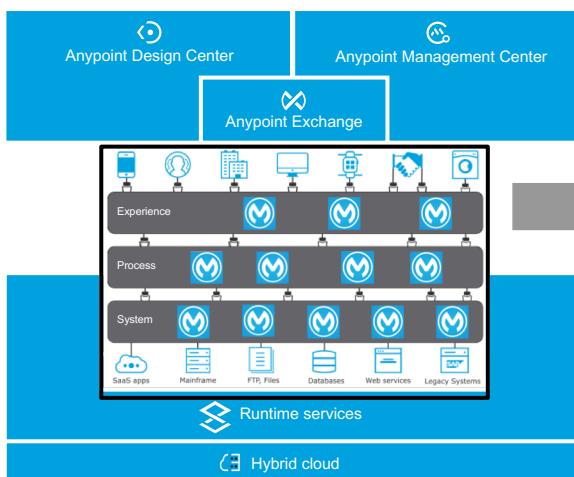
Introducing Anypoint Platform



Anypoint Platform uniquely enables the building of an application network

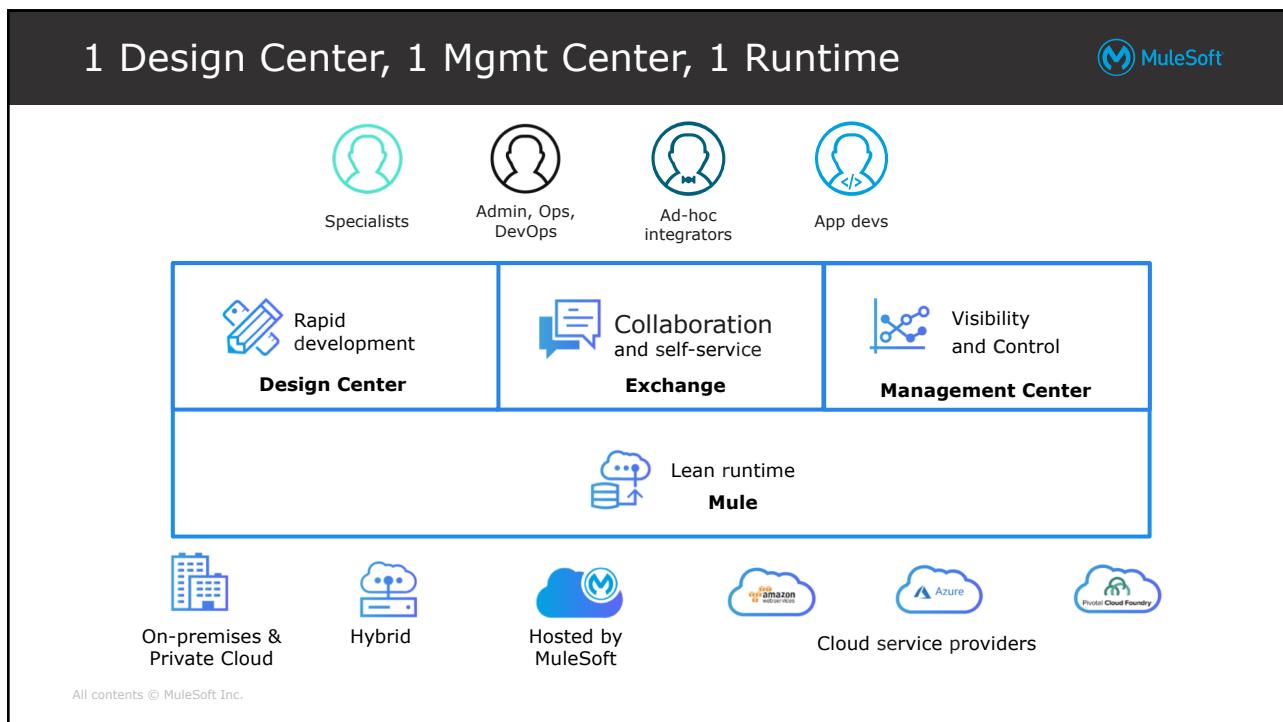
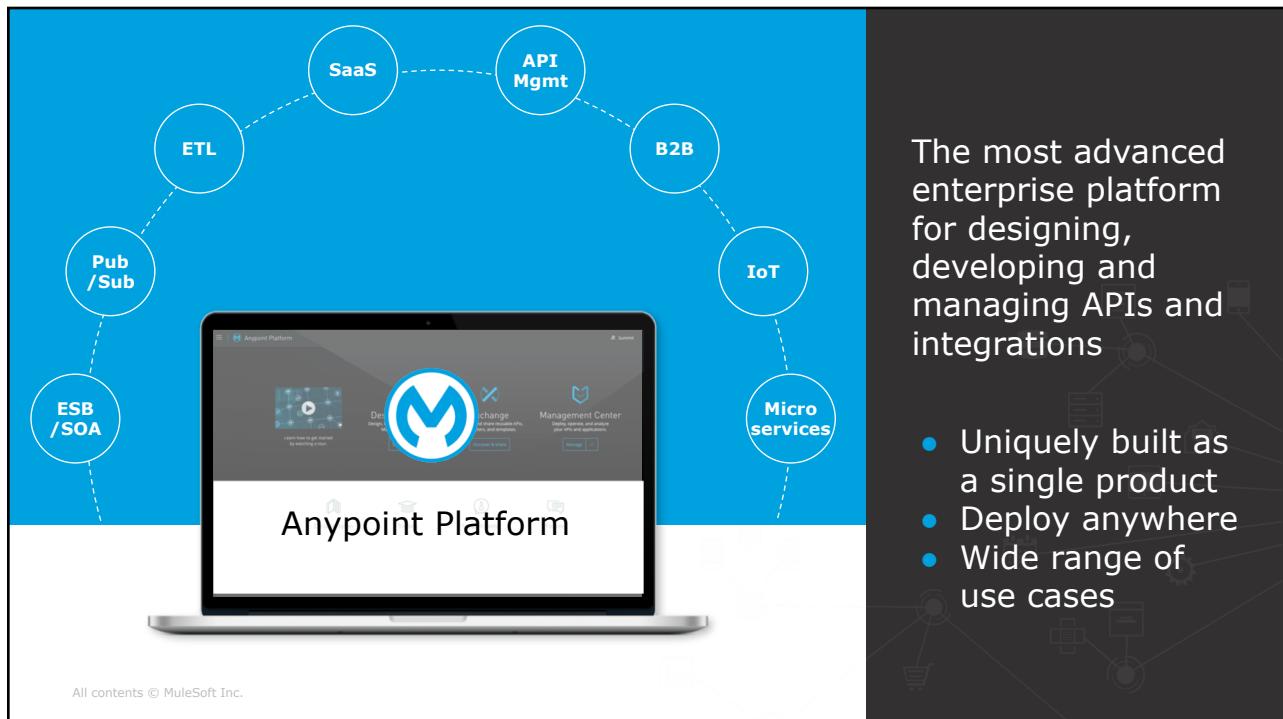


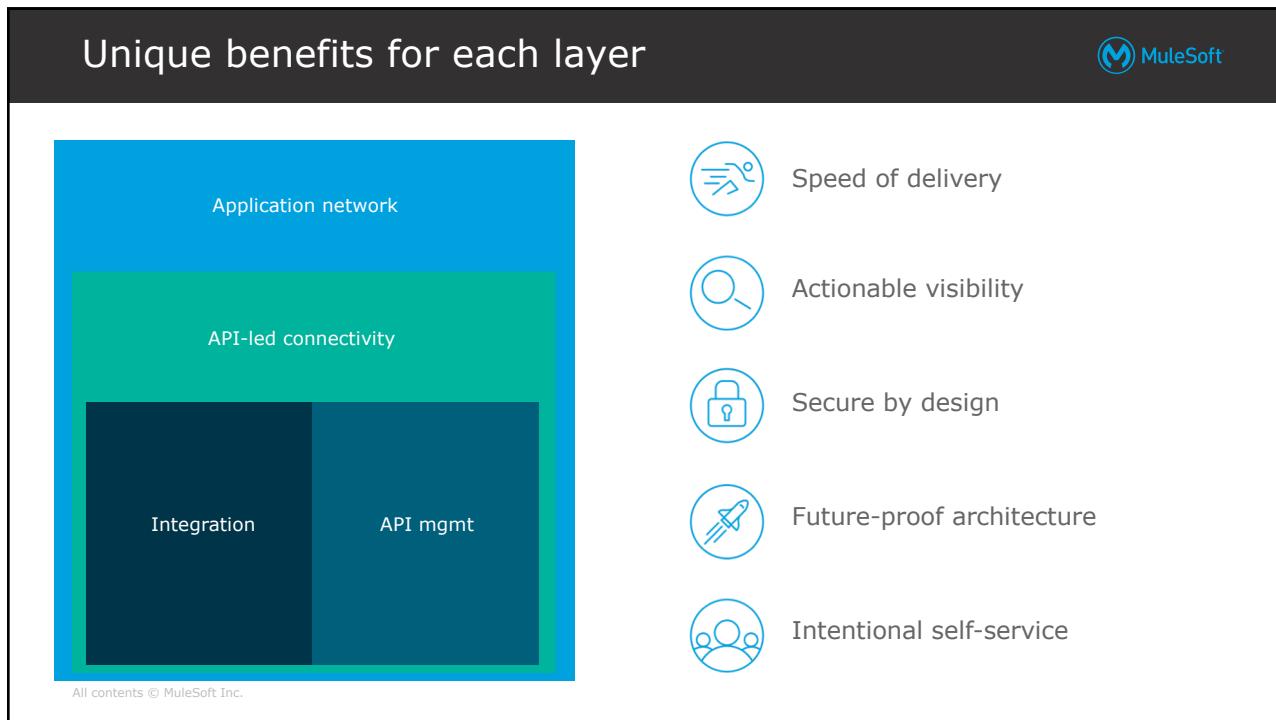
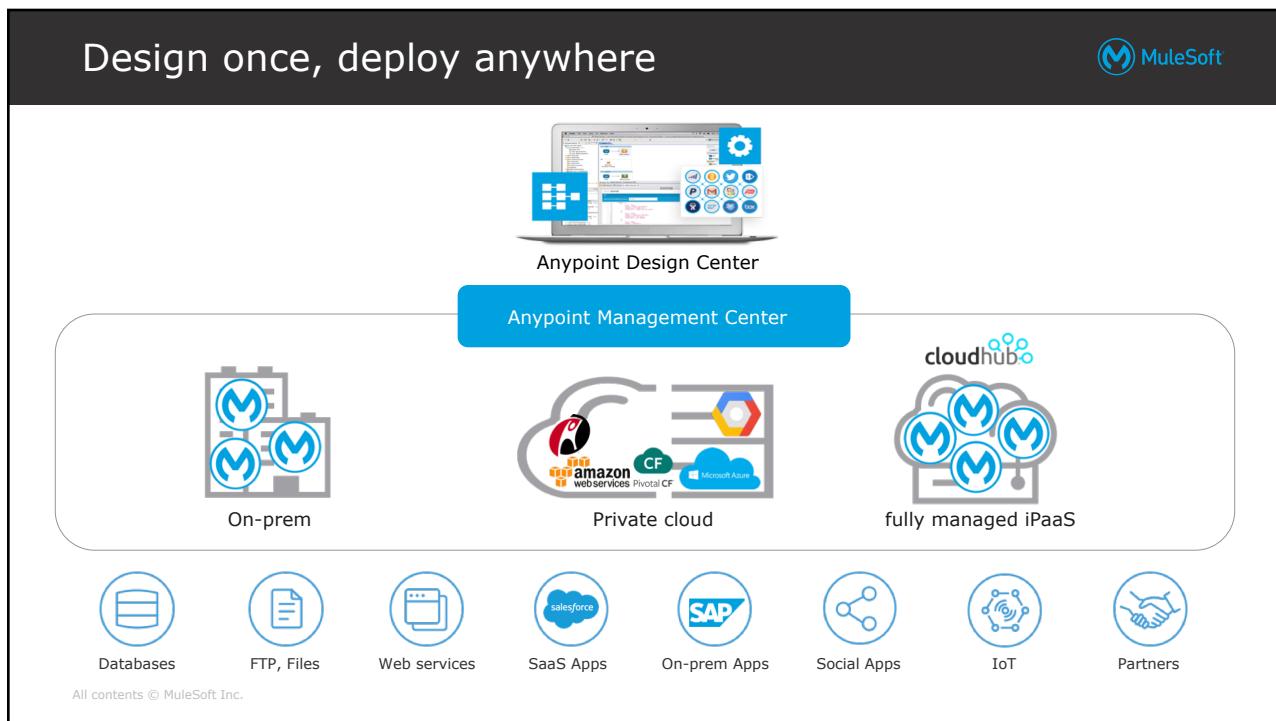
Anypoint Platform



Application network



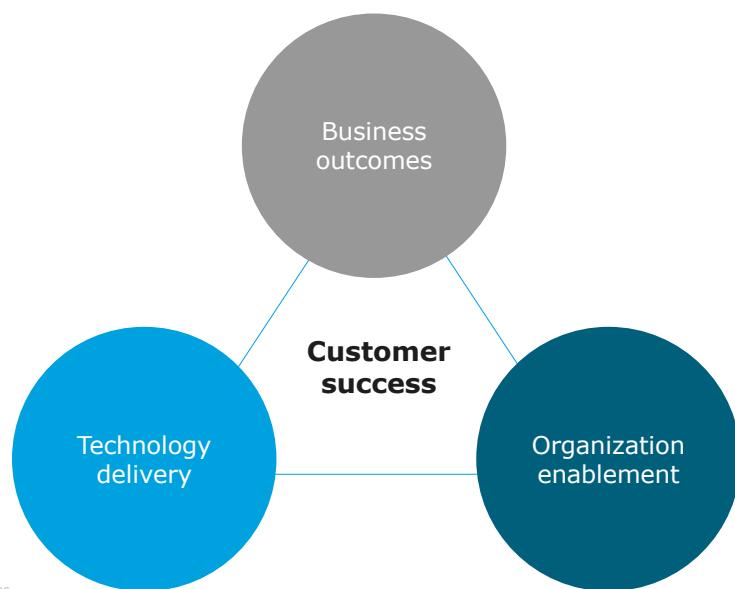




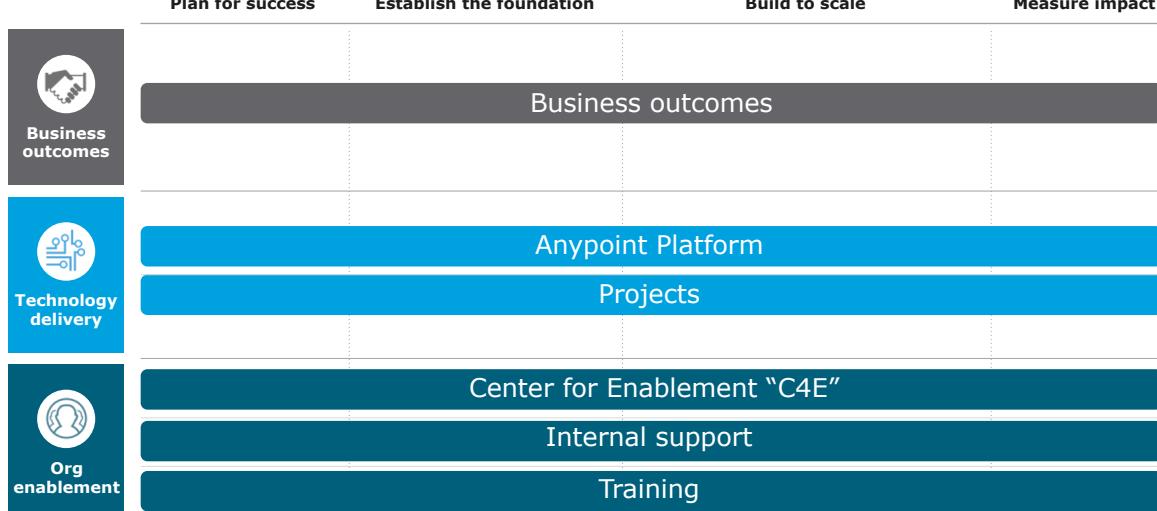
Achieving success with Anypoint Platform



MuleSoft's approach is centered around 3 core pillars  MuleSoft



Defining the path to achieve success



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MuleSoft has a blueprint for you to follow

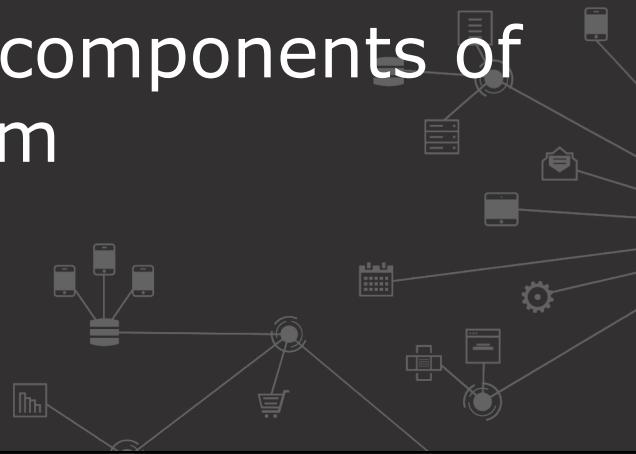


	Plan for success	Establish the foundation	Build to scale	Measure impact
 Business outcomes	Agree on business outcomes and KPIs Develop the overall success plan	Monitor and manage	Refresh the success plan	Measure business outcomes
 Technology delivery	Define Anypoint platform vision and roadmap Design Anypoint platform architecture and implementation plan	Deploy Anypoint Platform	Refine and scale Anypoint Platform	Measure Anypoint platform KPIs
 Org enablement	Prioritize IT projects and quick wins Staff and onboard the project teams	Define reference architecture Launch initial projects and quick wins	Onboard additional project teams Launch additional projects	Measure project KPIs
	Assess integration capabilities Establish the C4E operating model	Build and publish foundational assets Evangelize	Drive consumption	Measure C4E KPIs
	Onboard MuleSoft Determine the internal support operating model	Staff, train and launch team Publish support guidance and self-serve materials	Monitor Anypoint Platform	Measure support KPIs
	Agree on initial roles Train the initial team(s)	Develop the broader training plan Launch experiential learning opportunities	Update training plan	Conduct skills assessment

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Note: For details about individual steps, contact your MuleSoft Customer Success Manager

Introducing the components of Anypoint Platform



API development cycle: API specification

MuleSoft

The diagram illustrates the API development cycle, represented by a circular arrow divided into four segments: Design, Simulate, Validate, and Feedback. The cycle flows clockwise from Design through Simulate, Validate, and Feedback back to Design. The tools used in each stage are:

- Design:** API portal
- Simulate:** API console
- Validate:** API designer
- Feedback:** API notebook

API portal: Shows the Exchange interface for the American Flights API, including a list of assets and a detailed view of a specific API endpoint with parameters and headers.

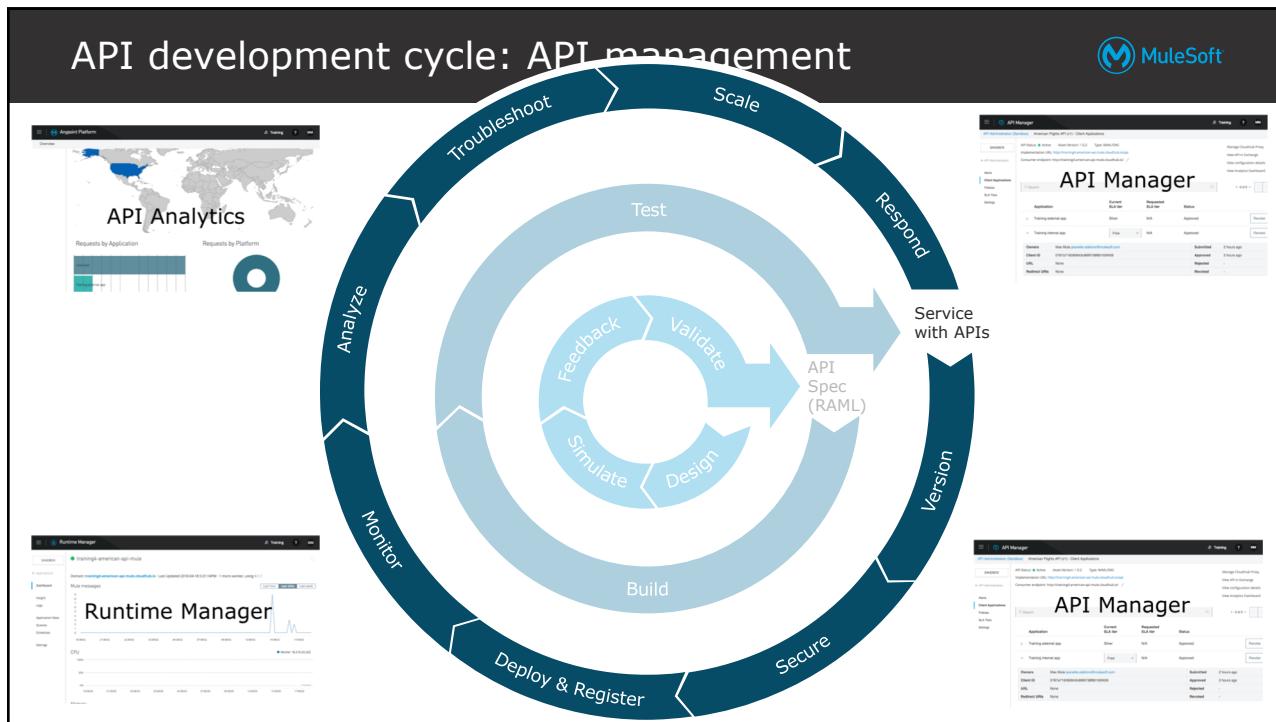
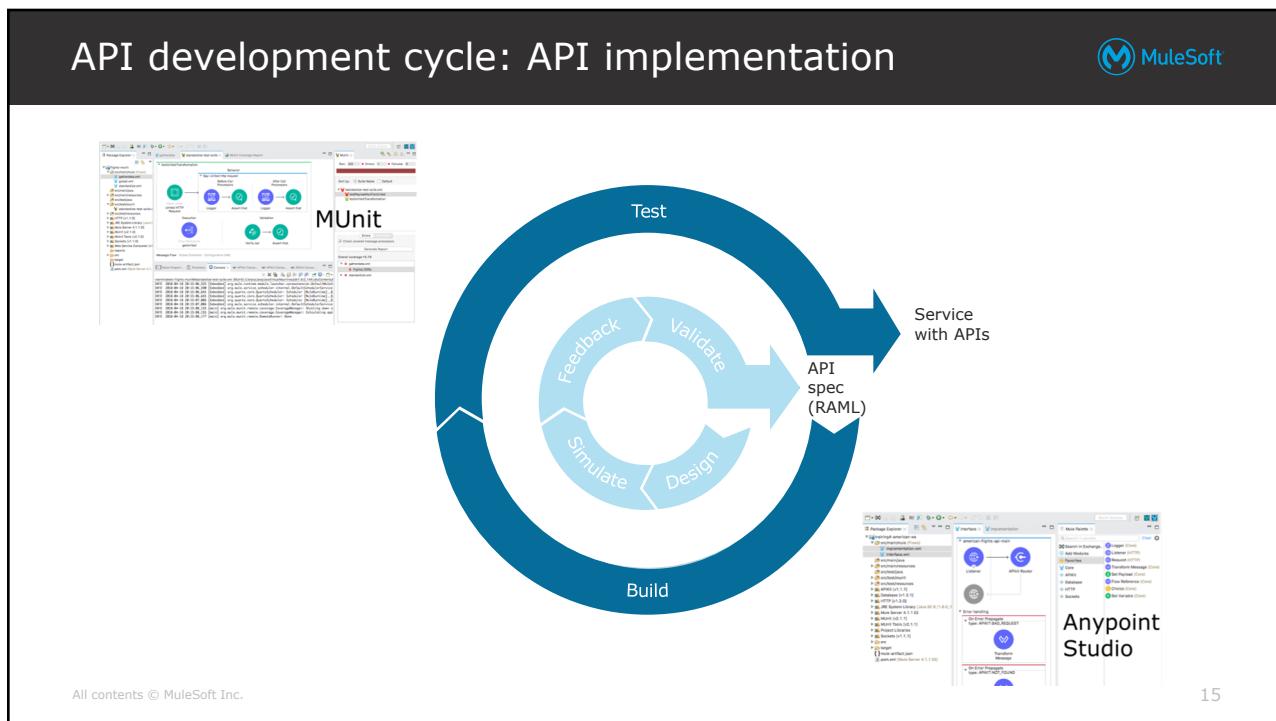
API console: Shows the API summary for the American Flights API, version v1, with supported methods (GET, POST, PUT, DELETE) and a Mocking Service interface.

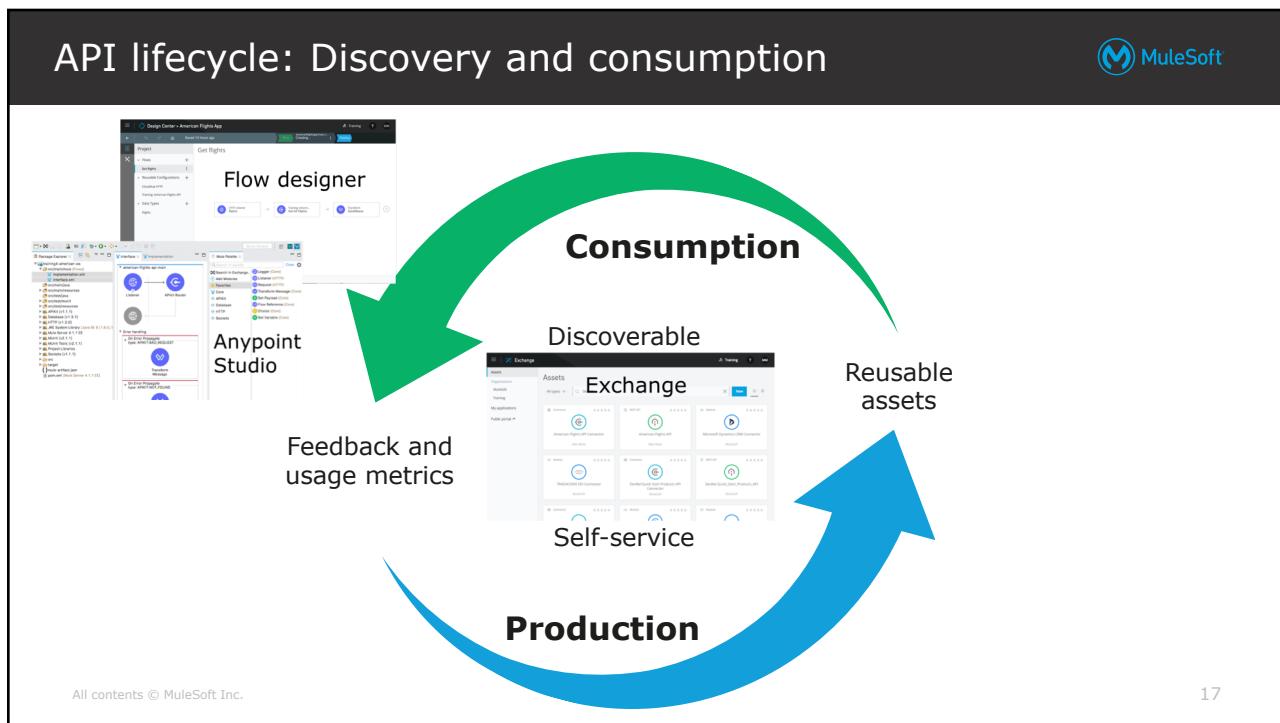
API designer: Shows the API designer interface for the American Flights API, version v1, with tabs for Headers, Parameters, Responses, Security, and Body.

API notebook: Shows the API notebook interface for the American Flights API, version v1, with tabs for Headers, Parameters, Responses, Security, and Body.

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Anypoint Exchange

The Anypoint Exchange is a central repository for API assets, providing the following benefits:

- 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

The interface includes a sidebar for navigation and a main area displaying a grid of assets, such as connectors and REST APIs, each with a preview, rating, and download options.

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What does (and should) Exchange contain?



- 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

All types
Connectors
Templates
Examples
REST APIs
SOAP APIs
HTTP APIs
RAML fragments
Custom

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REST APIs and API portals in Anypoint Exchange



- When a REST API is added to Exchange, an **API portal** is automatically created for it
- An API portal has
 - Auto-generated **API documentation**
 - An **API console** 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
- In the last module, you used a public API portal created from Anypoint Exchange for a private organization (Muletraining)

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REST connectors in Anypoint Exchange



- When a RAML 1.0 API specification is added to Exchange, a **connector** is automatically created for it
 - The connector can be used in Mule applications to make calls to that API
 - REST Connect is the name of the technology that performs this conversion

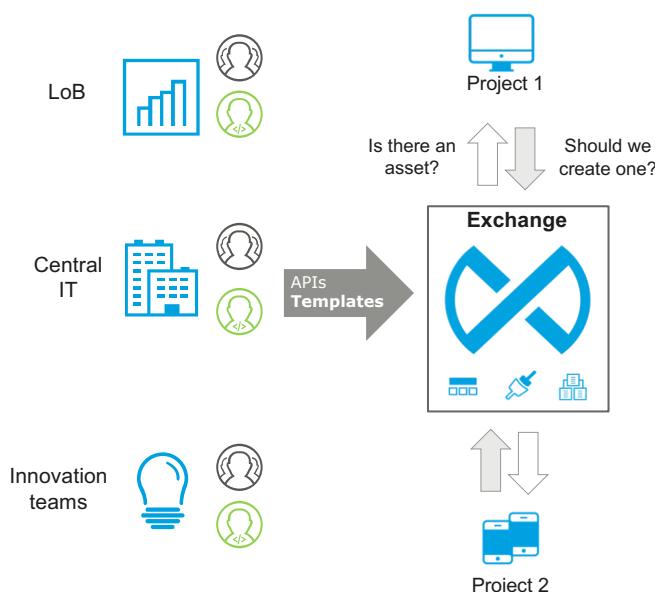
The screenshot shows the Anypoint Exchange interface with the title bar "Exchange". The left sidebar has categories: All, MuleSoft, Training, My applications, and Public Portal. The main area is titled "All assets" with a "Search" bar. It displays four items:

- American Flights API Connector**: Connector, 5 stars, Max Mule
- REST API**: REST API, 5 stars, Max Mule
- LDAP Connector**: Module, 5 stars, MuleSoft
- Amazon RDS Connector**: Module, 5 stars, MuleSoft

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Using Exchange: Success of C4E in action



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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 and make calls to the Training: American Flights API in the public Exchange

The screenshot shows the Anypoint Exchange 'Assets' page. The left sidebar includes sections for 'Organizations' (MuleSoft, Training), 'My applications', and 'Public portal'. A search bar at the top right contains the text 'american'. Below it, a message says 'Showing results for "american", Save this search'. Three items are listed: 'Training: American Flights API' (REST API, 5 stars, MuleSoft), 'Training: American Flight Data Type' (RAML Fragment, 4 stars, MuleSoft), and 'Training: American Flights Example' (RAML Fragment, 4 stars, MuleSoft). A 'New' button is visible in the top right of the search bar area.

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Building integration applications and APIs with Design Center



Design Center anatomy

The screenshot shows the MuleSoft Design Center interface. At the top, there's a navigation bar with 'Training', a question mark icon, and 'MM'. Below it is a search bar with 'American Flights App' and a '+' and '-' button. A modal window for 'American Flights App' is open, showing details like 'Created with API designer' and 'Created with flow designer'. The main area displays a table of projects:

Name	Project Type	Last Update
American Flights Example	API Fragment	July 27th, 2017
MUA Flights API	API Specification	July 27th, 2017
MUA Flight Data Type	API Fragment	July 27th, 2017
American Flight Data Type	API Fragment	July 27th, 2017
American Flight Example	API Fragment	July 27th, 2017
American Flights App	Mule Application	July 27th, 2017
Training American Flights API	API Specification	July 27th, 2017

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	<ul style="list-style-type: none"> • Anypoint Platform: Flow Design
API designer	Web app for designing, documenting, and mocking APIs	Module 3	<ul style="list-style-type: none"> • Anypoint Platform: API Design
Anypoint Studio	Desktop IDE for implementing APIs and building integration applications	Module 4 In Fundamentals: Modules 6-13	

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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

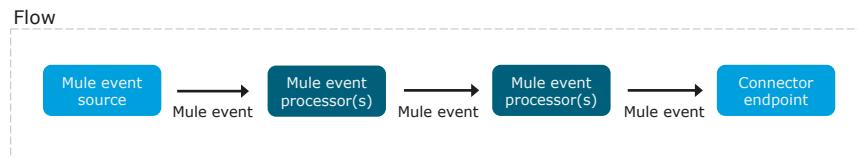


- **A lightweight Java-based enterprise service bus (ESB) and integration platform** that allows developers to connect apps together quickly and easily, enabling them to exchange data
 - Acts as a transit system for carrying data between apps (the Mule)
 - Can connect all systems including web services, 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 4 applications and flows



- 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

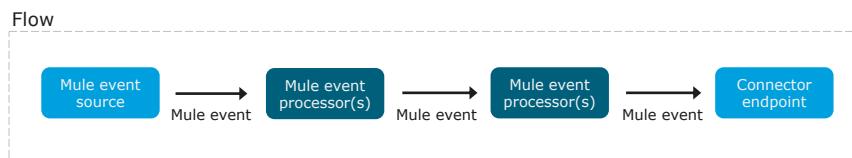
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What's in a typical Mule 4 flow?



- 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



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Creating integration applications with flow designer



Flow designer anatomy

MuleSoft

The screenshot shows the MuleSoft Flow Designer interface for the 'American Flights App'. The top navigation bar indicates the application is 'Running'. The left sidebar contains a 'Project explorer' with sections for 'Flows', 'Reusable Configs', 'CloudHub HTTP', 'Data Types', and 'Logs'. The main area displays a flow diagram with components: 'HTTP Listener flights' (with payload and attributes), 'Training: American Flights API' (with payload and attributes), and 'Transform DataWeave' (with payload and attributes). The 'Application status' section shows the application is 'Running'. The 'Cards' section provides a visual representation of the flow's structure. The 'Logs' section at the bottom shows application startup logs.

```

    * Application: americanflightsapp-hvac
    * OS encoding: UTF-8, Mule encoding: UTF-8
    *
    ****
    SYSTEM 06:22:35 Worker(18.220.102.247): Your application has started successfully.
    SYSTEM 06:22:35 Your application is started.
    All INFO 06:22:48 ****
  
```

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Running flow designer applications



- 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**
- When you make changes to the application in flow designer and are ready to test it
 - You need to run the application again – which updates the application deployed to the worker



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CloudHub workers



- **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

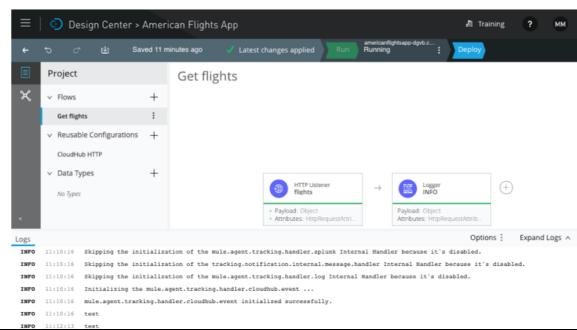
Worker size
0.1 vCores
0.1 vCores 500 MB memory
0.2 vCores 1 GB memory
1 vCore 1.5 GB memory
2 vCores 3.5 GB memory

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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
- Run and test the application
- View application information in Runtime Manager



Accessing, querying, and transforming data



Accessing and modifying Mule 4 event data



- ← 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

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Transforming data with DataWeave



- 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

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The Transform component

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

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

- 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

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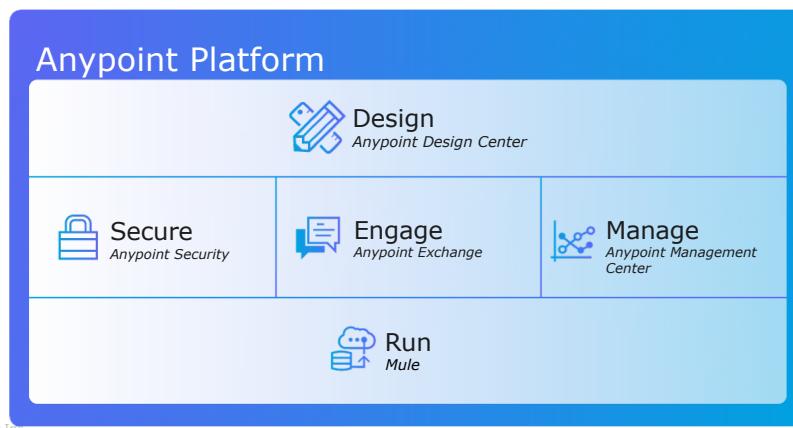
Summary



Summary: Anypoint Platform



- **Anypoint Platform** is a unified, 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

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