



API Strategy & the Asure Marketplace

Presenter: Christian Franklin



2024 Asure Reseller Partner Conference



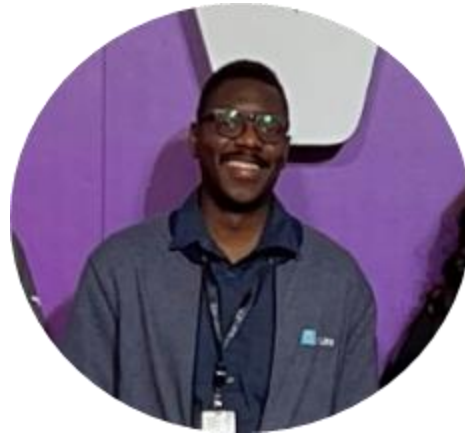
Speaker Introduction



Andrew Quarley & Ashrit Bista

Architects

Integrations, Marketplace,
AsureID, Engineering



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Product Manager/Owner

Integrations & Marketplace

Session Agenda

01 Introduction

02 Current state of APIs @Asure

03 Modernization Insight: Guiding Principle

04 API Vision

05 Timelines & Roadmap Prerequisites

06 Q & A



What is an API?



About API

Overview & Mission

Principles

Origins

Timeline

Who We Are

API represents all segments of America's natural gas and oil industry, which supports more than 11 million U.S. jobs and is backed by a growing grassroots movement of millions of Americans. Our nearly 600 members produce, process and distribute the majority of the nation's energy, and participate in [API Energy Excellence®](#), which is accelerating environmental and safety progress by fostering new technologies and transparent reporting. API was formed in 1919 as a standards-setting organization and has developed more than 800 standards to enhance operational and environmental safety, efficiency and sustainability.

Although our focus is primarily domestic, in recent years our work has expanded to include a growing international dimension, and today API is recognized around the world for its broad range of programs:

LEARN THROUGH

EXPERIENCE

Start your experiential learning journey with API and launch your personal and professional growth.

FIND MY PROGRAM >



Academic Programs International

<https://apiabroad.com>



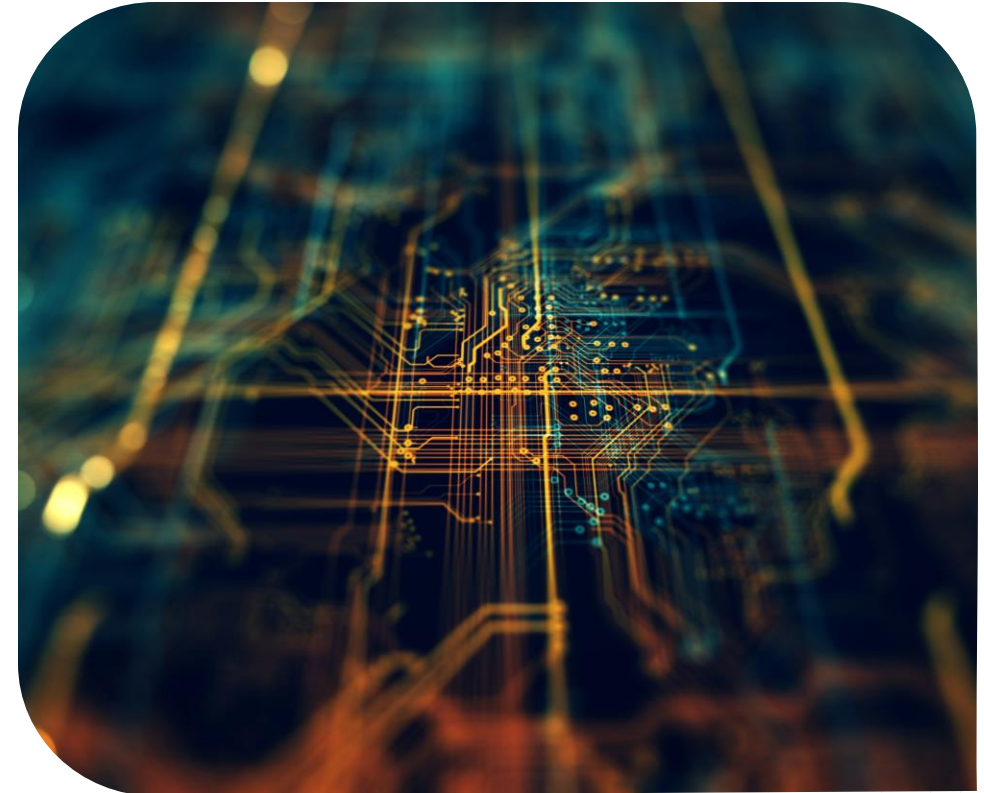
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Introduction to APIs

- Application Programming Interfaces (APIs) are beneficial ways of transferring information between systems
- Different types of APIs: REST, SOAP, GraphQL, Websockets
- APIs have evolved from basic programming constructs to critical components of modern digital ecosystems
- They allow for interoperability, flexibility and allow for new business models
- In the 1970s APIs were used as software interfaces that allowed various applications to communicate with the operating system



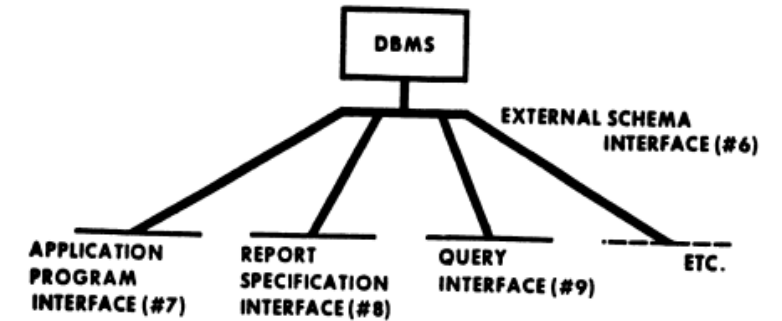
History of APIs

- The term *API* initially described an interface only for end-user-facing programs, known as [application programs](#). This origin is still reflected in the name "application programming interface." Today, the term is broader, including also [utility software](#) and even [hardware interfaces](#).^[7]

- A diagram from 1978 proposing the expansion of the idea of the API to become a general programming interface, beyond [application programs](#) alone.^[6]

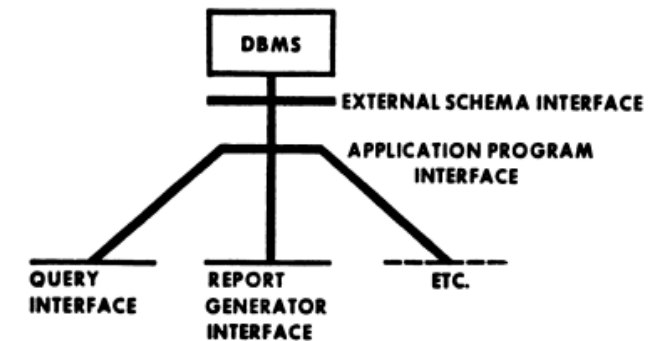
- <https://en.wikipedia.org/wiki/API>

Figure 5
Application Programmer Interface



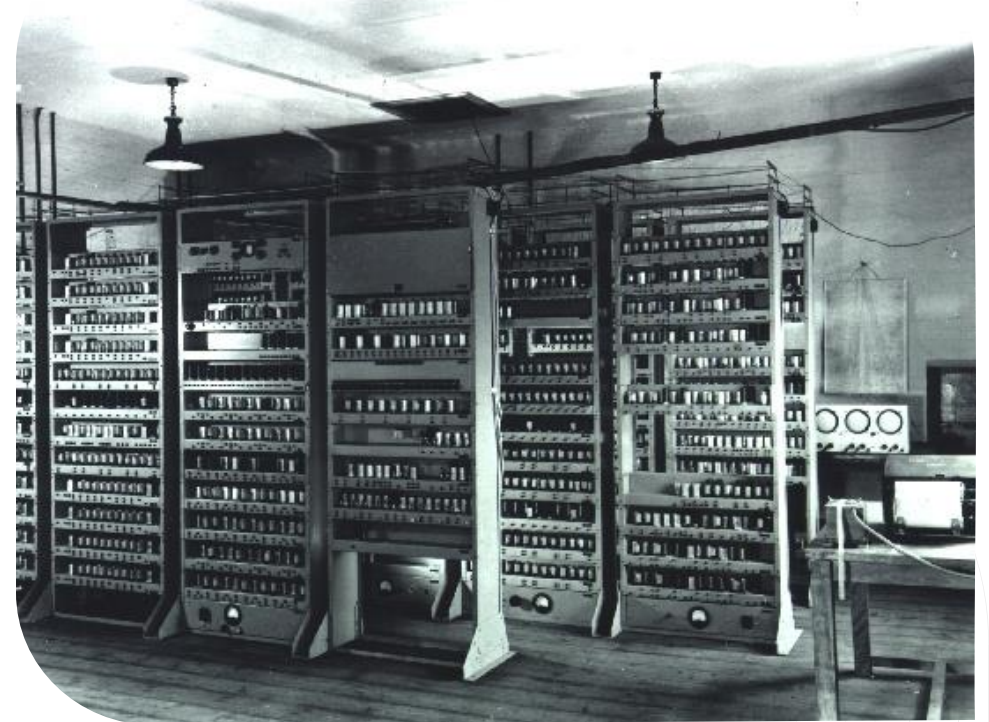
An alternative which has several advantages is to make the API sufficiently rich to enable programs to be written in support of query, report generation, etc. (Figure 6).

Figure 6
Enriched Application Programmer Interface



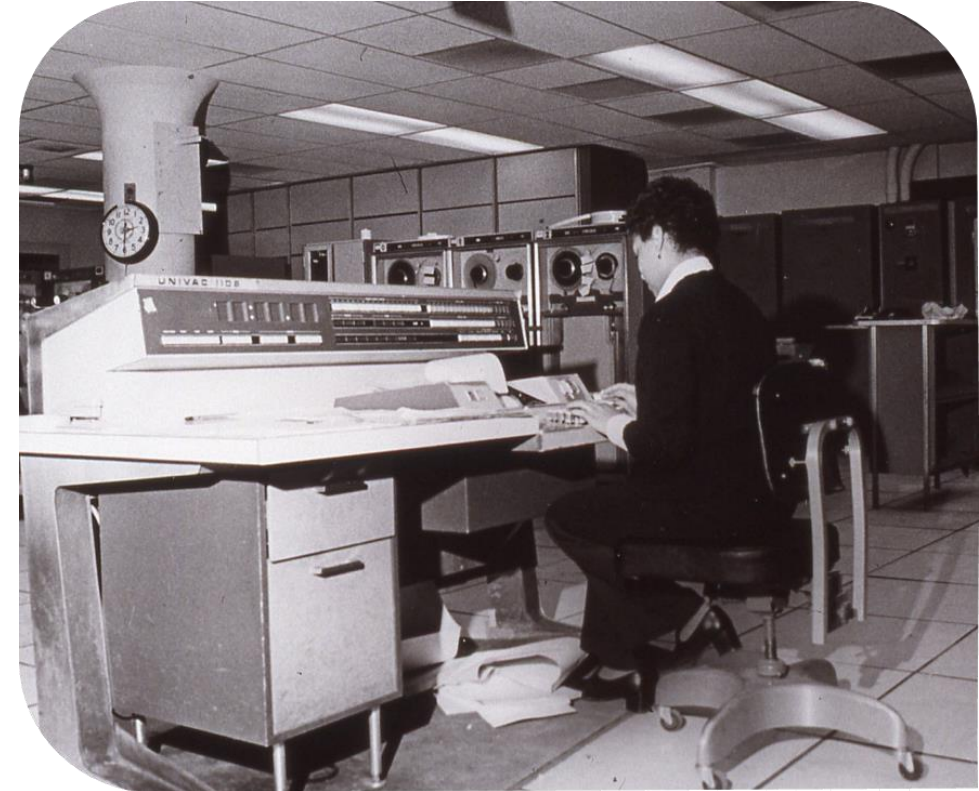
History Continued

- The idea of the API is much older than the term itself. British computer scientists [Maurice Wilkes](#) and [David Wheeler](#) worked on a modular [software library](#) in the 1940s for [EDSAC](#), an early computer.
- The [subroutines](#) in this library were stored on [punched paper tape](#) organized in a [filing cabinet](#). This cabinet also contained what Wilkes and Wheeler called a "library catalog" of notes about each subroutine and how to incorporate it into a program.
- Today, such a catalog would be called an API (or an API specification or API documentation) because it instructs a programmer on how to use (or "call") each subroutine that the programmer needs. [\[7\]](#)



History Continued

- Although the people who coined the term API were implementing software on a [Univac 1108](#), the goal of their API was to make [hardware independent](#) programs possible. [8]
- <https://en.wikipedia.org/wiki/API>



Modern APIs

- In building applications, an API simplifies programming by **abstracting the underlying implementation** and only exposing objects or actions the developer needs.
- A REST API conforms to the constraints of REST architectural style and allows for interaction with RESTful web services. REST stands for representational state transfer and was created by computer scientist Roy Fielding.
- GraphQL is an open-source data query and manipulation language (created by Facebook) for APIs and a query runtime engine.
- GraphQL enables declarative data fetching where a client can specify exactly what data it needs from an API. Instead of multiple endpoints that return separate data, a GraphQL server exposes a single endpoint and responds with precisely the data a client asked for.



HTTP Request

GET <https://api.nasa.gov/planetary/apod>

concept_tags are now disabled in this service. Also, an optional return parameter *copyright* is returned if the image is not public domain.

Query Parameters

Parameter	Type	Default	Description
date	YYYY-MM-DD	today	The date of the APOD image to retrieve

API Example - REST & CRUD

▪ REST – Representational State Transfer

- ✓ Stateless - each request happens in isolation (no memory from previous or future requests)
- ✓ All information needed to process a request is within the request itself

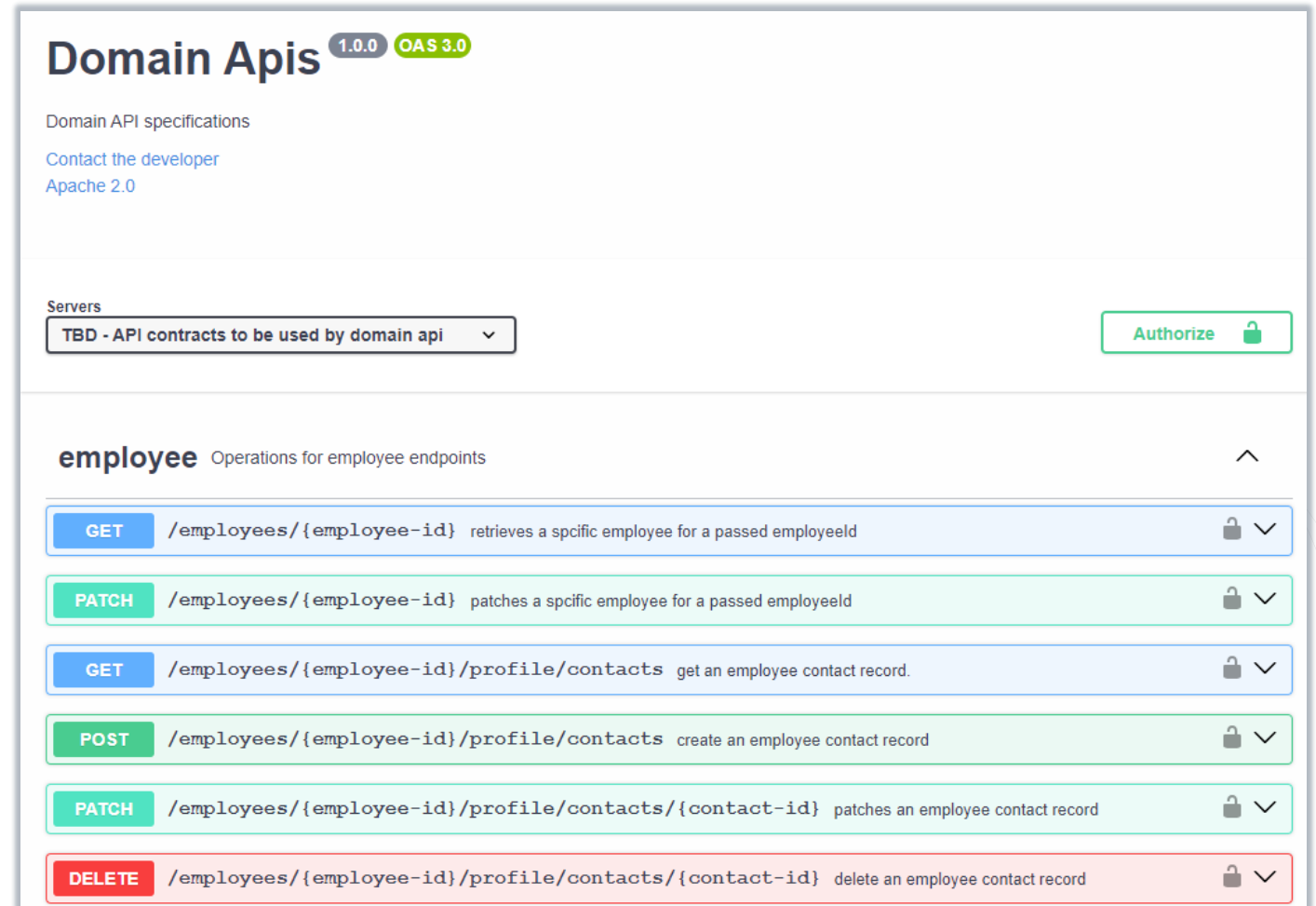
▪ CRUD Operations and HTTP Methods:

- ✓ Create resources using the POST method
- ✓ Read resources using the GET method
- ✓ Update resources using the PUT method
- ✓ Delete resources using the DELETE method



API Design and Development

- **Design Principles:** Simplicity, consistency and adherence to Asure software standards
- **Documentation and Developer Experience:** OpenAPI style specifications that illustrate endpoints
- **Security:** New APIs built and secured with AsureID
- **Versioning:** Versions of API to maintain backward compatibility



The screenshot shows a web interface for API documentation. At the top, it says "Domain Apis" with version tags "1.0.0" and "OAS 3.0". Below this, there are links for "Domain API specifications", "Contact the developer", and "Apache 2.0". A "Servers" section contains a dropdown menu set to "TBD - API contracts to be used by domain api" and an "Authorize" button with a lock icon. The main content area is titled "employee Operations for employee endpoints" and lists six API endpoints with their methods, URLs, descriptions, and security status (lock icon).

Method	Endpoint	Description	Security
GET	/employees/{employee-id}	retrieves a specific employee for a passed employeeid	Lock icon
PATCH	/employees/{employee-id}	patches a specific employee for a passed employeeid	Lock icon
GET	/employees/{employee-id}/profile/contacts	get an employee contact record.	Lock icon
POST	/employees/{employee-id}/profile/contacts	create an employee contact record	Lock icon
PATCH	/employees/{employee-id}/profile/contacts/{contact-id}	patches an employee contact record	Lock icon
DELETE	/employees/{employee-id}/profile/contacts/{contact-id}	delete an employee contact record	Lock icon

Business Value of APIs

Revenue Generation

- Connecting different systems together
- Service for clients

Ecosystem Development

- Build partnerships with vendors and clients
- Work together to create value-added services

Speed of Development

- Once built, can be repurposed for multiple uses
- Depending on system – fast development

Security

- Can utilize modern security practices such as using OAuth
- AzureAD

Ease of Management

- Set it and forget it
- Allows others to connect and build vs building from scratch each time

File Integration



Simple method to transmit data from point A to point B



CSV or Text files that contain relevant data to be transmitted



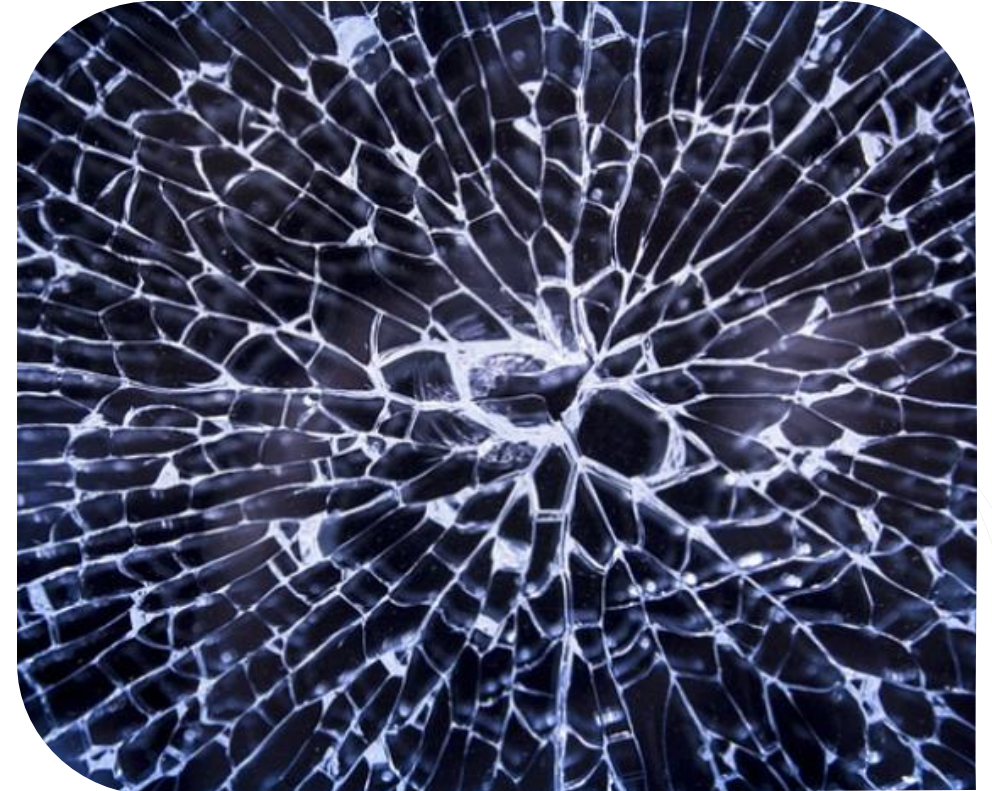
Generally sent through SFTP or uploaded through a web portal



Files must be created and maintained

Current State: Fractured API Landscape

- No reliable singular public API for direct clients, resellers and partners
- Several different APIs by application domains used simultaneously for direct integrations with select partners and clients (direct and resellers)
- No uniform authorization model – Basic Auth, custom JWT, custom API keys
- Implementation in older tech stack: Delphi, .Net Framework MVC
- Hosting and deployment – Windows servers hosting IIS and not truly scalable
- Non-multitenant
- Hard to add new functionality and deliver timely



Modernization @Asure: Guiding Principle

Software built at Asure should be cloud-native, observable, extensible, geographically resilient, support compliance requirements and operational workflows. All of this must be served in a scalable and cost-effective manner. This is every team's ownership.



API Vision

01

Developer Portal

- API collections
- Authorization for APIs
- Self-service generation of API credentials
- Sandbox environment generation

02

Developer APIs

- Data APIs
- Event APIs (subscriptions)
- RESTful domain-based covering core HCM domains – benefits, payroll, time, employee, etc.

03

Developer SDKs

- Downloadable SDKs inbuilt support for exponential back-off, retries
- Support for ease of event subscription

04

Partner APIs

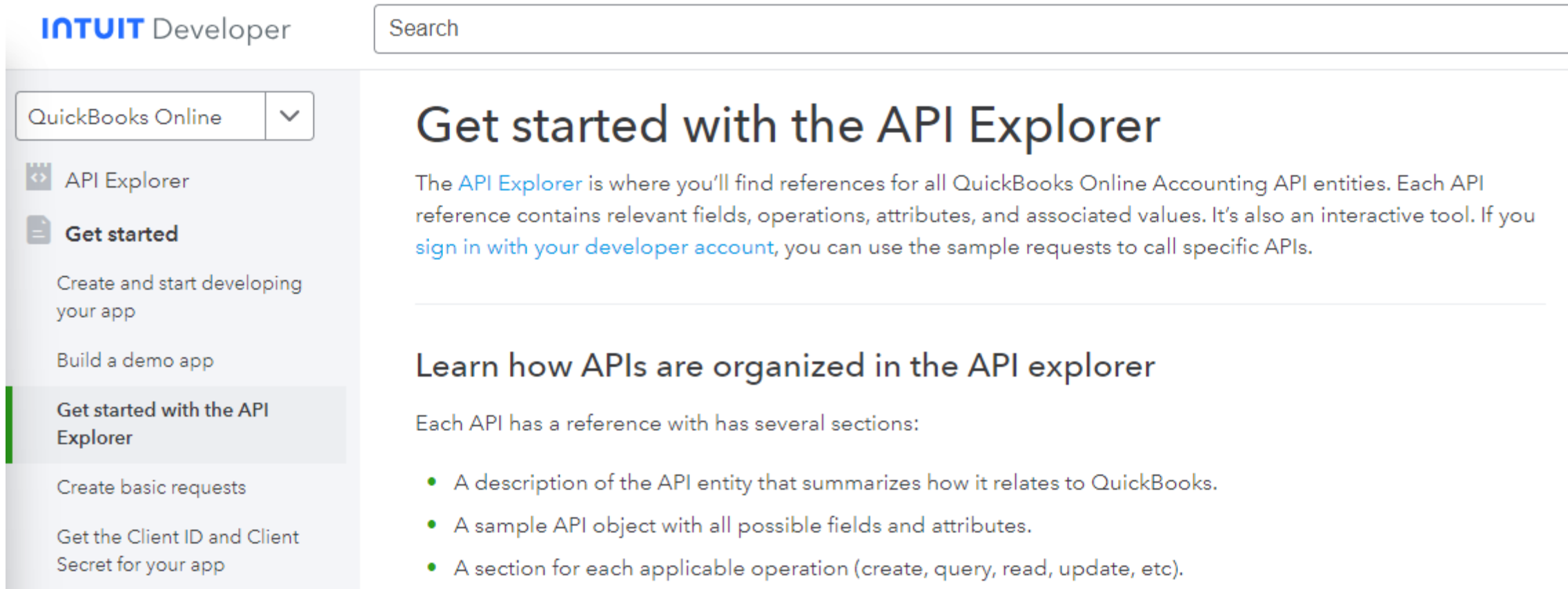
- Customized unpublished APIs for specific partners to support Asure Marketplace and strategic partners

05

Security Model

- OAuth2 JWT token-based authorization (initial)
- Financial Grade API support: mTLS, DPOP
- Tenant Isolation

Intuit Developer Portal



The screenshot shows the Intuit Developer Portal interface. At the top left, the text "INTUIT Developer" is displayed. To its right is a search bar with the placeholder text "Search". Below the search bar is a dropdown menu currently set to "QuickBooks Online". The left sidebar contains several navigation items: "API Explorer" with a code icon, "Get started" with a document icon, "Create and start developing your app", "Build a demo app", "Get started with the API Explorer" (highlighted with a green bar), "Create basic requests", and "Get the Client ID and Client Secret for your app". The main content area features a heading "Get started with the API Explorer" followed by a paragraph explaining the API Explorer's purpose and a link to sign in. Below this is another heading "Learn how APIs are organized in the API explorer" followed by a paragraph and a bulleted list of three items.

INTUIT Developer

Search

QuickBooks Online

API Explorer

Get started

Create and start developing your app

Build a demo app

Get started with the API Explorer

Create basic requests

Get the Client ID and Client Secret for your app

Get started with the API Explorer

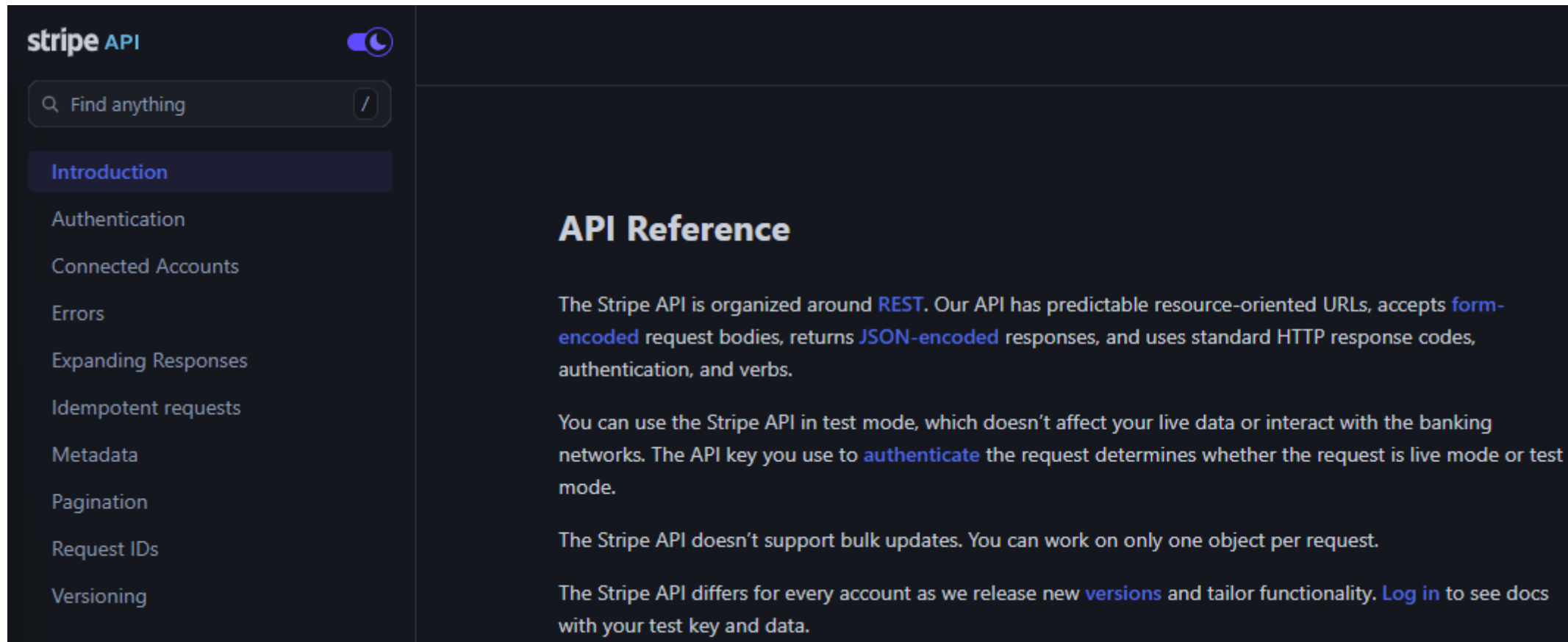
The [API Explorer](#) is where you'll find references for all QuickBooks Online Accounting API entities. Each API reference contains relevant fields, operations, attributes, and associated values. It's also an interactive tool. If you [sign in with your developer account](#), you can use the sample requests to call specific APIs.

Learn how APIs are organized in the API explorer


Each API has a reference with has several sections:

- A description of the API entity that summarizes how it relates to QuickBooks.
- A sample API object with all possible fields and attributes.
- A section for each applicable operation (create, query, read, update, etc).

Stripe Developer Portal



The screenshot shows the Stripe Developer Portal interface. On the left is a dark sidebar with the 'stripe API' logo and a search bar containing 'Find anything'. Below the search bar is a list of navigation items: 'Introduction' (highlighted), 'Authentication', 'Connected Accounts', 'Errors', 'Expanding Responses', 'Idempotent requests', 'Metadata', 'Pagination', 'Request IDs', and 'Versioning'. A toggle switch is visible in the top right of the sidebar. The main content area is titled 'API Reference' and contains three paragraphs of text. The first paragraph explains the API's organization around REST, mentioning resource-oriented URLs, form-encoded request bodies, JSON-encoded responses, and standard HTTP response codes. The second paragraph discusses test mode, noting that it doesn't affect live data and that the API key used for authentication determines the mode. The third paragraph states that the API doesn't support bulk updates, allowing only one object per request. The final paragraph mentions that the API differs for every account due to new versions and tailored functionality, with a link to log in to see docs.

stripe API 

Find anything /

Introduction

Authentication

Connected Accounts

Errors

Expanding Responses

Idempotent requests

Metadata

Pagination

Request IDs

Versioning

API Reference

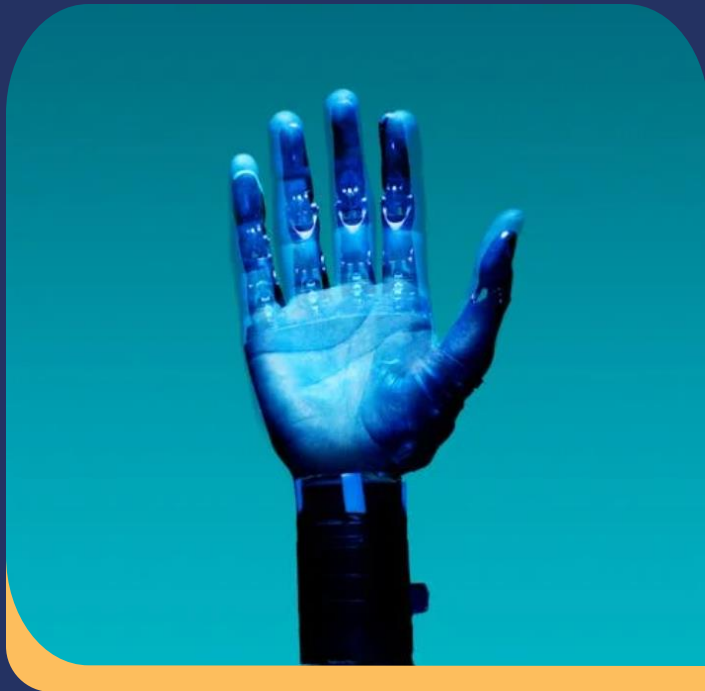
The Stripe API is organized around **REST**. Our API has predictable resource-oriented URLs, accepts **form-encoded** request bodies, returns **JSON-encoded** responses, and uses standard HTTP response codes, authentication, and verbs.

You can use the Stripe API in test mode, which doesn't affect your live data or interact with the banking networks. The API key you use to **authenticate** the request determines whether the request is live mode or test mode.

The Stripe API doesn't support bulk updates. You can work on only one object per request.

The Stripe API differs for every account as we release new **versions** and tailor functionality. **Log in** to see docs with your test key and data.

Status: Current Iteration



Continuous Improvement Continuous Development

- First iteration of domain-based APIs built to support Employee Portal to provide necessary data from current source systems of record
- Unified Azure GraphQL-based API to power new web and mobile platforms with federation to the domain-based APIs
- Integration of APIs with AzureAD for JWT-based token authorization
- Not ready for 3rd party consumption

Roadmap & Timeline

Prerequisites: API v1.0

- Backend Integration Phase Completion
- Support for Service Bureau users and administrative users
- Integration of payroll systems into AsureID (Small & Mid-market)
- Integration of Time & Labor into AsureID



API First Development



Create APIs

- Ensure correct data attributes are being used
- Generic enough to allow for cross platform development
- Reusable and extensible
- Designing with 3rd parties in mind



Connect APIs to New & Old Applications

- Employee Portal
- Employer Portal
- Microservices



Expand APIs

- Expand on existing APIs rather than building new for each project
- Improving with 3rd parties in mind

API Based Integrations

Vendor Dependent

- Not all vendors support APIs
- Some required data elements not always available

Impact

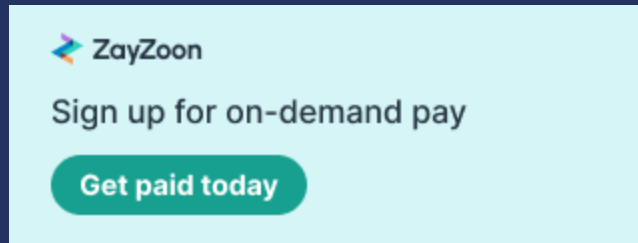
- Is it solving a problem worth solving?
- Will it be widely used?

Solution

- Ease of use
- Hands-off
- Seamless

Asure Marketplace

EQUIFAX®



- Access driven - can be turned on/off at different levels
- Vendors only have access to clients and employees that have the integration turned "on"
- Secure - no access given without permission (consent management)
- Modern design

Marketplace: ZayZoon

- API based integration
- Utilizes Azure Datastore / Data Lake
- Evolution Scheduled Task
- Mangrove APIs
- Wages automatically reported to ZayZoon
- Deductions automatically imported to Employees
- Deductions automatically reported to ZayZoon

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Win the war for talent with a platform that measurably improves your employee's financial wellbeing. By reducing financial stress in the workplace, ZayZoon makes employees happier, more productive and likelier to stick around.

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Marketplace: Equifax



Employers

Employers provide encrypted income and employment data, which is updated each pay cycle.

The Work Number handles verification requests, lessening the manual load on HR departments.



Credentialed Verifiers

Access vital data securely and instantly 24/7.

Credentialed verifiers with a permissible purpose can easily access important data so there is less waiting on consumers to provide documentation to complete manual verifications.



Employees

Employees can receive decisions faster.

Verifiers can get the information they need instantly to help expedite important decisions, almost always without additional action needed from the consumer.

Marketplace: Equifax

- API based integration
- Utilizes Azure Datastore / Data Lake
- Can be turned on/off per company
- Employees can review information through Equifax's Employment Data Report, request a data freeze, and more

EQUIFAX®



Marketplace: E-Comp

- Evolution API based integration
- After turning “on” the API - simple to add/remove clients
- Provides real time payroll data to E-Comp via API
- Removes the need to send file uploads or reports



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Marketplace: Vestwell

- File based integration
- File transfer is automated
- Integration manages and sends payroll files to Vestwell
- Files received from Vestwell are processed by integration and can be automatically imported using EvoExchange
- Available on both Evolution and Mangrove



Modern
retirement
benefits for
your business

Get started



Q & A



Thank You!



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