What is API Integration?

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An **Application Programming Interface** or an **API** is a set of definitions and protocols through which applications communicate with each other. With API your application or service can use the functions provided by another application without needing to know how that other application is being implemented. APIs can also serve as an intermediary layer for data transfers between system applications, allowing businesses to open their application data and functionality to third-party developers, business partners, as well as internal departments within their organizations.

For example, the **weather application** on your mobile phone is communicating with the news bureau's API to fetch you the latest news, without needing to know the internal working of the news bureau API or consider an app like **Zomato** which uses API to show the restaurant locations on Google Maps without needing to know how the location is determined internally.

Now that you have got a brief idea of what API is, let's continue with the topic of **What is API Integration**.

API integration and its importance

The process of connecting two or more software applications or processes using APIs is referred to as **API integration**. This allows the systems to exchange data and functionality, allowing them to work in unison. APIs are a collection of protocols, routines, and tools used to create software and applications. APIs allow for communication between different applications specifying how the software components should interact with each other.

API integration is required for businesses to connect their systems and services to other external applications, allowing them to exchange data and functionality in real time. This improves efficiency, scalability, and user experience while potentially saving money. Businesses can use API integration to **automate** tasks and **integrate** new systems and services, creating new opportunities for innovation and growth. Without API integration, businesses would have to rely on **manual processes** and custom development, which can be costly, time-consuming, and less efficient.

How to Achieve API integration?

Depending on one's need, API integration can be achieved in quite different ways, but it majorly revolves around the following,

1. Custom Integration

It is the process of connecting one application or service to another via a **custom-built API**. Custom integration can be created when an existing API is not available or does not meet the specific needs of the integration. This entails developing a new API that allows data and functionality to be exchanged between systems or services. These integrations can be built in a variety of programming languages, such as **Python([Build a REST API using Flask](#))** or **JavaScript ([REST API in Node.js)](#)**, and can be tailored to specific needs and constraints.

Custom integration necessitates more effort and resources than using pre-existing APIs, but it also provides greater flexibility and control over the integration.

2. Connector Applications

It is the process of utilizing **third-party software** to connect various systems and services via APIs. These connector applications, also known as middleware, frequently come with **preconfigured** tools for popular systems and services and act as a **bridge** between the systems and services, allowing data and functionality to be exchanged. A connector application, for example, can be used to integrate social media platforms such as **Instagram** with an analytics tool, allowing for the automatic collection of social media data such as follower counts and the analysis of this data in the analytics tool.

It is important to note that connector applications may have customization and flexibility limitations, as well as additional costs associated with their use, but they are much simpler than **Integration Platforms**.

3. Integration Platforms

Integration platforms also referred to as **iPaaS (integration platform as a service)**, offer a centralized environment for developing, deploying, and managing integrations. They usually

include pre-built connectors for popular systems and services, as well as tools for developing custom connectors and workflows. They support a wide range of integration scenarios, such as real-time data synchronization, batch data processing, and the creation and execution of complex business processes. They can also include features like monitoring and analytics, security, and error handling. Examples of Integration Platforms include **Mulesoft** and **Jitterbit**.

Integration Platforms are more powerful and versatile than **connector applications,** but, aside from being costly, they are also more difficult to set up and manage.

Benefits of API integration

Integrating **APIs** into one's applications can bring a number of benefits to an individual or an organization, which can include:

1. Efficiency: API integration automates the transfer of information and data from one application to the next, which was previously done manually by a payroll employee. It has the potential to automate repetitive tasks by allowing systems and applications to communicate and share data with one another, thereby increasing overall efficiency.

2. Scalability: By utilizing API integration**,** businesses can avoid having to start from scratch when developing certain services or applications. This can help businesses grow and expand by making it easier for different systems to communicate with one another, share data and functionality, and create new capabilities and services. As a result, the business's scalability improves.

3. Cost Savings: API integration can reduce the need for manual data entry, which not only improves data accuracy but also saves money on labor and reduces the risk of errors. The API integration can assist businesses in lowering costs by mitigating the need for custom development and allowing them to leverage existing systems and services.

4. Reduced Errors: API integration can reduce the need for manual data entry and thus increase data accuracy by allowing different systems and applications to communicate with each other and share data.

For example, accounting software can use an API to automatically import transaction data from a bank account, eliminating the need for manual data entry and lowering the risk of errors.

Examples of API integration

API integration comes with the goal of making different applications and services **communicate** seamlessly **irrespective of the technologies** they are developed in. Below are a few examples of **use cases** of API integration.

1. Social Media: A social media platform can use API integration to connect to a sentiment analysis tool, allowing for the automatic analysis of social media posts to determine customer **sentiment**. It can also be used to enable social **login**, which allows users to sign into a website or application using their existing social media account.

2. Healthcare: API integration could be used by **hospital management systems** to connect to an **EHR** or electronic health record system, allowing for the sharing of patient health information. APIs can also assist healthcare providers in securely and efficiently sharing patient information with other providers.

3. Chatbot: A chatbot application can use API integration to connect to a customer service platform, allowing for the automatic routing of customer **inquiries** to the appropriate service agent. The chatbot can also use APIs to access customer information and provide personalized product **recommendations**.

4. IoT: IoT devices can connect to a data analytics platform via API integration, allowing for the automatic collection and analysis of sensor data. API could be used to **remotely control** a thermostat or to activate a security camera.

5. E-commerce: An e-commerce platform can connect to an inventory management system via API integration, allowing for automatic inventory level **updates** and order processing. APIs can also be used by e-commerce websites to integrate with payment gateway providers such as **Google Pay or PayPal** to securely process transactions and handle **payments**.

6. Accounting: An accounting system can connect to a **payroll system** via API integration, allowing for the automatic processing of employee payroll. It can also be used with invoicing systems like Zoho Invoice to create and send invoices automatically, as well as **track** payment status.

7. Location tracking: API integration in location can provide accurate location data, enable real-time tracking, and improve the user experience by providing location-based services such as geocoding to convert street addresses into geographical coordinates, reverse geocoding, routing, and navigation by providing turn-by-turn directions or estimated time of arrival. Examples of such APIs include **Google Maps API**, **OpenRouteService API**, etc.

Conclusion

API integration is a **powerful** tool that enables various processes and applications to communicate with one another by **exchanging** data and functionality. Businesses can benefit significantly from this, including the **automation** of repetitive tasks, the streamlining of data flow, improved efficiency, increased scalability, cost savings, and the reduction of errors.

But, it is also very important to work with experienced developers who have a thorough understanding of the systems and services, that are being integrated during the process. Furthermore, before deploying the integration to a production environment, it is critical to thoroughly **test** it to ensure that it works as expected.

However, there are also various **free** APIs and services available in the market that an individual can integrate to enhance the functionality of his application. Some of those include **NewsAPI**, **OpenWeatherMap API**, **dummyjson API**, etc. If you have already found your favourite one, do comment it down below!