Why are Federated APIs Important in Cloud Computing?

Cloud computing is one of the biggest consumers of federated APIs today. It can be defined as the process of delivering computer services such as databases, storage, servers, software, networking, intelligence, and analytics over the cloud

A federated architecture can be defined as an enterprise architecture pattern that allows sharing of information and interoperability in an organization. If you look at organizations that have implemented enterprise APIs successfully, you will realize that they have built the implementations on a project level and localized architectures that employ clearly identified services.

When it comes to federated APIs, organizations are required to establish the services that are more important to them and implement them within their own APIs compared to consuming them from third-party APIs. Furthermore, to focus on their core services and enhance efficiency via re-use, they need to understand the capabilities of the APIs that they implement. This is an important part when developing federated APIs.

Picture 1 of Why are Federated APIs Important in Cloud Computing?

Cloud computing is one of the biggest consumers of federated APIs today. It can be defined as the process of delivering computer services such as databases, storage, servers, software, networking, intelligence, and analytics over the cloud to enhance economies of scale, flexible resource allocation, and innovation. In this article, we will discuss three reasons why federated APIs are important in cloud computing. They include;

1. Protocol and Message Interoperability

Messages are exchanged within or across API domains in different formats, among them SOAP, JSON, EDI, XML, and HTML. For an application to get the required information from a message, the message has to be structured well in a way that a machine can read it.

This process, which involves generating responses and reading messages effectively as well as translating messages to and from different formats is what determines whether an API has been successfully deployed or not.

Furthermore, the process requires autonomy and interoperability of the APIs, which are fundamental especially at both the semantic (for instance when getting customer information from different messages) and message level (for instance when changing XML or even JSON messages to SOAP).

When it comes to protocol interoperability, organizations need to understand that it is important when setting up an API domain that integrates well with all of their existing processes. They need to be ready to understand and parse different types of messages before they can interact with the cloud. This means that the lack of an infrastructure that is well deployed with federated APIs will bring interoperability problems when adding cloud computing APIs.

2. Federated Management of Identity

In an Applications Programming Interface (API) interaction, organizations are supposed to establish a level of trust between producers and service consumers. This is done through the use of identity tokens. These tokens come in different formats, among them Cookies, Basic Auth, OAuth, and Cookies which are protocol-based, and WS-SAML, WS-UserName, and SAML which are message-based.

This means that one of the most important elements of API communication is consuming as well as generating identity tokens for both authorization and authentication. To be successful in cloud computing, organizations need to find the best way through which they can generate and consume identity tokens since cloud computing providers interact through the use of the tokens. To effect that, they need a federated API architecture to deal with the generation, consumption, and management of different identity tokens.

3. Message Hygiene

In the event of a successful deployment of an API, there are millions if not billions of messages of different formats that go through the API. One of the most critical things that organizations need to do is to find out whether such messages get to the desired target without being changed or tampered with. In a case where a single message is lost, the entire operations of the organization might be affected negatively.

This means that organizations need to identify and quarantine any messages that might be lost or tampered with and analyze them later to ensure that their business operations are not affected in any way. They (organizations) need a federated API architecture that is capable of freezing out operations affected by bad messages and creating logs that can be analyzed and corrected. This is critical for effective cloud computing.

Conclusion

A federated API architecture plays a very crucial role for organizations that want to adopt cloud computing. Organizations that adopt cloud computing with the lack of federated APIs usually have their domains demoted into isolated silos. This means that such an organization will not be able to outsource its core architecture to employ cloud computing.

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