akana

WHITE PAPER

Federated Architecture For Enterprise API Management

Reducing Complexity and Increasing Agility

Introduction

As businesses grow, so do their infrastructure needs. This growth presents complex problems that require a simple solution.

The key to ensuring enterprise-wide security and compliance, while still preserving agility and flexibility, is the balancing act between centralization and autonomy between disparate business units.

In this white paper, we will examine federated architecture for API management and how it supports your organizational structure.

The Challenges of API Proliferation

Corporations that acknowledge the potential of APIs to create new channels for their business often face a daunting challenge: how do they maintain an appropriate level of enterprise-wide governance without sacrificing the relative autonomy of their business units?

With the evolving significance of the API channel as a business value-add, one can only expect a rapid proliferation of APIs across the enterprise. Though the utilization of APIs is a good thing in itself, what should also be considered are the impact on enterprise global resources, data protection concerns, and overall interoperability.

The Solution: Federated Architecture

In scenarios like the one provided above, it is key to find the optimal balance between centralized governance across the enterprise (not just *regulating*, but rather *facilitating*) and agility for each separate business unit.

To this end, it makes great sense to consider the advantages of a federated architecture. This architectural approach seeks to ensure, or even optimize, inter-operability among semi-autonomous business units by having them benefit from shared resources to support their initiatives rather than obstruct them.

Such an architectural approach has shown to more likely receive essential stakeholder buy-in.

Federated Architecture and API Management

When this approach is translated to APIs and API management, one can easily envision a similar balancing act between global governance and the autonomy of each business unit. Providing an enterprise-wide platform to support essential API management functions would benefit all business units, while at the same time provide centralized oversight.

For example, critical security policies, agreed-upon API product design elements, and documentation standards could be shared across all participating business units. Similarly, global resources such as back-end services and IT infrastructure would be shared, yet the means would be available to ensure appropriate resource allocation, etc.

To effectively support a federated architecture from an API management perspective, it is essential to allow for a level of granularity that reflects the requirements of each underlying organizational division. There are multiple possible approaches here, with the optimal approach for each organization being determined by the balance between resource sharing and autonomy.

Organizational Structure

Even in cases where business units share resources to a large extent, they may still require a level of control over their APIs, such as who can access them and who can edit them.

The solution should reflect the preferred organizational structure, with users assigned to individual units and granted permissions relative to their role within that unit.

Multi-Tenancy

On the other end of the spectrum, business units may prefer an entire "work space" that is logically segregated from others. This can be supported through a multi-tenant solution.

In a multi-tenant environment, business units can be assigned a distinct tenant in which data, functions, and processes are logically isolated from other tenants. At the same time, critical resources can still be shared and reused across tenants.

As an example, critical security policies may be defined at the super-tenant (federated) level and automatically put in place with API products that are configured at the

tenant level. Yet, this still allows for additional features to be applied from one business unit to the next: specific additional security measures, API quality features, and proposed subscription plans, for example.

However, we should be wary of an API management solution using multi-tenancy to overcome its own limitations. Some solutions may not be able to handle an organization's structure within a single tenant as they weren't architected from the ground up as an enterprise solution. Though multiple-tenancy is a powerful solution and certainly applicable in specific use cases, working from an organizational structure within a single tenant environment will usually be more cost-effective and easier to administer.

Benefits of Federated Architecture

OPTIMIZING RESOURCE UTILIZATION

Under a federated architecture, federation members are able to use shared resources such as a global IT infrastructure and IT services.

From an API management perspective, critical elements can be specified and governed at the global level, whereas individual business units may have additional ascendancy over their APIs. This can include additional information they like to publish with the API product, the management of the API consumers, and the monetization plans that are applied.

ISOLATION

In a federated environment, authority will be delegated to the federation members to allow them an amount of operational independence – while maintaining interoperability within the organization as a whole.

Separation at the organizational level allows for a more granular allocation of visibility and additional privileges, while even further isolation using a multi-tenant approach helps to reduce the complexity of managing APIs across the enterprise as a whole.

SECURITY

Regardless of the deployed architecture, the protection of an enterprise's data assets and the integrity of processes and systems associated with them needs to be ensured at all times. This principle typically surpasses a need for autonomy, so critical security-promoting measures will rather be specified at the global level to the benefit of any member.

COMPLIANCE

Especially in highly-regulated industries like healthcar and financial services, regulatory compliance must be ensured. Deploying a federated model allows for federation members to share compliance-related policies, for example, or even for having these automatically applied to any API in scope, thus avoiding compliance breaches.

BUSINESS AGILITY AND RESPONSIVENESS

Federation allows for a quick roll-out of adjustments across the enterprise, enabling an effective response to rapidly changing conditions. When critical features are managed at the federal (global) level, adjustments to these features can be quickly propagated across all federation members.

The Akana Solution

The Akana API management platform addresses your enterprise's federated architecture needs with capabilities such as:

ORGANIZATIONAL CAPABILITIES WITHIN A SINGLE TENANT

- Create an organizational structure to reflect the relevant parts of your enterprise's organization, and/or correspond with API delivery processes (for example, from project to operational ownership).
- Assign users to any organization and grant permissions.
- Create and manage API products within the organizational unit's scope.

- Promote API products from source to target organization across environments.

MULTI-TENANCY WITH AKANA

- Out-of-the-box API Portal for each tenant: common functionality yet tenant-level customization/theme application.
- Shared APIs next to tenant-specific APIs (and associated permissions, access workflows, environment promotion topology, etc.).
- Have tenants reuse common resources like API Gateway or have tenants deploy API Gateways for their own individual usage.
- Federated API metrics across all tenants.
- Shared identity provider next to tenant-specific SSO.

Use Cases

SINGLE INSTANCE WITHIN AN ORGANIZATION

In this scenario, each business unit is developing their own APIs but don't want to deal with deploying multiple instances of their API management platform for each business unit.

Along the API lifecycle, each of the business units will have their own environment (within a single instance of their API platform) where each unit can manage their APIs, policies, and users. However, when the APIs from the different business units are promoted to the production instance, the organizational structure goes away, with a single shared instance or portal that hosts all their APIs.

The separation of APIs is not required in the production instance as it is consumer focused and still subject to the rules that determine who has access to which APIs.

MULTI-TENANCY

In a multi-tenancy scenario, APIs in the production environment can have multiple instances or multiple portals. Development is still a single instance, but publishing is multi-tenant where each tenant has a logical grouping of APIs based on line of business. The metadata of the API will govern which API gets published to one or more tenants. This allows for flexibility for the individual business lines when APIs reach production.

For example, a national insurance carrier may have different portals for each type of insurance such as automobile, health, or life insurance. However, there may be some APIs that are common across all those verticals and would exist in each portal and managed as part of the CI/CD pipeline.

Experience the Akana Solution

Is your enterprise struggling with the balancing act between centralization and autonomy for each business unit? See how the Akana API management platform supports federation by signing up for a free 30-day trial.

With Akana, you can be confident that your APIs are built the right way – secure, reliable, and running as they should be – across all of your enterprise infrastructure.

TRY FREE

akana.com/free-trial

About Perforce

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