

API Management – 101

The Key to Digital Transformation

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APIs are changing not only how you and I access products and services but also how companies do business.

Driving Innovation with APIs

Every day we enjoy the convenience of technology, from booking a ride to ordering food and shopping online with our phones, we enjoy a seamless user experience right at our fingertips. But have you ever wondered what makes this possible? The short answer is Application Programming Interfaces or APIs are working behind the scenes to make our lives easier.

Harnessing the capabilities of online, social, cloud, and mobile technologies, applications driven by APIs have ushered in a revolutionary era of interconnected devices and immersive encounters, often referred to as the “Internet of Things” and more expansively, the “Internet of Everything.” In the realm of generative AI—another prevailing discourse—APIs are playing a pivotal role. They are facilitating the practical integration of generative AI by offering developers a means to engage with and leverage the power of pre-trained generative AI models. This augmentation has elevated the role of APIs to even greater heights.

So, how do APIs work to deliver a connected experience and provide the foundation for a digital transformation? In this foundational blog, we will focus on the integral role of API Management in driving digital transformation and explore how APIs serve as a bridge between applications, enabling seamless data exchange and integration across diverse systems.

API Management in the Bigger Picture

Think of APIs as the raw ingredients for creating a culinary masterpiece. Just as chefs have an array of ingredients at their disposal, developers have access to a variety of APIs offered by different service providers to build their own software. And, like each culinary ingredient brings a unique taste/ flavor to a dish and complements other ingredients, in the same way, each API serves a specific purpose in its ecosystems. And just as the chefs manage an ensemble of complex ingredients in their dishes, an API Management software enables developers to handle APIs effectively.

Foundations of API Management

API Management encompasses the various stages of an API's lifecycle, including design, development, documentation, deployment, security, versioning, monitoring and maintenance. Its significance has grown with the rise of microservices architecture, as API Management solutions simplify the usage of APIs provided by these microservices and enable effective governance of information flowing through them. API Management comprises four key components.

API Gateway ▶ This acts as a facade layer for upstream APIs, handling tasks such as request routing, protocol transformation, authentication and rate limiting. The API Gateway manipulates data and aggregates it across multiple upstream API services to provide the required functionality to application developers. API security is a very important aspect of the API Gateway. Commonly used security mechanisms for APIs include API key-based authentication and authorization, OAuth and JWT, which helps protect the APIs and ensure secure access.

API Analytics ▶ An understanding of API usage and performance analytics is essential from a business perspective. API Management platforms gather data on API usage and present it in user-friendly dashboards, allowing organizations to gain insights into API utilization and make informed decisions.

API Monitoring & Alerting ▶ Proactively identifying and resolving API errors is critical, particularly when there are associated service level agreements (SLAs). API Management platforms provide monitoring solutions that track API performance and availability, coupled with alerts via email, Slack, or other communication channels. These alerts enable API producers (those who create APIs) to address issues promptly and minimize disruptions.

Developer Portal ▶ APIs are documented using the OpenAPI specifications, which allow API producers to publish them on a Developer Portal. Often, organizations prefer to setup internal and external API Developer Portals that cater to different audiences and address their respective needs. Internal portals help to streamline collaboration, share knowledge, standardize implementation, and bring consistency. External portals help to increase developer engagement, monetize APIs, build API marketplace and ensure rapid onboarding. Some API Management solutions offer turn-key options for the Developer Portal through a ready-to-use platform with all the necessary features. Furthermore, there are Content Management System-based options available for building the Developer Portal. These options leverage modern technologies and offer extensive flexibility in terms of customization and design.

API Management in Enterprise Architecture

By employing these components, API Management platforms facilitate the effective administration and utilization of APIs throughout their lifecycle, ensuring secure, efficient, and reliable API interactions.

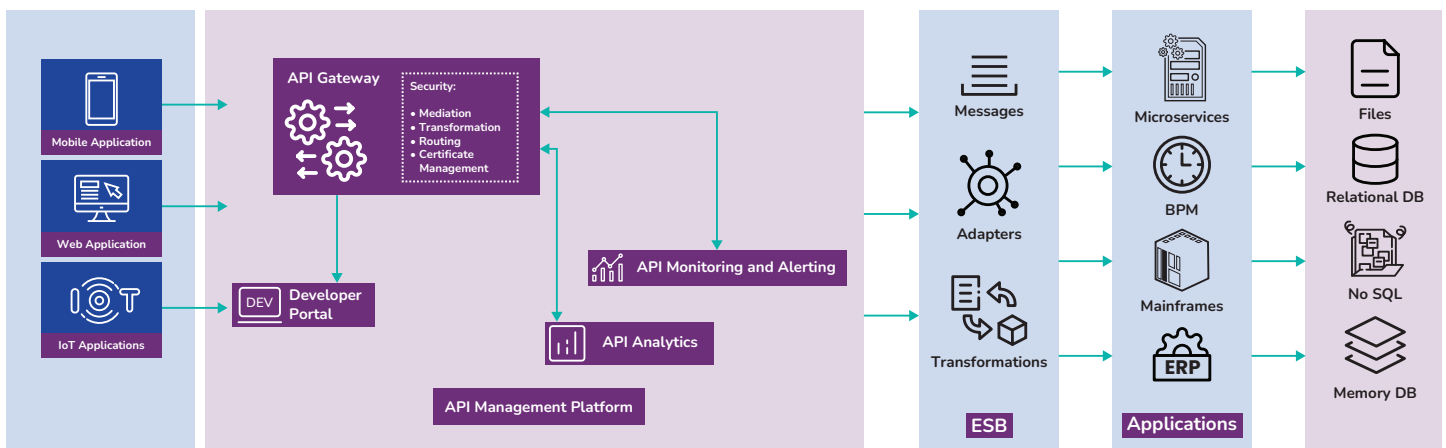


Figure 1: From APIM to Applications Layer

Benefits of API Management

In the microservices development methodology, each API is designed to perform a specific task as a single unit. API Management platforms provide peripheral functionalities required to secure, monitor, and publish APIs, allowing businesses to focus on building specific features. The key benefits of API Management platforms include:

API Monetization ▶ Companies can monetize APIs through various models, such as subscription plans, pay-as-you-go, freemium or revenue-sharing arrangements. Effective API monetization strategies can create new revenue streams, expand market reach, and foster ecosystem growth by encouraging third-party developers to build applications and services on top of their APIs.

API Usage Monitoring ▶ API Usage Monitoring involves monitoring and gathering data related to the usage, performance, and behaviour of APIs. By collecting metrics such as request/response times, error rates and user interactions, API Analytics helps optimize and improve API functionality. API Analytics tools provide valuable insights to developers and businesses, enabling them to make data-driven decisions and enhance the overall API experience.

Automation ▶ API Management streamlines the development process and significantly reduces time for interface builders. Numerous API Management platforms provide features like template-based creation and automated API generation, eliminating repetitive tasks and expediting deployment. Also, these platforms provide APIs which allows API developers to implement scalable and secure CI/CD solutions.

Message Transformations ▶ API Management provides numerous message and payload transformation capabilities, for example, SOAP to REST or REST to SOAP, XML to JSON or JSON to XML. Most of the API Management solutions provide pre-built functions to perform these activities.

Onboarding ▶ Developer Portal provides comprehensive API documentation, interactive interfaces for testing APIs, and other resources that facilitate the adoption of APIs. It enables faster onboarding of partners who build self-sustainable API ecosystem through API-based applications. The Developer Portal also simplifies the integration process for developers, making it easier for them to understand and use the available APIs.

Security and Compliance ▶ API Management ensures adherence to data privacy regulations, corporate policies, and external compliance requirements. By utilizing API Management platforms, organizations can offload the responsibility of local compliance and security, allowing them to concentrate on their core business.

Traffic Management ▶ Traffic Management is the strategic control and distribution of incoming API requests, allowing for efficient load balancing, rate limiting and caching to ensure optimal performance, scalability, and responsiveness of backend services.

In Conclusion

By leveraging API Management platforms, businesses can achieve greater efficiency, consistency, and security in their API development processes. These platforms handle common functionalities, allowing developers to focus on building specific features and accelerating the overall adoption of APIs within their applications.

The Blue Altair Advantage

To ease the API adoption journey for our clients, Blue Altair has developed a comprehensive comparison scoring sheet that evaluates major and popular API Management platforms based on fifteen different criteria. Our evaluation criteria cover various aspects, including platform deployment models, ease of use, API development features and developer portal, among others. Furthermore, our strong partnership with leading API Management platform vendors enables us to ensure Blue Altair provides the best and latest technologies to our clients.

Our approach with clients is one of collaboration. Right from day one, we collaborate with them to assess their requirements, develop a comparison matrix of different API Management platforms, and build a proof of concept. Based on these initial efforts, we guide our client on the API Management platform best suited to their business needs. We also help clients during the pre-sales phase, working closely with both, their customers, and the product teams.

About the Author

Aashish is the Director of API Management & Integration capability at Blue Altair. With more than 13 years of experience in solutioning and software development, Aashish has a strong track record of delivering successful API and integration projects across multiple industries.

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