SAP API Management und Cloud Platform Integration

Usage, architecture and deployment scenarios of APIs in the context of cloud and IoT integration
Challenges

In the digital world, technical interfaces between different systems and devices have become increasingly important and are an essential part of our everyday life.

As the number of interfaces within the company and with external partners and platforms grows, so do security and data protection requirements.

In addition, the integration of cloud applications into the existing IT infrastructure increases the functional requirements for interfaces, since cloud applications usually follow much shorter release cycles than on-premise systems. This creates a tension between additional functional requirements and stable operation.

Interfaces also play a decisive role in the rapidly growing Internet of Things sector. Through IoT scenarios such as networked production lines, service consumers worldwide will increase massively by 2020. Sensors will enable more intelligent factories, machines and complete production facilities. They occur in large quantities and are often difficult or even impossible to administer individually.

The Solution: API - Application Programming Interfaces

APIs offer the possibility to structure services according to business requirements independent of the underlying technologies and application systems. APIs also allow to separate corrections and bug fixes from functional enhancements.

While API management publishes the services in an abstract form and takes on tasks such as backward compatibility and authentication, the integration platform takes over the technical implementation and integration into the company-specific IT landscape.

Architecture

API Management
- Versioning
- Access control
- Usage statistics

Integration platform
- Routing
- Mapping
- Backend connectivity

Specialist application
- Business logic
- Master data
- Transaction data
To implement cloud-based business processes, SAP landscapes can be integrated via SAP Cloud Platform Integration (CPI) in combination with SAP API Management.

The cloud platform integration enables integration through pre-configured packages for standard solutions as well as the implementation of individual processes.

With a large number of interfaces, a central management solution such as API management brings significant advantages. It enables a standardized security concept as well as the definition of content-based checks.

API management includes the control, publishing and optimization of application interfaces in a scalable and protected environment.

Technically, a proxy is set in API management between the sender and the receiver. This enables the monitoring and translation of requests. The required interface is then no longer called via its direct target address on the integration platform or in the application system, but via a placeholder on the API proxy that catches the request, checks authorizations, for example, and forwards them to the actual target address.

Concrete application example

A common requirement scenario is the creation of service and repair orders, in which a defect can be reported by different sources and methods.

Case 1

The customer reports a defect to a service employee. The employee creates a service order in a cloud application such as Salesforce. The order is transferred from the cloud to the on-premise application via an automated interface.

Case 2

A technician is on site and notices a defect. He/she enters it in a mobile app on his smartphone. The information is immediately transferred or sent at a later point of time to the on-premise application.

Case 3

The machine itself recognizes via integrated sensors that there is a defect and reports this automatically to the interface. Filter, aggregation and decision rules enable that only relevant events and defects are forwarded to the on-premise system.
The API management can provide a central and standardized interface library for the different clients. New functionality is offered by new API versions, while clients who do not need the new functionality or are unable to make a change at short notice can continue to use previous versions of the API. Depending on the type of access, the API management provides different authentication methods and prevents accidental or abusive overload by limiting API calls and syntactically checking incoming messages.

In the second architectural level, SAP Cloud Platform Integration converts the messages from restful Web services (such as JSON format) to SAP IDoc, SAP Web, and OData Services.

The actual execution of the application logic for creating and processing the service order takes place in the S/4HANA system.

Implementation Options

SAP API Management is included in the Enterprise License of the SAP Cloud Platform Integration. Both are stand-alone products that can be used separately from each other, but offer many synergies when used in combination.
"As part of strategy and implementation projects in the context of Cloud, IoT and S/4HANA, cbs supports its customers in the evaluation and implementation of an API-based integration architecture“.

Holger Himmelmann
Consulting Director

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