Quick Answer: Should Apache Kafka Replace My Existing Integration Platform(s)?

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Adoption of Apache Kafka is now widespread, leading to some Gartner clients asking if Kafka can replace their existing integration platforms (such as Boomi, Informatica or MuleSoft). In all but the most limited of scenarios, software engineering leaders being asked this question should respond no.

Quick Answer

Quick Answer: Should Apache Kafka replace my existing integration platform(s)?

In all but the most limited of use scenarios, the answer is “no,” and this is why:

- Apache Kafka provides a subset of the integration capabilities required for most organizations but is lacking capabilities, such as orchestration and data modeling.

- Successful integration delivery is more than just the technical features and functions of the integration technology and instead must enable a variety of integration personas and skill sets.

More Detail

Apache Kafka Only Provides a Subset of the Integration Capabilities Required

Gartner's simple definition of integration is to make independently designed systems work together. These systems could be applications, data sources or devices. These systems are designed and developed independently, meaning that there is no agreement on technology, data standards, security policy or communication standards between them. To enable interoperability between the systems, a number of integration capabilities need to be implemented (see Figure 1).
While Apache Kafka does provide a number of these integration capabilities (such as Kafka Connect for connectivity to application programming interfaces and data sources, Kafka for choreography and Kafka streams for data transformation and enrichment), it lacks the orchestration and data modeling capabilities found in other integration technologies (such as integration platform as a service [iPaaS], enterprise service bus [ESB] and data integration tools). Several vendors have successfully built integration platforms based on Apache Kafka and added extra features to fill some of these gaps. But in that case, you are using the vendor platform and not Apache Kafka.

Successful integration delivery is more than the technical features and functions of integration.
Being successful with integration is not a simple exercise of selecting integration technology based on features and functions. Successful integration strategy includes providing the right mix of integration technologies that match your IT operating model, your integrator skills and company culture, as well as the governance around the usage of said technologies. Gartner has published research describing four major integration personas. They include integration specialists, such as ESB engineers, data engineers, EDI engineers, software engineers, IT administrators (like SaaS admins), and citizen integrators. To better understand the mix of personas your integration strategy needs to consider, see How to Optimize Your Integration Strategy to the Needs of Different Personas.

While the feature/function overlap between integration technology categories is no doubt increasing, the genesis of each category brings with it a certain perspective to the integration challenges they solve. Data integration tools have a historical focus on data at rest and batch processing. ESBs focus more on transactional data in motion. B2B gateway software focuses on EDI exchange with business partners. Event brokers and event stream processing platforms, like Apache Kafka, focus on data in motion. All of these technologies have targeted developers within IT departments but not necessarily with the same skill sets.

More recently we have seen the rise of technologies targeting business technologists outside of IT. These include technology categories, such as integration platform as a service (iPaaS), low code application platforms (LCAP) and robotic process automation (RPA) to name but a few. All of these technologies provide integration capabilities to less technical integration personas. See Innovation Insight for Citizen Automation and Development Platforms for a better understanding of technologies targeting these personas. Apache Kafka alone does not address the integration needs of business technologists.

The technology options for integration delivery are vast, and the success rate of large organizations using a single integration approach is low. Technically, Apache Kafka could replace some of your existing integration technology, as shown in Figure 1. However, unless you have a relatively limited set of integration scenarios and personas, if someone asks “Should Apache Kafka replace my existing application integration platform?” respond “No” and send them this research note.

Recommended by the Authors

How to Optimize Your Integration Strategy to the Needs of Different Personas
Choose the Best Integration Tool for Your Needs Based on the Three Basic Patterns of Integration

How to Identify Your Event-Driven Architecture Use Cases to Select the Best-Fit Event Broker

Innovation Insight for Streaming Data in Motion: The Collision of Messaging, Analytics and DBMS

Essential Patterns for Event-Driven and Streaming Architectures

Innovation Insight for Citizen Automation and Development Platforms

Identify and Evaluate Your Next Low-Code Development Technologies

Gartner's Integration Maturity Model