451 Research

S&P Global
Market Intelligence **Business Impact Brief**

Integration in Cloud-Native Architecture: An Event-Driven Approach

The 451 Take

Cloud-native computing can abstract away the complexity of IT infrastructure. It promises to free developers to concentrate on crafting logic, improving development quality and accelerating the deployment of mission-critical applications. It's composed of many different technologies at various stages of maturity. Among them is the promise of serverless applications, where reusable functions are assembled into software that works independently of the infrastructure that executes it. Applications invoke compute resources only when needed, controlling costs by operating on a pay-per-use rather than pay-per-provision basis as when using virtualized hardware.

To better understand the adoption of cloud-native computing, we surveyed business and IT professionals about how and where they will develop, migrate and run their mission-critical applications. In 2020, 38% said they will retain existing on-premises applications but move them to modern infrastructure and application architectures. Refactoring and shifting applications will be the approach for 29% of the respondents, with slightly over three-quarters of them doing so relatively quickly, or immediately after refactoring. These findings signify a desire by enterprises to take advantage of, and gradually migrate to, cloud-native architecture.

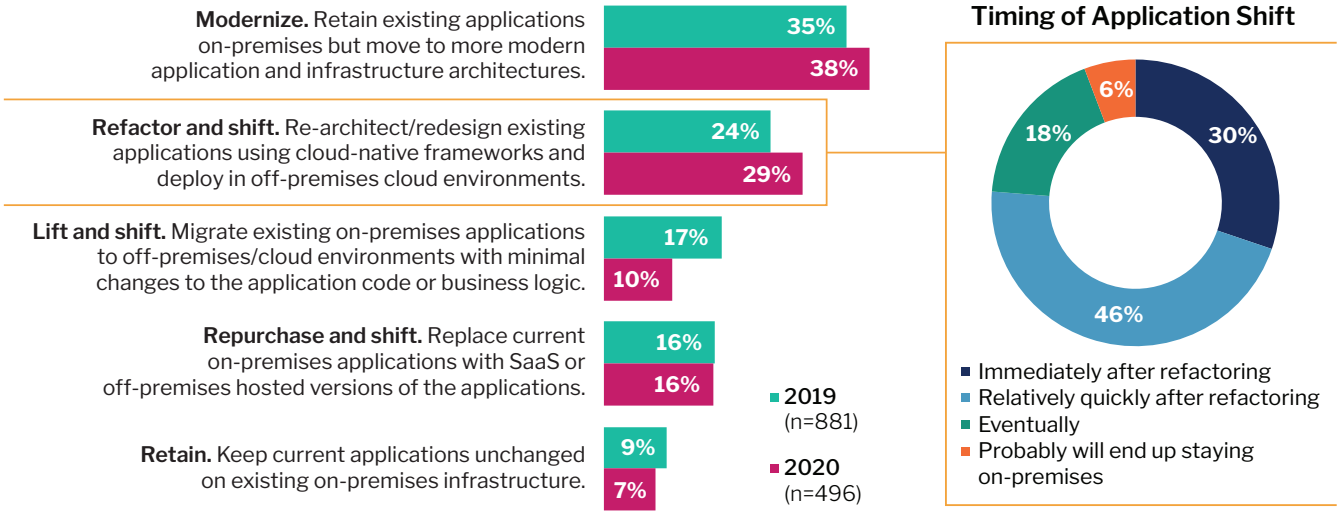
Modernization and Migration Approaches to Mission-Critical Applications

Source: 451 Research's Voice of the Enterprise: Digital Pulse, Workloads & Key Projects 2Q 2020

Q: Which of the following best describes your organization's approach to mission-critical legacy applications and workloads going forward? Base: All respondents

Q: Once the application has been modernized, which of the following best describes the pace of shifting the application to an off-premises cloud environment?

Base: Refactoring & shifting mission-critical legacy apps/workloads (n=139)



The technology for building and operating cloud-native applications at scale is still evolving, and questions remain. In particular is how best to integrate and orchestrate services, especially when they reside and execute in and across hybrid and multiclouds. Some are looking to integration PaaS (iPaaS) technologies for answers; iPaaS enables data exchange and interoperability across distributed and disparate on-premises infrastructure, software, cloud services and devices. It has evolved into low-/no-code integration development environments capable of any-to-any data, application and process integration. However, the integrations they create are typically 'message-oriented' – an approach that, if not properly enabled, may inhibit some of the benefits of cloud-native computing.

451 Research

S&P Global
Market Intelligence **Business Impact Brief**

The 451 Take

A message is a form of asynchronous service-to-service communication that exchanges the data needed for an action. In many implementations, the publishers and subscribers of messages know one another, such as when an on-premises ERP application needs to exchange data with a CRM SaaS offering. This approach can sometimes bind or 'tightly couple' applications with one another, making them less responsive to change. More importantly, it does little to alert potential publishers and subscribers when new services or sources of data are available for consumption.

In cloud-native computing, applications are decoupled, containerized and can be composed of many microservices. They're more portable and can be quickly deployed, reused and adapted by other developers. Workloads and applications can run anywhere, and, because the serverless environments and economics of various cloud service providers (CSPs) vary by price and performance, often do. Cloud-native integration must address the challenges that occur when data, applications and processes transcend the unique and proprietary designs of various CSPs. Moreover, it must alert publishers and subscribers to new sources of data when added to an IT ecosystem. This calls for a new breed of cloud-native integration technology, one based on event-driven architecture (EDA).

An EDA uses but surpasses simple message-oriented integration. It can also produce, detect, consume and react to events. An event differs from a message in that it is a notification that a change in state (e.g., for sale/sold, working/not working) has occurred, and it may include payload data to be acted upon. The publishers of events ('producers') do not need to know their subscribers ('consumers'). In an EDA, the consumers decide which event sources they are interested in. The EDA enables a constant state of awareness so that producers can 'stream' data about various types of events (or topics) in real time upon occurrence to all potential consumers. For example, a customer purchase on an e-commerce website produces an event that is streamed and consumed by interested services such as credit verification, inventory availability and fulfilment.

An EDA is an evolutionary step beyond message-oriented integrations. Emerging EDA platforms will bring low-/no-code tooling that can create rules-based workflows to enable an agile approach to the integration of distributed and decoupled application services and functions. It will help orchestrate their interoperability using policies and rules to guide the execution of application logic within and across cloud-native architectures.

Business Impact

ON THE ENTERPRISE: The event-driven serverless capabilities of cloud-native computing can minimize or eliminate idle resources, offer freedom from infrastructure expense and management, and help realize faster time to value from modern cloud-native applications and workloads.

ON BUSINESS OUTCOMES: An EDA brings real-time situational awareness to operations. It can provide business functions greater agility to adapt to change through more efficient integration and orchestration of services and serverless functions that can compose applications.

ON DEVELOPERS AND USERS: Applications built using containers and microservices that are run in serverless environments and integrated using an EDA are portable and can be quickly deployed, reused and adapted by others – thus contributing to improved developer velocity and productivity.

Looking Ahead

The speed, adaptability, reuse and economic benefits of cloud-native computing and serverless functions can be frustrated when the integration technology needed for all to interoperate doesn't keep pace. The challenge deepens when cloud-native applications and workloads are distributed and run across multiple disparate CSPs. Early message-oriented approaches to integration and orchestration across hybrid IT architecture can fall short of what cloud-native computing needs. Going forward, this will drive demand for new market entrants that evolve beyond message-oriented integration to enable a new breed of event-driven cloud-native integration platforms.