



Cloud Native Expands to Modernization and Migration of Mission-Critical and Data-Rich Applications

The 451 Take

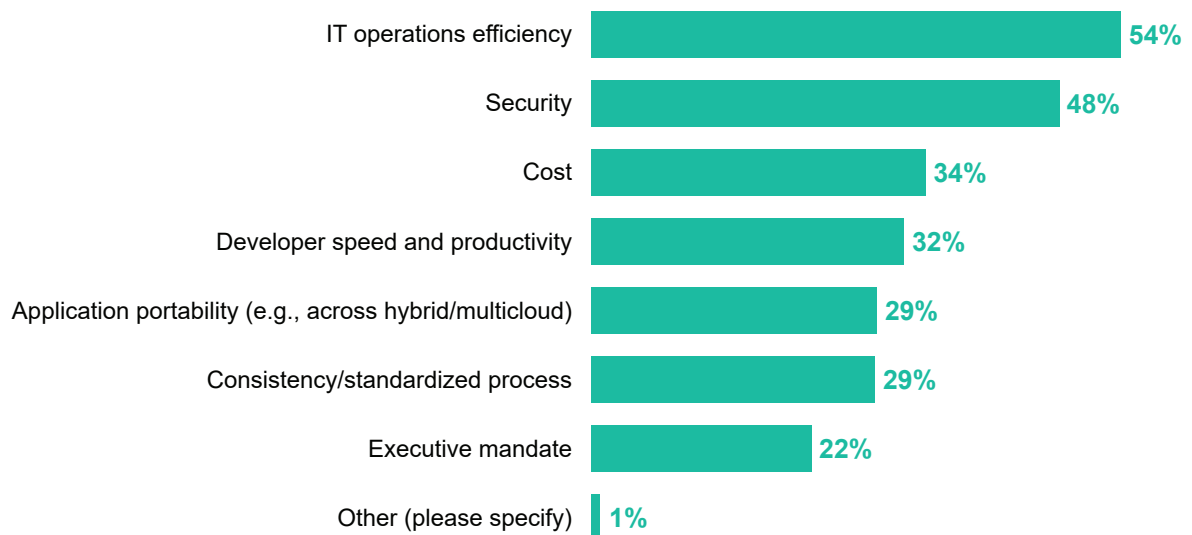
Driven by advantages including efficiency, security, cost and developer speed, cloud-native technology such as containers and Kubernetes have become critical components of enterprise migration to the cloud, modernization and digital transformation. While cloud native has thus far been largely limited to web and stateless applications, there is a growing movement to leverage containers and Kubernetes for stateful, mission-critical applications that require data persistence. In our Voice of the Enterprise: DevOps, Workloads and Key Projects 2020 survey, 56% of respondents reported that more than half of their containerized applications are stateful. This building wave of cloud-native applications includes databases of all kinds and data services such as Apache Hadoop, Spark and Kafka.

Cloud-Native Drivers/Benefits

Source: 451 Research, Voice of the Enterprise: DevOps, Workloads and Key Projects 2020

Q: What are the primary drivers/benefits of cloud-native technology, such as containers, Kubernetes and serverless, for your organization? Please select all that apply.

Base: All respondents (n=508)



The movement is being fueled by the continued evolution of cloud-native technology, such as added support for persistent data volumes in Kubernetes. At the same time, enterprise end users are seeking to apply cloud-native constructs to more data-rich, mission-critical applications. This means that larger swaths of enterprise application portfolios and teams are leveraging cloud-native technology, and organizations are benefiting from greater simplicity, consistency and automation across different applications and environments.

Cloud native is also proving to be a match for today's hybrid infrastructures that span on-premises, private cloud and multiple public cloud environments. As organizations seek to run applications on the most appropriate infrastructure based on factors such as cost, performance, data sovereignty, geographic location and other factors, technologies such as Kubernetes can enable the portability needed.



Business Impact

ENTERPRISES ARE LEVERAGING CLOUD-NATIVE TECHNOLOGY SUCH AS CONTAINERS AND KUBERNETES FOR IT EFFICIENCY, SECURITY, COST, DEVELOPER SPEED, PORTABILITY AND OTHER ADVANTAGES. Cloud-native software is designed to take advantage of cloud computing architectures and automated environments by leveraging API-driven provisioning, auto-scaling and other operational functions. This does not mean cloud native is limited to cloud infrastructure and applications; some organizations are applying cloud-native constructs and approaches to on-premises applications and IT operations.

WHILE MOST EARLY CONTAINERIZED SOFTWARE HAS BEEN LIMITED MAINLY TO WEB AND STATELESS APPLICATIONS, ORGANIZATIONS ARE INCREASINGLY CONTAINERIZING STATEFUL APPLICATIONS, TOO. A greater capability for cloud-native software to support stateful applications with data persistence and a growing desire to cast the cloud-native net across more applications are driving this second wave of container applications. Organizations are using containers for relational databases as well as open source and NoSQL databases, in addition to a growing breadth of data services such as Apache Hadoop, Spark and Kafka.

WE ALSO SEE CLOUD NATIVE PLAYING A PROMINENT ROLE IN APPLICATION MODERNIZATION AND MIGRATION TO THE CLOUD. A growing number of organizations are leveraging containers, Kubernetes, serverless and service mesh to accomplish their digital transformation objectives. The inclusion of legacy mission-critical applications in modernization and migration to the cloud has typically required a strong plan and even stronger nerve. After all, these are often still an organization's crown jewels, and any modernization process is not to be entered into lightly. Nonetheless, our research shows that two forms of application modernization are emerging as clear favorites: in-place modernization, and refactoring and shifting using cloud-native frameworks.

Looking Ahead

Cloud-native technology and methodology can enable successful digital transformation, cloud migration and modernization, but the greater opportunity lies in extending cloud-native constructs to legacy mission-critical applications. This often equates to more data-sensitive and data-rich applications, as well as other applications that rely heavily on databases and data services.

We expect the trend toward more stateful, containerized applications to be further fueled by continued evolution and maturation of cloud-native software such as Kubernetes, which continues to provide innovations in compute, orchestration, networking and storage capabilities. Over time, more Kubernetes applications will progress beyond testing and development to include a number of production workloads.

Cloud-native capabilities such as those critical to stateful container applications will also become increasingly important as organizations seek to support applications across hybrid infrastructures that include on-premises, private cloud and multiple public cloud environments. Cloud native can help enable portability across these environments, as well as others such as the edge, which is emerging as another area where cloud-native technology and methodology can uniquely meet the needs of end users, including consistent performance across resource-constrained edge locations.



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