

## REPORT REPRINT

# Kubernetes turns five: Cloud native goes mainstream

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### Introduction

It was the fifth birthday of Kubernetes, which defined the recent Barcelona edition of Kubecon and CloudNativeCon 2019. The 7,700 attendees at this event was nearly double the number at 2018's event. The entire cloud industry and all the enterprise software companies are Cloud Native Computing Foundation (CNCF) members (more than 415, and platinum sponsors are accepted by ballot) and there are 56,000 GitHub contributors, or 2.66 million contributions to some 38 CNCF projects.

### 451 TAKE

Five is the age at which toddlers begin their mainstream primary education and it certainly feels like 'cloud native' is now moving into production mode as the use of containers, Kubernetes and microservices accelerates. It's hardly scientific but one way to think about this market – and the opportunity – is that while 90% of applications don't use containers, 95% of new applications do.

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### Killer app

In an informal poll, more than half of the organizations at the event said they were running a production Kubernetes implementation and 451 Research finds that cloud native adoption among enterprises is strong (see Figure 1 below).

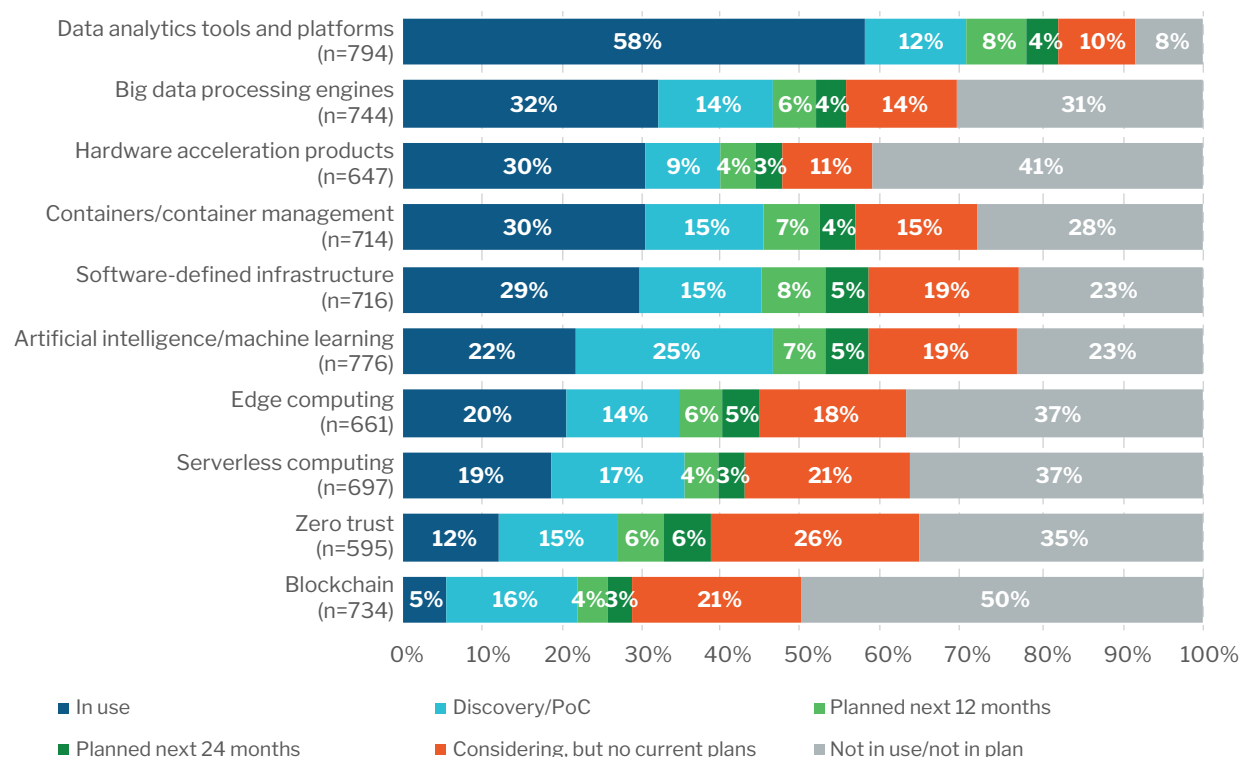
Moreover, about half said they are doing this on-premises. Admittedly, this is a self-selecting audience; however, while Kubernetes is five years old, the velocity at which cloud native is sweeping the industry suggests it's on a fast track to graduation. And this is also precisely its 'killer app': speed is the principal driver of cloud native adoption – faster development, faster delivery and faster return. Overall, the conversion to cloud native is similar to the re-platforming to the web that took place more than 20 years ago. What's also key here is that it's not Unix SVR4 v OSF, Corba v DCOM or Java v .NET.

Not all cloud native is open source, which is 'the what.' However, using DevOps processes is definitely the 'how,' while cloud in all its forms – public and private – is where containers and microservices run. The key challenges are principally people oriented.

The Fira Exhibition Hall exemplified how cloud, itself becoming a teenager this year, may be disappearing as a separate IT category. The word 'cloud' was not so prominent at booths or in branding; however, cloud's role as the host infrastructure for cloud native – whether public or private – is the default.

**Figure 1: Emerging technology usage/adoption, all respondents**

Source: 451 Research, Voice of the Enterprise: Digital Pulse, Budgets and Outlook 2018



## Service Mesh

Service meshes were particularly prominent as major vendors and independents continue to enter this part of the market, which is still being made up. AWS recently entered the market with App Mesh (based on Envoy) as did VMware with NSX Service Mesh (using Istio). Of particular interest was discussion about the role service meshes may provide for telcos, enabling every transaction to be tracked and accounted for governance purposes in the complexity of and diversity of 5G services and network slicing.

A Service Mesh Interface was launched in Barcelona, which defines a set of common APIs aimed at providing developers with interoperability across different service mesh technologies including Istio, Linkerd and Consul Connect. This was created by Microsoft in conjunction with Linkerd, HashiCorp, Solo.io, Kinvolk and Weaveworks with support from Aspen Mesh, Canonical, Docker, Pivotal, Rancher, Red Hat and VMware. It provides traffic policy – to apply policies like identity and transport encryption across services; traffic telemetry – to capture key metrics like error rate and latency between services; and traffic management – to shift and weight traffic between different services. As microservices move into production, the use of a service mesh will become mandatory.