CNCF Survey 2019

SDN x Cloud Native Meetup #27
April 20, 2020

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About Me

Ernest Chiang

AWS Community Hero.

Doing product and technology integration in fitness industry.

Worked on process integration engineering in semiconductor industry.
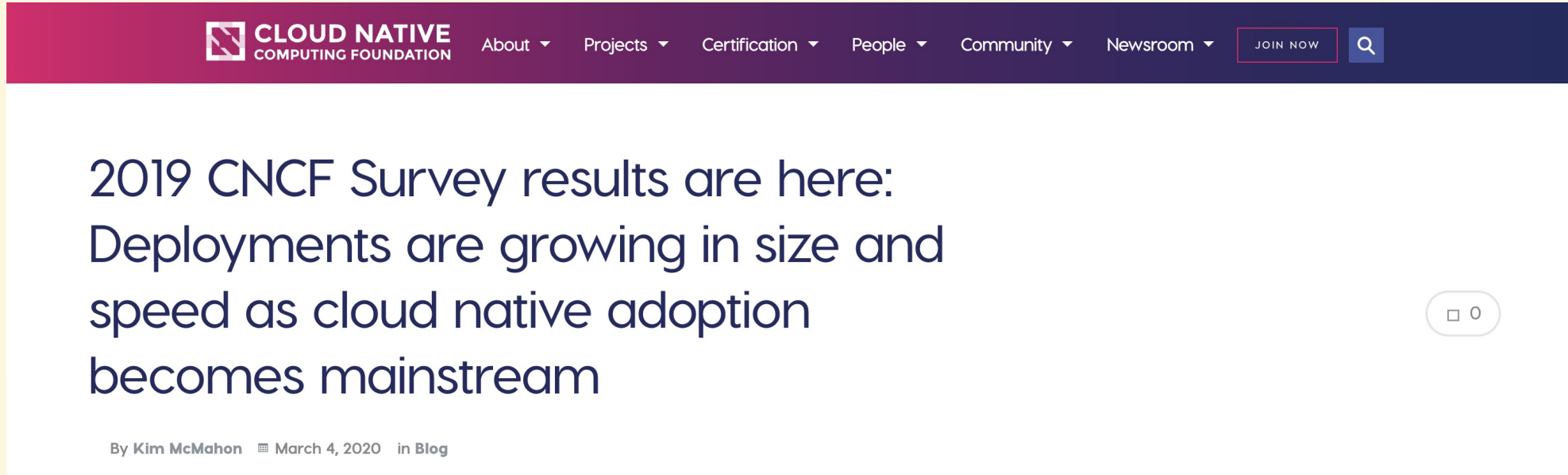
Why? How? What?

- Why
- How
- What

Why? How? What?

- Why

  - objectives, goals, strategies, ...

- How

  - aware, know, learn, evaluate, compare, adopt, implement, ...

- What

  - properties, attributes, meta-data, characteristics, ...

Published on March 4th

2019 CNCF Survey results are here: Deployments are growing in size and speed as cloud native adoption becomes mainstream

By Kim McMahon · March 4, 2020 · in Blog

- https://www.cncf.io/blog/2020/03/04/2019-cncf-survey-results-are-here-deployments-are-growing-in-size-and-speed-as-cloud-native-adoption-becomes-mainstream/

Outline

- Survey Methodology & Respondents

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- Application Development & Delivery

- Containers

- Cloud Native Tools

- CNCF Technologies

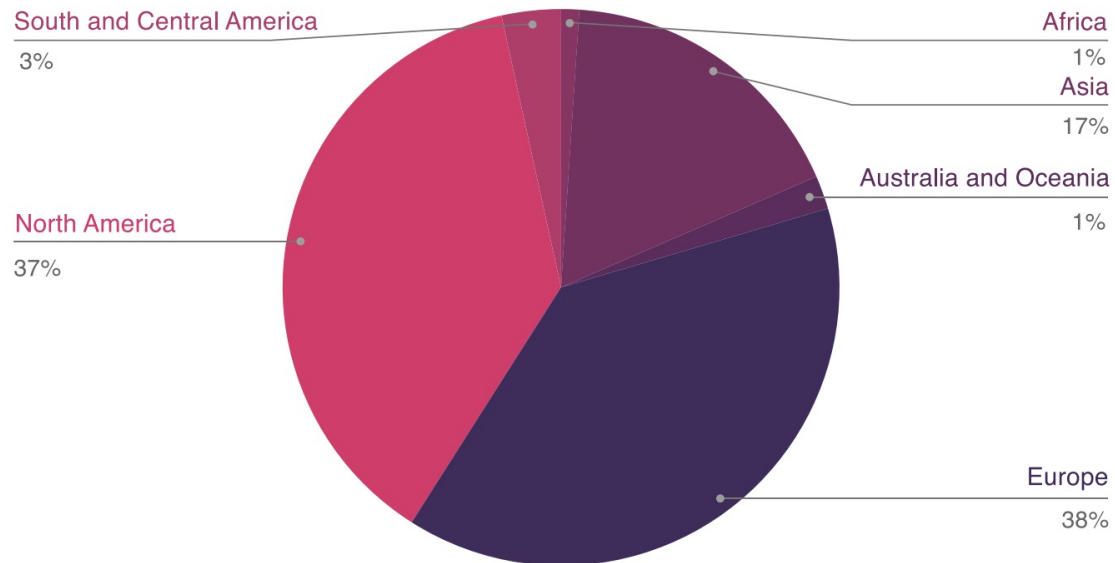- Kubernetes

Survey Methodology & Respondents

Survey Methodology & Respondents (1/5)

- during September and October 2019
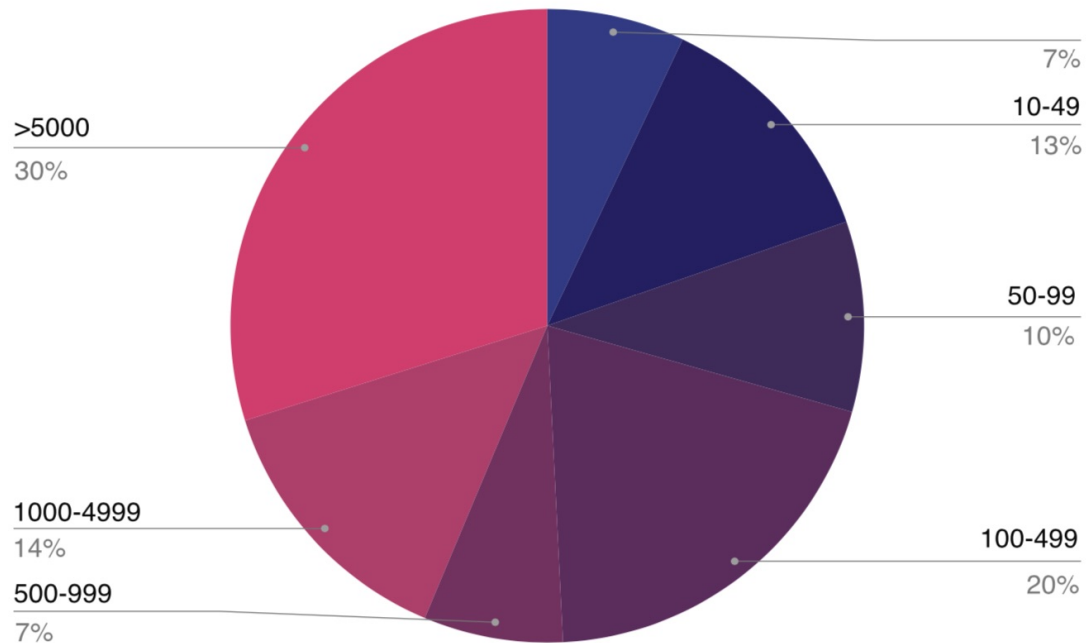- received 1,337 responses

SMR (2/5)

Geographic Location

- There was a nearly even proportion of respondents from Europe (37%) and North America (38%), followed by Asia (17%).
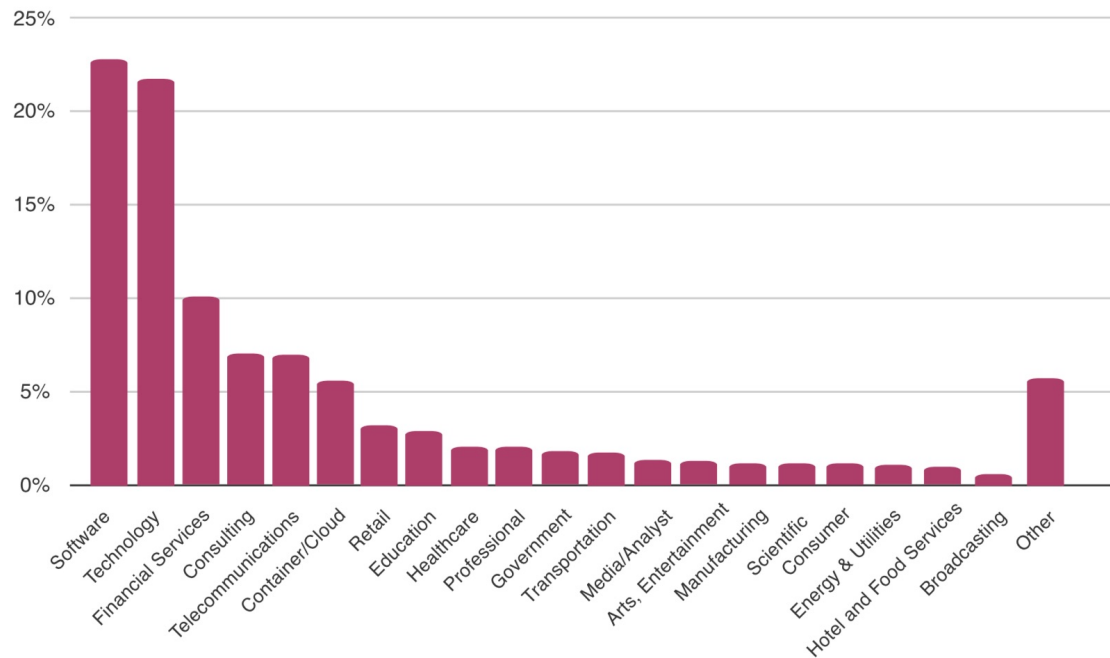
SMR (3/5)

Size of Organization

- 10-49: 7%
- 10-49: 13%
- 50-99: 10%
- 100-499: 20%
- 500-999: 7%
- 1000-4999: 14%
- >5000: 30%

- The majority of respondents (71%) were from organizations with at least 100 employees, the largest portion of these coming from enterprises with more than 5,000 employees (30%).
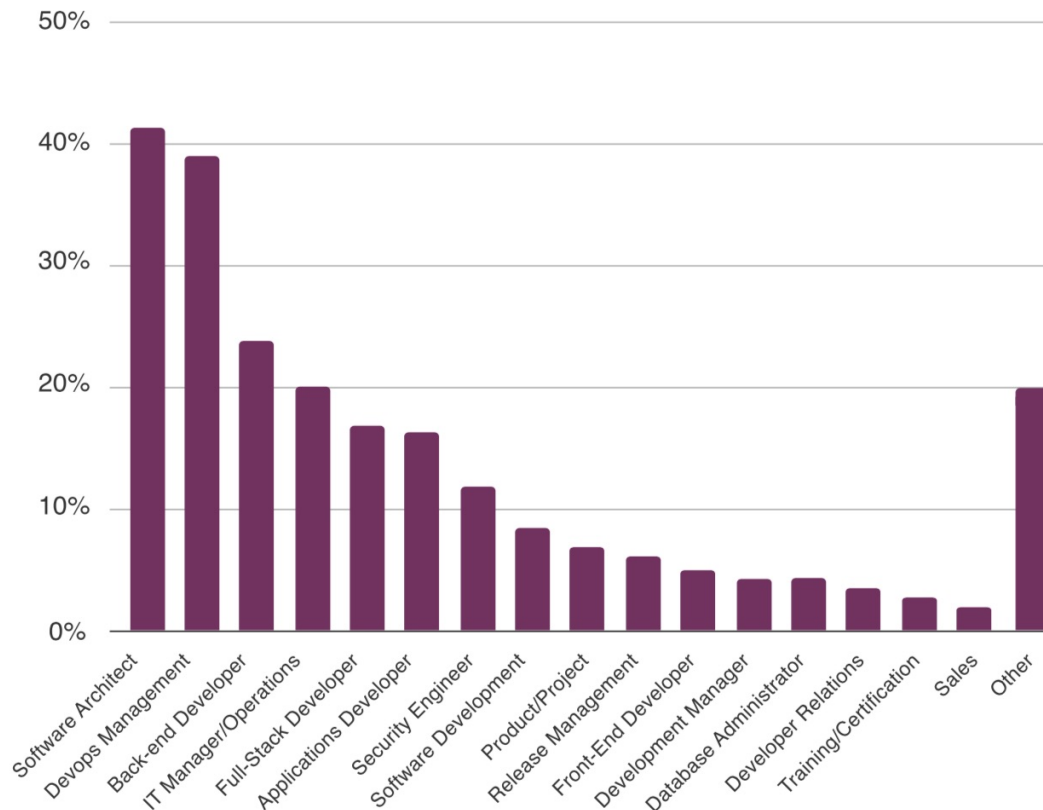
SMR (4/5)

- Two-thirds of the respondents were in the software and technology industry, with the remainder coming from other professional service industries.

SMR (5/5)

Job Function

- The top job functions were software architect (41%), DevOps manager (39%), and back-end developer (24%).
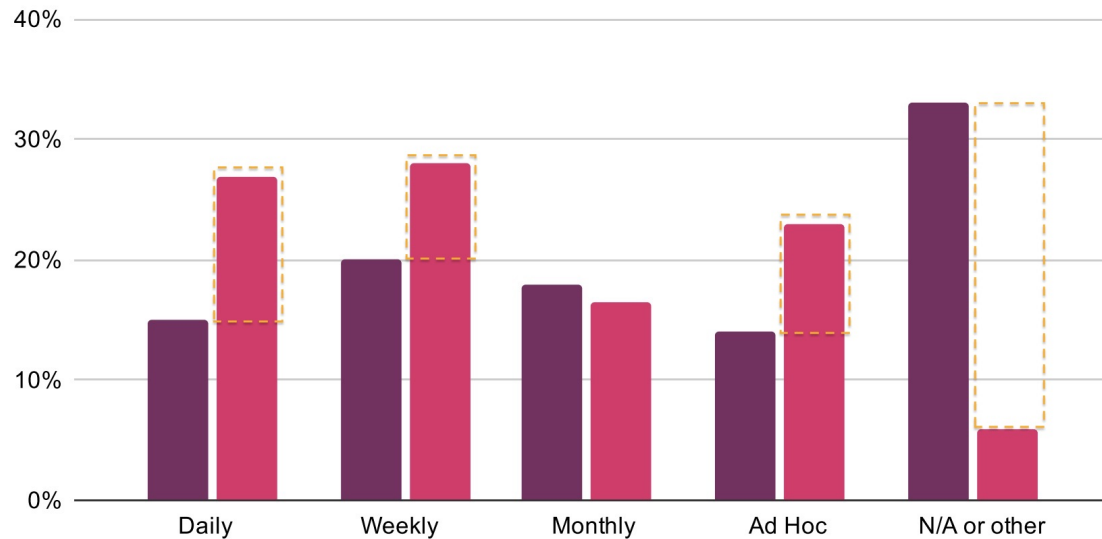
Application Development & Delivery

Release cycles continue to accelerate
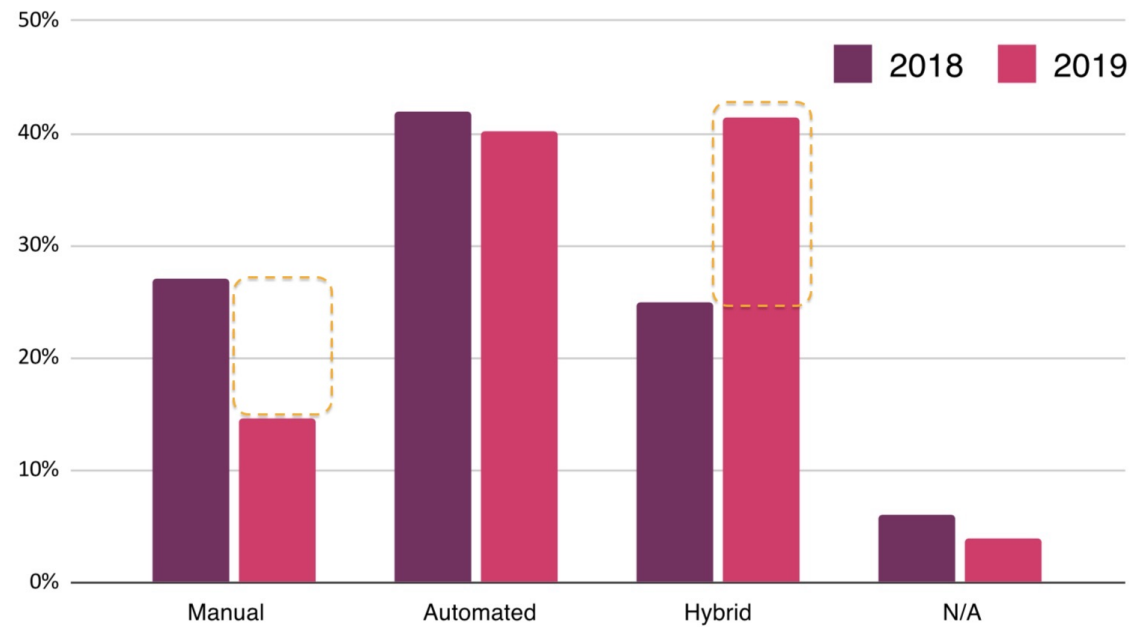
App D&D (2/6)

- Those with daily release cycles increased from 15% in 2018 to **27%**, and weekly release cycles have increased 20% to **28%**.

App D&D (3/6)

- Hybrid approaches, using a combination of manual and automated tools, are up to **41%** in 2019 compared to 25% last year.
- Doing releases manually has dropped to **14%** from 27%.

Application Development & Delivery (4/6)

- This can be attributed to a rise in available CI/CD tools, the most popular being **Jenkins (58%)**, followed by **GitLab CI/CD (34%)**, and **CircleCI (13%)**.

- These tools are also becoming more reliable. Less than **11%** of respondents indicated they built custom scripts this year, down from 26% in 2018.
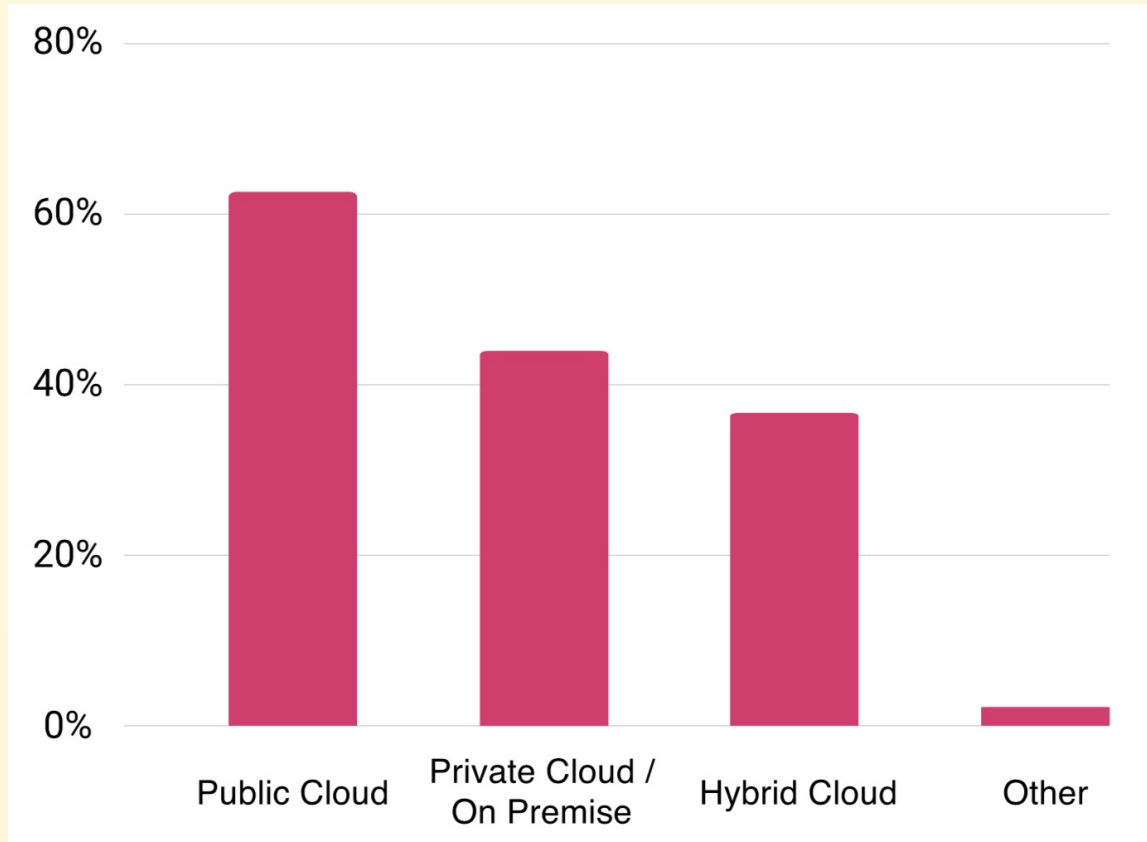
App D&D (5/6)
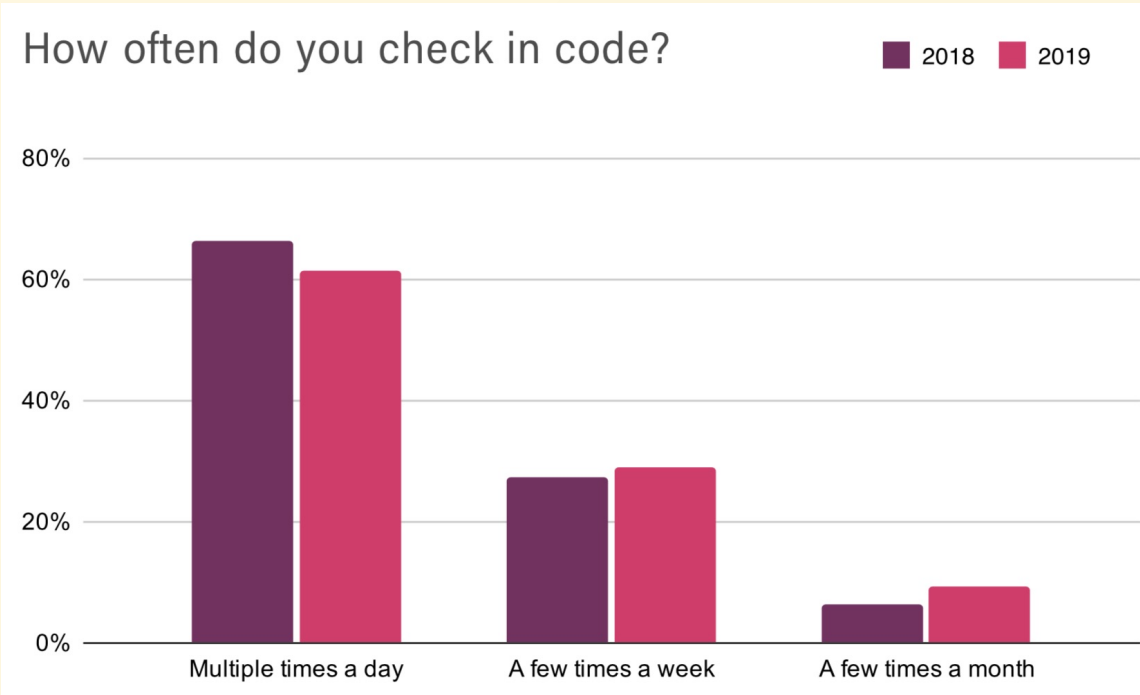
- Comparing the data from 2019 and 2018, respondents are checking in code *less frequently*.

App D&D (6/6)

How many machines are in your fleet?
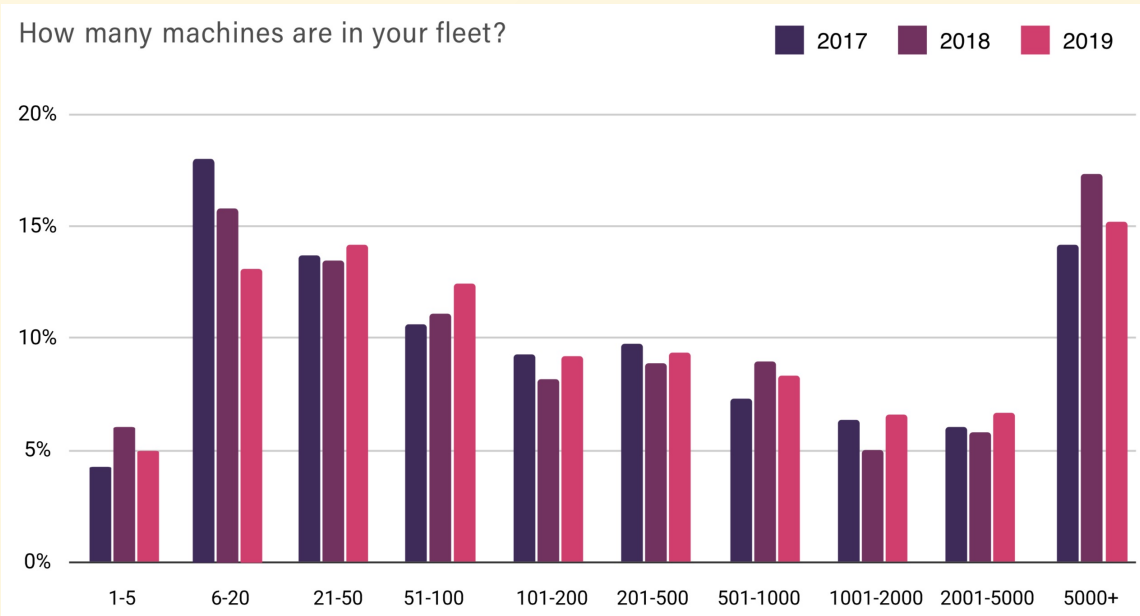
- At the same time, the number of machines in an organization's fleet *continues to increase.*

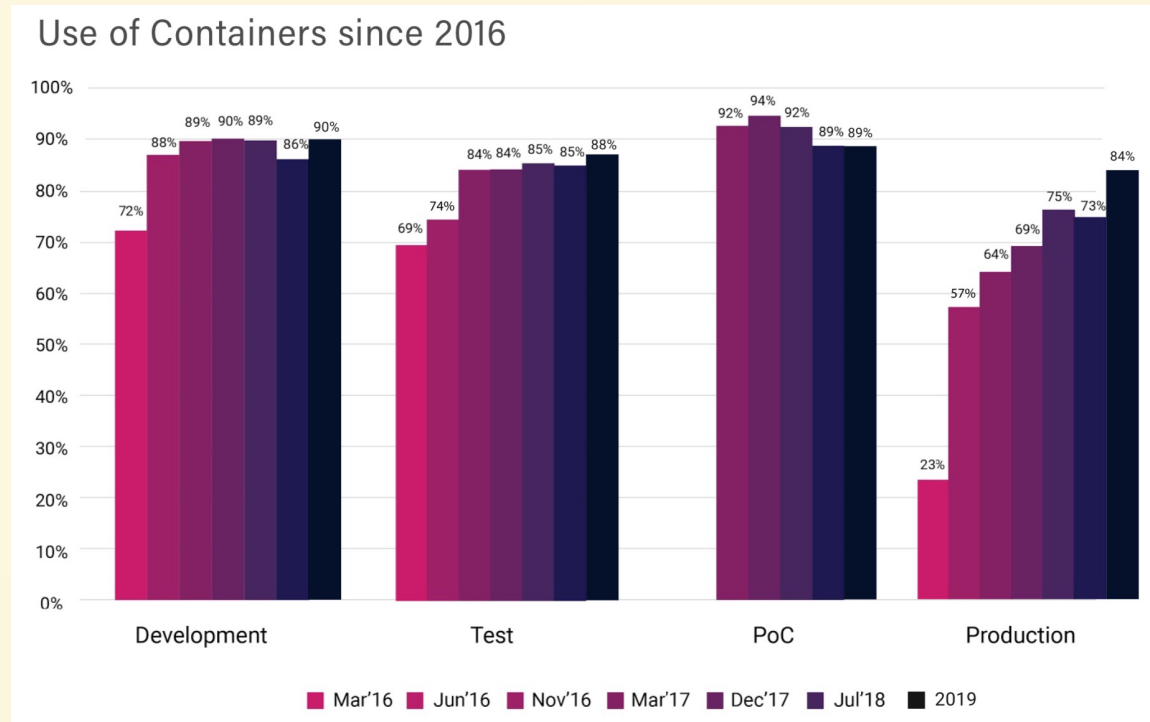# Where Is Your Cloud? (1/1)

- Vendor lock-in strategy may diff?
  - Enterprise
  - SME
  - Start-up

Containers

Most notably, the use of containers in production *increased* significantly.
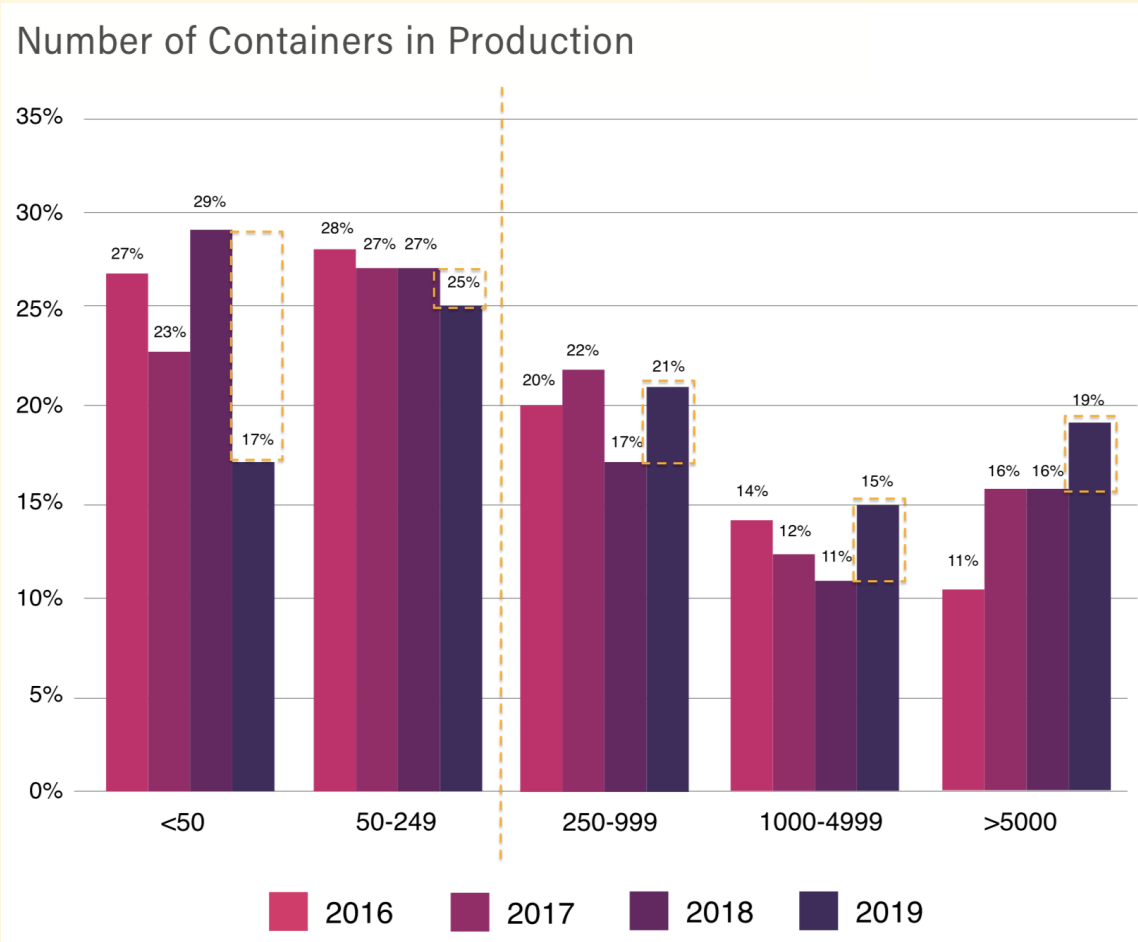
Use of Containers since 2016
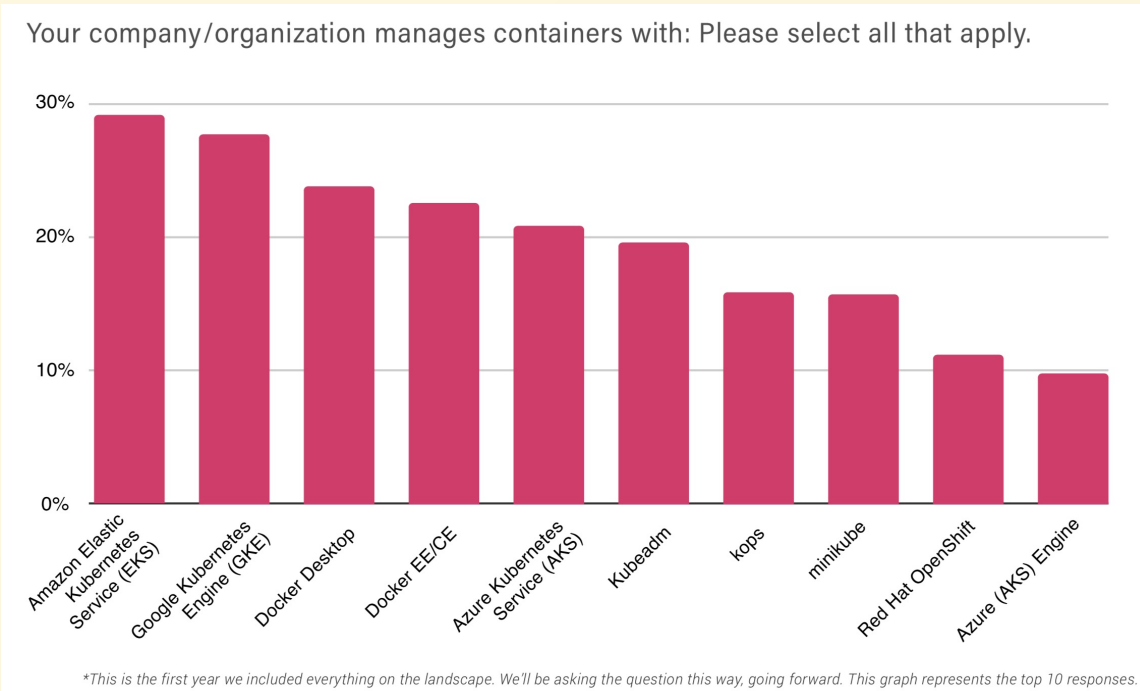
Containers (2/5)

- This year, **84%** of respondents are using containers in production, an impressive jump from 73% in 2018, and from 23% in our first survey in 2016.
- `Hint`: Ref to SMR (4/5) Industry.

Containers (3/5)

- As organizations are trusting their production workloads to containers, they are also using *more* of them.
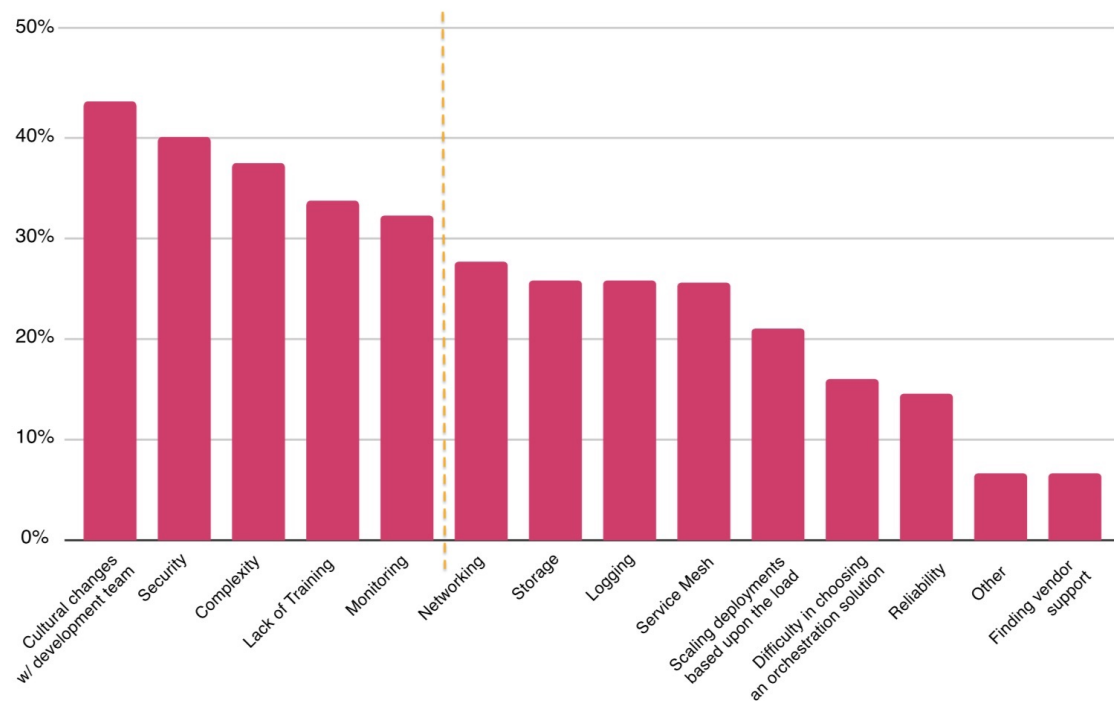
Containers (4/5)

Your company/organization manages containers with: Please select all that apply.

*This is the first year we included everything on the landscape. We'll be asking the question this way, going forward. This graph represents the top 10 responses.

- According to CNCF's Cloud Native Landscape, there are more than 109 tools to manage containers, but **89%** are using different forms of Kubernetes.
- `Hint`: Ref to SMR (4/5) Industry.

Containers (5/5)

What are your challenges in using/deploying containers? Please select all that apply.

- *Cultural* challenges with the development team remain the top challenge in using/deploying containers (43%).
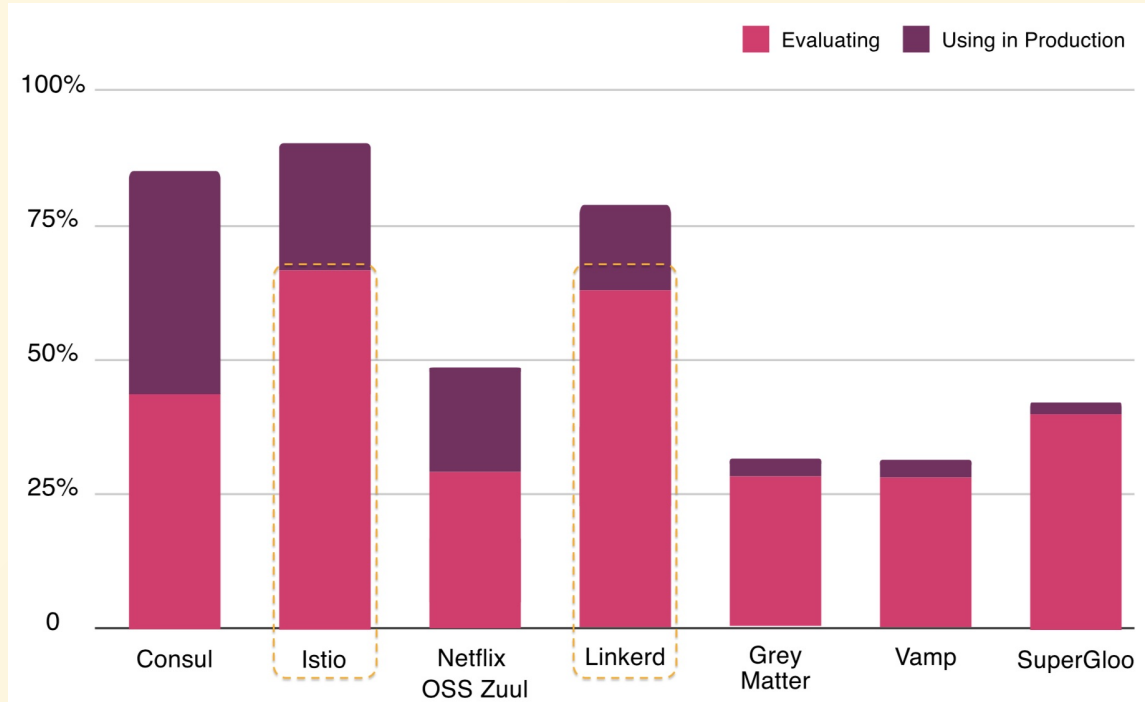
- `Hint`: Cultural changes.

Cloud Native Tools

While *use in production* is still rather low with **18%** of those who responded indicating they use a service mesh project, **47%** are *evaluating* the use of a service mesh.
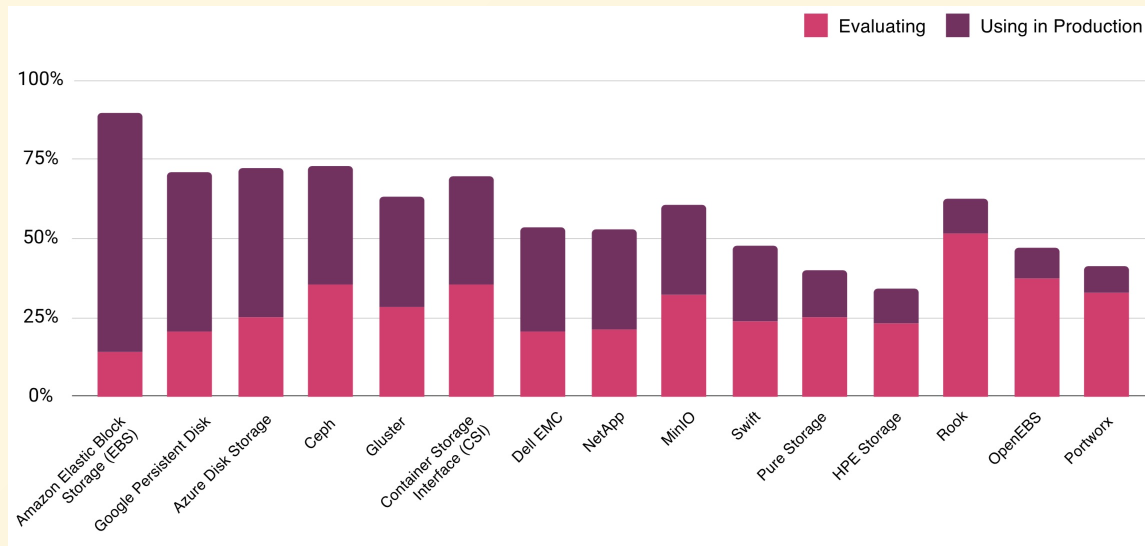
Service Mesh

- **Istio** (69%) and **Linkerd** (64%) were the top two tools being evaluated, suggesting they will see significant increases in use in production in coming years.
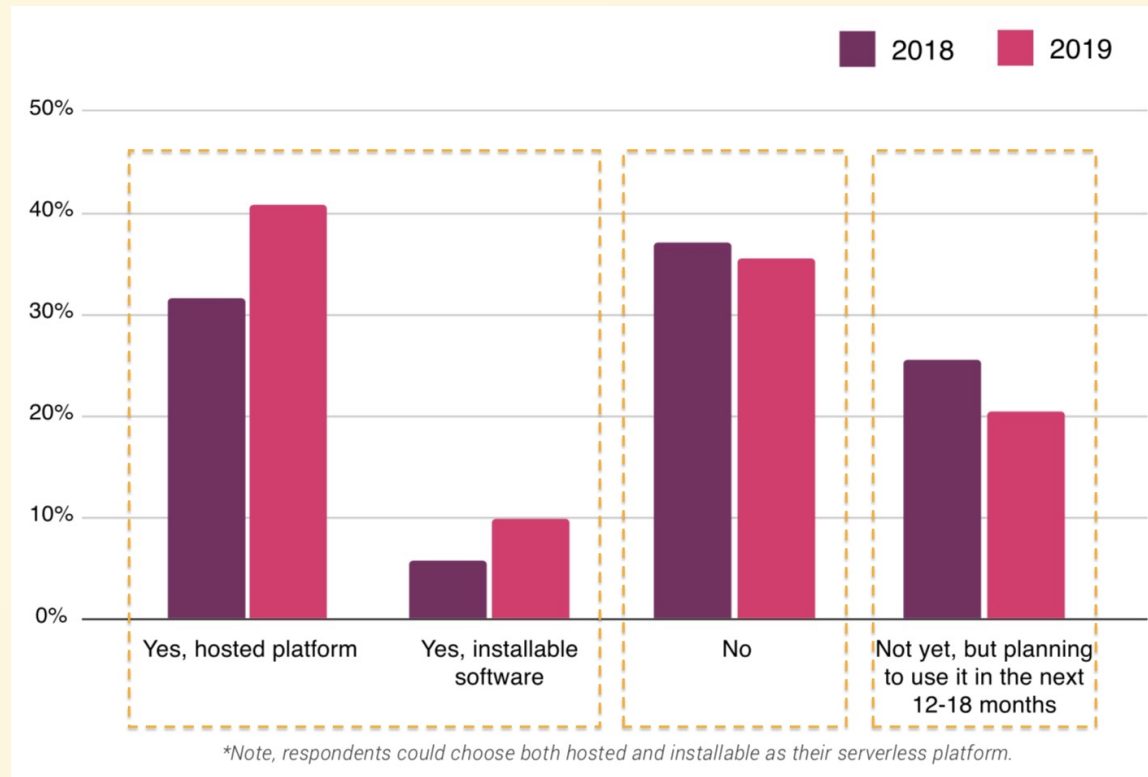
CN Tools (3/6)

Storage

- Top-3 are public cloud storage projects.
- More than half of respondents were evaluating **Rook** – more than any other project.

Note, respondents could choose both hosted and installable as their serverless platform.

Serverless

- Of those who are using serverless, **80%** use a hosted platform and **20%** use installable software.
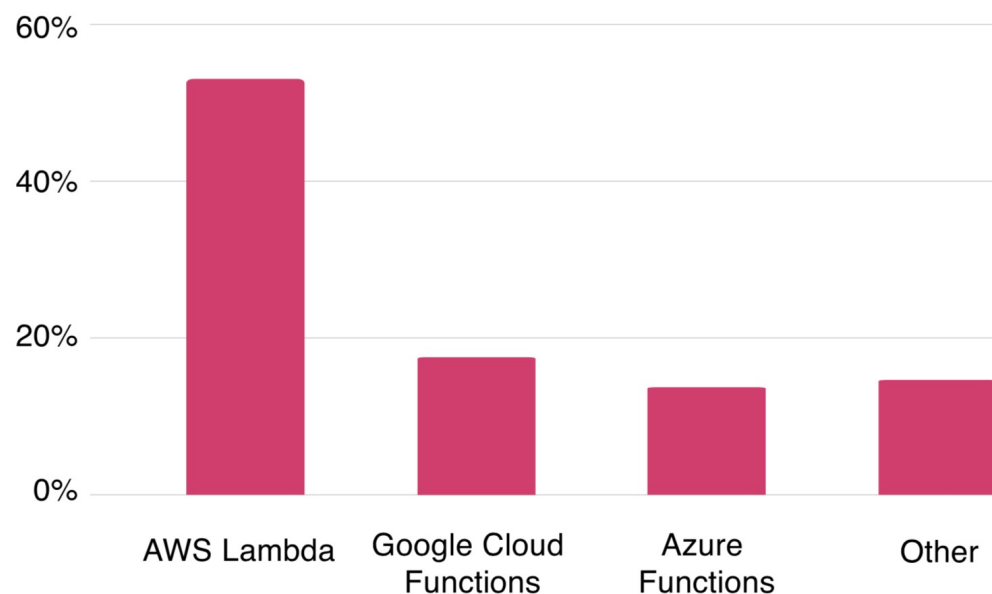
Hosted Serverless Platforms

Hosted Serverless Platforms

- Of the hosted platforms in use, the top tool is **AWS Lambda** (53%). **Google Cloud Functions** (18%) and **Azure Functions** (14%) are a distant second and third.
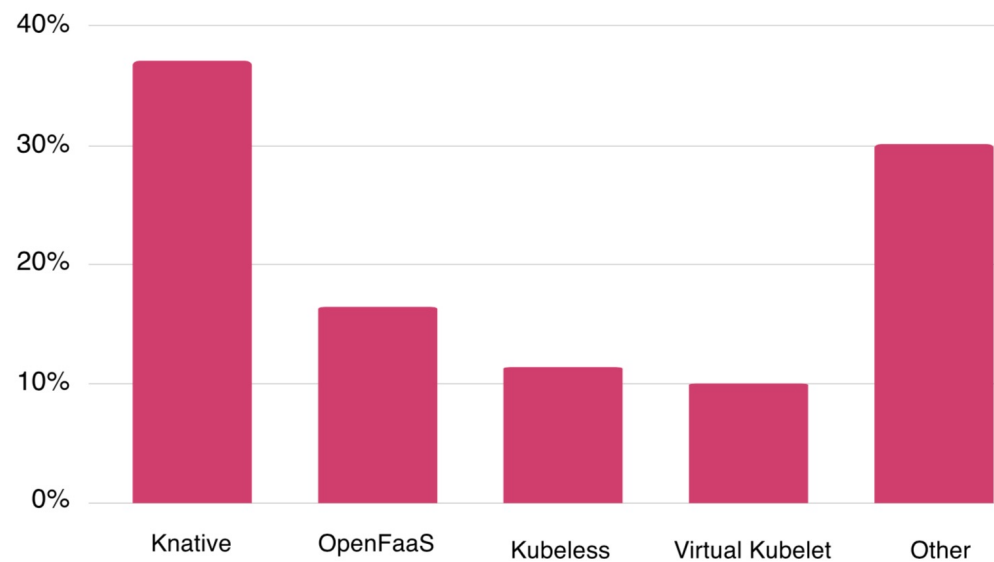
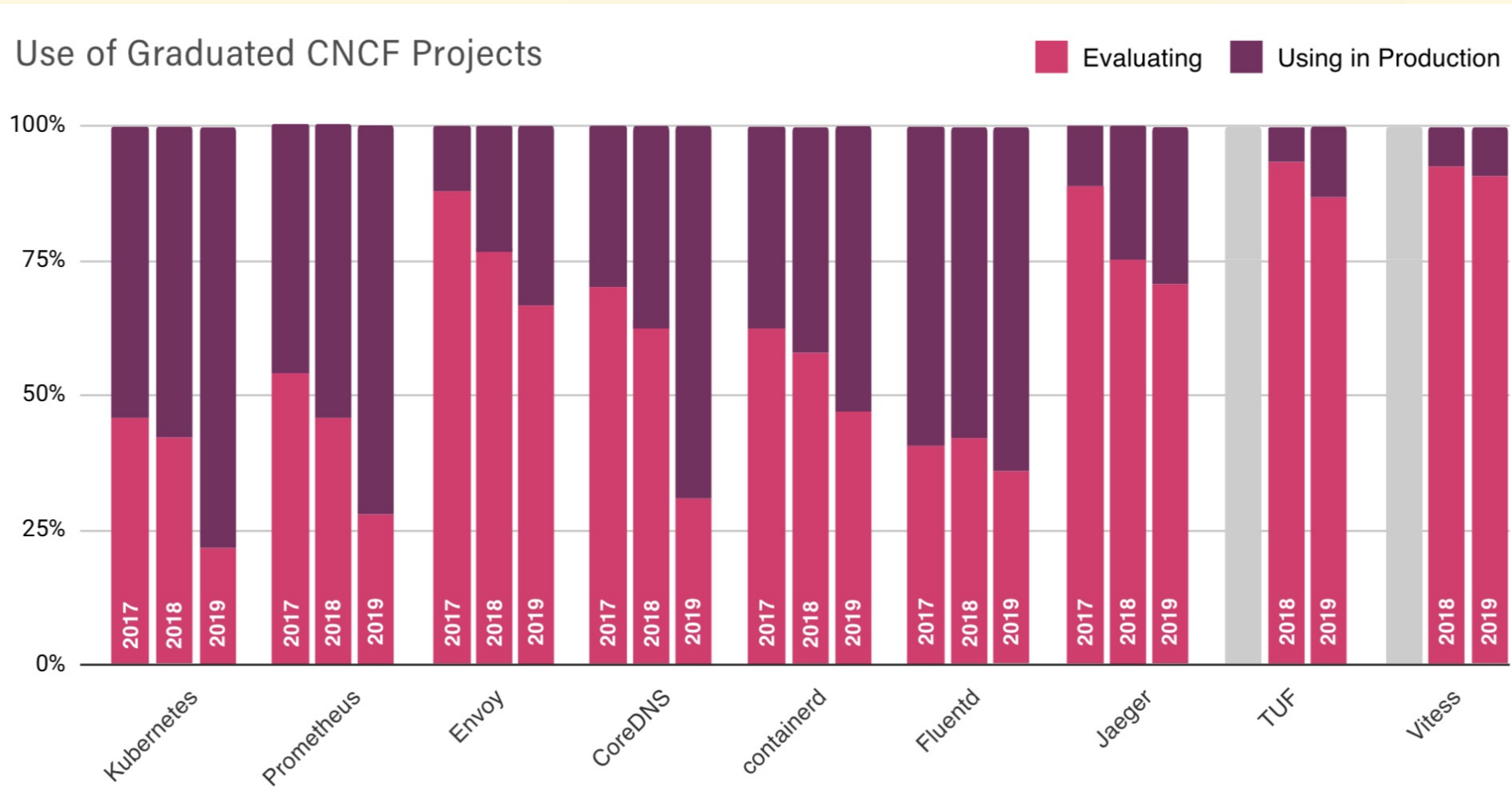## Installable Serverless Platforms

Installable Serverless Platforms

- Of the installable software in use, **Knative** is the tool of choice (34%), followed by **OpenFaaS** (15%) and **Kubeless** (11%).
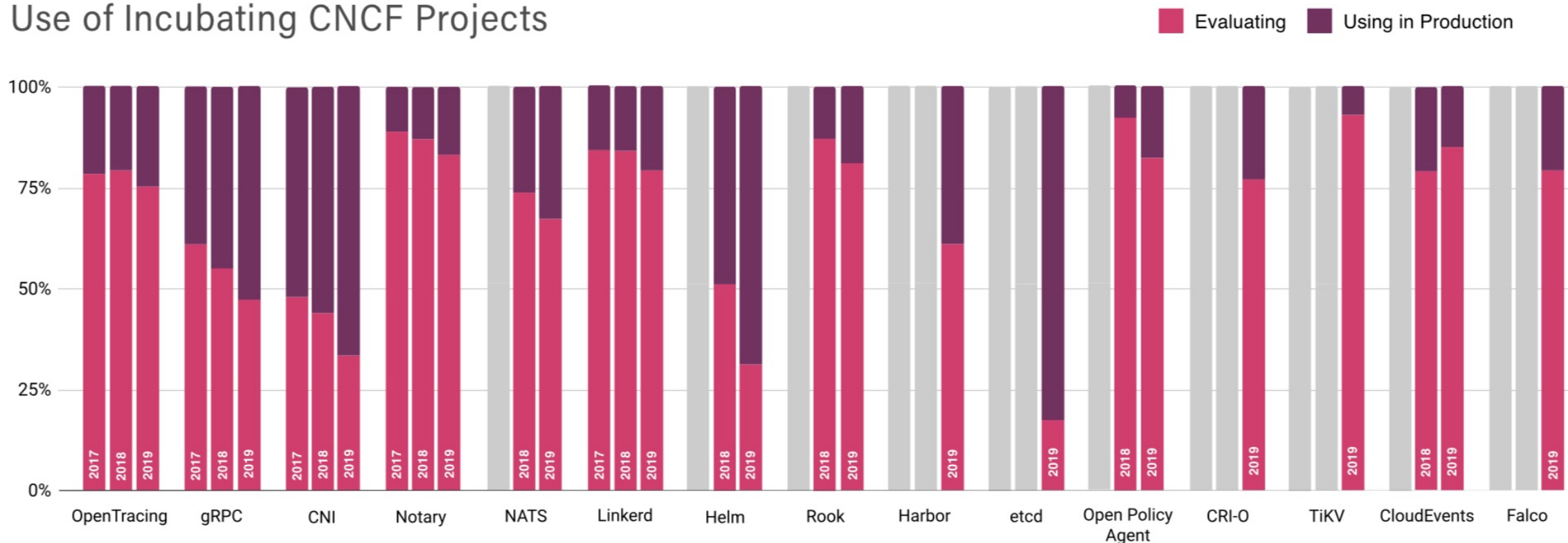
CNCF Technologies

99% of respondents indicated they are using or evaluating at least one graduated or incubating CNCF technology in production.

Use of Graduated CNCF Projects

- **Prometheus** and **CoreDNS** also saw considerable jumps in use in production.

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Use of Incubating CNCF Projects

- For incubating projects, **Helm** saw the largest increase since last year, growing 41% to reach 69% usage in production. etcd was the most widely used, with 83% use in production.

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Use of CNCF Sandbox Projects

*Since this survey was completed, in-toto, Strimzi, KubeVirt, Longhorn, and ChubaoFS have been added to the Sandbox. We do not have data for Sandbox projects from 2018 or before.
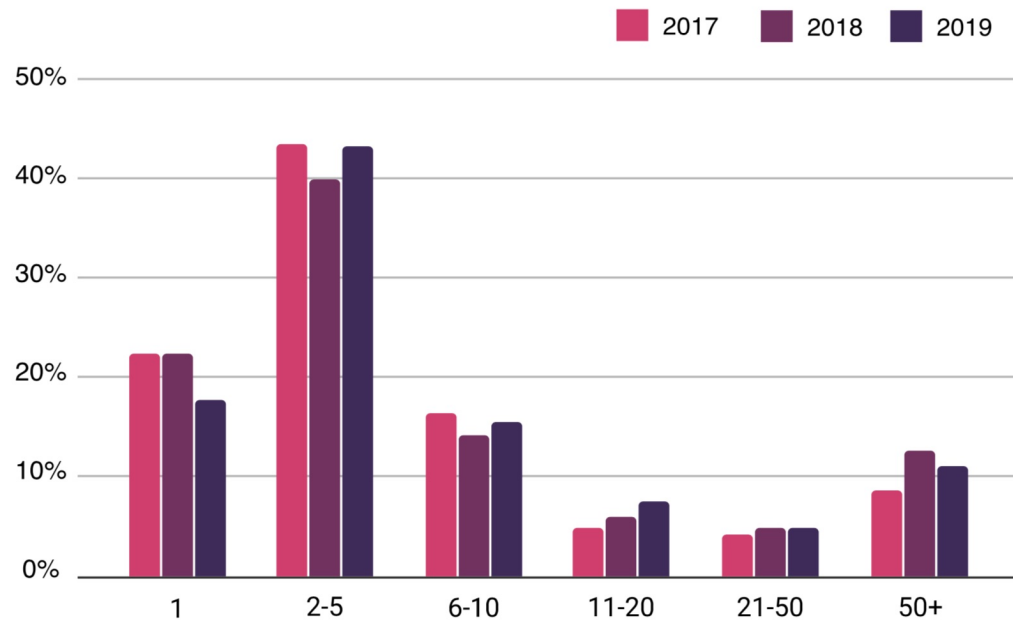
Kubernetes

If you use Kubernetes, how many production clusters do you have?

Kubernetes (1/8)

Production Clusters

- Of those using Kubernetes, most respondents have 2-5 clusters in production (43%).

Kubernetes

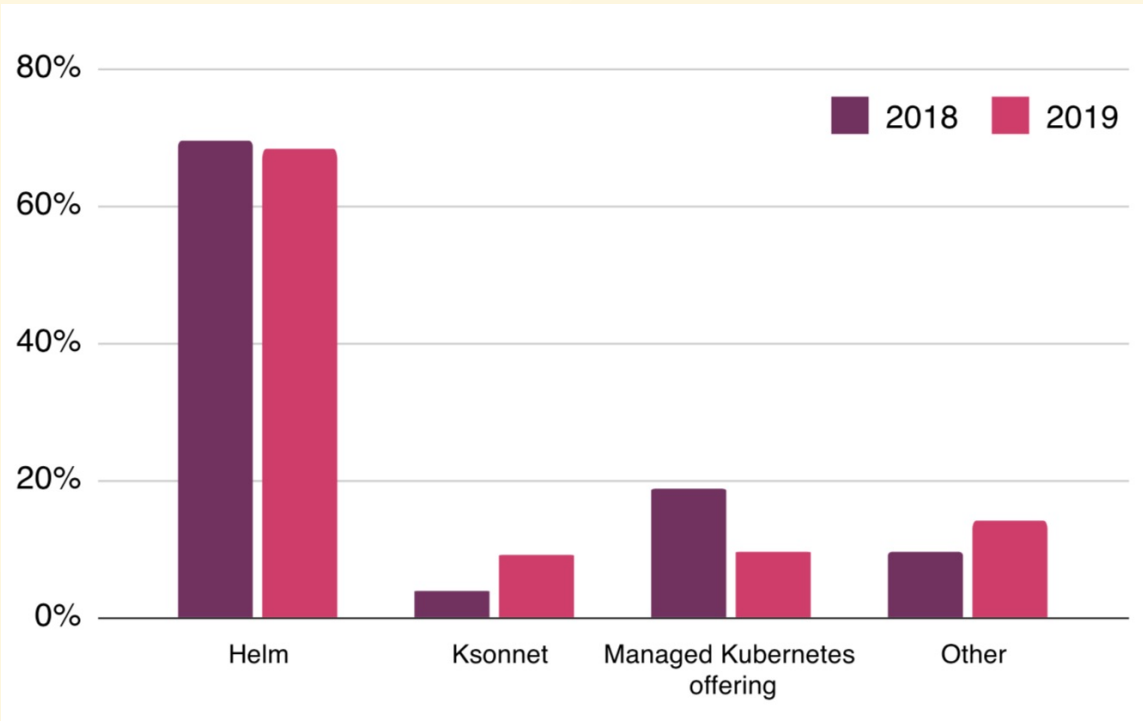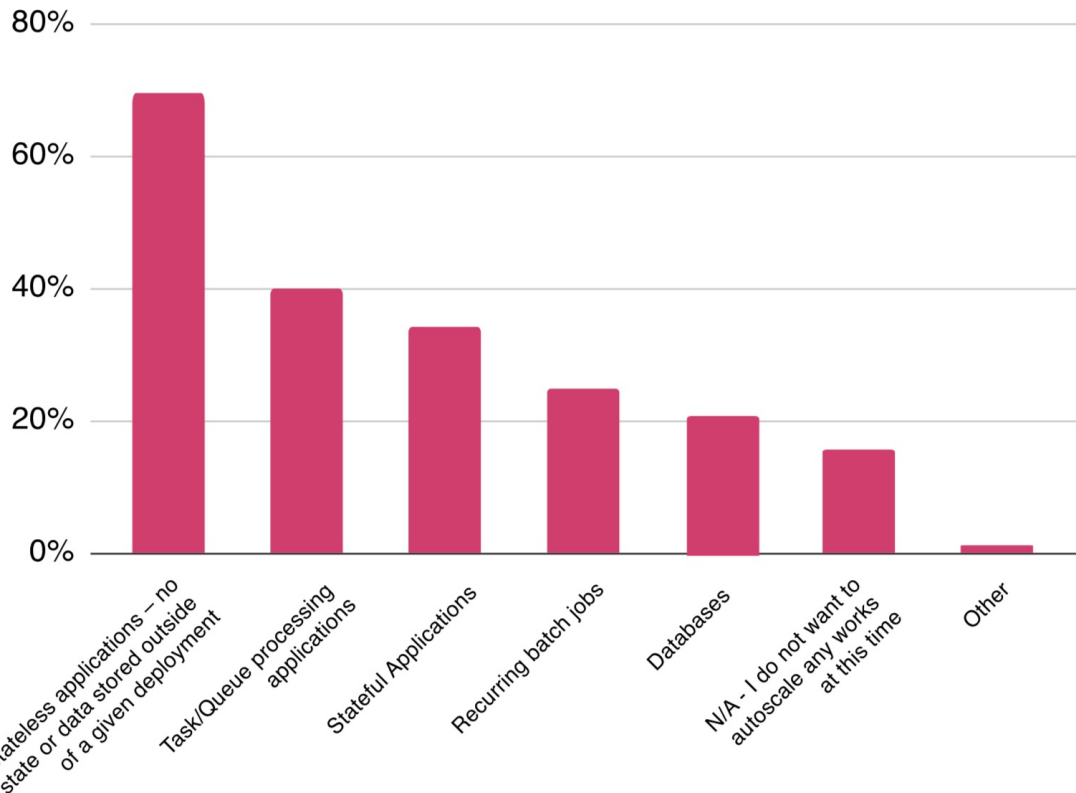## Packaging Applications

- **Helm** remains the most popular tool for packaging Kubernetes applications.

Kubernetes
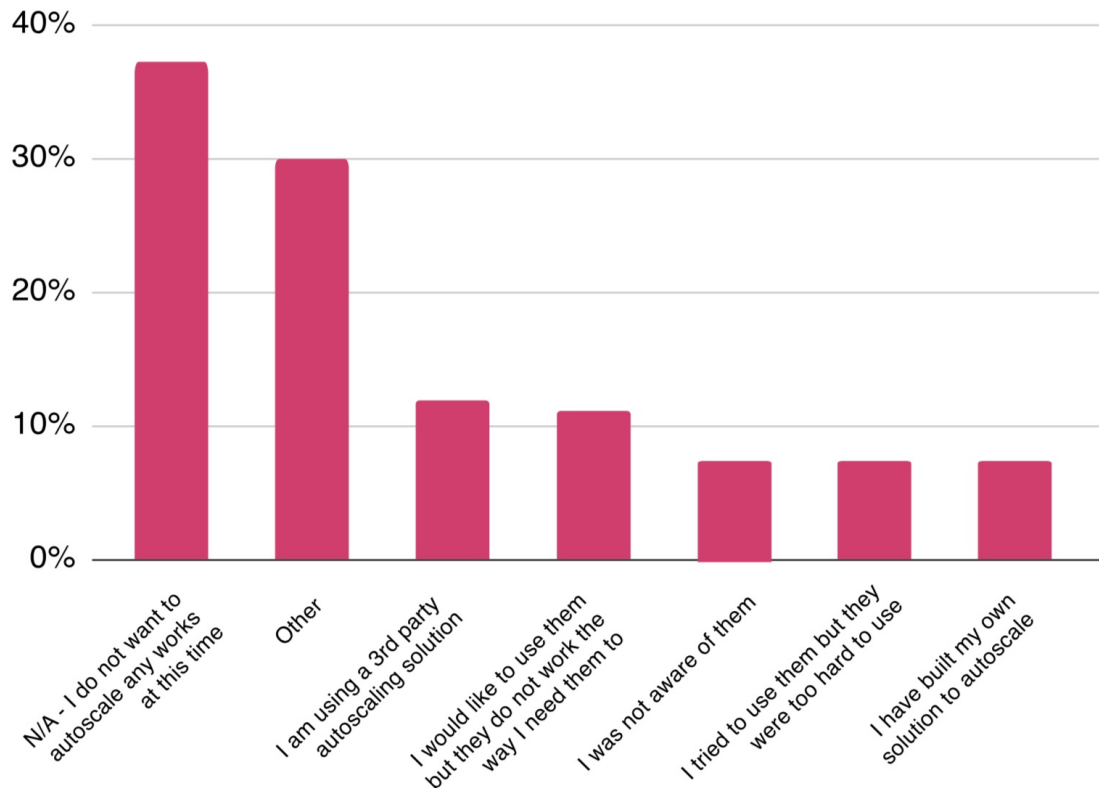

Autoscaling Workloads

- the majority (70%) of respondents plan to autoscale their **stateless applications**,
- followed by 40% for **task/queue processing applications**,
- and 34% of **stateful applications**.
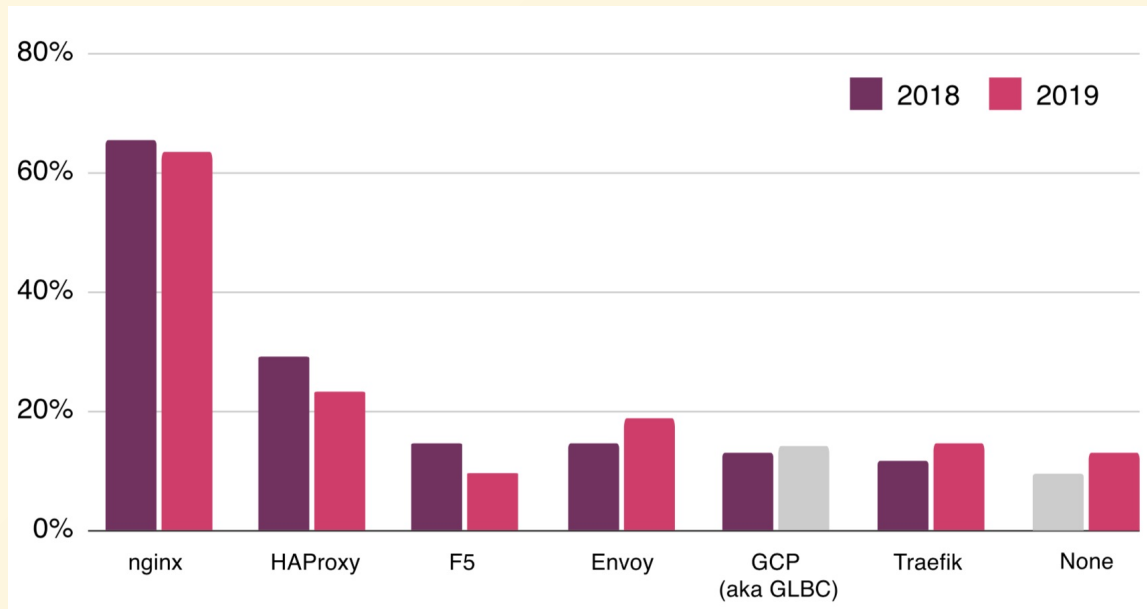
Kubernetes

NOT using Kubernetes Autoscaling

- Of those who are not using Kubernetes autoscaling capabilities, 35% **do not want to autoscale** any works at this time, and 12% are using a **third-party solution**.
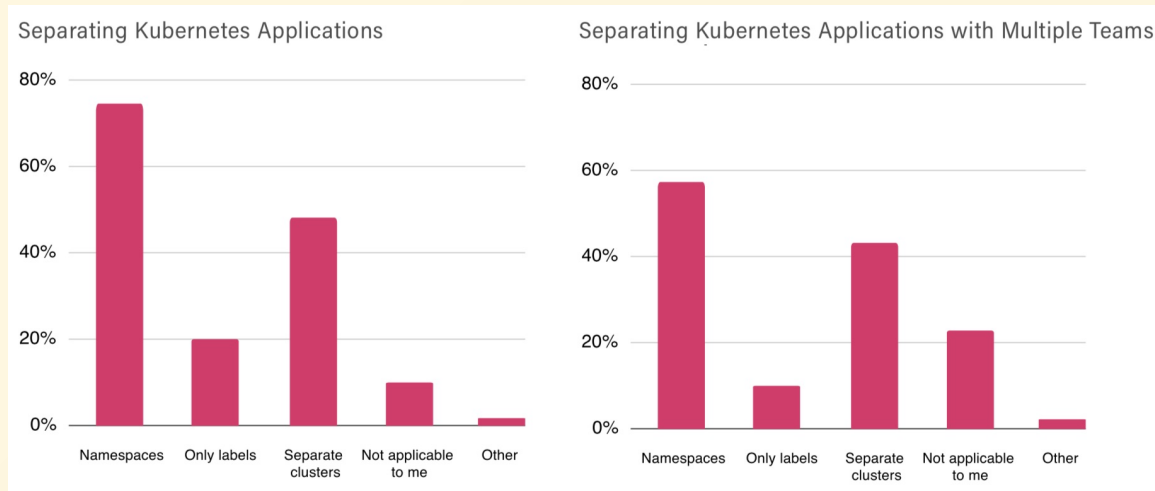
Kubernetes

Ingress Providers

- **nginx** kept its lead this year as the top Kubernetes ingress provider (62%),

- followed again by **HAProxy** (22%).

- **Envoy** overtook F5 for the third spot (up from 4 in 2018) with 19%.

Kubernetes

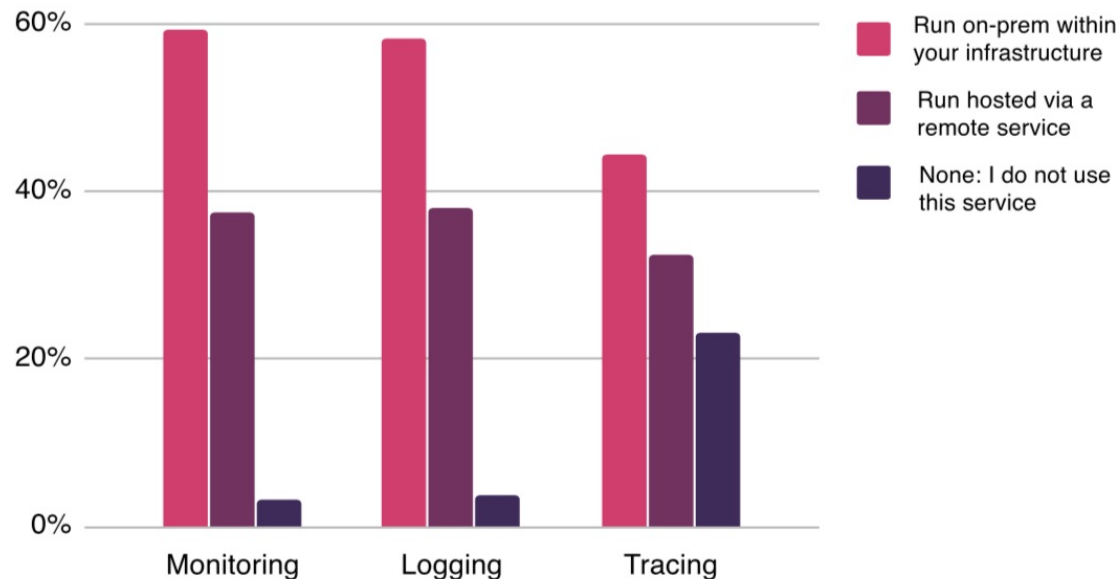## Separating K8s Applications

Separating Kubernetes Applications

Separating Kubernetes Applications with Multiple Teams

- **Namespaces** are the most popular way to separate Kubernetes applications for all respondents, including those with multiple teams.

For your monitoring, logging, and tracing solutions, do you require the system to:

Legend:
- Run on-prem within your infrastructure
- Run hosted via a remote service
- None: I do not use this service

Kubernetes

Monitoring, **Logging,** and Tracing

- **23%** report that *they do not use tracing*, compared with just over 3% for both monitoring and logging.
- `Hint`: Tracing.

What Kubernetes environment(s) do you target during local container development? Please select all that apply.

Kubernetes

Local Container Development

- **Minikube** (39%) and **Docker Kubernetes** (32%) are the most popular Kubernetes environments during local container development.
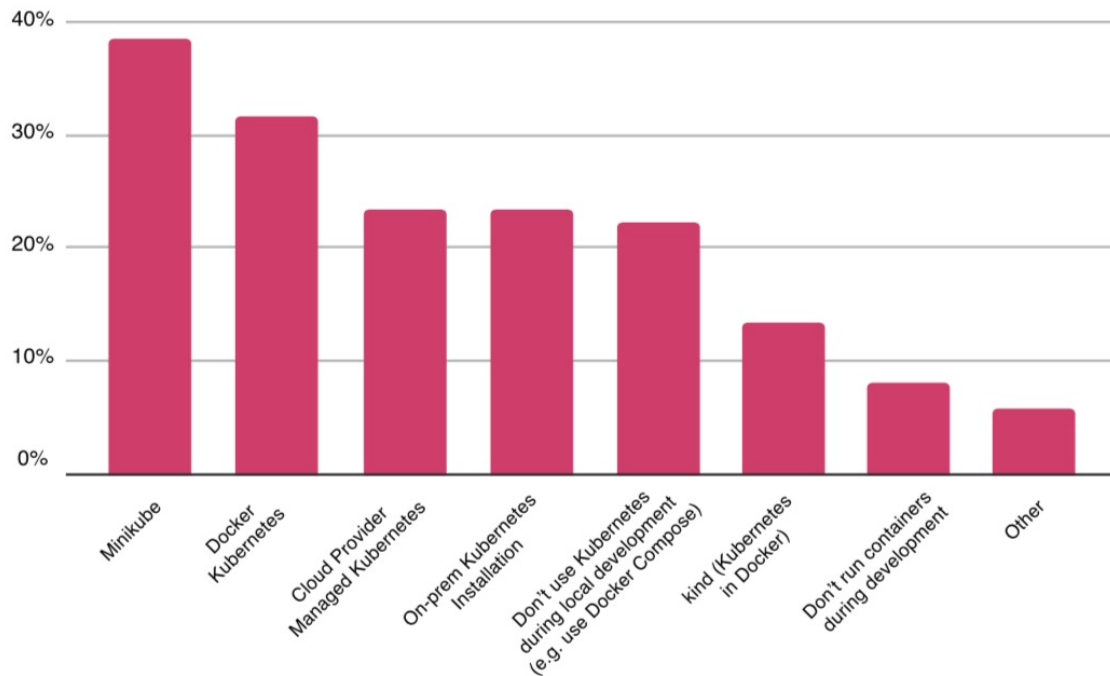
Takeaways

Key Takeaways (1/2)

- Survey Methodology: Scope v.s Industry
- (`Release cycles`)+++ v.s (`Check in code`)-
- (`Use of containers in prod`)+++
- (`Cultural changes`)++

Key Takeaways (2/2)

- Serverless
  - `Using/planning to use` : 70%
  - `Hosted` : `Installable` = 80% : 20%
- Kubernetes
  - `Helm` : ~70% (Packaging)
  - `Not use tracing` : 23%

Thank you

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#CrossFieldIntegration

#TechnicalManagement

#Bluetooth   #AWS