



Platforms & Portals for cloud-native architecture

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Agenda

- What is a platform? What is an internal platform?
- Platforms for cloud-native architecture
- Kubernetes as platform of platforms
- Enabling app developers with great interfaces



What is a platform?

What is an "internal" platform?



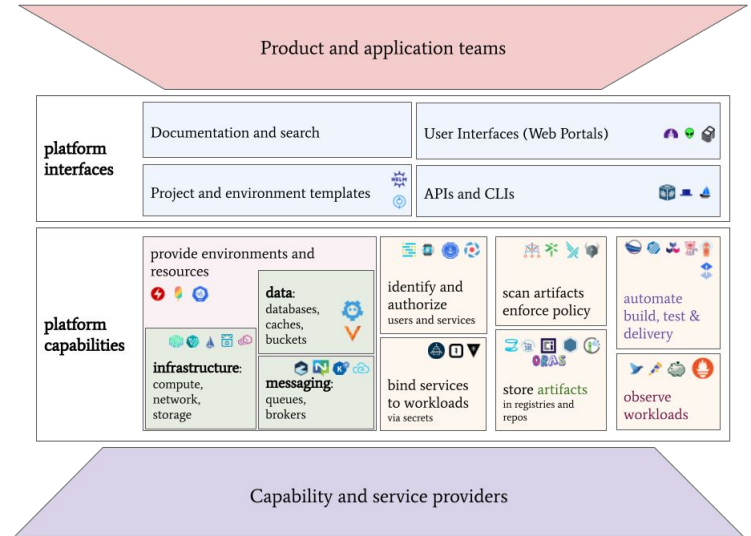
What is a platform?

Per

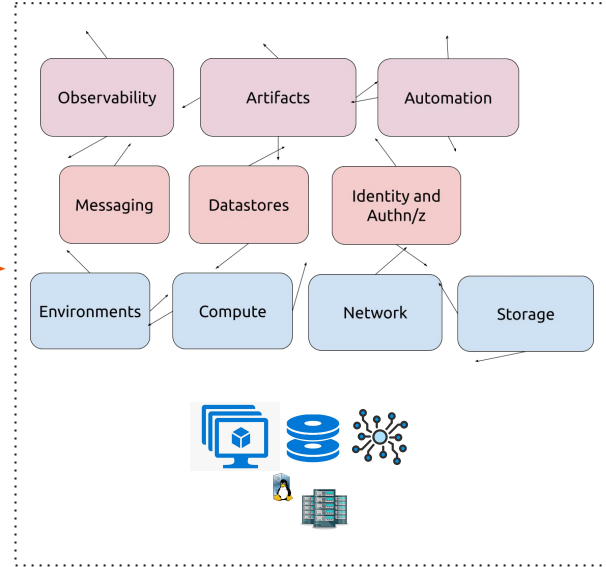
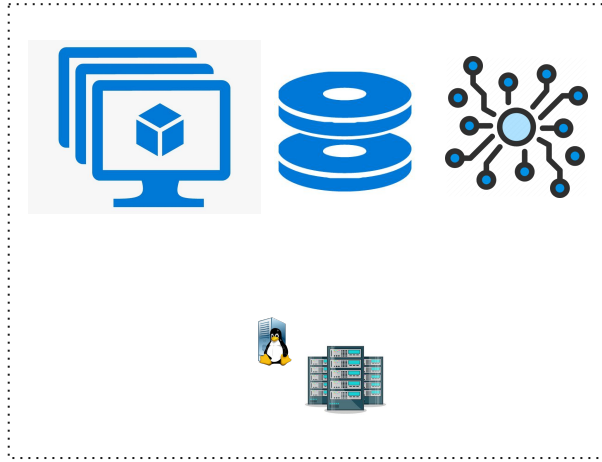
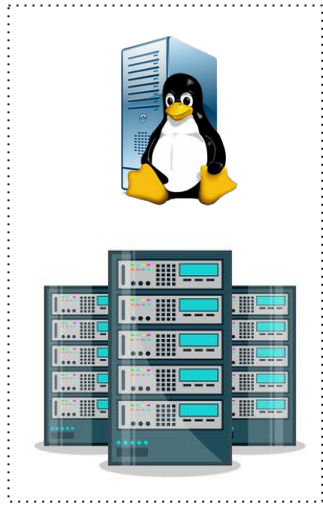
<https://tag-app-delivery.cncf.io/whitepapers/platforms>,

a platform is:

- ...an integrated collection of capabilities defined and presented according to the needs of the platform's users
- ...a cross-cutting layer that ensures a consistent experience for acquiring and integrating typical capabilities and services for a broad set of applications



Evolution of computing platforms





Internal Platforms

No more & no less than your use cases

What?

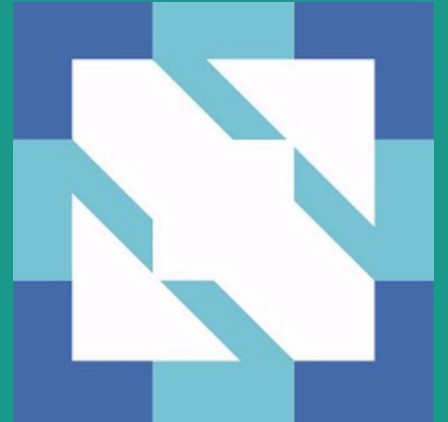
- Customer-centric **product**
- User experiences: self-service **APIs and portals**
- Abstracts infrastructure
- Optional
- Composable
- Compliant by default

Why?

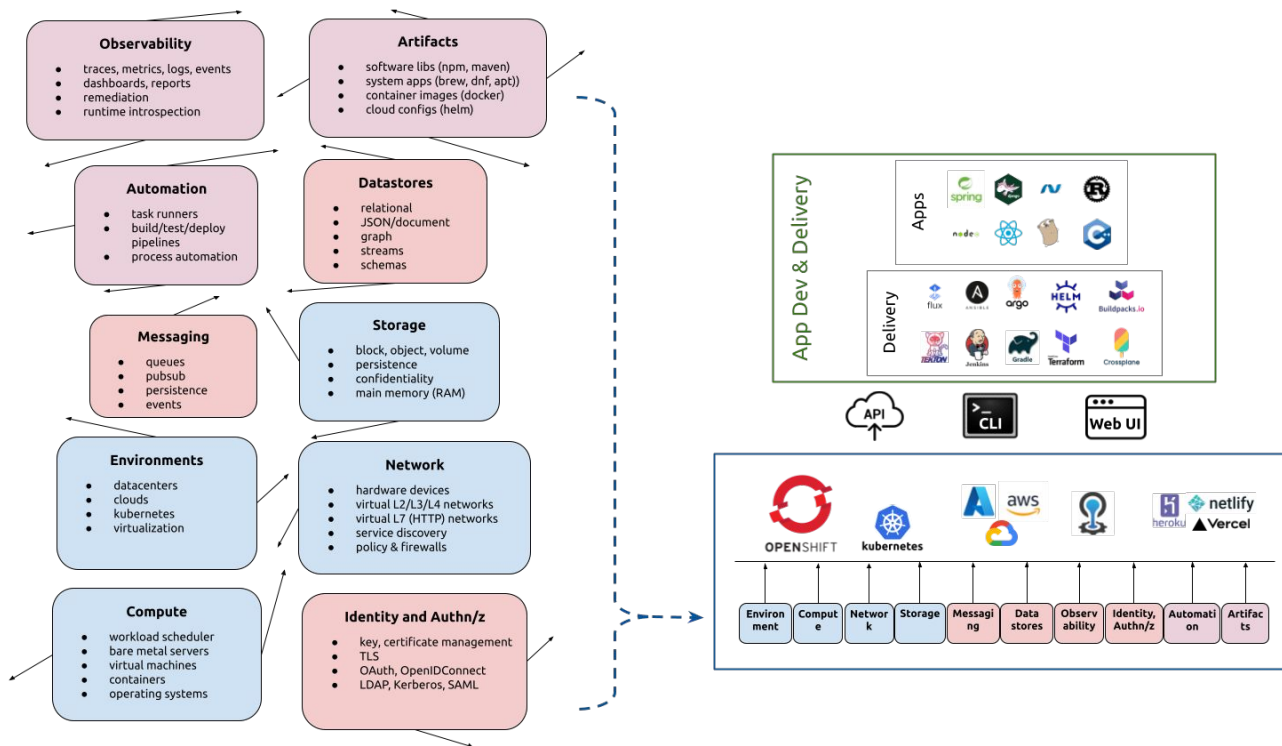
- Reduce **cognitive load**
- Improve **reliability** and resiliency
- Accelerate product **delivery**
- Reduce risk
- Integrate **managed services**



Why platforms for cloud-native?



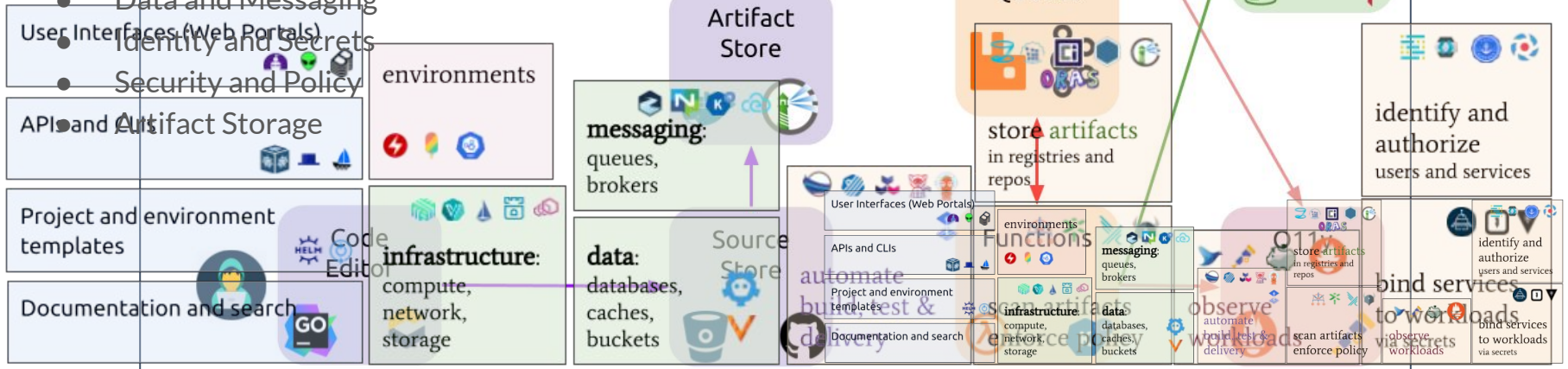
Platforms for cloud-native computing



Distributed Capabilities

for distributed applications

- Portals and APIs
- Templates and Docs
- Automation for Build, Test, and Delivery
- Development Environments
- Observability
- Infrastructure: Compute, Network, Storage
- Data and Messaging





Distributed Capabilities

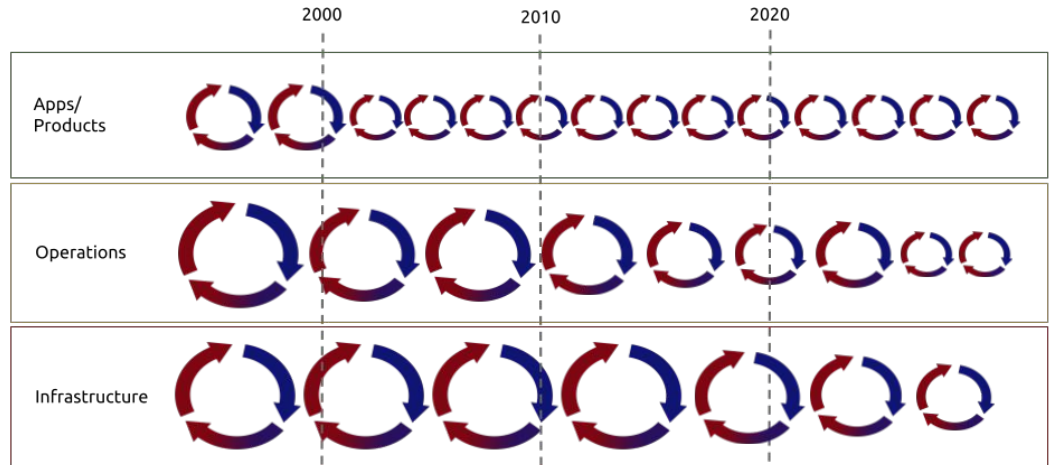
for distributed applications

- Portals and APIs
- Templates and Docs
- Automation for Build, Test, and Delivery
- Development Environments
- Observability
- Infrastructure: Compute, Network, Storage
- Data and Messaging
- Identity and Secrets
- Security and Policy
- Artifact Storage

DevOps & Cooperative Delivery

You build it, *we* run it

- You build a service, you run that service. But we run the *platform* together.
- Platform team delivers platform capabilities; app team delivers business logic.





Jobs of Platform Engineers

- Platform engineers run Kubernetes and Tekton; application developers run pods and pipelines
- Platform engineers manage a DBMS; application developers run databases.
- Platform engineers run a message broker; application developers use queues and topics
- Platform engineers install telemetry collectors; application developers instrument and observe their applications



App / Product / Workload

Platform / DevOps

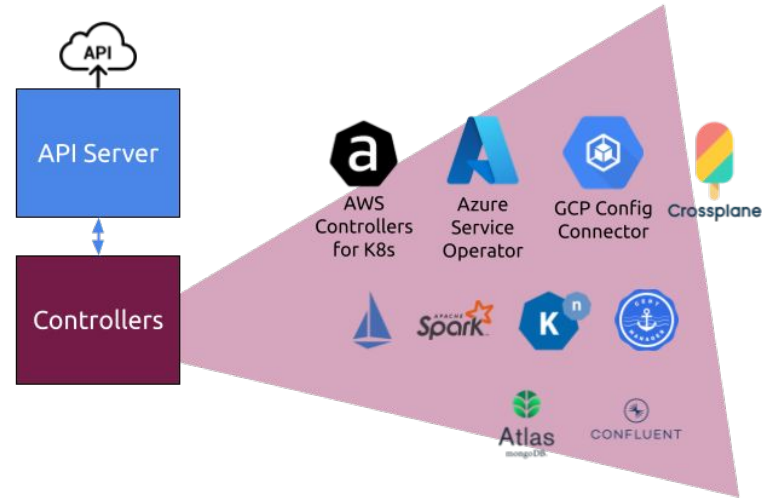
Infrastructure

Kubernetes: A platform for platforms



Platform Capabilities via Kubernetes APIs

- Kubernetes APIs: Custom Resource Definitions (CRDs)
- Implemented in Controllers (aka Operators)
- Continuous Reconciliation
- Resource types
 - **Built-in** services: compute, network, storage
 - **Internal** services: databases, certificates, etc.
 - **Provider** services: ACK, ASO, GCC
 - **Compositions**: Crossplane, Kratix



Demo: Platform and Application



Developer Portals





Interfaces for Application Developers

APIs: automatable and concise

- Cloud Provider APIs
- Kubernetes APIs
- Compositions

GUIs: observation and ad-hoc provisioning

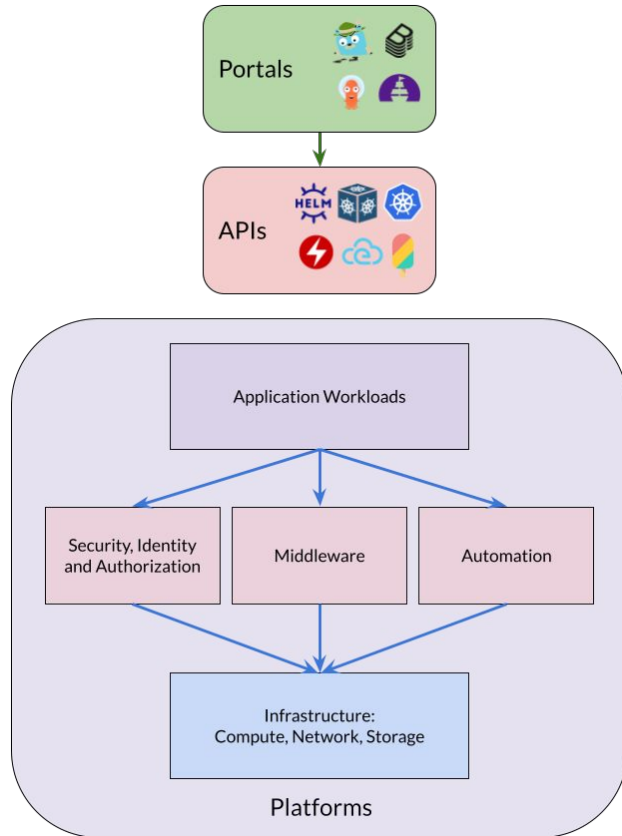
- App dev: Backstage, Argo, GitHub
- Platform ops: OpenShift dashboard, cloud consoles
- Support: Service Now, JIRA

What is a portal?

- A portal is a GUI for the platform

What is Backstage?

1. Software catalog
2. Project templates
3. Documentation
4. Discovery (search)



Golden Paths

- Backstage Scaffolder
- GitHub template repos
- OpenShift Dev Console Scaffolder



Demo: Manage applications in Backstage





Summary

1. Platforms and capabilities enable efficient cloud-native development and delivery
2. Consistent APIs and GUIs make platforms useable
3. Kubernetes is an open platform for building internal platforms
4. Backstage is a portal into your platform



Thank you!

CNCF Platforms White Paper

<https://tag-app-delivery.cncf.io/whitepapers/platforms/>



CNCF Platforms Survey

<https://forms.gle/iWBY64g19zhR8pY5A>



Thank you!

