



Kubernetes Intro & the Digital Enterprise

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Introduction



Incorporated June 2011

Major Customers'



Products



ChainIn

No/Low code app platform.

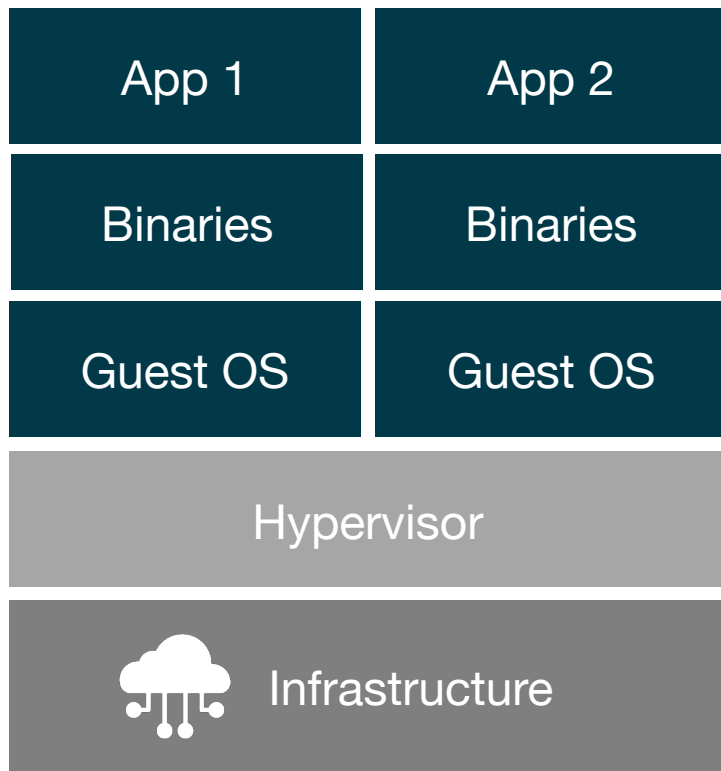
Agenda / Overview



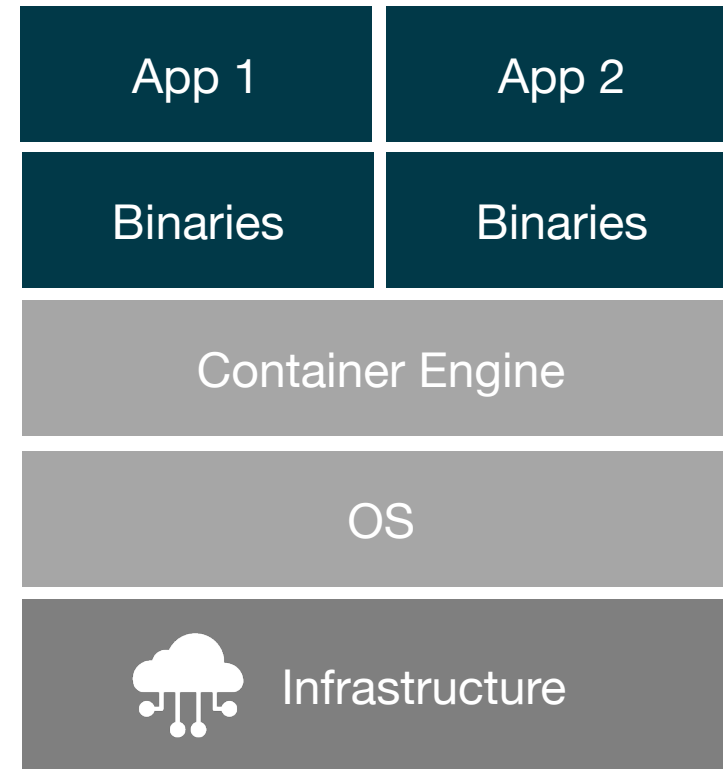
kubernetes

- Introduction on Kubernetes/Cloud native
- Understand Kubernetes architecture at a high level
- Get familiar with Kubernetes concepts
- Hands-On demo
- Use-cases with Kubernetes for the Digital Enterprise

What are VMs and Containers?



Virtual Machines



Containers

What is Cloud-Native?

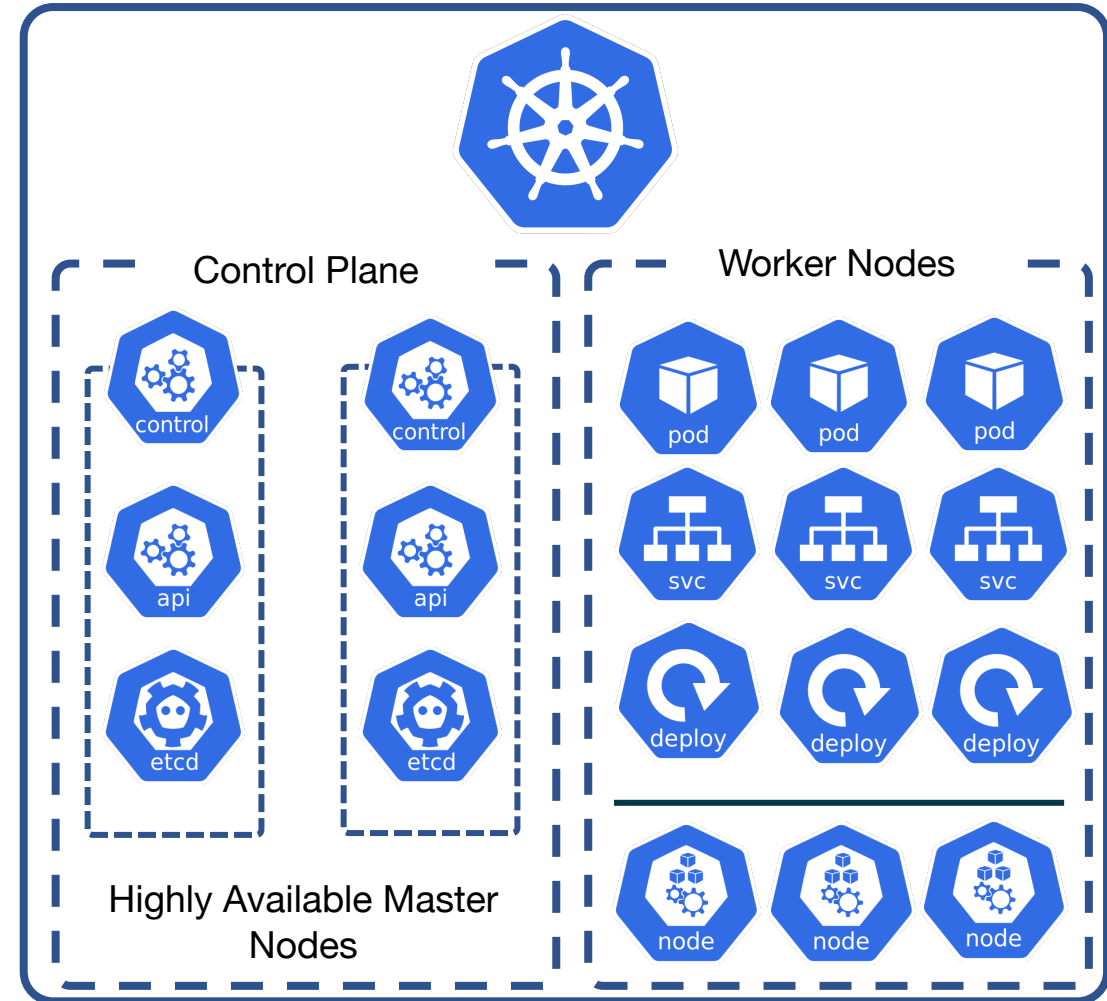
Cloud native is a term used to explain technologies that help to create, deploy, and operate applications in a scalable environment such as in public, private, and hybrid clouds.

Why Kubernetes?

- *Build Cloud-Native applications* - Cloud native solutions are also able to elastically scale up and down on the fly (without disruption) to deliver the appropriate cost-performance mix and keep up with growing or changing demands. This means you only have to pay for and use what you need.
- *Cluster management* – Easily manage Nodes/VMs.
- *Service discovery* - knows where containers are located and distributes client requests across them.
- *Replication* - ensures that the right number of nodes and containers are available for the requested workload.
- *Micro-Services* - management becomes very easy.

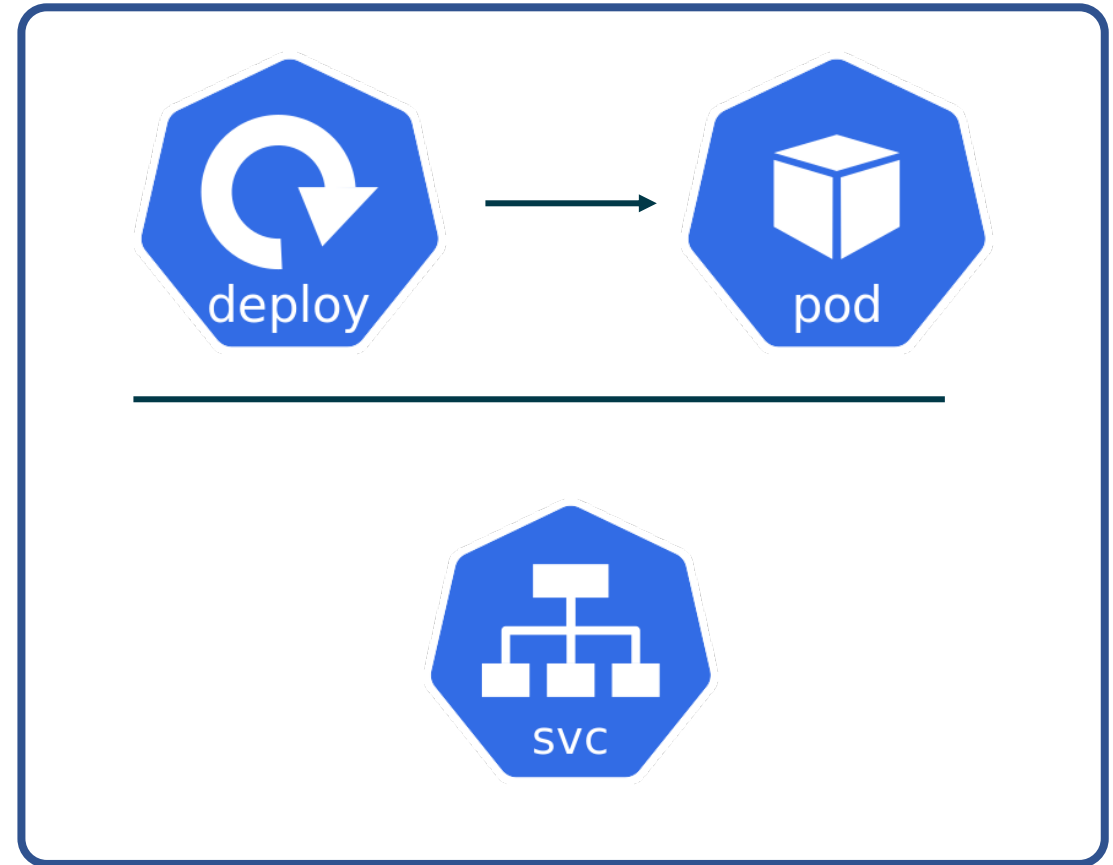
Kubernetes Architecture

- Provision, Manage and Scale Apps. Manage cluster of nodes (which is a collection of VMs or physical machines)
- Your apps might need many other resources, such as, File System, Networks, Secrets (to connect to DB), Firewall etc.,
- Define the setup declaratively (in a file) and assign resources to your apps



Kubernetes Concepts

- Pods - smallest unit of deployment, a Pod, runs containers. Each Pod has its own IP address and shares a PID namespace, network, and host name.
- Deployment – Declarative way / Setup of your Pod.
- SVC - An abstract way to expose an application running on a set of Pods as a network service.



Demo

1. Single Node Installation of k8s with microk8s
2. Deploy an App
3. Access the App from external network

Kubernetes Advanced Topics

- ***Service Mesh*** – Istiod, Linkerd
- ***File Storage (Persistent Volumes)*** – Cloud Storage providers or NFS
- ***ReplicaSets for long running services*** – Database services on k8s
- ***PodScaler*** – Horizontal scaling depending upon resource consumption
- ***Knative*** – Serverless computing on k8s
- ***k8s operators*** – Custom functionality to extend k8s

Future is Now – the Digital Enterprise



Digital Transformation

Build modern business applications that can streamline operations. Rapidly integrate existing ERP systems and create an engaging customer experience in less time.



App Modernization

Upgrade legacy desperate systems without disruption or risk. Extend existing applications by defining APIs or rewriting applications.



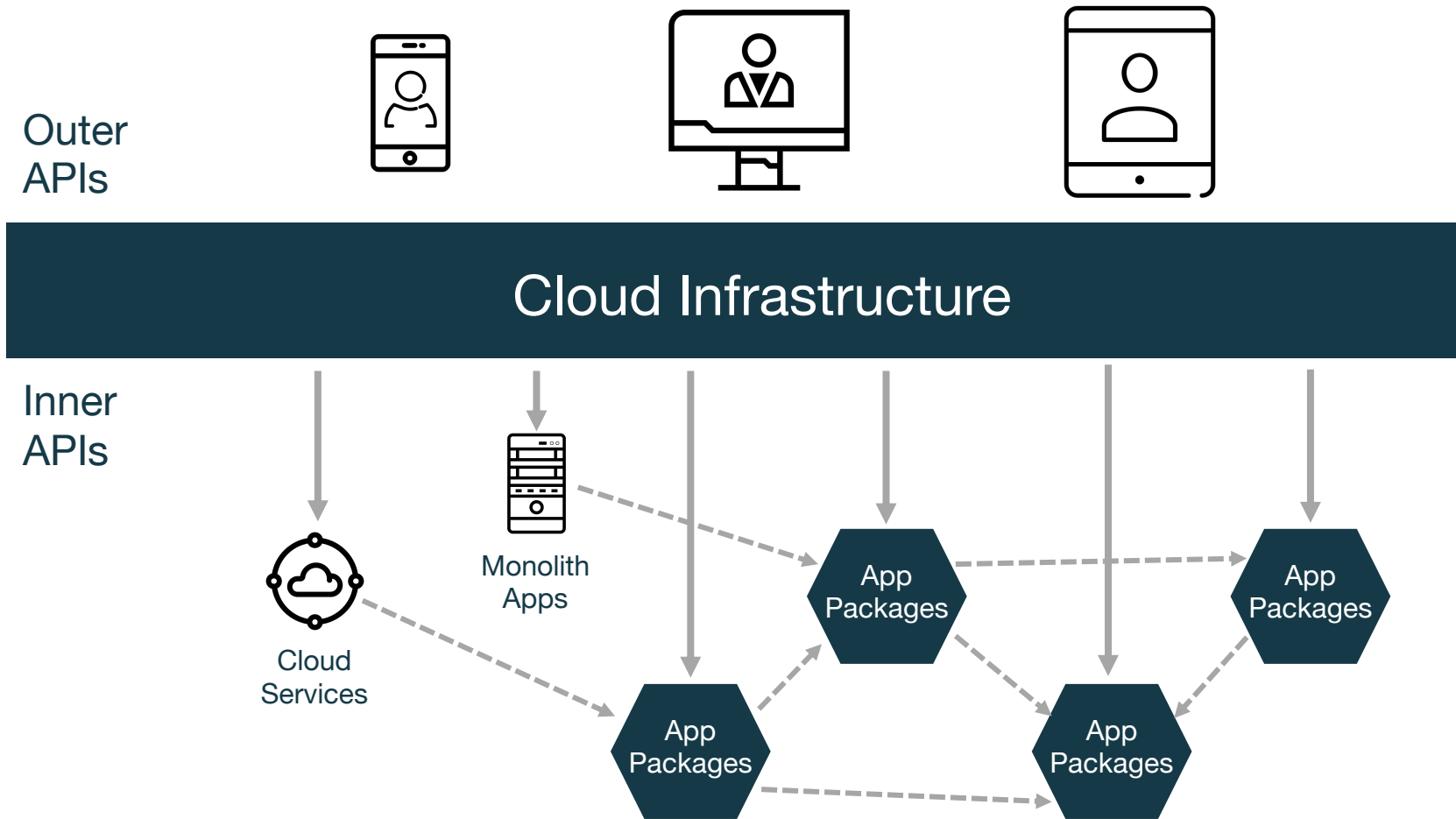
Platform Ecosystem

Scale your business from delivering point solutions to delivering custom solutions twice as fast. Transform your solution into a platform and build an ecosystem around it.

Cloud Native for the Digital Enterprise

- By becoming a ***Digital Enterprise***, a company can integrate and expose its business capabilities as APIs by digitizing an entire value chain.
- ***API-led integration*** provides a platform to enable enhanced digital experiences for consumers.
- ***Agility, flexibility, and scalability*** are key to becoming a successful digital enterprise.
- Combining ***cloud-native technologies*** with an API-led integration platform helps to increase productivity by having agility, flexibility, and scalability through automation and services.

Cloud Native for the Digital Enterprise



Links

- Kubernetes - <https://kubernetes.io/>
- microk8s - <https://microk8s.io>
- CNCF - <https://www.cncf.io/>
- Slides & Code - https://github.com/fahadsuhaib/k8s_profsummit_2021_talk

Contact & Thank You!

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