



Reverse Engineering Cloud Native

Building the NextGen Identity of
Practitioners



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Reverse Engineering Cloud Native

Building the NextGen Identity of
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Emergence of
Interfaces

Sustainable
Community



Cloud Native in
Data Science

Container Globalization



Container primitives

cgroups
Impose limits

Namespaces
Process resources

Linux kernel since
2008

Why containers became popular only in the
recent years?

Technology became the **competitive edge**

1

Application
complexity

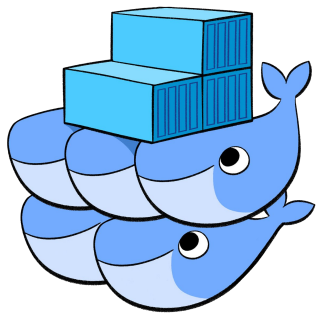
2

Fast
deployments

3

Environment
uniformity

Container Orchestrators



docker
SWARM

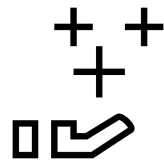


Apache
MESOS



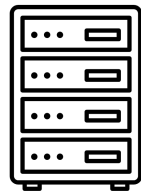
kubernetes





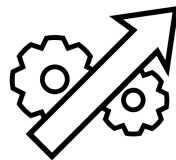
99%

—
Clear benefits of
adoption



52%

—
On-premise



88%

—
Operating 6+ clusters







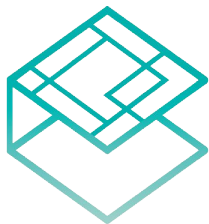
CLOUD NATIVE Landscape



Emergence of Interfaces

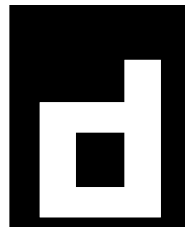


The Practical Past



CNI

Container Network Interface



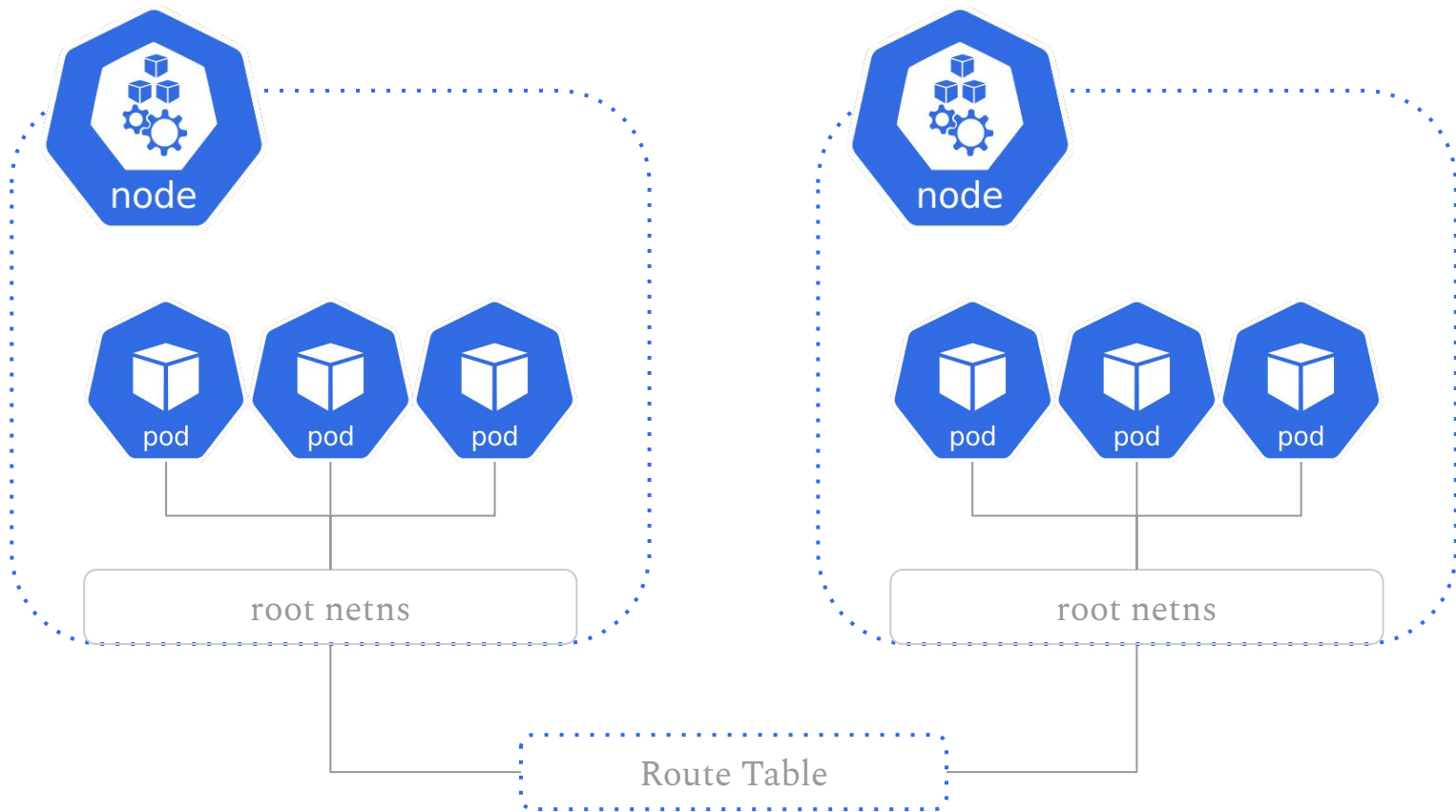
CRI

Container Runtime Interface

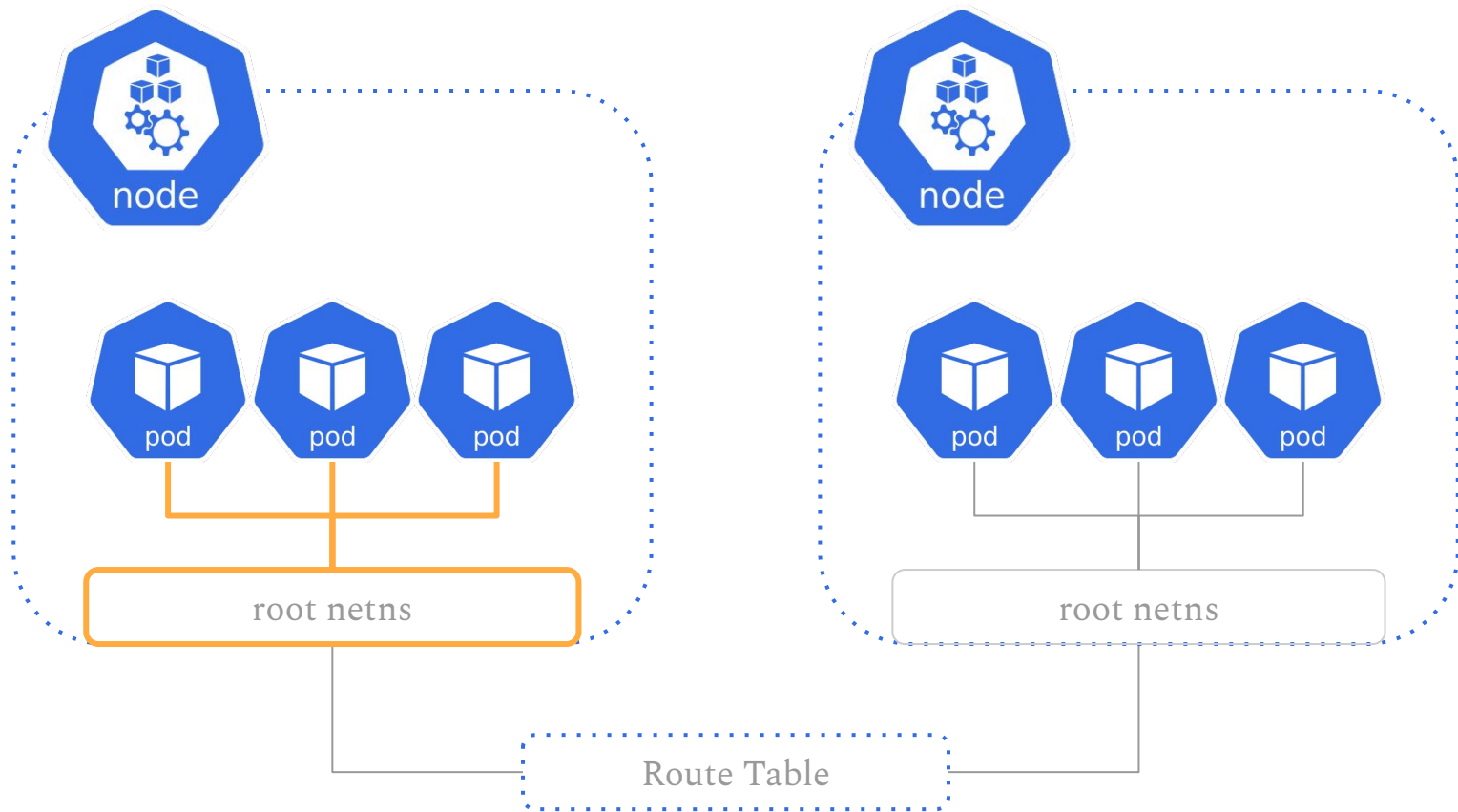
CNI

Container Network Interface

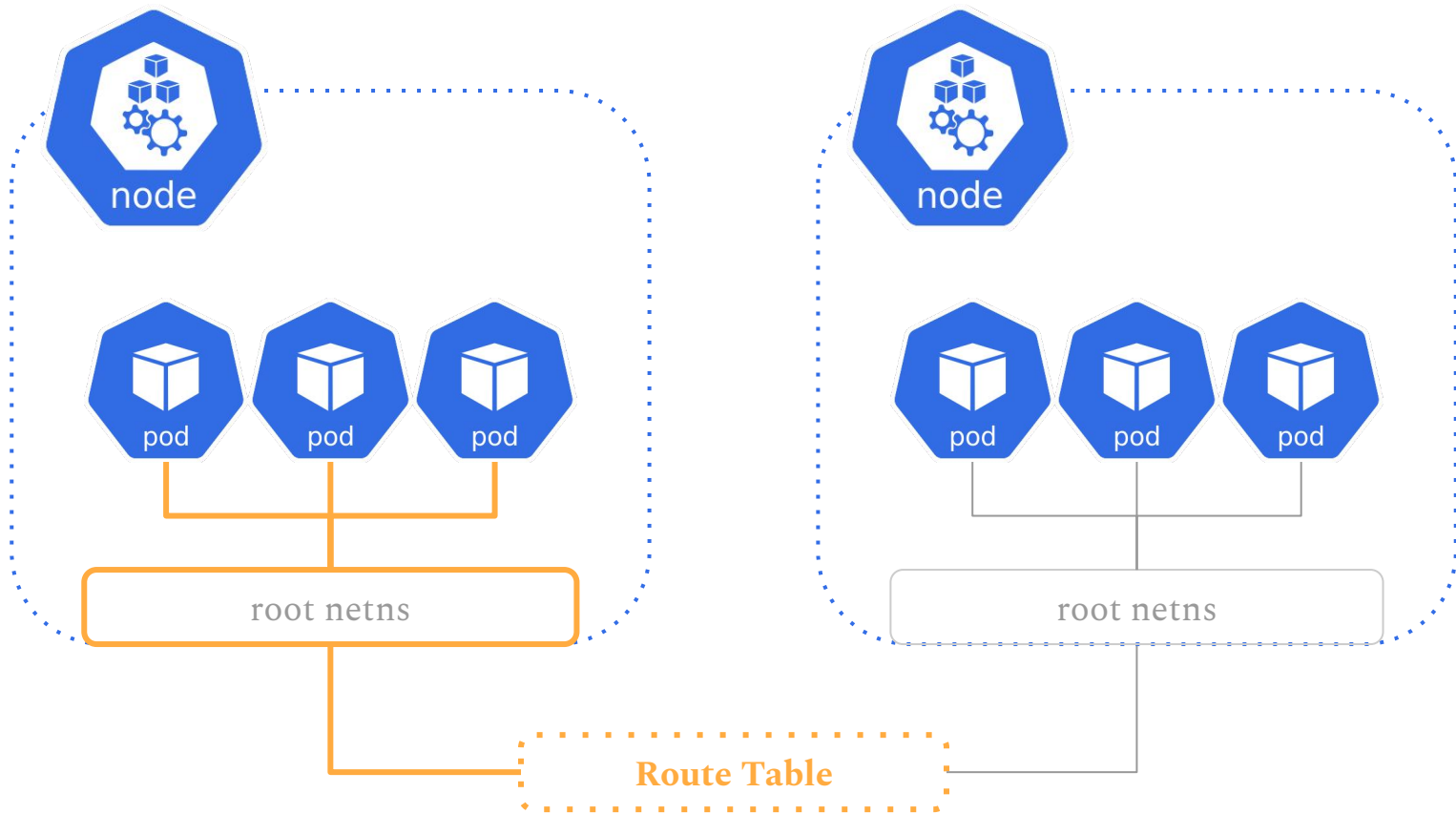
Each pod has a unique IP



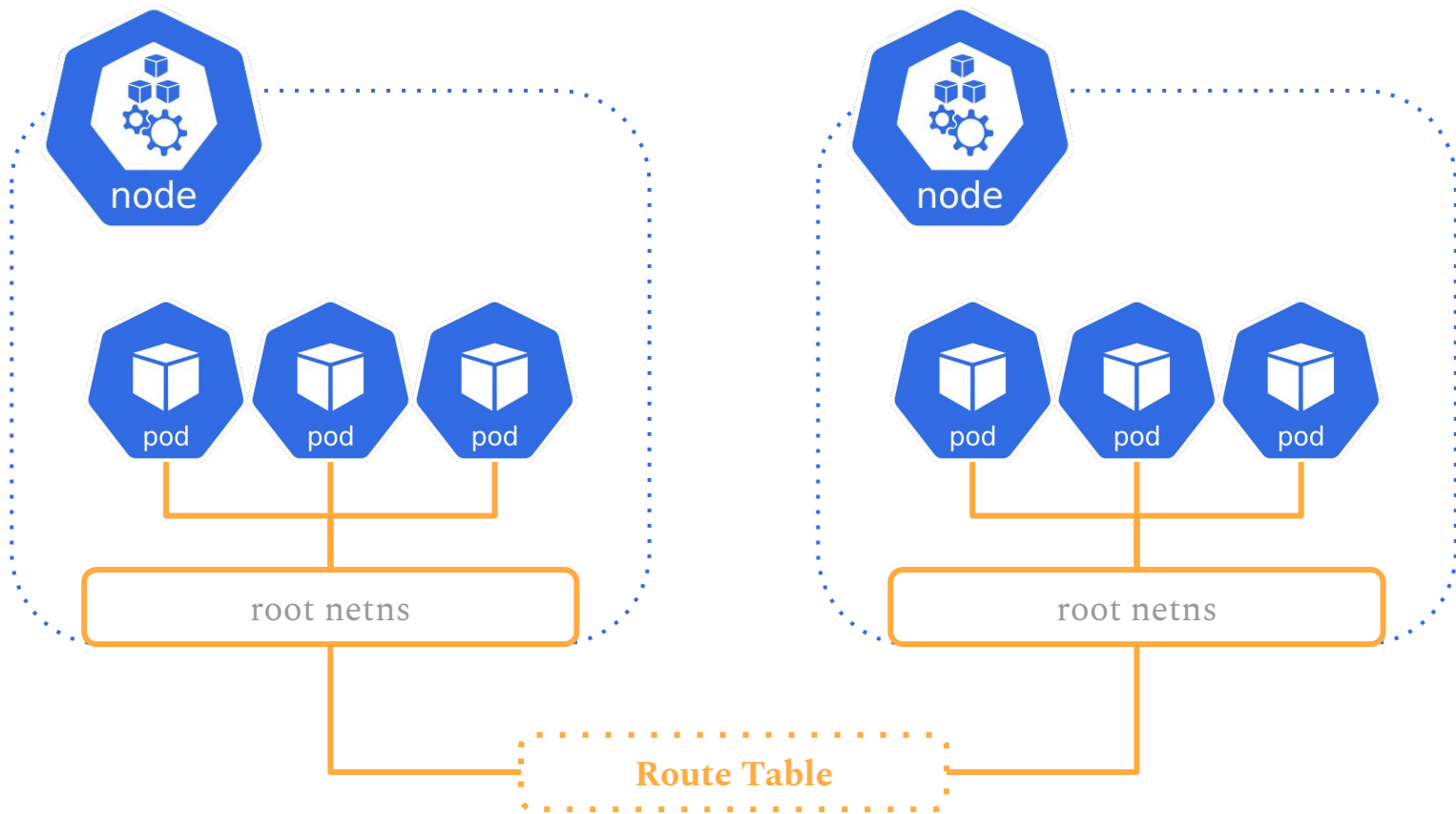
Inter-node communication



Inter-node communication



Inter-node communication



Inter-node communication

CNI

“

Provides only network connectivity of containers and removes allocated resources on container deletion.

”



CNI

Container Network Interface



CALICO



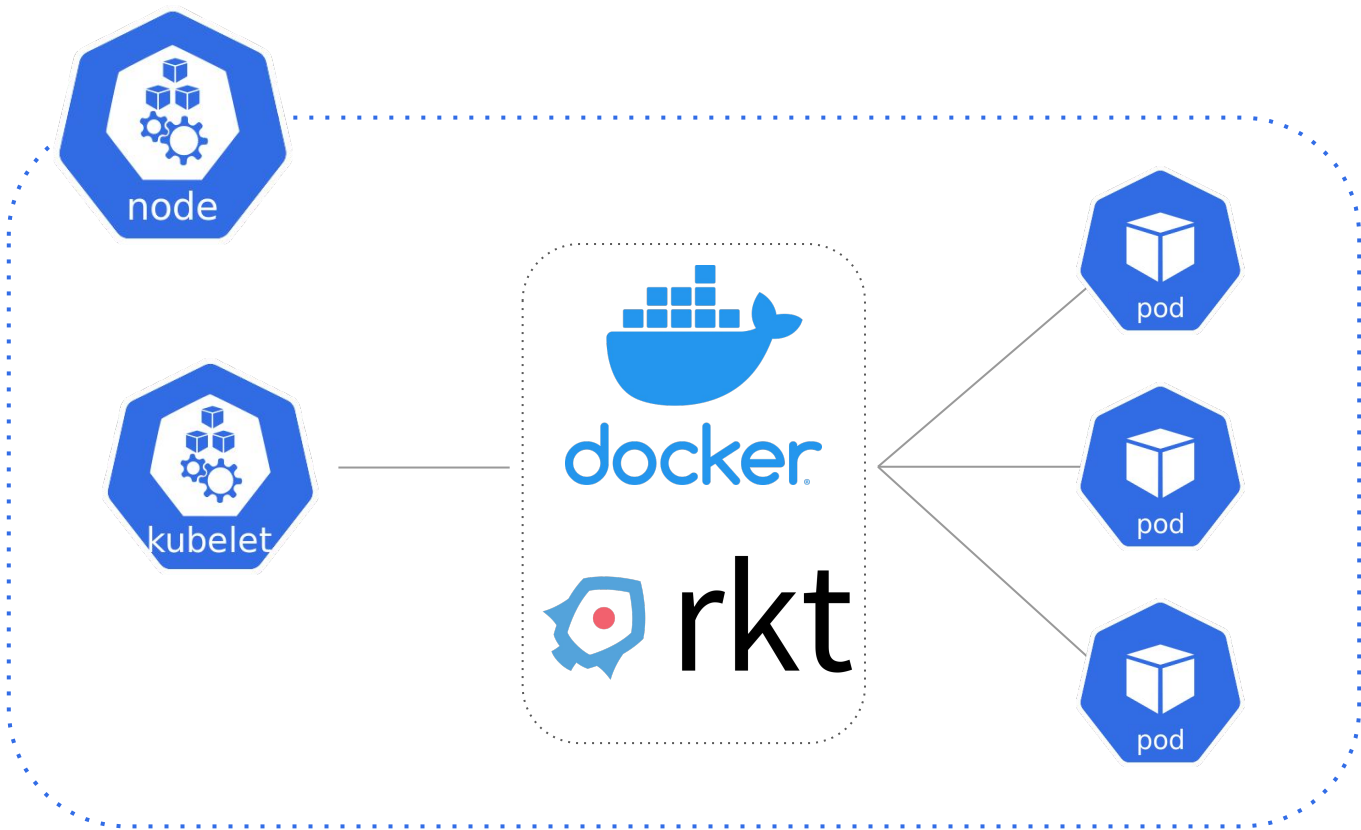
flannel

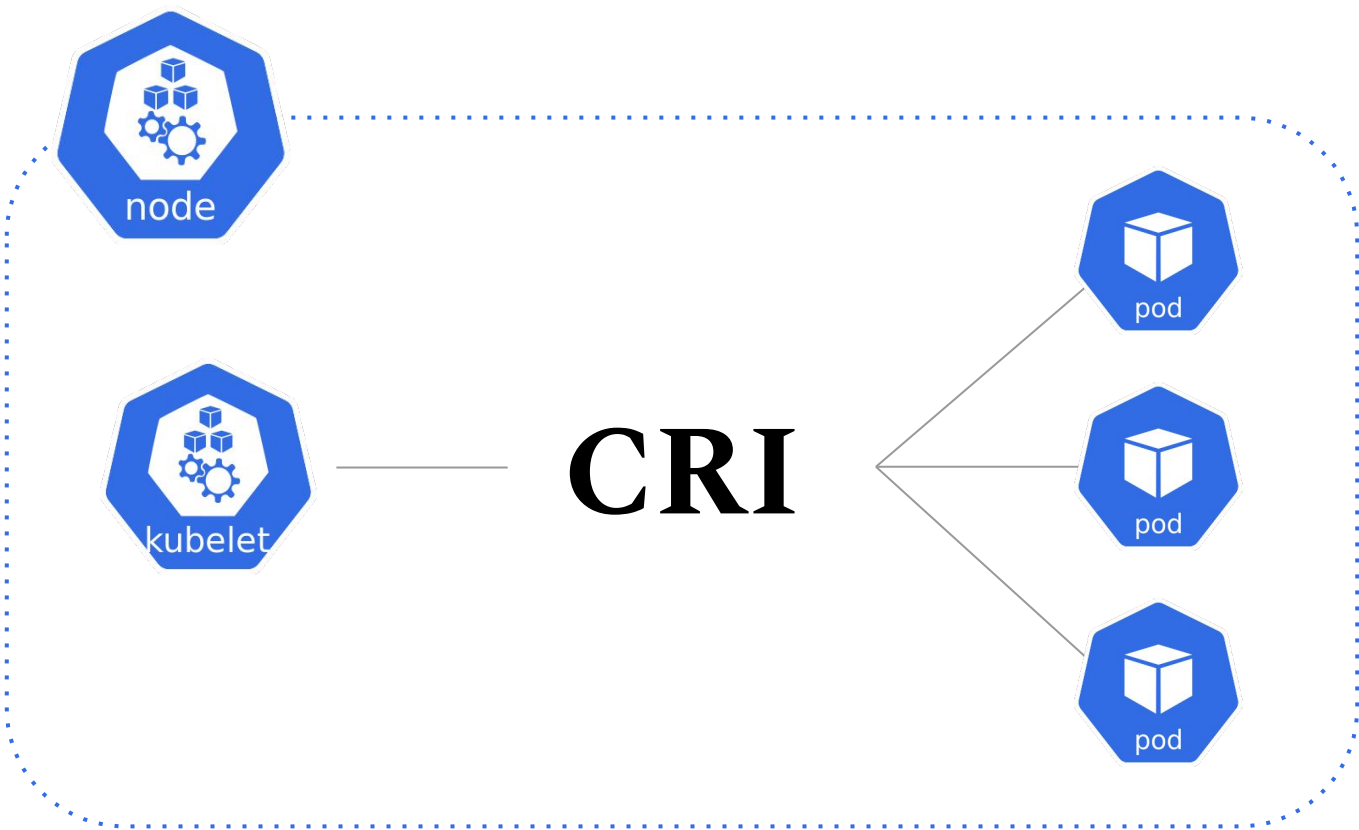


cilium

CRI

Container Runtime Interface





CRI

“ Provides an abstraction layer over
the integration of container
runtimes (inc. Docker and rkt) ”

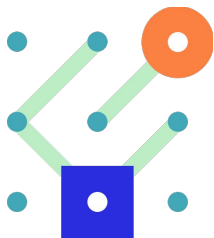


CRI

Container Runtime Interface



The Innovation Wave



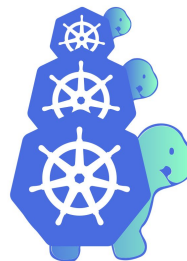
SMI

Service Mesh Interface



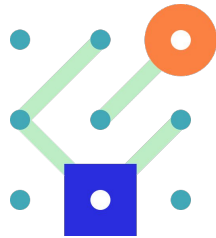
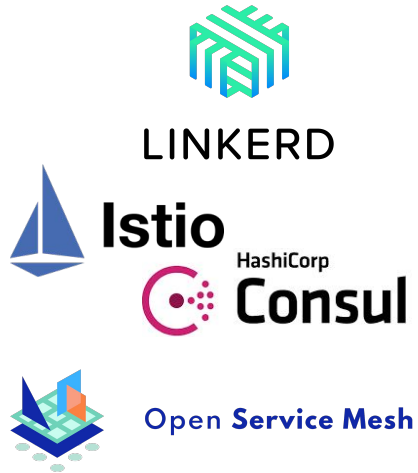
CSI

Container Storage Interface



Cluster API

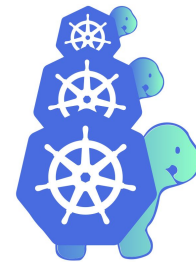
Cluster Provisioning



SMI
Service Mesh Interface



CSI
Container Storage Interface



Cluster API
Cluster Provisioning

Observability Stack

Ensure visibility across the stack:

- Simplify instrumentation
- Lowering the data aggregation costs
- Standardizing formats and frameworks



Application Deployment

“Simplify the application deployment on any platform while enriching the developer experience.”



KubeVela



Crossplane



Backstage

Community Sustainability



“

Open Governance:

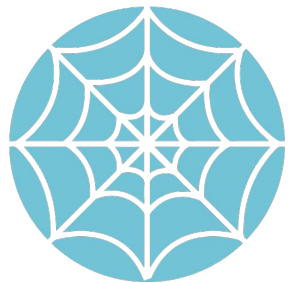
Inclusive is better than exclusive

”

contribute.cncf.io



CNCF Technical Advisory Groups (TAGs)



TAG
NETWORK



**CLOUD
NATIVE
SECURITY**



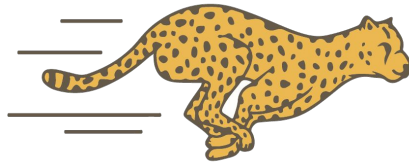
**TAG CONTRIBUTOR
STRATEGY**



TAG
App Delivery



TAG Observability



TAG Runtime



TAG Storage

Community Sustainability

*“Community needs to **scale continuously** at the pace of technology growth.”*

- CK{AD,A,S} certifications
- KCNA - Kubernetes and Cloud Native Associate certification
- Cloud Native Fundamentals course @Udacity



Continue building a diverse
community!

Cloud Native in Data Science



Cloud Native Definition

“

Empower organizations to build and run **scalable applications** in modern, dynamic environments such as **public, private, and hybrid clouds**. These techniques enable **loosely coupled** systems that are **resilient, manageable, and observable**.

”

Data Science Definition

“

Unify **statistics, data analysis, informatics**, and their related methods in order to **understand** and **analyse** actual phenomena with **data**.

”

Cloud Native Data Science

Machine Learning



Batch



Streaming



Storage



Analysis



Artificial Intelligence



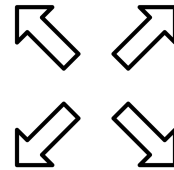
QLF AI & DATA

The Perspective



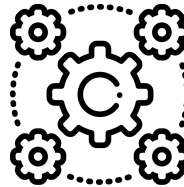
Innovation

Vendors



Extensibility

End Users



Diversity

Community

jobs.apple.com



Reach out!



kgamanji.medium.com



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