KubeCon | CloudNativeCon
North America 2024

Unleashing the Power of Init and Sidecar Containers in Kubernetes

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Init containers

Runs before main containers

Ordered start
Need to complete before the next one starts
Can copy files into volumes later used by main containers
Can use images with files not desirable in main containers
The most significant in terms of resources drives the scheduling

use cases
waiting for resources
reducing exposure of privileged tasks
fetching files
generating configuration files
avoid rebuilding main container images

Sidecar containers

All run at the same time

Running for the whole lifecycle of the pod
Their readiness/liveness affects the whole pod
Separate process group
Separation of concerns and more modular applications (isolated)
Reusable across multiple apps

use cases
Logging and monitoring
Caching
Proxying
Security and authentication
Data replication

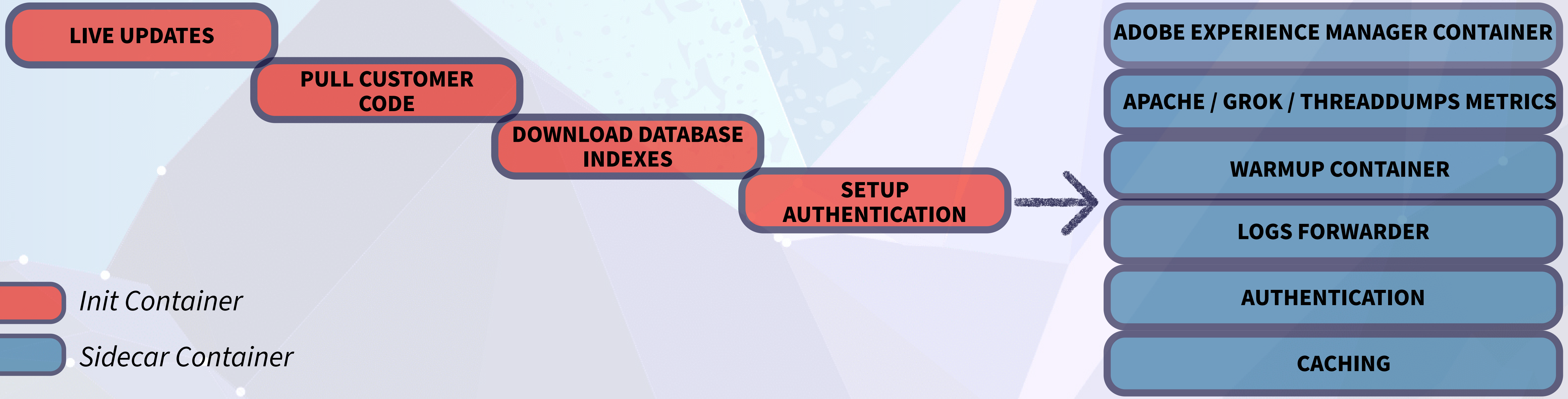
New sidecar containers

Start during init containers but run for the whole pod lifecycle

restartPolicy set to Always
https://kubernetes.io/docs/concepts/workloads/pods/sidecar-containers/

use cases
logging for both init and sidecar containers

Features
Running in the same node
Shared networking
Separate file system
Can share file mounts
Separate resource constraints (cpu/memory/ephemeral storage)



🟥 *Init Container*

🟦 *Sidecar Container*