
KubeCon
CloudNativeCon
North America 2019

KubeCon | CloudNativeCon

North America 2019

Containing the Container

Developer Experience vs Strict Security Posture

We are Verizon.

- **Fortune 500 Rank: #19**
- **$130.8B in revenue in 2018**
- **Launched the world's first commercial 5G service**
- **98% U.S. wireless network coverage**

fios

5G

ThingSpace

verizon connect

Aol.

yahoo!

visible

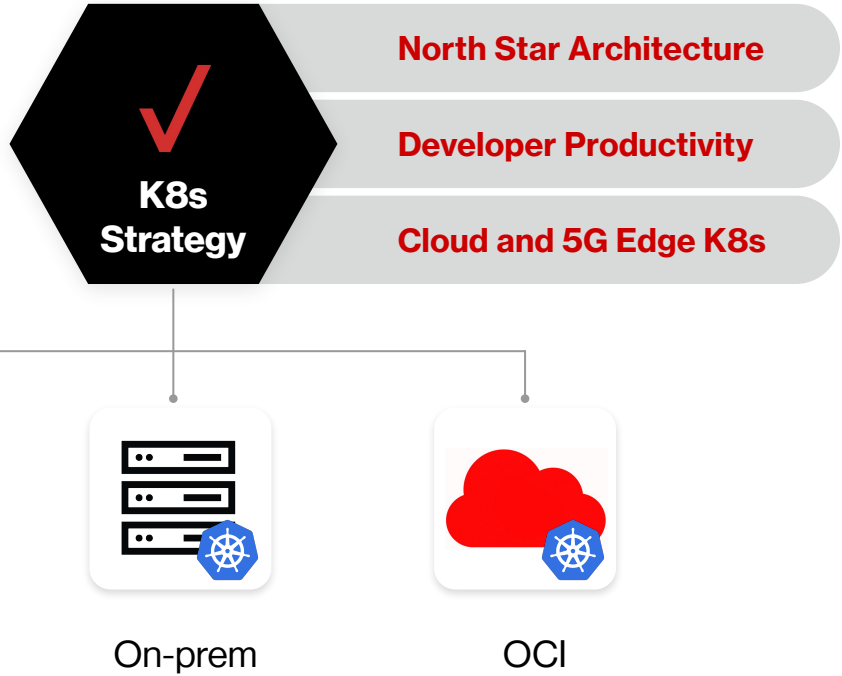
verizon media

Who Are We

Sharat Nellutla
Associate Director

Brian Bagdzinski
Cloud Engineer

Verizon K8s Strategy & Goals



> **We are committed to containerizing 50% of our current workloads by the end of 2020**

The Problem

1 | No Docker Locally

2 | Container Vulnerability Scans Overhead

3 | Multi-Cloud K8s Clusters CI/CD

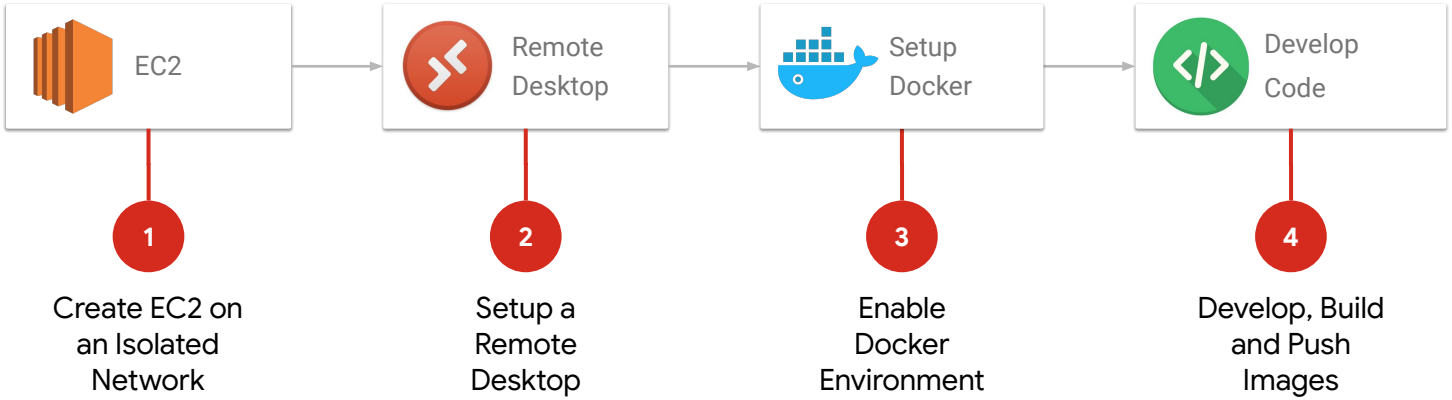
4 | Create, Secure, and Manage Images

Security posture @ Verizon is very strict

How can we enable developers to actually develop and innovate with this security posture?

verizon

Our First Answer: DevX 1.0



What Didn't Work

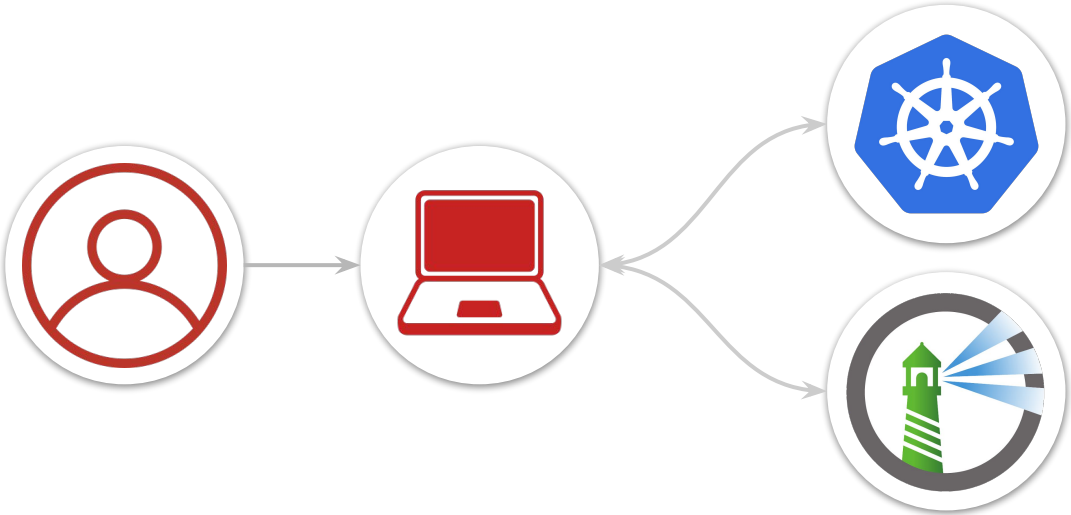
> Containers in containers is not the right solution

01 Docker in Docker issues
Poor performance

02 Network restrictions
Added cost

03 Not user-friendly
Impacts developer velocity

Now: DevX 2.0



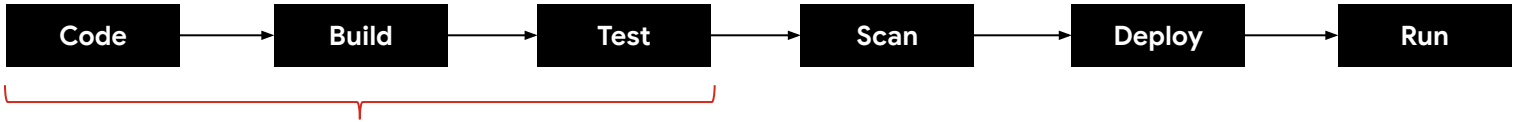
Use tooling directly on the developers' workstations to build and deploy images without the need of a Docker daemon

Tools in the Armory

We want to solve our problems using best-of-breed open source tooling to align with our cloud-native strategy:

- Kaniko
- Jib
- Skaffold
- Gitlab Runners
- Harbor
- Octant
- KUI

Development Tools



Kaniko

Builds images in environments that can't run a Docker daemon
Runs within a Kubernetes cluster in an unprivileged state
Less performance overhead compared to DinD builds

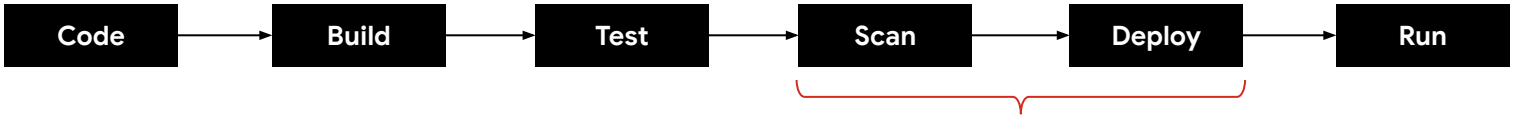
Jib

Builds optimized images for Java without Docker daemon
Splits dependencies from classes into layers -- more granular builds
No need for a Dockerfile, plugin via Maven or Gradle

Skaffold

CLI tool that facilitates continuous development for K8s apps
Iterate on your code locally then deploy to clusters
Can run in background and continually update without input

Deployment Tools



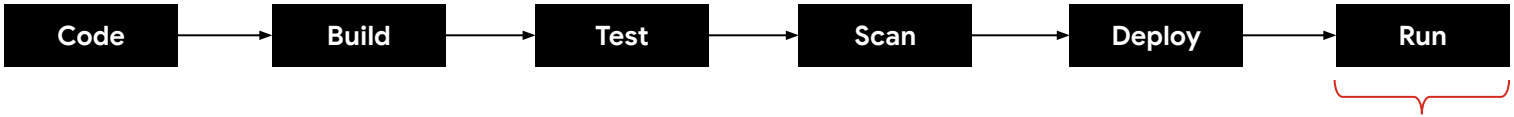
Open source project that is used to run jobs in Gitlab CI
Runners can be scoped to projects, groups, or globally
Leverage K8s to run builds on a cluster and scale out per job
Integration with Kaniko for image builds

Gitlab Runners

Open source container image registry
Role-based access control for registry and projects
Supports integration with image vulnerability scans via Clair
Image notary for ensuring authenticity
Provides a Helm chart repository

Harbor

Analysis Tools



Web-based tool to view how applications are running on a K8s cluster
Easily navigate multiple clusters via contexts and label filters
View log streams of pods and containers
Forward a local port to a running pod for debugging apps
Extensible via plugins

Octant

Uses Electron to provide an augmented CLI via kubectl
Offers a suite of visualizations for aggregating complex data
Gracefully transition between visualizations and console output
More easily view and modify JSON and YAML data models
Only available for MacOS and Linux

Kui

DevX 2.0 Demo

Conclusion

Developers' need to understand K8s fully is continually decreasing

New tools and frameworks are constantly popping up that make development, testing, and deployment more seamless

Verizon is committed to CNCF and building a cloud-native future

CNCF App Delivery SIG

- https://github.com/cncf/sig-app-delivery
- Meet the 2nd and 4th week of each month

Q&A

Thank you.