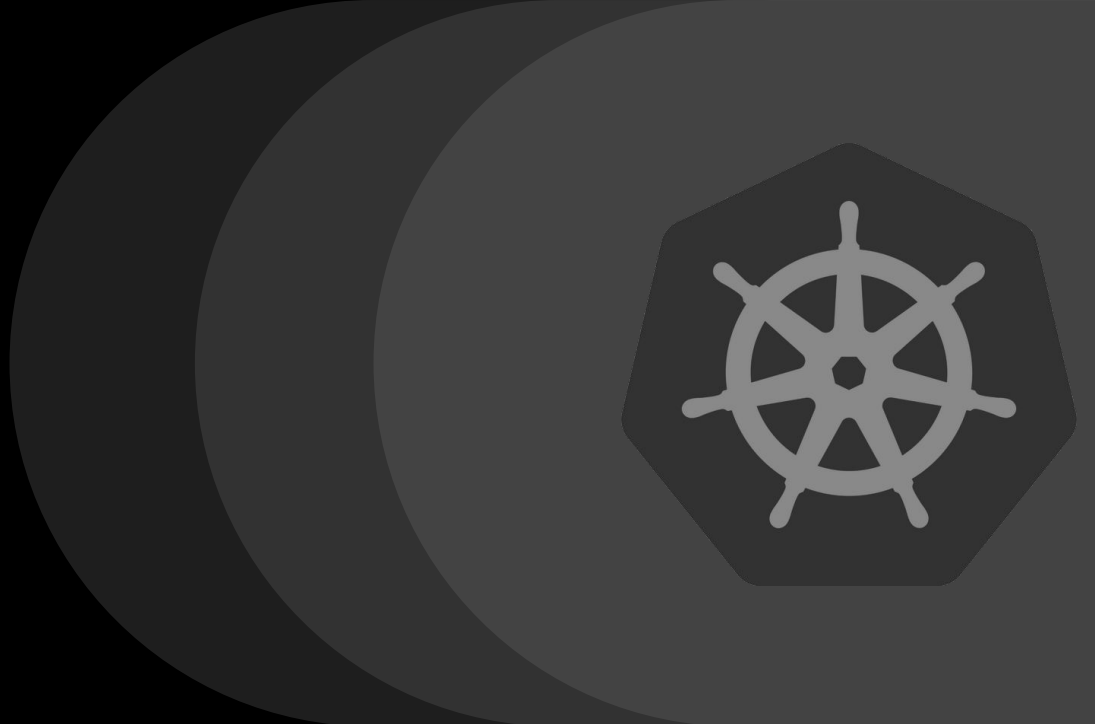


What is next for cloud native?

Cloud Native Operations.



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Operations Road Ahead

1. Backdrop
2. A new operations model
3. New operations roles
4. Architecting for operations
5. Cloud Native Ops and teams

Roads? Where we're going we don't need... roads!
-- *Dr. Emmett Brown*

Backdrop

- In an increasingly competitive world software capability is a critical differentiator
- Open source is eating the software industry
- Cloud is happening

Operations Model 1

System Administrator

- Competing teams
 - Developers
 - System administrators
- **Atom of work: Ticket**
- Works
 - ... but slowly
 - ... and it doesn't scale all that well
 - ... and it makes people sad

A learning experience is one of those things that say, 'You know that thing you just did? Don't do that'.

-- *Douglas Adams*

Operations Model 2

Devops!

- Code the heck out of it!
 - Language A for business logic
 - Language B to program the infrastructure
- **Atom of work: Integration**
- Works
 - ... except when it doesn't (imperative code in prod)
 - ... doubles your toolbox size
 - ... loses visibility and control

A human being should be able to change a diaper, plan an invasion, butcher a hog, conn a ship, design a building, write a sonnet, balance accounts, build a wall, set a bone, comfort the dying, take orders, give orders, cooperate, act alone, solve equations, analyze a new problem, pitch manure, program a computer, cook a tasty meal, fight efficiently, die gallantly. Specialization is for insects.

-- Robert A. Heinlein

Operations Model 3

Cloud Native Ops

- Logical infrastructure
 - Common services
 - Specialized operations teams
- **Atom of work: API**
- Works well
 - ... scales effortlessly
 - ... highly repeatable
 - ... low toil factor
 - ... **but is new**

In a properly automated and educated world, then, machines may prove to be the true humanizing influence. It may be that machines will do the work that makes life possible and that human beings will do all the other things that make life pleasant and worthwhile

-- *Isaac Asimov*

Attributes of 'Cloud Native Operations'

- Apps deployed to 'logical infrastructure'
- Automation replaces toil
- Smart specialization of role
- Access to shared application level services
- Intelligent subsystems drive optimization

New operations roles

- Infrastructure operations
- Cluster operations
- Service operations
- Application operations
- App developer

New Operations Mindset: Expert Operator

- Inspired by SRE model from Google
- Focus on automation -- drive down toil
- Drive operational maturity
 - Service level monitoring
 - Incident response tactics
 - Incremental deployment
 - Run experiments

Architecting for Cloud Native Ops

- Embrace continuum of composition and sharing
 - Pod composition vs container monoliths
 - Deconstructed monolith into services behind stable interfaces
 - Promote parts to 'repeatable local service'
 - Promote to 'global service'
- Each point of aggregation allows ops specialization

Teams with Cloud Native Operations

- Remember Conway's law
- Specialized ops reduces atomic team size
- Go from 'throwing over the wall' to 'delivering as a service'

Impact of 'Cloud Native Operations'

- Increased organizational efficiency
- Increased infrastructure efficiency
- More agile systems
- Easier access to technology

Call to action

- We need better tooling
 - At the cluster level
 - At the application level
- We need better training
- We need better playbooks
- We need better app level services

The major difference between a thing that might go wrong and a thing that cannot possibly go wrong is that when a thing that cannot possibly go wrong goes wrong it usually turns out to be impossible to get at and repair.

-- *Douglas Adams*