Kubernetes on Supporting 1 Million Bike-Taxi Drivers in Indonesia

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Hello!

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We’re from Jakarta, Indonesia
Ojek!
Milestone

Go-Jek 1.0
Call-center for ojek service

2010
Milestone

01 Go-Jek 1.0
Call-centre for ojek service

02 Mobile App
First mobile app was launched

2010 2015
With great number of apps comes great headache
a typical flow of an app in Go-Jek...
AUTOMATE EVERYTHING
Infrastructure as Code

Started in the beginning of 2016, we now have Terraform modules, Chef cookbook, and Ansible playbook for most of infrastructure use cases within Go-Jek group environment.
We went from 3 VMs in 2015 to 10,000+ VMs today
Our Journey to The Land of Containers
By the end of 2016, we started our Kubernetes journey by developing a deployment tool called Project X. The goal is to create a tool that is easy to use and scheduler agnostic.
Technical Issues

- **Not Well-Designed Abstraction**
  - Trying to make a scheduler-agnostic deployment tool is hard and can lead to abstraction that’s awkward for one or more scheduler

- **Not Easily Extendable**
  - As the consequence of the first issue, it was hard for us to extend Project X to keep up with new features released in Kubernetes or Nomad.

- **Blackbox**
  - Because we hid complexity from our product engineers, it was hard for them to figure out what went wrong when they had issues with their deployments.
Non-Technical Issues

Centralized and Siloed

• We're not saying that centralized effort is bad when creating initiative to migrate your organization to Kubernetes. In our experience, with only one team working on it, the knowledge becomes siloed within that team only.

Start with a Bang!

• Instead of starting with onboarding small number of teams, we went with the whole organization. When issues happened, we did not have the bandwidth to work on all of them at once.
Why do we fall, sir?

So that we can learn to pick ourselves up.
Multiple Approaches

- aws
- kops
- KVM
- Kubeadm
Improve
Project X

- Focus on Kubernetes only
- Design better abstractions
- Work with small number of teams at a time
Project X was used as deployment tool for Go-Jek International Expansion Projects

- Faster Setup Time
  - Setting up the whole Go-Viet infrastructure only took four days.

- Cookie Cutter Model
  - Repeatable/immutable nature of containerizing helps us to replicate our MVP launch strategy for different geographies.

- Scalable
  - Scaling based on business growth is very easy.

- Faster MTTR
  - In the case of traffic spike, for instance, we can spin up new containers much more quickly than setting up new VMs.
Project X was used as deployment tool for Go-Jek International Expansion Projects

- Higher Uptime
  - High availability DBs lead to fewer outage

- Efficiency
  - System resources like CPU, memory, etc. are more effectively utilized in container world than in VMs.

- Easy Configuration
  - Automatic service discovery allows engineers to not maintain any configuration for multi-data center deployments.

- Cost-effective
  - Save > $1 Million per year per country.
Whiterabbit

Kubernetes custom resources to support sharding with Kubernetes namespaces.
Barito Log

Barito Overview

- **Provisioning**
- **Service Discovery**
- **Log Forwarding**

- **Log Cluster A**
  - Consul
  - Producer
  - Kafka
  - Kibana
  - ES

- **Log Cluster B**

- **Service A**
  - Fluentd

- **Router**

- **Market**

- **User**
Cloud Native Saturdays

Internal knowledge-sharing sessions held regularly to discuss in depth about cloud native technologies. Aimed to get more people within our organization to understand better about the inner working of cloud native tech stack.
What’s Next?
Stateful Apps

Visit:
https://github.com/gojektech/charts/tree/master/incubator/stolon
Credits

Vijay Dhama – Go-Jek System Team
Prashant Mittal – Go-Jek Lambda Team
Irfan Shah – Go-Jek Atlas Team
Sumit Gupta – Go-Jek International Expansion Team
Willem Pienaar – Go-Jek Data Science Team
Arief Hermansyah – Go-Jek Data Science Team
Shani Pribadi – Go-Jek Business Intelligence Team
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Q & A
谢谢