Building a Fintech Startup on Cloud Native Technology

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Who?

Kasper Nissen (@phennex)

• Cloud Architect / SRE @lunarway
• Previous; LEGO Systems, IT Minds, Drivelogger
• Organiser & Co-Founder of Cloud Native Aarhus
• MSc. Computer Engineering
• Founder Cloud Native DK Slack Community
• Occasional speaker at meet ups and conferences
• Blogger at kubecloud.io
Who?

Thomas Bøgh Fangel (@tbfangel)

• Web Architect @lunarway
• Previous: Stibo Systems, Mobilethink, IBM
• MSc. Mathematics
• Occasional speaker at meet ups and conferences
Lunar Way in Numbers

35,000+ customers
5M+ transactions
500M+ USD through our system
60+ employees
60+ microservices
3 kubernetes clusters
The Partner Bank Model

- All money is in the partner bank
- Leverage the partner bank’s infrastructure and compliance
AGENDA

- The value proposition of Cloud Native
- Where we started
- Where we are now
- Observability at Lunar Way
Cloud Native, the CNCF definition

Cloud native technologies empower organizations to build and run **scalable applications** in modern, **dynamic environments** such as public, private, and hybrid clouds. **Containers**, **service meshes**, **microservices**, **immutable infrastructure**, and **declarative APIs** exemplify this approach.

These techniques enable **loosely coupled** systems that are **resilient**, **manageable**, and **observable**. Combined with robust automation, they allow engineers to make **high-impact changes frequently** and **predictably** with **minimal toil**.

The Cloud Native Computing Foundation seeks to drive adoption of this **paradigm** by fostering and sustaining an ecosystem of **open source, vendor-neutral projects**. We democratize state-of-the-art patterns to make these innovations accessible for everyone.

https://www.cncf.io/about/faq/
Business Value

- Speed
- Scalability
- Resilience
Format

Dev

Ops
Where we started
Application Architecture

Native iOS and Android apps

Backend

Bank Integration

DK Bank

NemID Integration

NemID

PostgreSQL

Open FinTech Forum 2018
Assessment of App Architecture

- Monolith in the cloud
- Highly coupled data model
- Highly coupled with partner bank
Relating to Business Value

No Speed
No Scalability
No Resilience
Infrastructure Architecture

iOS/Android

Rails
- Signup
- Support
- Goals
- Feed
- Credit
- Push

HAProxy

HAProxy

HAProxy
Assessment of Infrastructure Architecture

- Replicated Instances
- Jenkins as the orchestrator
- Deployment was too exciting
Relating to Business Value

No Speed

No Scalability

No Resilience
Where we are now
New App Architecture Principles

- Microservices
- Async first
- Event driven
Assessment of New Architecture

- Speed
- Scalability
- Resilience
New App Architecture Challenges

- Microservices
- Async first
- Event driven
Key Learnings App Architecture

”Think about the challenges, specifically prioritize deployment and runtime platform”

”Be systematic and automate”

”Prefer async communication… preferably event driven”
New Infrastructure Architecture Principles

- Independent Deployability
- Easy to maintain
- Minimize deployment fear
Deployable Unit
Assessment of New Infrastructure

- Speed
- Scalability
- Resilience
Key Learnings Infrastructure Architecture

"If it hurts, do it more often"

"Prioritize your infrastructure to unlock the potential of microservices"

"Apply #1 to infrastructure as well"
Observability at Lunar Way
Application Perspective
Observability Drives Improvement

Code

Observe

Deploy
Infrastructure Perspective

Monitor  ✓  Logging  ✓  Tracing  ❌  Chaos Experiments  ❌
Observability at Lunar Way

Grafana

Monitoring

Humio

Logging

fluentd
Key Learnings Observability

"Read your logs, use your metrics and improve them"

"Systematize logging and metrics"

"Logging and monitoring is not enough!"
Open Source Perspectives at Lunar Way

- Utilize CNCF projects
- Provide issues, PR fixes upstream
- Open source our own projects
Transformation to Microservices
Kubernetes is the foundation on which we built this
Wrapping up

Kubernetes is complex, but enables endless possibilities
Prioritize your infrastructure to unlock the potential of Microservices
Make your system observable
Read your logs and make them easily accessible
If it hurts, do it more often

Key takeaways
Thank You!

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