CODENAME ONE

- Introduction
- Codename One
- Startup Building
- Cloud Architecture
- PaaS vs. IaaS
- Questions

Scaling a Mobile Startup Thru The Cloud: A True Story

Shai Almog & Chen Fishbein
@Codename_One

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Who Are We?

Shai Almog

Co-founder & CEO of Codename One
Founder of vprise consulting firm
Sun consultant working on mobile development tools since the 90's
Member of original WTK team, co-creator of LWUIT project
Worked with Sun/Oracle, IBM, DoCoMo, Nokia, Samsung, Verizon, Sprint, Vodafone, Sony Ericsson and more
Open source hacker, Java developer since 96
Over 20 years of professional software development experience
Frequent conference speaker, JavaOne rockstar award winner, blogger & writer

Chen Fishbein

Co-founder & CTO of Codename One
Co-founder of the open source LWUIT project, most successful open source mobile project from Sun Microsystems
Lead developer of the Sprint Wireless Toolkit, the most successful operator specific mobile development environment
Worked for Sun/Oracle, Samsung, Verizon, Sprint, Vodafone, Sony Ericsson and more
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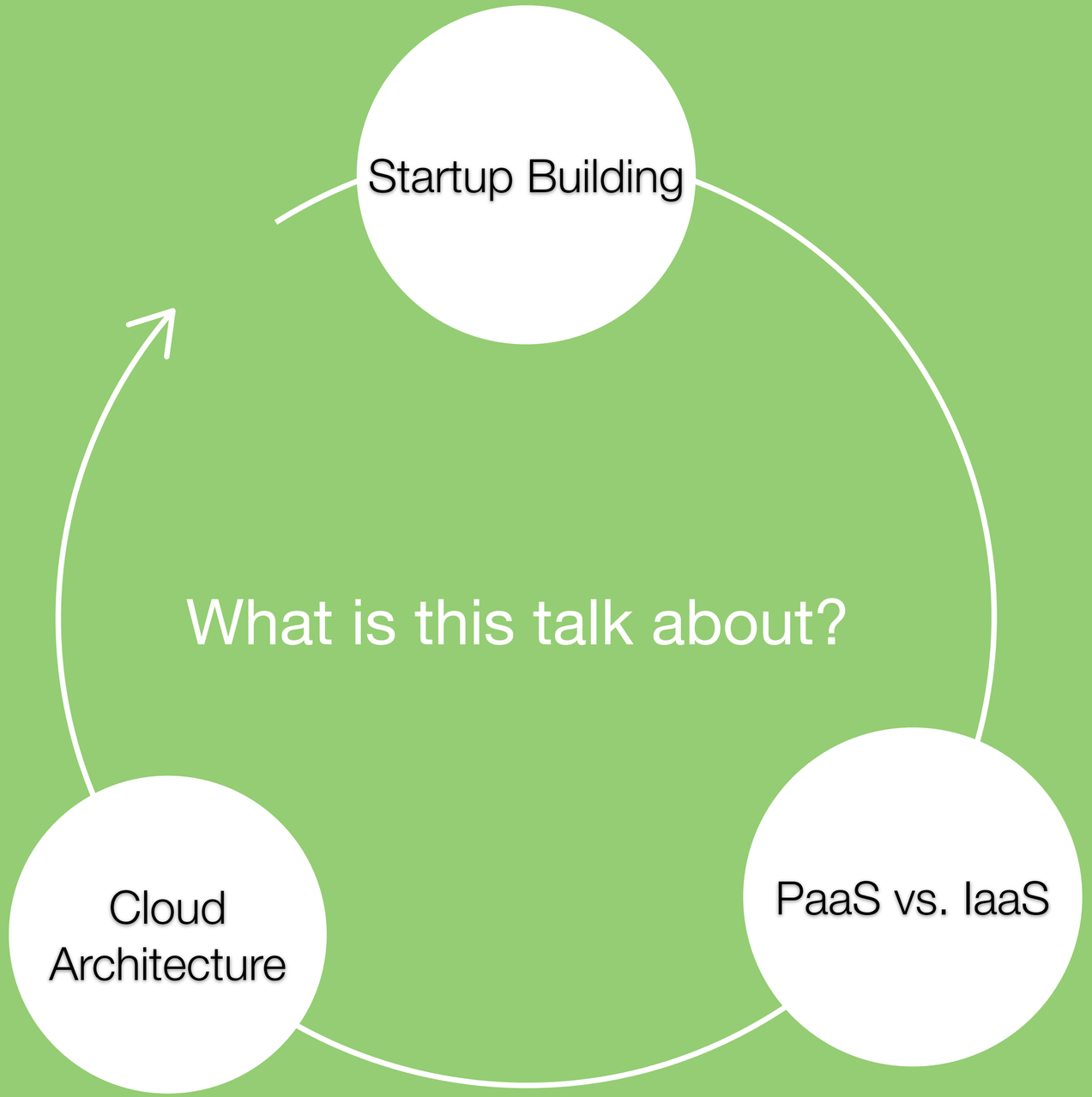
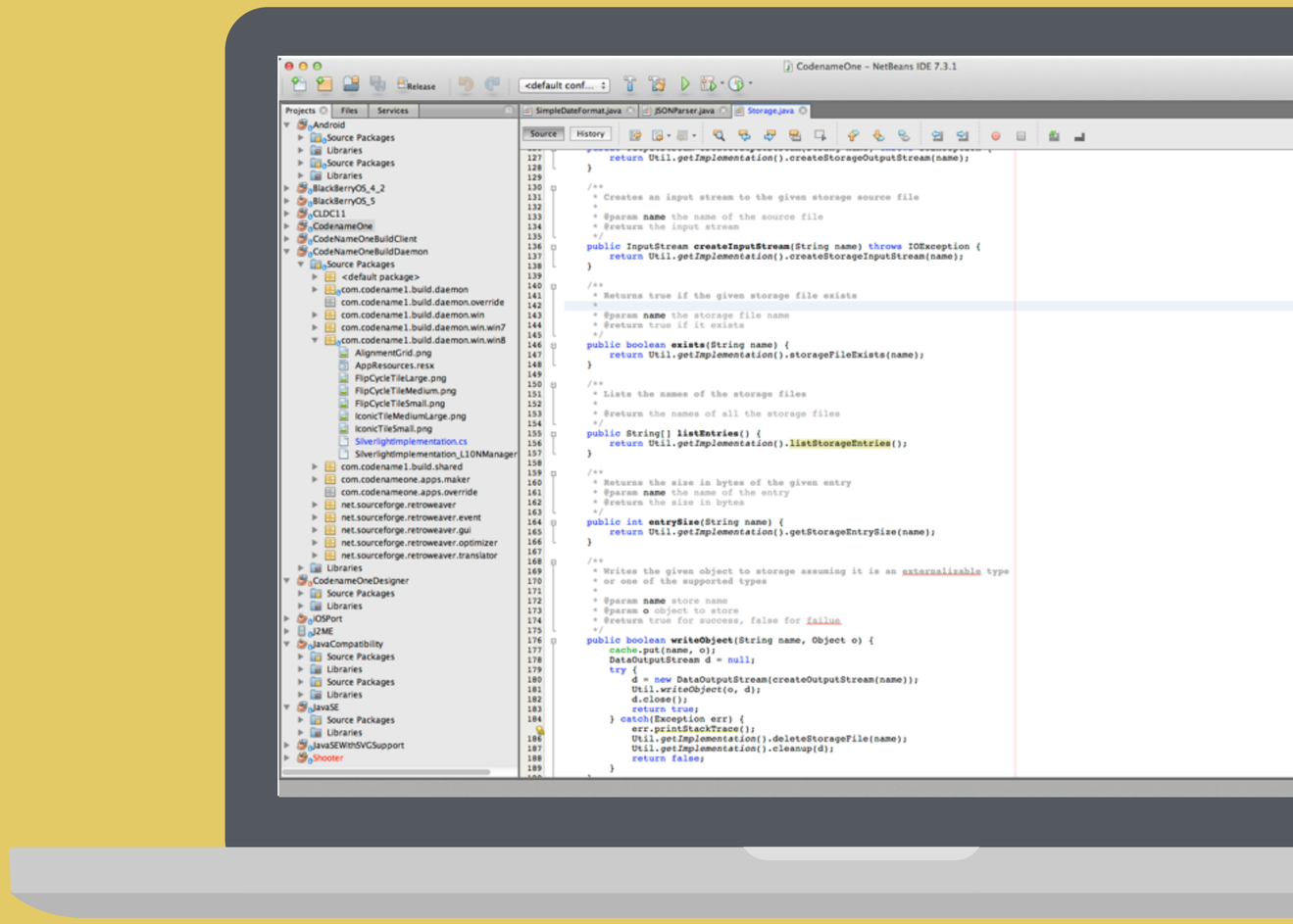
What is this talk about?



But First…
What Is Codename One?

Some stories start at the end…



What Is Codename one

- WORA (Write Once Run Anywhere) For all mobile devices
- Debug locally on simulator
- Open source - roots at Sun Microsystems circa 2006
- Macs, Windows & Linux machines in cloud allow building native code with one click
- Basic service is free (with quota)

Demo

What is Codename One and how does it work

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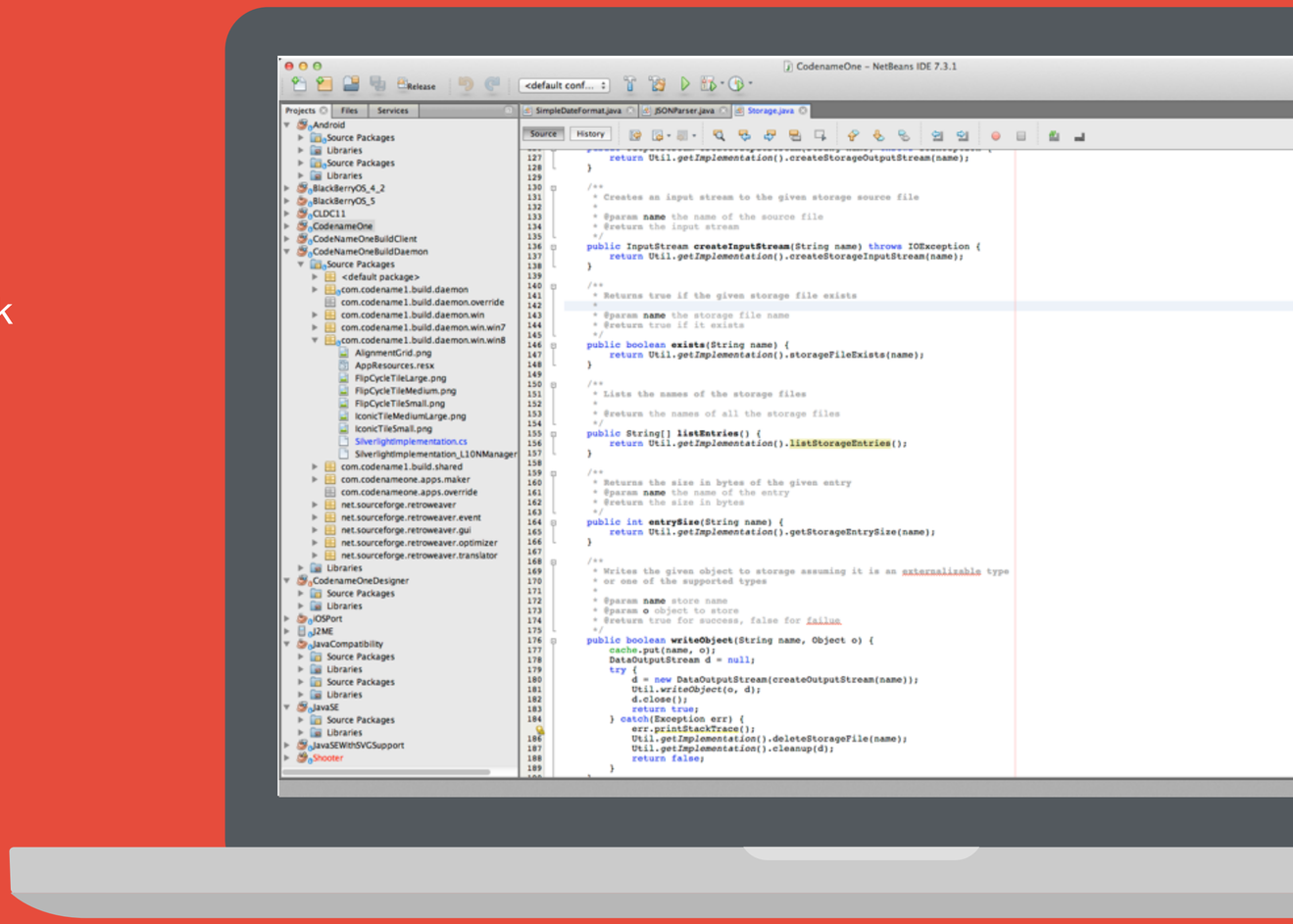

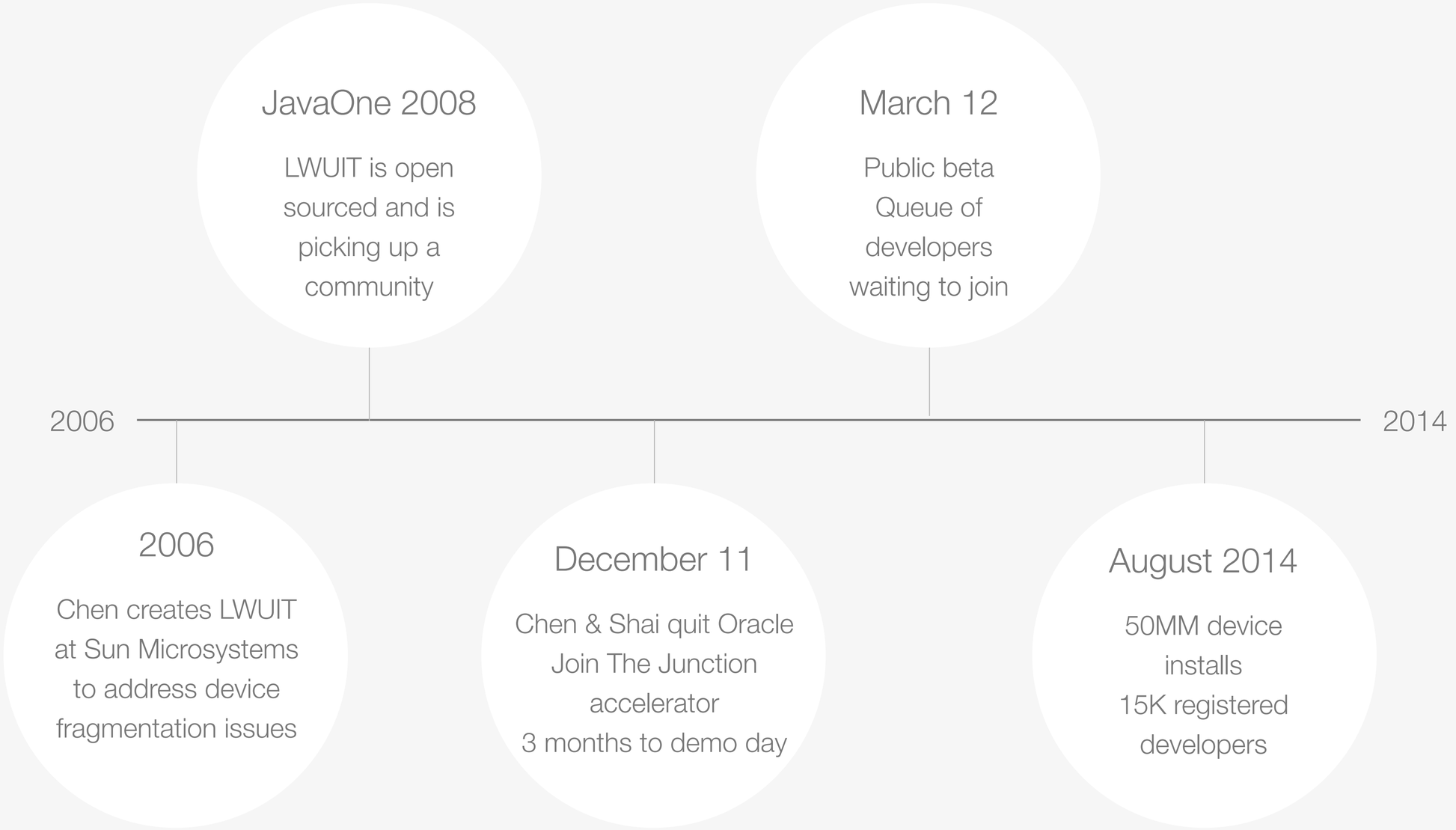

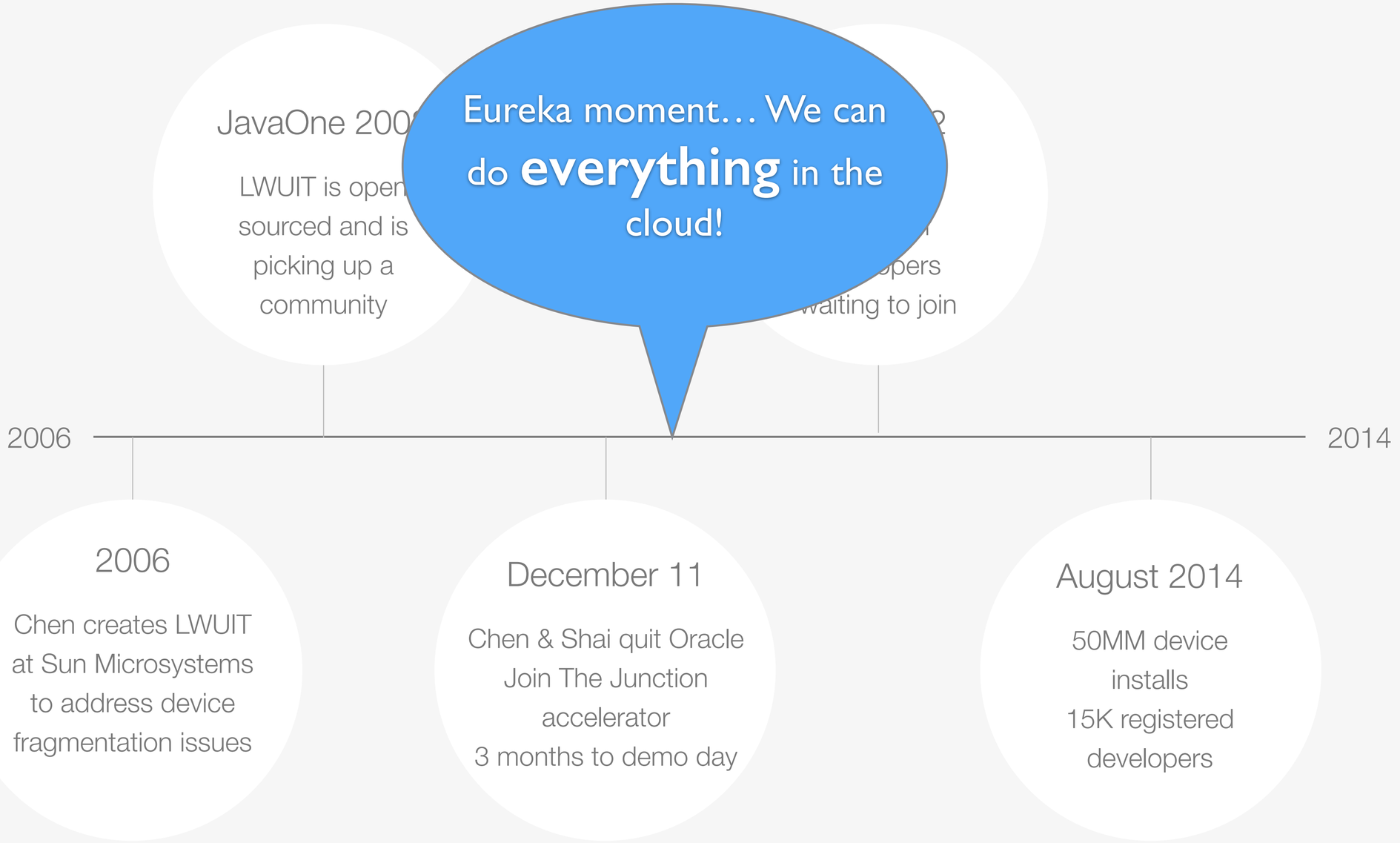

Problem!

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Almost all of this is mobile experience. Didn't do serious server code since 2008!

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Our options for cloud:

Our options for cloud:

Unavailable or beta late 2011

Only one real choice in 2011…

We could have gone with AWS, avoided Java or host our own servers. All of the above would require more work than we could manage

Google App Engine

What We Came Up With

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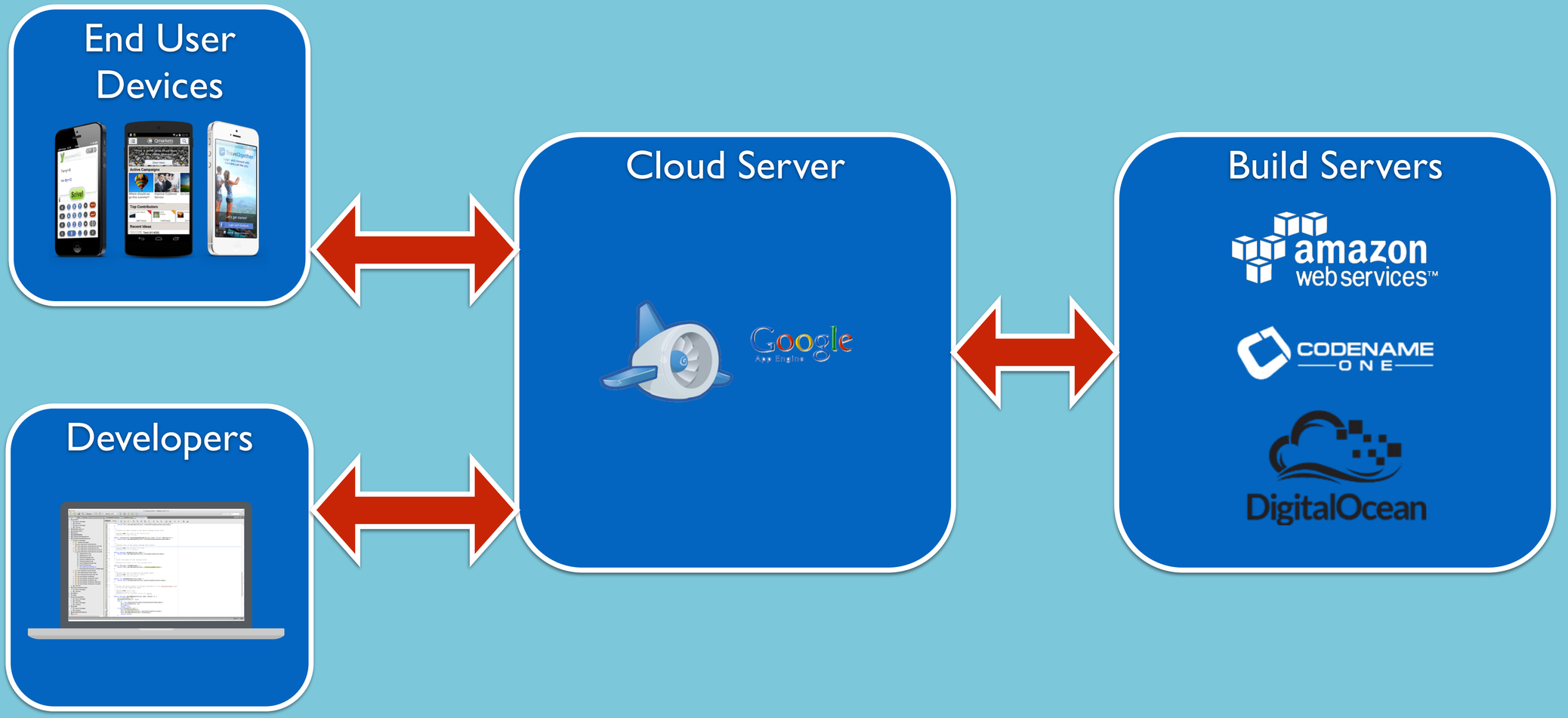

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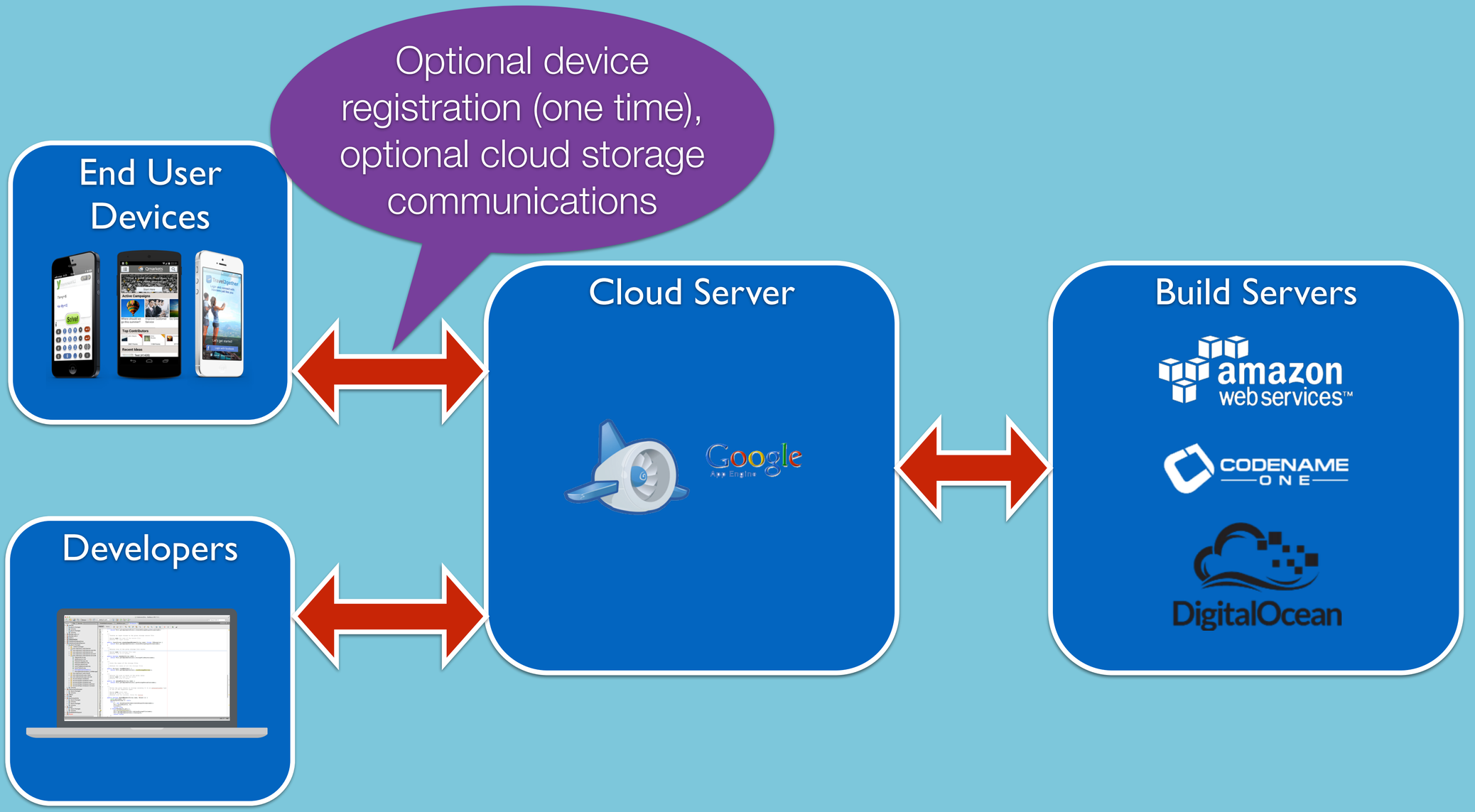

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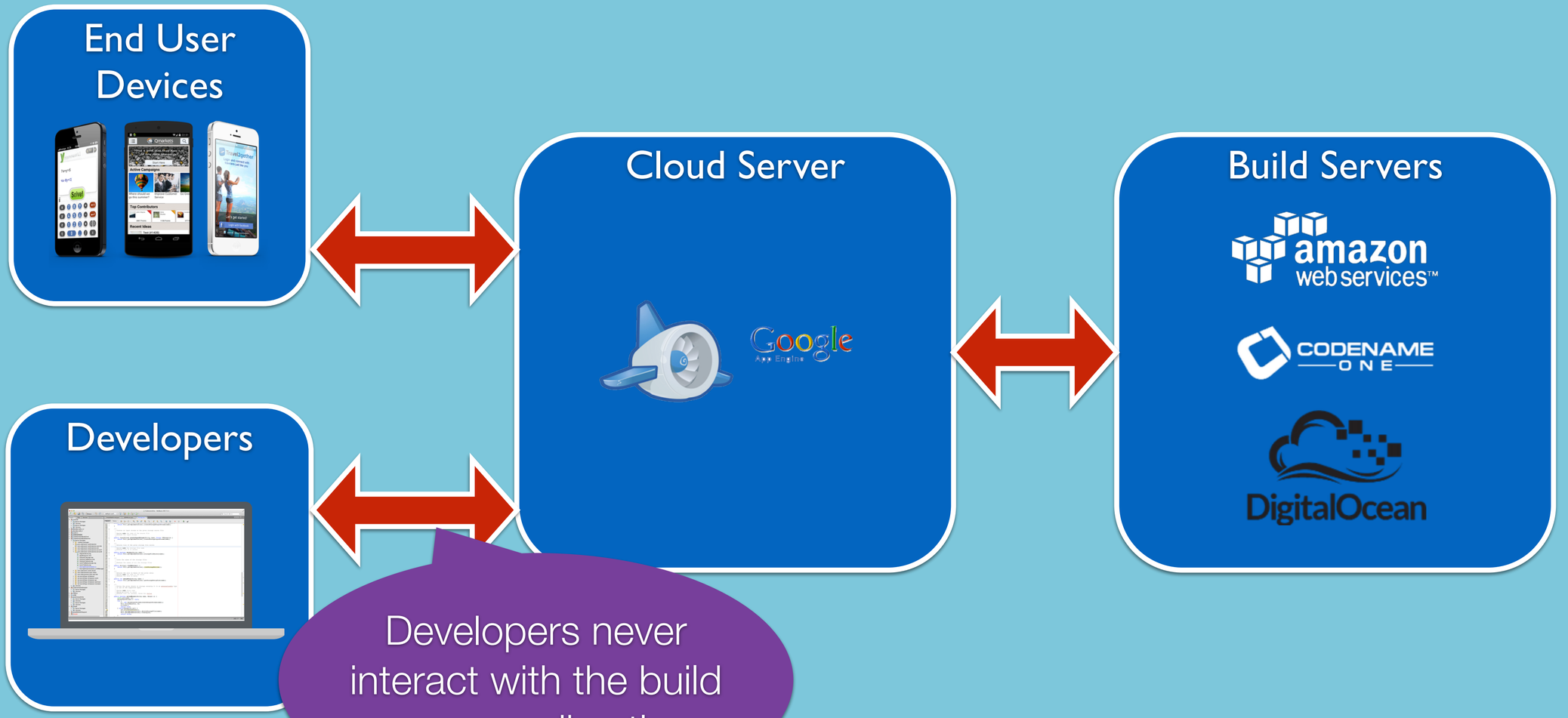

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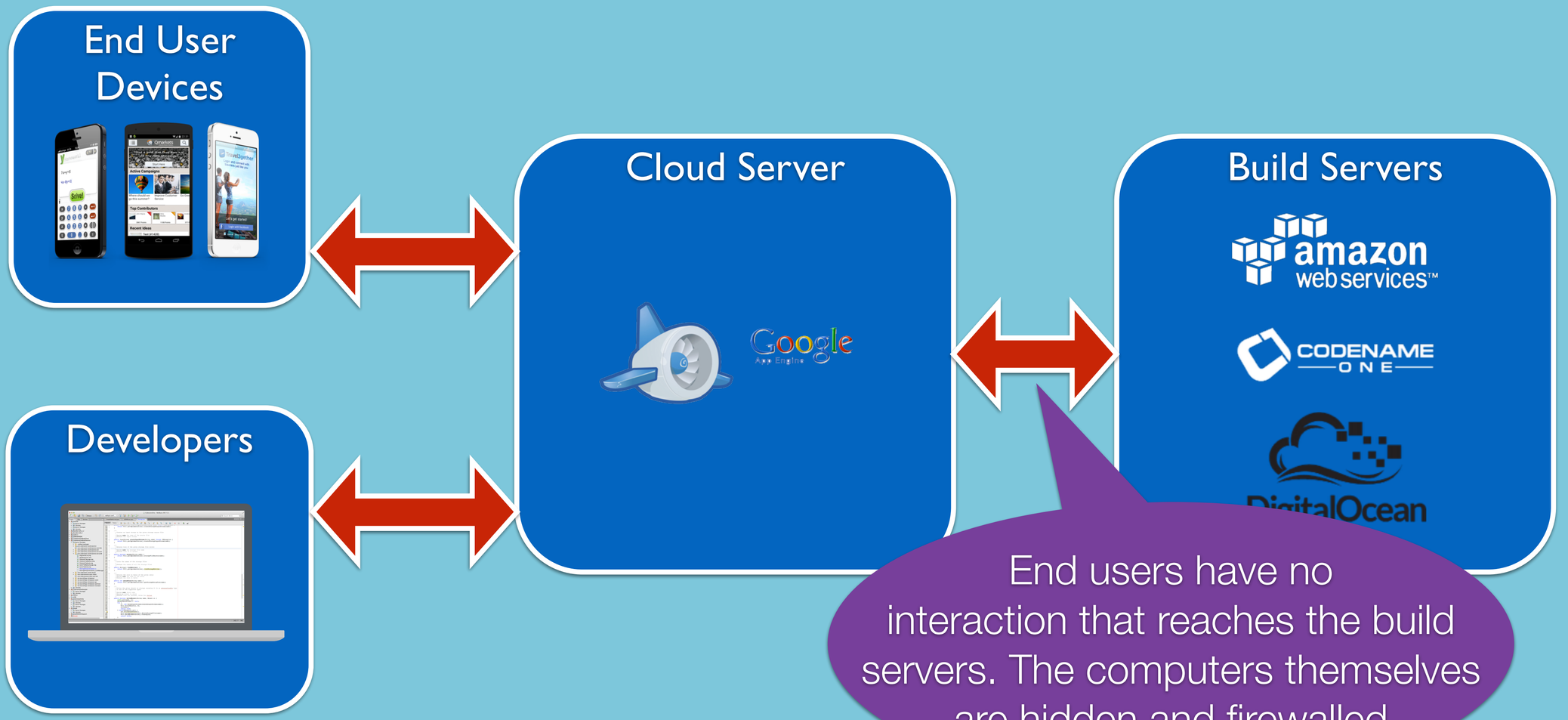

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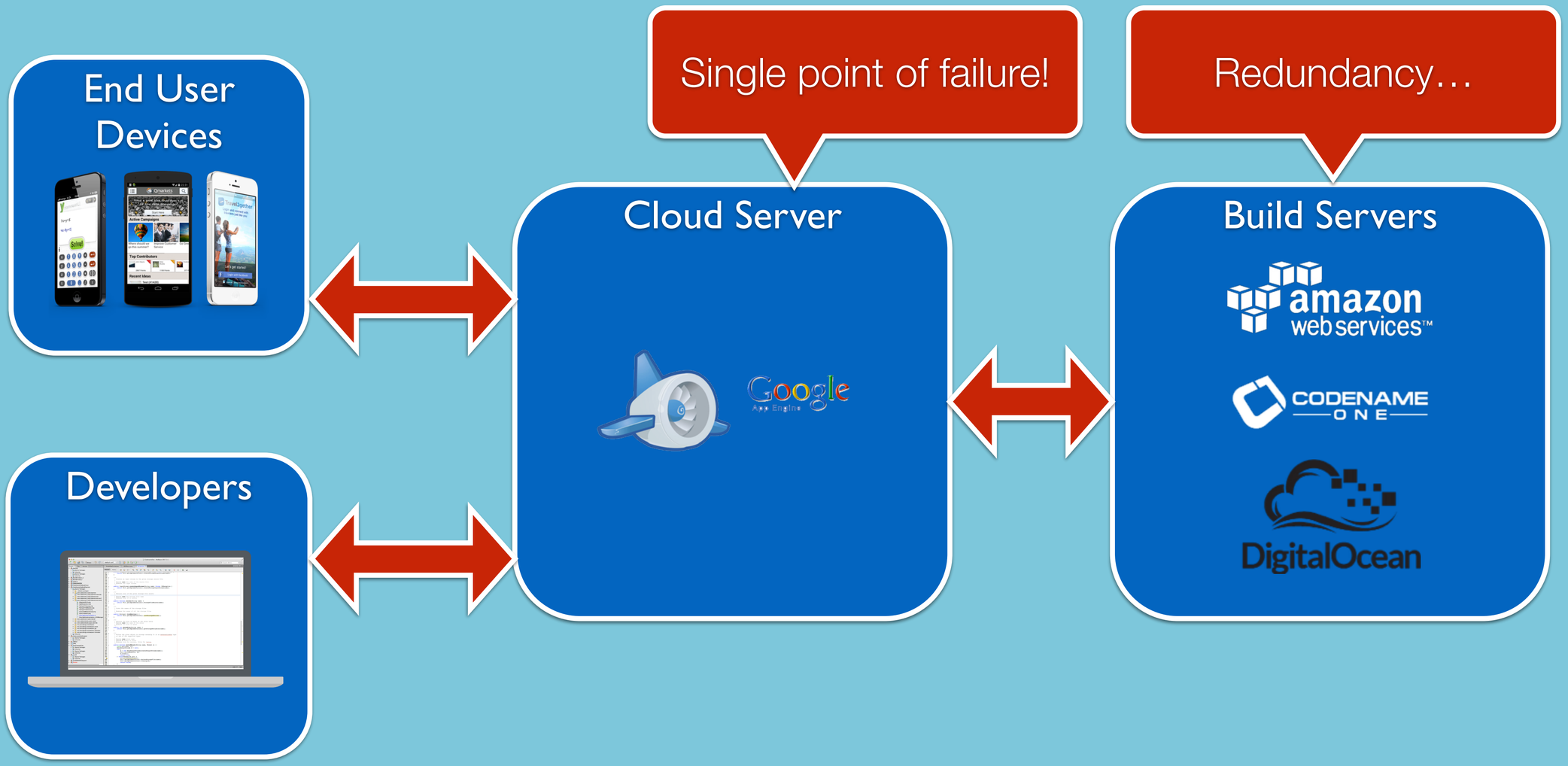

App Engine has its pros and cons

Without it we probably wouldn't have a startup so you can't get a better review than that but it had its pain points.

Most of these hold true to other PaaS environments to one degree or another.

Pros	Cons
Java	Opaque
Cheap	Failures hard to track
Reliable	Production != Development
Seamless HTTPS	Limited API's
No configuration	Can't do APNS, Image processing
Auto-scaling	Datastore API is limited
Scalable by default	Spotty Support & Unclear Focus From Google
Fast - network & performance	

Storage - DataStore

- When we started there was no cloud SQL option, so Big Table was the only option
- We didn’t know enough and believed that we could use JPA for future cloud portability
- The JPA implementation for App Engine is buggy and problematic
- Querying is difficult and extracting statistics requires map-reduce
- We were never able to get Google’s map-reduce samples working in a real world setting
- Using the DataStore API directly is relatively decent

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Failures

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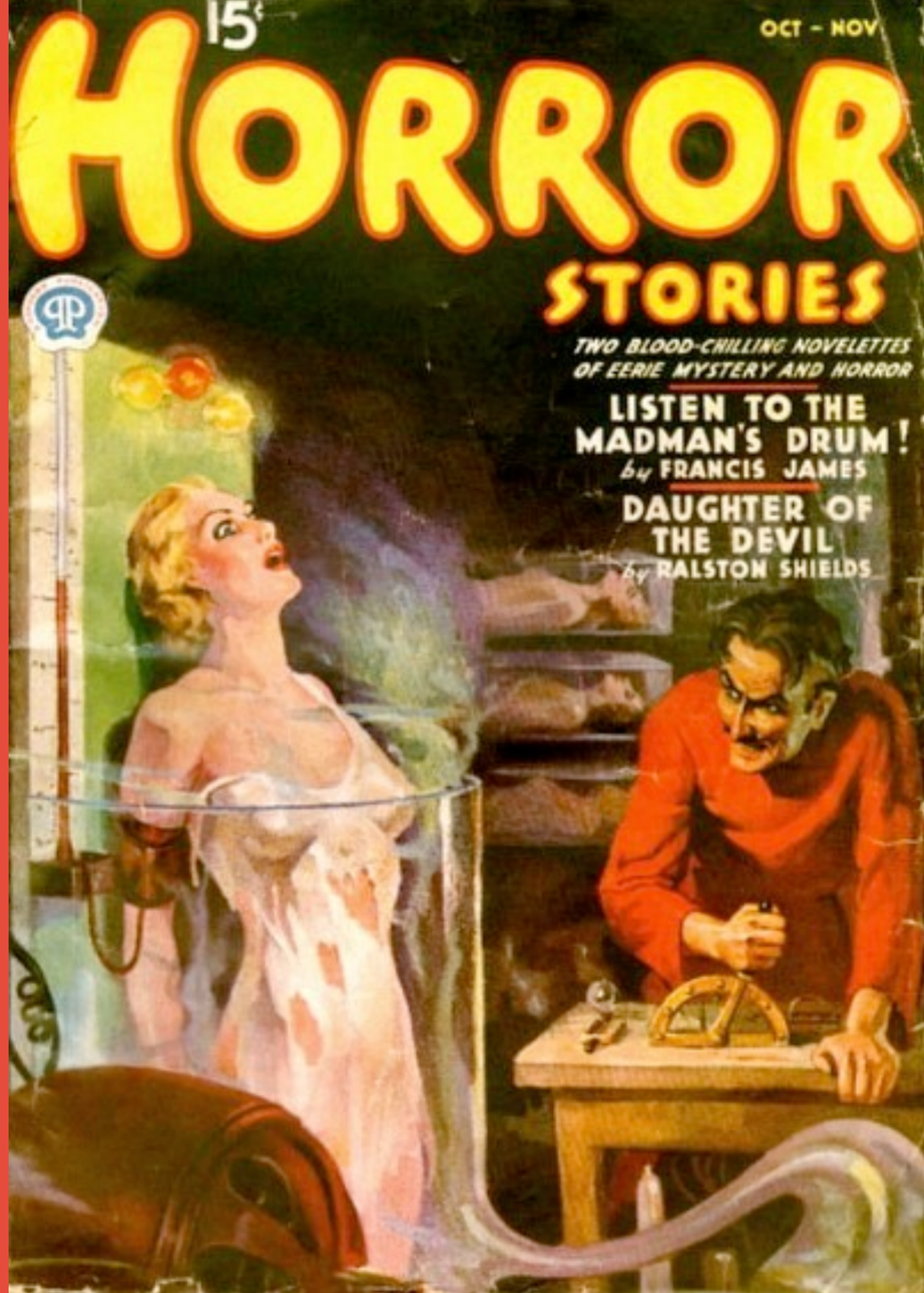
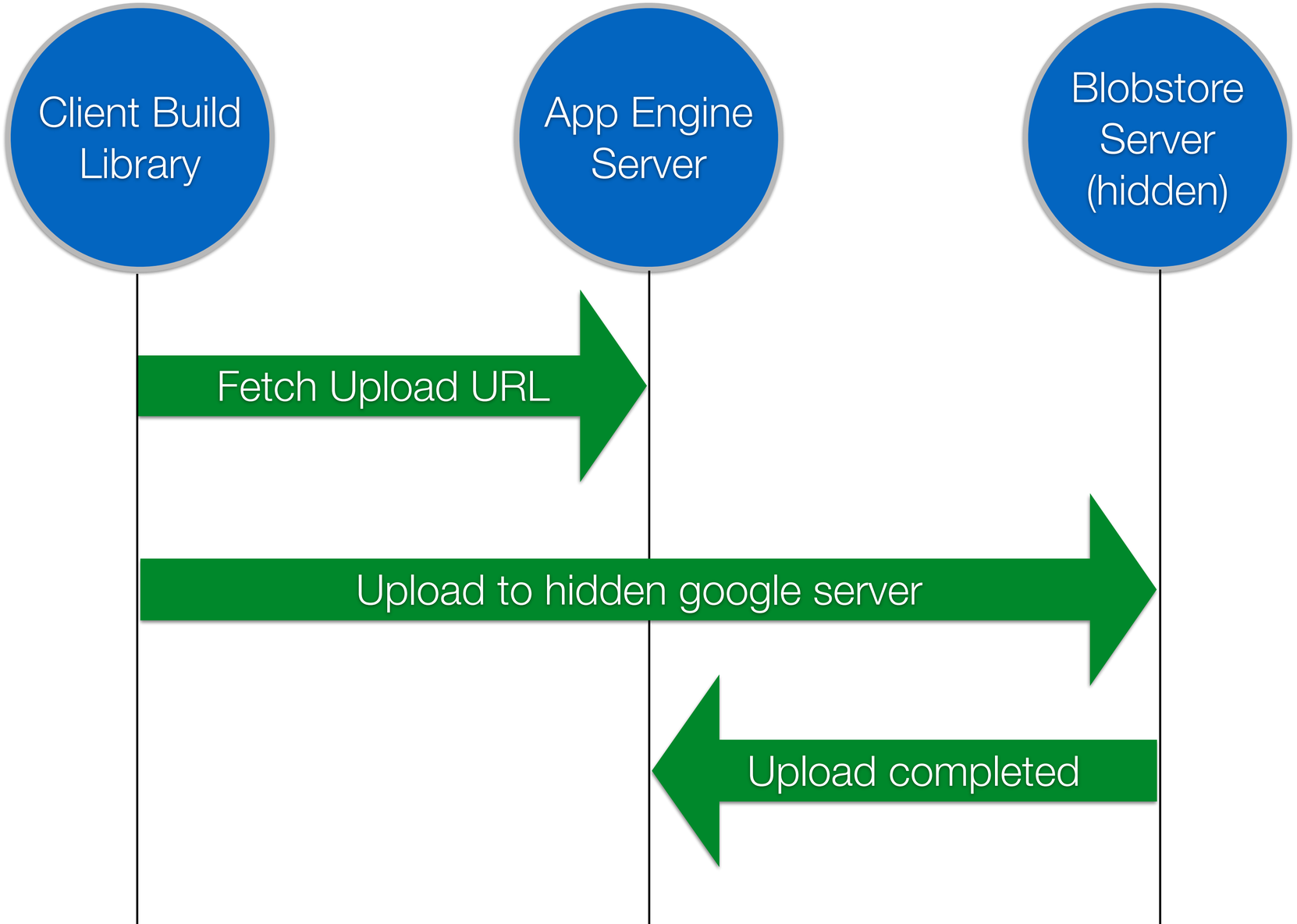


Blobstore Stopped Working

- App Engine requests have a timeout limit which means you can’t do file uploads
- Uploads in Codename One go thru the blobstore API
- Blobstore suddenly stopped working without any error in the logs
- The API is opaque so app engine got the files (builds) but we didn’t!
- Debugging consisted of guesswork since back then there was no paid support option!
- The API is opaque so app engine got the files (builds) but we didn’t!

Blobstore Upload Request - How Does It Work?



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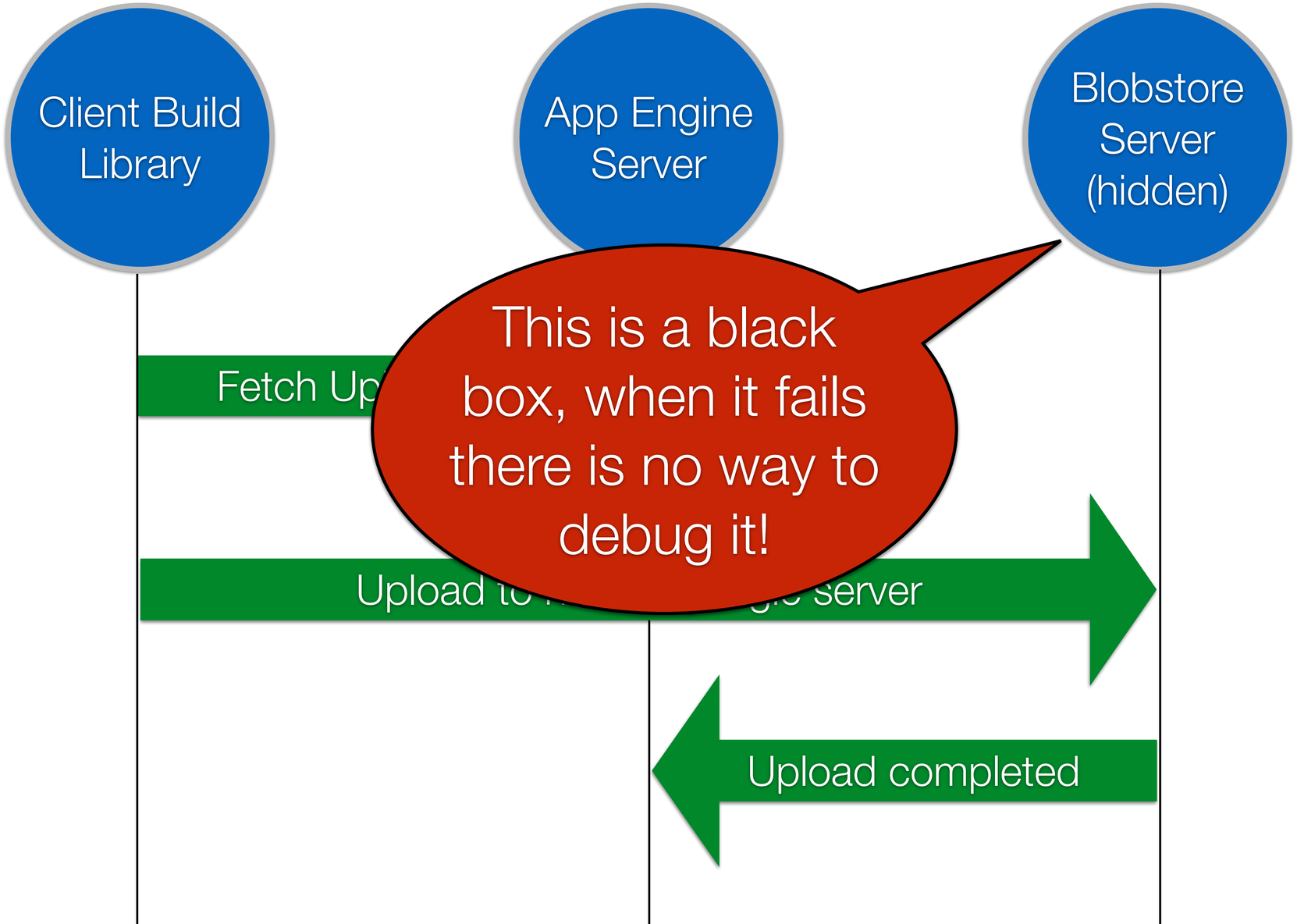
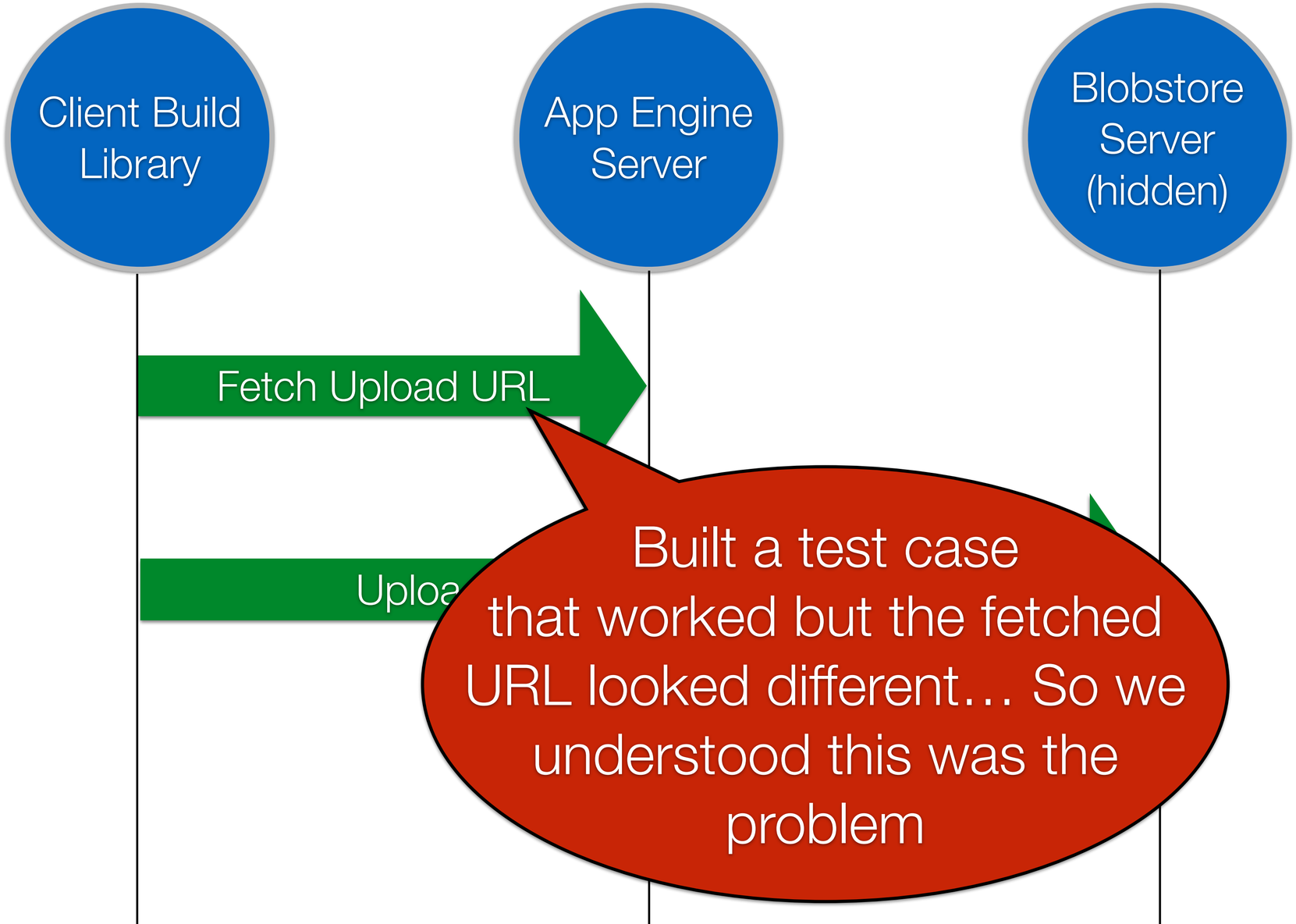


Blobstore Upload Request - How Did We fix it?



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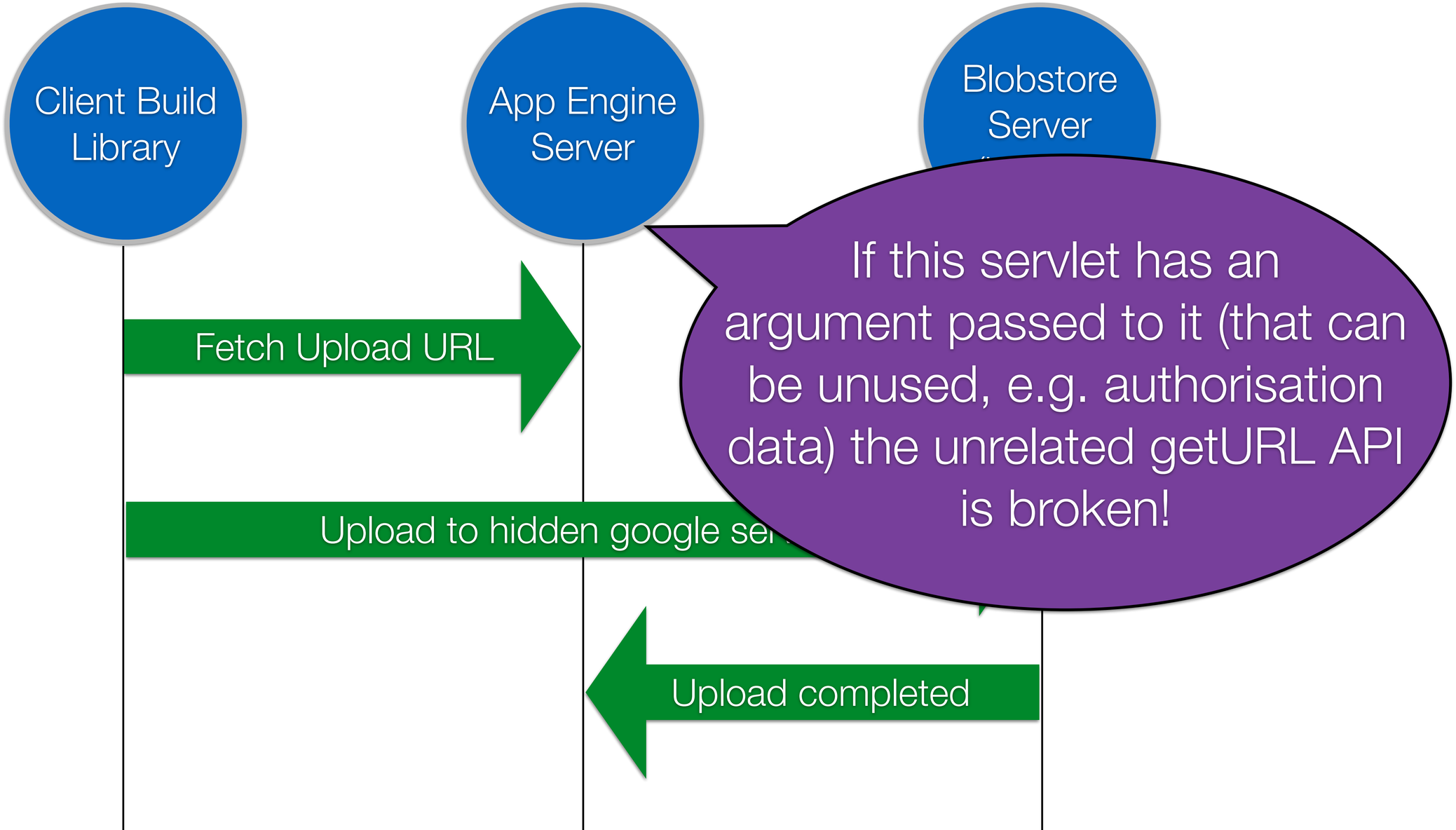

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Blobstore Issues

- Our second worst downtime - over 2 hours of total downtime
- Back then Google didn’t have a paid support option which we now have
- Support is CRUCIAL with any PaaS provider, difficult on a startup budget
- Debugging these issues is guesswork more than debugger

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Everything Stopped Working Issue

- After a deployment to app engine everything stopped working!
- Server logs showed odd exceptions that kept filling the logs and made no sense
- Googling the issue showed some people reporting it but all had sync issues
- There was no indication and no way to fix it
- Worse downtime yet of over 3 hours!

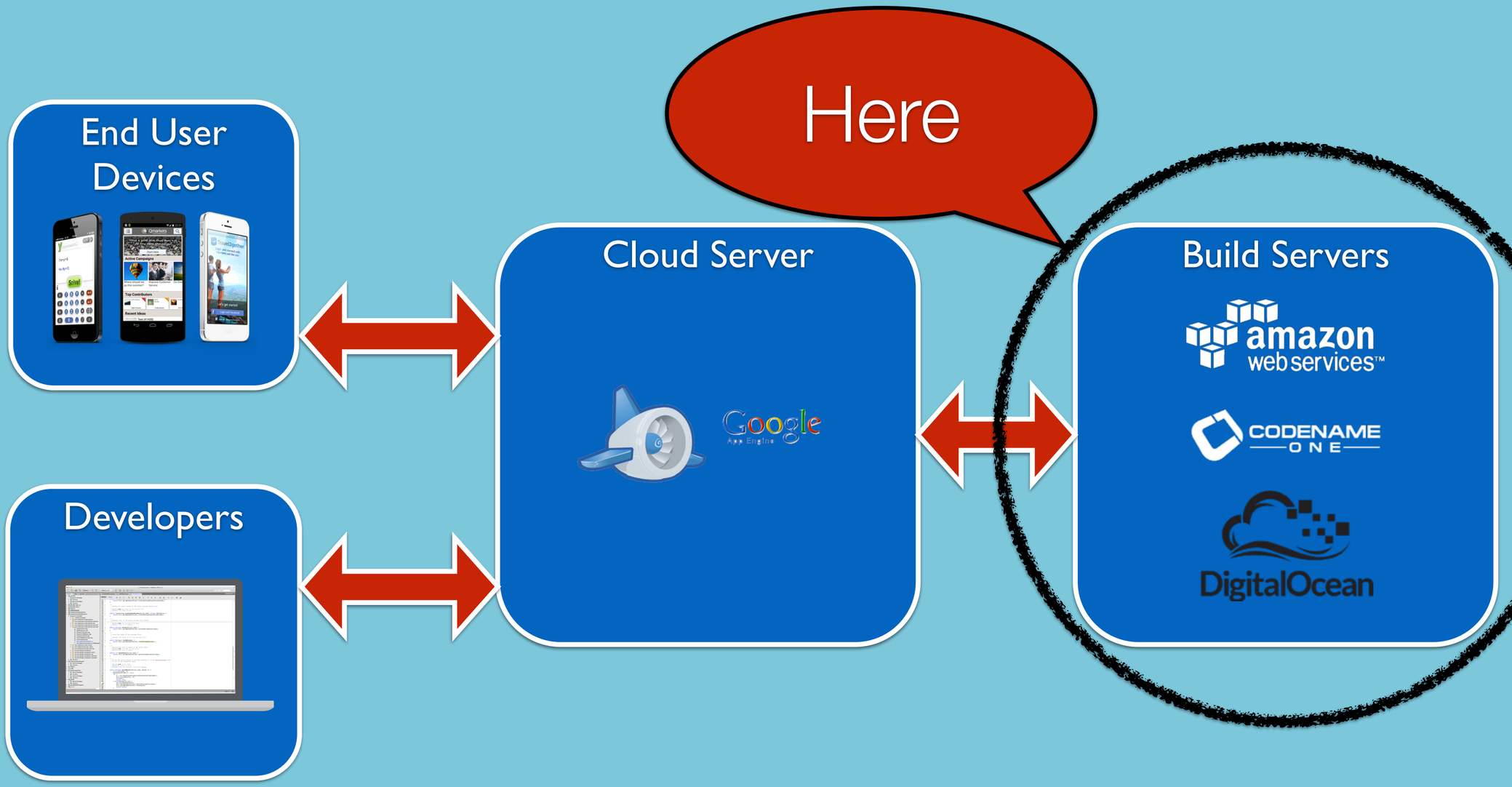
What did we do?

- Updated Eclipse plugin and recreated the project
- Tried to create a blank project and see if it works
- Cleaned caches, restarted servers & posted in groups/stack overflow
- This predated the paid support option

Resolution

- An installation of Java 8 was picked up by Eclipse
- Googles plugin compiled with that VM rather than the JDK defined in preferences!
- The only way to see/fix it was thru the ini file
- We found this out thru guesswork!
- Lessons: Always deploy to a new version

What about the IaaS part?



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IaaS Is a Pain To Manage With Startup Resources

- Without a dedicated virtualisation guy AWS overcharged us on servers
- This was purely a result of our ignorance (reserved instances are confusing)
- Managing all these machine instances is a full time job and we just don’t have the manpower
- Migrating from AWS to Digital Ocean just for simplicities sake (might also save a bit here)
- Azure was an unstable nightmare and had remarkably obtuse billing as well
- Failures in the build servers aren’t as traumatic (more localised, easier to detect and fix)

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Lessons Learned

- Without PaaS our startup might not have gotten off the ground…
- We have 99.95% uptime, we are shooting for 4 9's in 2015 and its an achievable goal
- Check that you actually need NoSQL options before getting started with it…
- Don't trust vendor promisses on Java EE compatibility at least in the storage dept.
- PaaS can be very cheap and provide huge benefits
- Support is probably the most essential requirement for any PaaS solution

Thank You

Further Reading

How Do I - http://codenameone.com/how-do-i.html
Developer Guide - http://codenameone.com/developer-guide.html
Discussion Forum - http://www.codenameone.com/discussion-forum.html
Course (free for pro users) - http://udemy.com/codenameone101/
Source code/Issue tracker - http://code.google.com/p/codenameone/
JavaDocs - https://codenameone.googlecode.com/svn/trunk/CodenameOne/javadoc/index.html
Blog - http://codenameone.com/blog

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