Scale, baby, scale!

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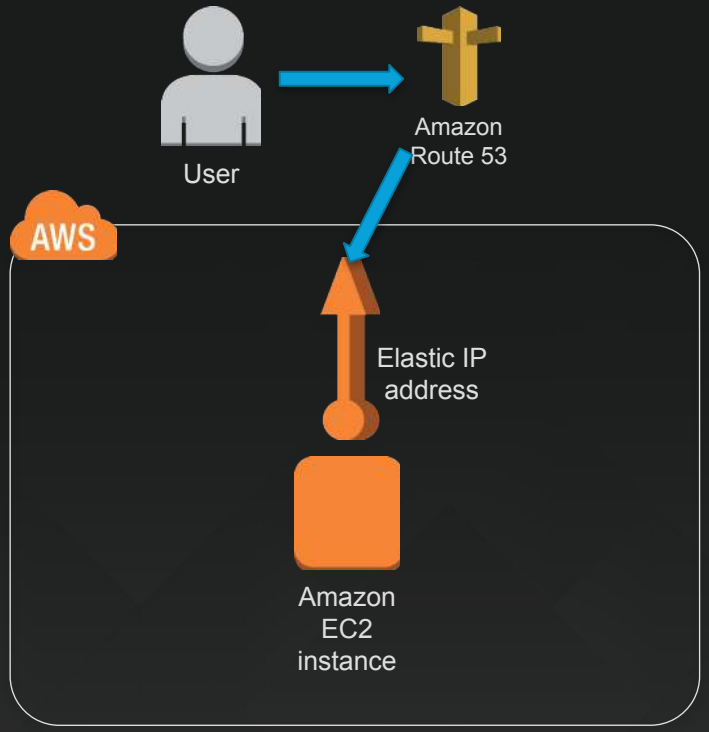
Agenda

- The old way
- The new way
- Demo

So let’s start from day 1, user 1 (you)

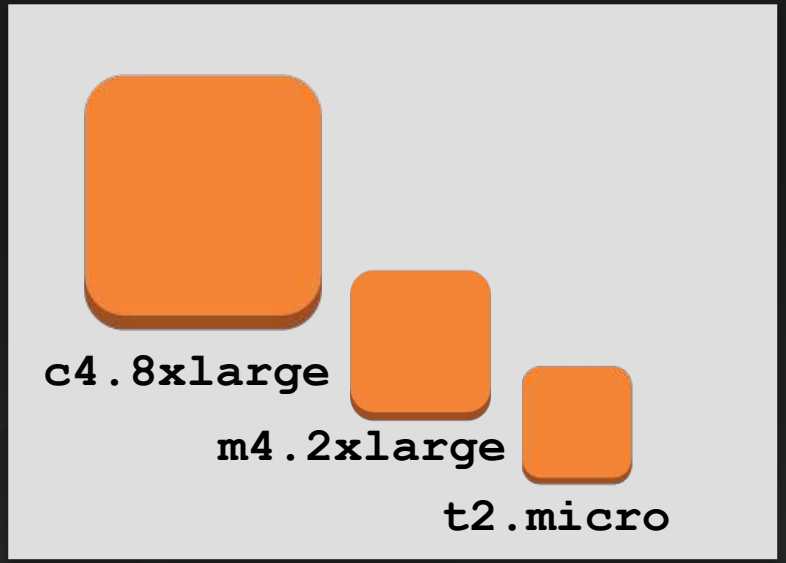
Day 1, user 1

- A single Amazon EC2 instance, with full stack on this host
  - Web app
  - Database
  - Management
  - And so on…
- A single Elastic IP address
- Amazon Route 53 for DNS



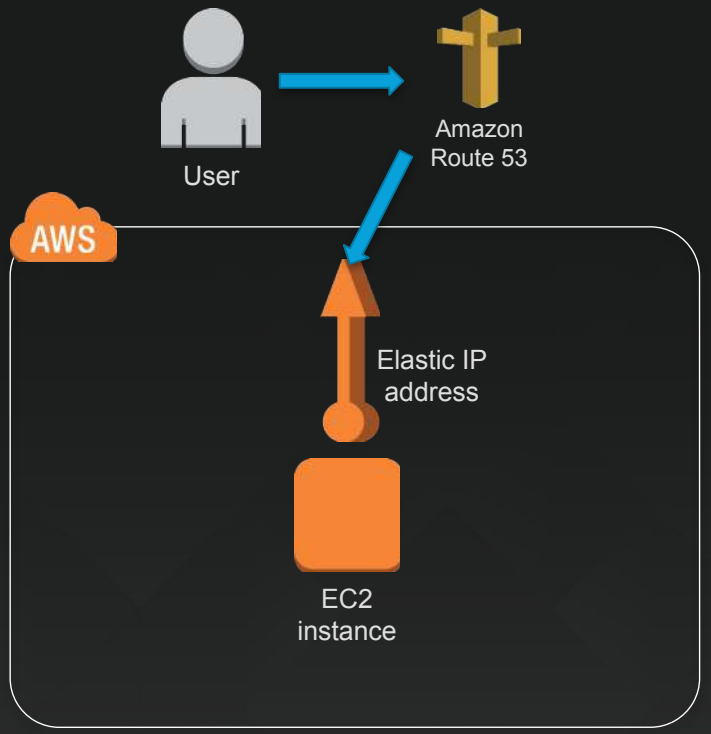
“We’re gonna need a bigger box”

- “Scale up”: simplest approach
- Can now leverage PIOPS
- High I/O instances
- High memory instances
- High CPU instances
- High storage instances
- Easy to change instance sizes
- **Will hit a wall eventually**



Day 1, user 1

- We could potentially get to a few hundred to a few thousand depending on application complexity and traffic
- **No failover**
- **No redundancy**
- **Too many eggs in one basket**

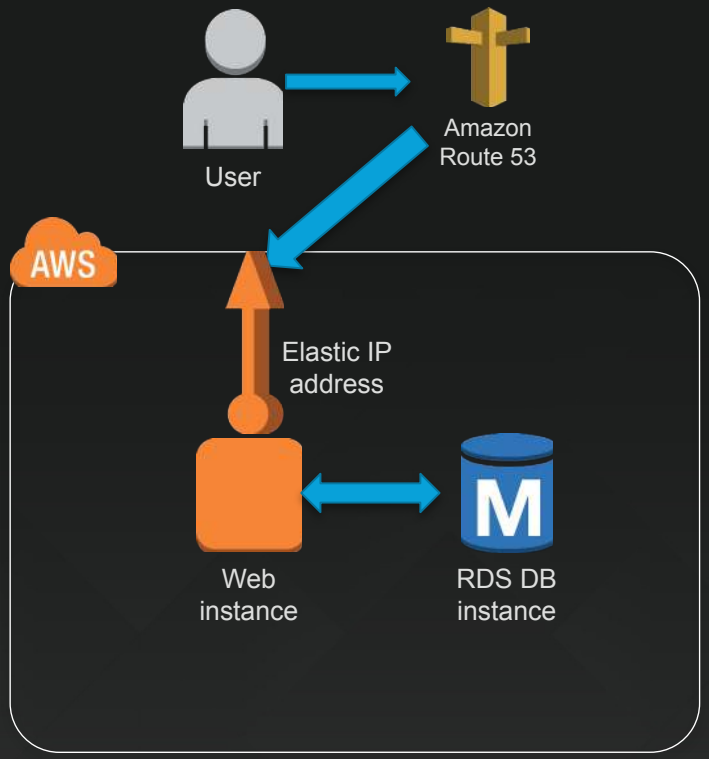


100 users

First, let's separate out our single host into more than one:

- Web
- Database

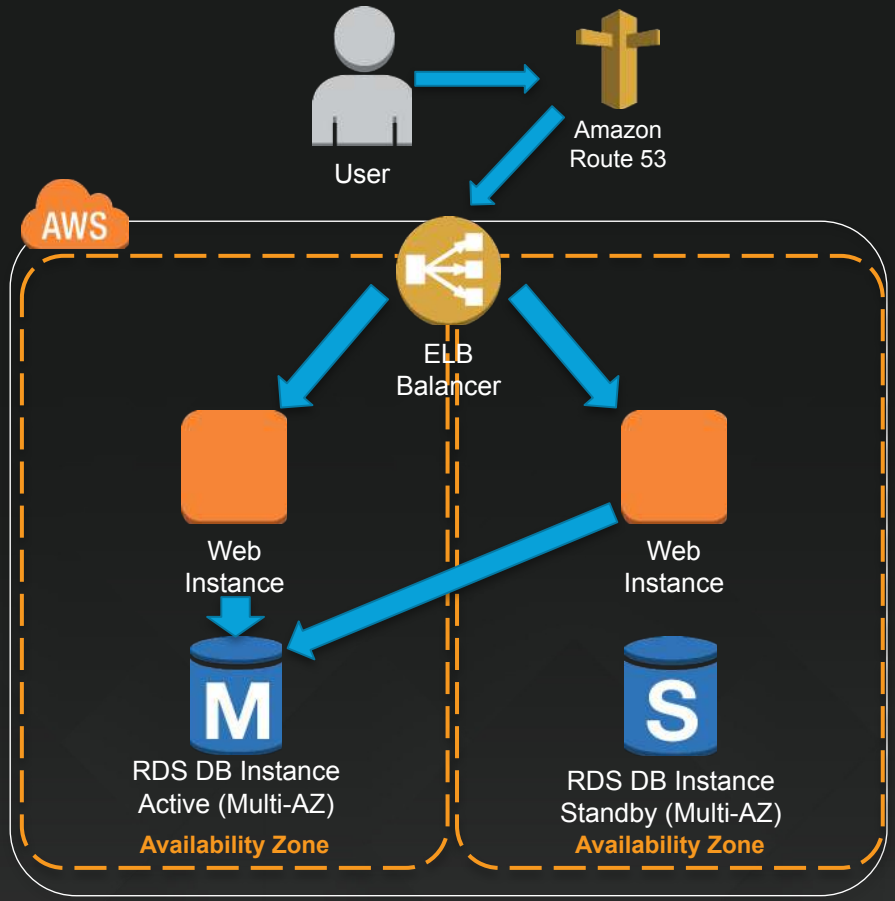
Use Amazon RDS to make your life easier



1000 users

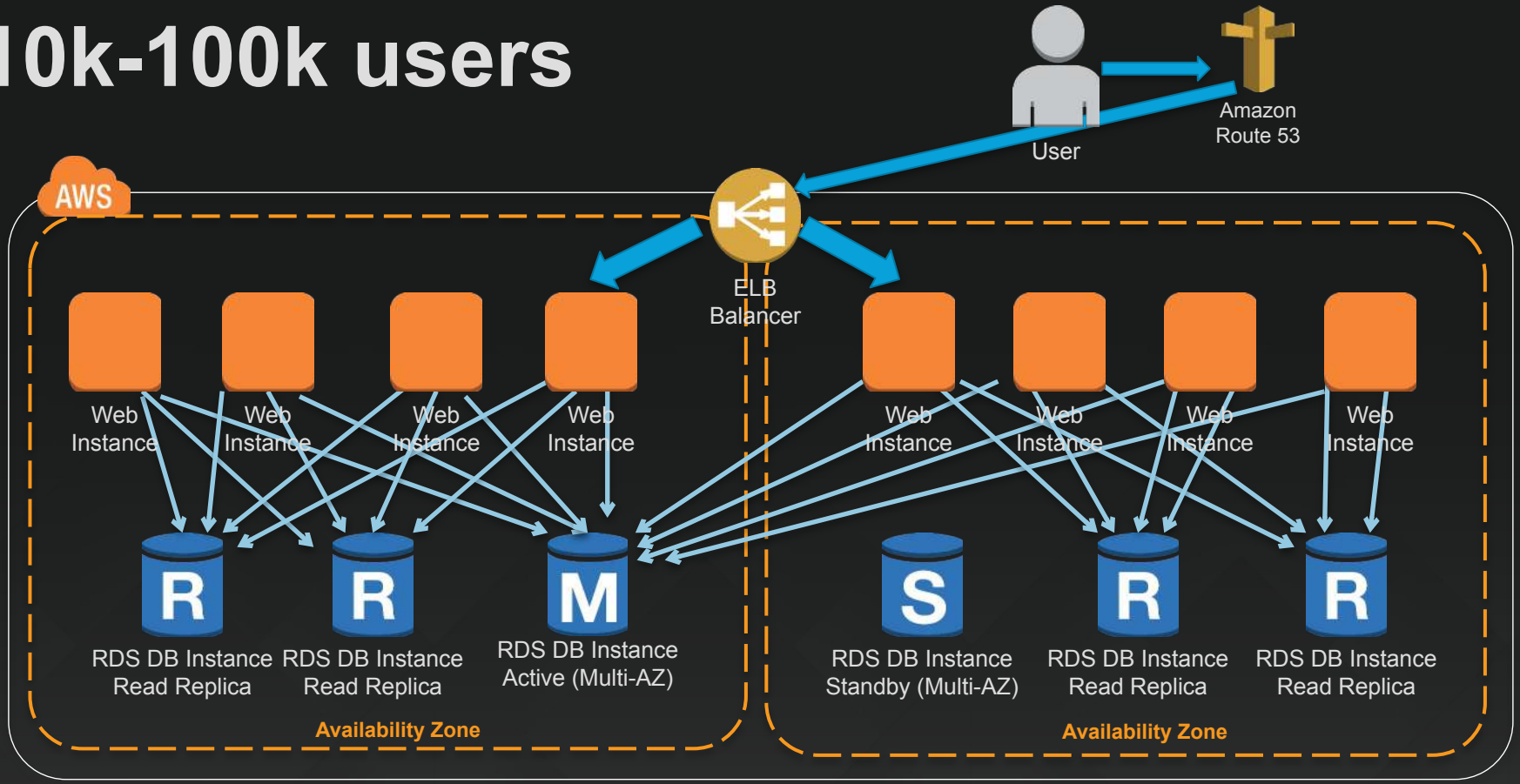
Next, let's address our lack of failover and redundancy issues:

- Elastic Load Balancing (ELB)
- Another web instance
  - In another Availability Zone
- RDS Multi-AZ



Scaling this horizontally and vertically will get us pretty far (tens to hundreds of thousands)

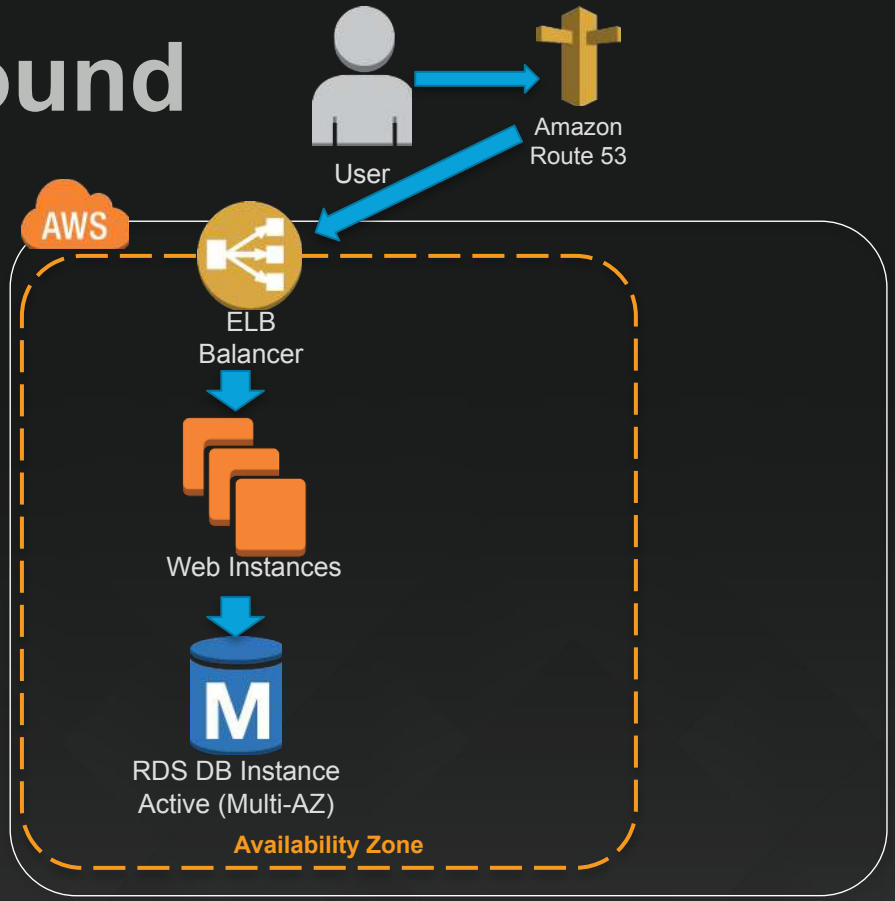
10k-100k users



This will take us pretty far, but we care about *performance* and *efficiency*, so let's improve further

Shift some load around

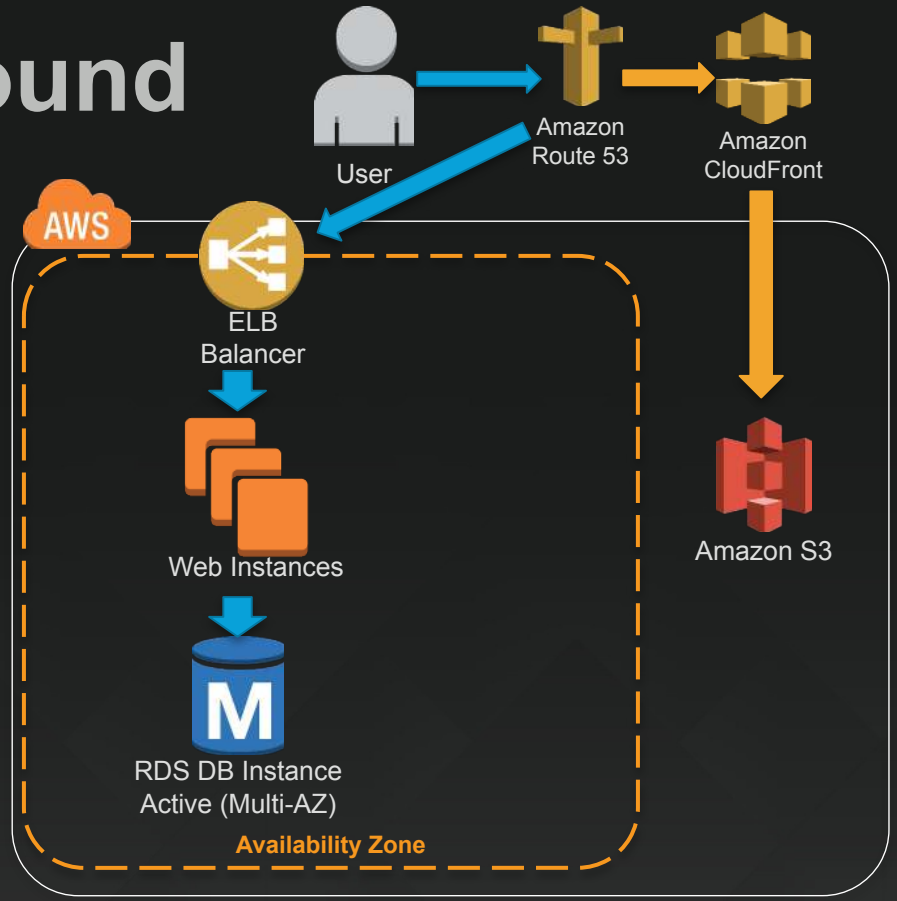
Let’s lighten the load on our web and database instances



Shift some load around

Let's lighten the load on our web and database instances:

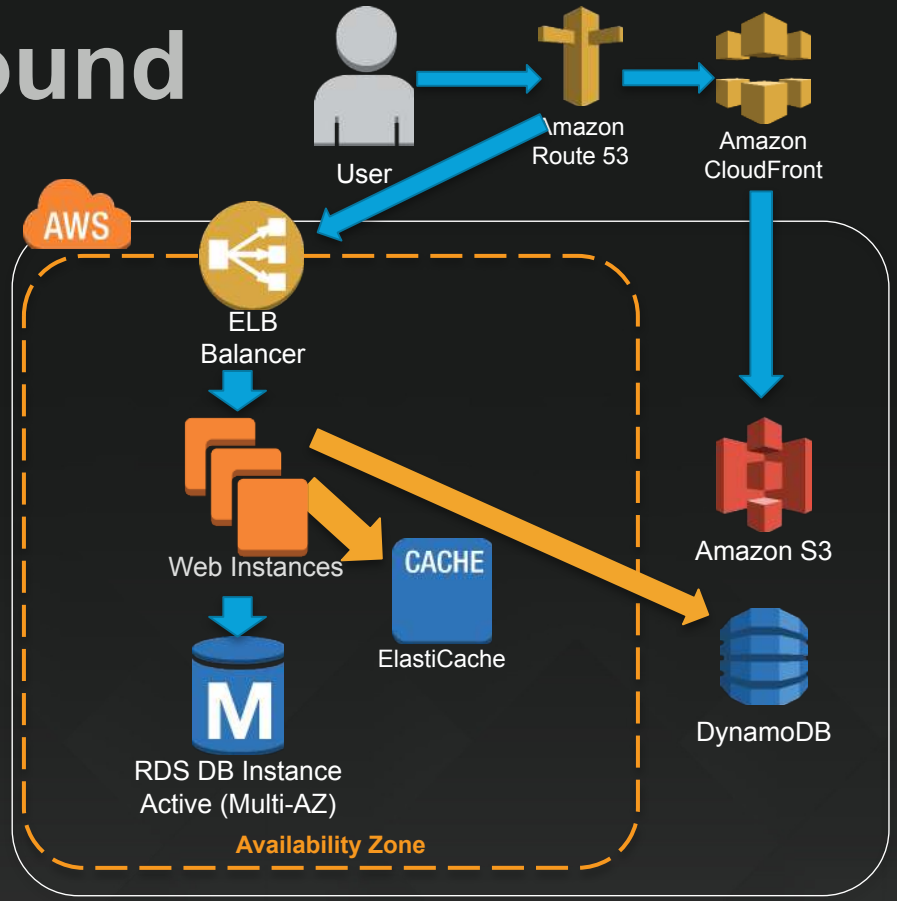
- **Move static content from the web instance to Amazon S3 and Amazon CloudFront**
- **We could even host the site directly in S3 (aka "S3 static website")**



Shift some load around

Let's lighten the load on our web and database instances:

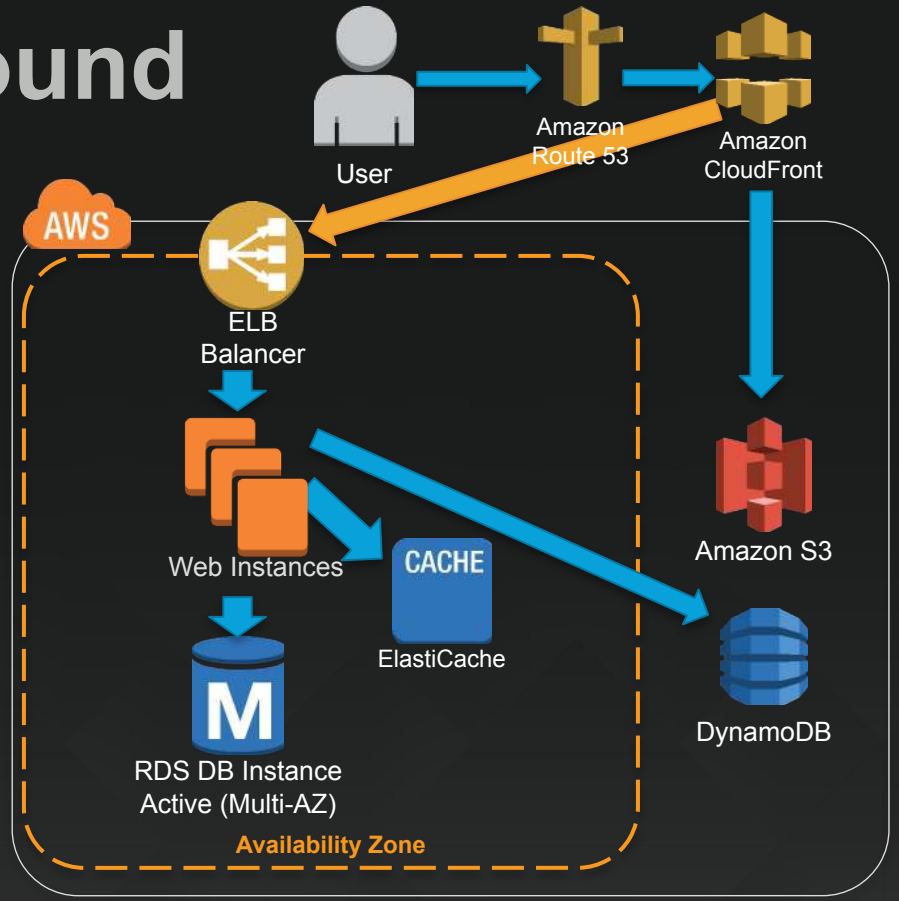
- Move static content from the web instance to Amazon S3 and Amazon CloudFront
- **Move session/state and DB caching to Amazon ElastiCache or Amazon DynamoDB**



Shift some load around

Let's lighten the load on our web and database instances:

- Move static content from the web instance to Amazon S3 and Amazon CloudFront
- Move session/state and DB caching to ElastiCache or DynamoDB
- **Move dynamic content from the ELB balancer to Amazon CloudFront**



Now that our web tier is much more lightweight…

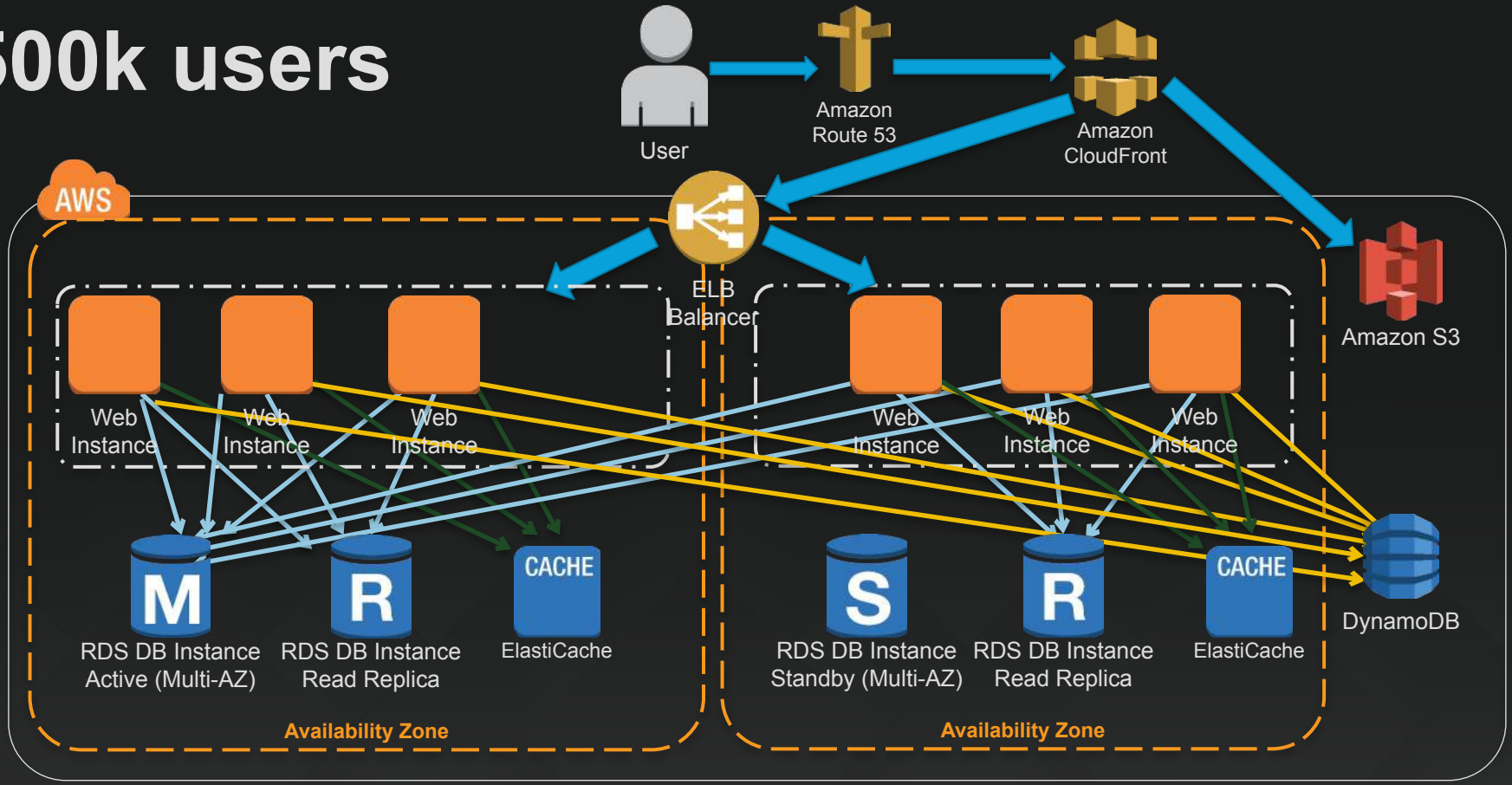
Auto Scaling!

Resize server farms automatically based on monitoring metrics

Spot instances!

Bid on unused EC2 capacity (typically at 80% discount)

500k users



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There are more improvements to be made and we could get much higher, but do we really want to manage all these instances ?

Werner Vogels, CTO, Amazon.com
AWS re:Invent 2015

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Managed services
+ AWS Lambda
= Serverless architecture

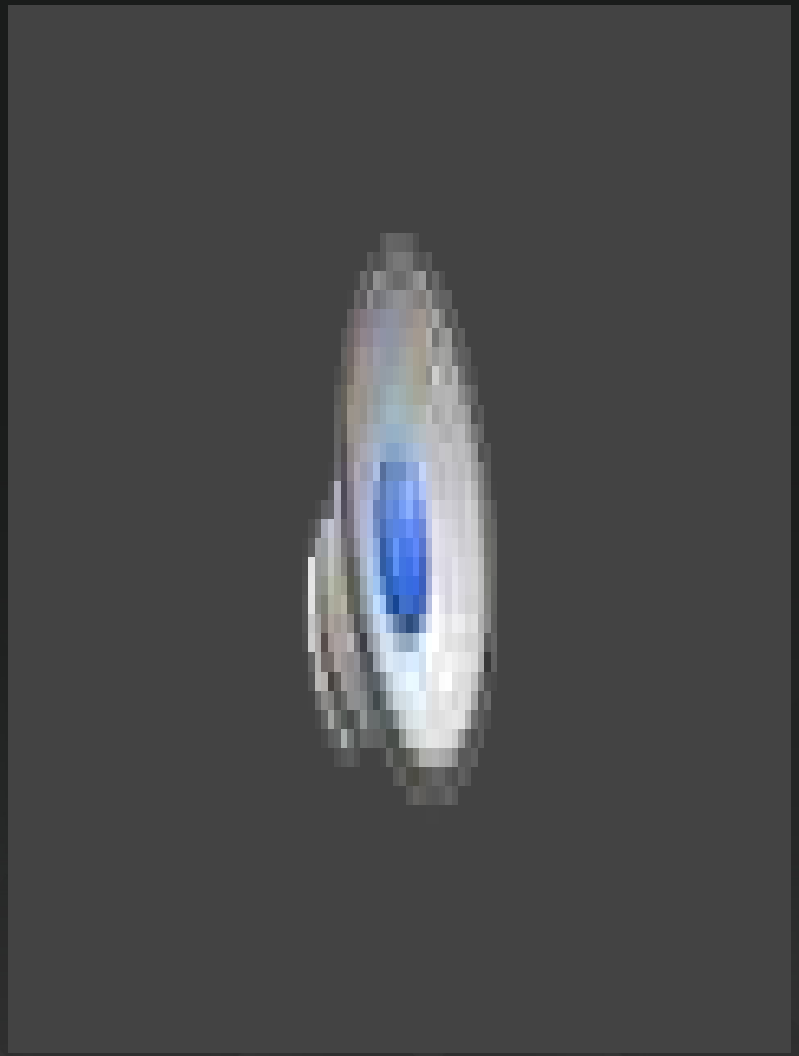
The #1 benefit:

(almost) zero cost
when no traffic,
with instant scalability

Another way to put it...

Tim Wagner,
General Manager,
AWS Lambda

Serverless conference, NYC, May 2016



Selected serverless platforms

THREAT INTELLIGENCE
AND ANALYTICS

MOBILE
CHAT APP

AD DATA ANALYTICS
AND ROUTING

MOBILE APP
ANALYTICS

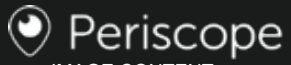


IMAGE CONTENT
FILTERING

WEB
APPLICATIONS

WEB APPLICATIONS

DATA
PROCESSING

CLOUD
TELEPHONY

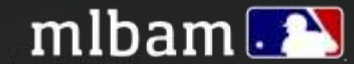
REAL-TIME VIDEO
AD BIDDING

PRODUCT
RECOMMANDATION

NEWS CONTENT
PROCESSING

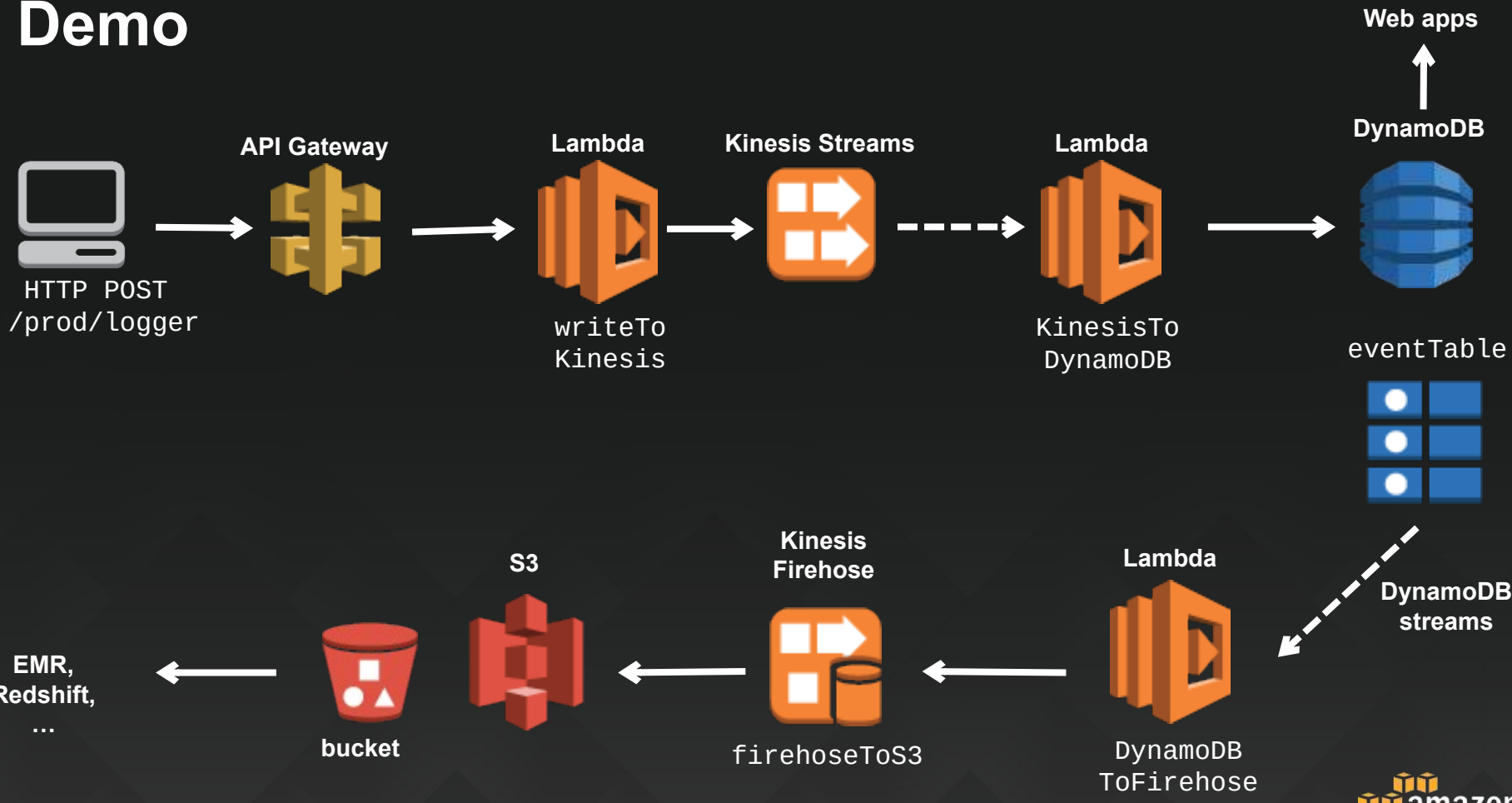
NEWS CONTENT
PROCESSING

GENE SEQUENCE
SEARCH



GAME METRICS ANALYTICS

Demo



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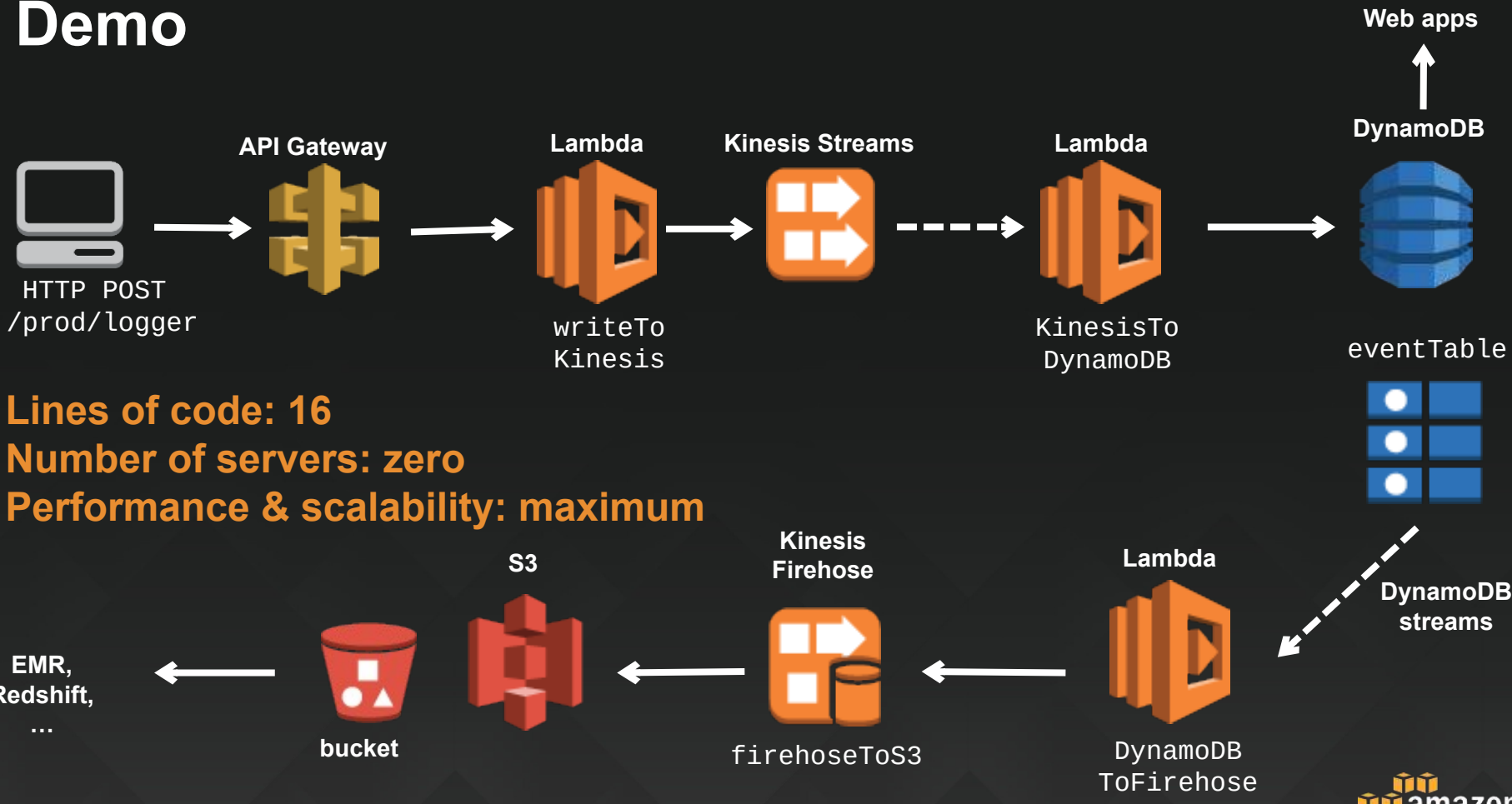
Ready for some testing?

http://api.julien.org

Demo



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Putting all this together means we should now easily be able to handle 10+ million users!

Are you ready for catastrophic success?

The Barbarians are at your gates!

Supercell: 100 million active users daily

Ilkka Paananen @ipaananen · 7 mars

Voir la traduction

100MILLION! Huge milestone for us,wanted to share some thoughts and a video: supr.cl/100m #welovetuvalu

Hi Everyone,

Today we've announced a major milestone in Supercell's history: **100m daily active players!**

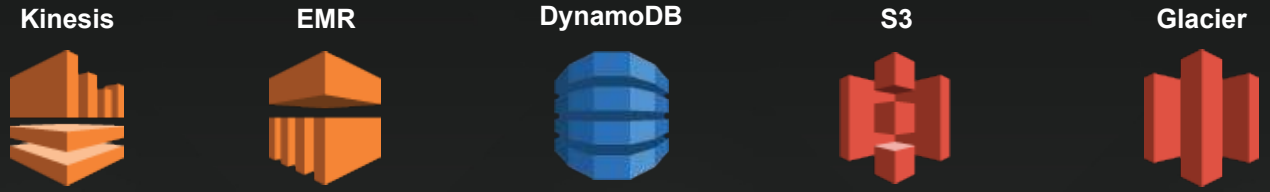
100 million! It blows my mind to think of that many people playing our games all around the world, every single day. I want to thank every single one of them: from Albania to Zimbabwe and everywhere else in between. Wish we had someone from Tuvalu! :-)

https://twitter.com/ipaananen/status/706844089216532480

Case study: Supercell

https://aws.amazon.com/fr/solutions/case-studies/supercell/

45 billion real-time events and 10 TB of data every day



“We don’t have to worry about being able to manage our infrastructure to match our growth — AWS tools make it easy for us.”

Sami Yliharju, Services Lead

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“AWS is the easy answer for any Internet business that wants to scale to the next level”

Nathan Blecharczyk
Co-founder & CTO of Airbnb

https://aws.amazon.com/fr/solutions/case-studies/airbnb/

And now it's your turn!
What will you build?

To go further

AWS re:Invent 2014 | (MBL202) NEW LAUNCH: Getting Started with AWS Lambda
https://www.youtube.com/watch?v=UFj27IaTWQA

AWS re:Invent 2015 | (DEV203) Amazon API Gateway & AWS Lambda to Build Secure and Scalable APIs
https://www.youtube.com/watch?v=ZBxWZ9bgd44

AWS re:Invent 2015 | (DVO209) JAWS: The Monstrously Scalable Serverless Framework
https://www.youtube.com/watch?v=D_U6luQ6l90
https://github.com/serverless/serverless

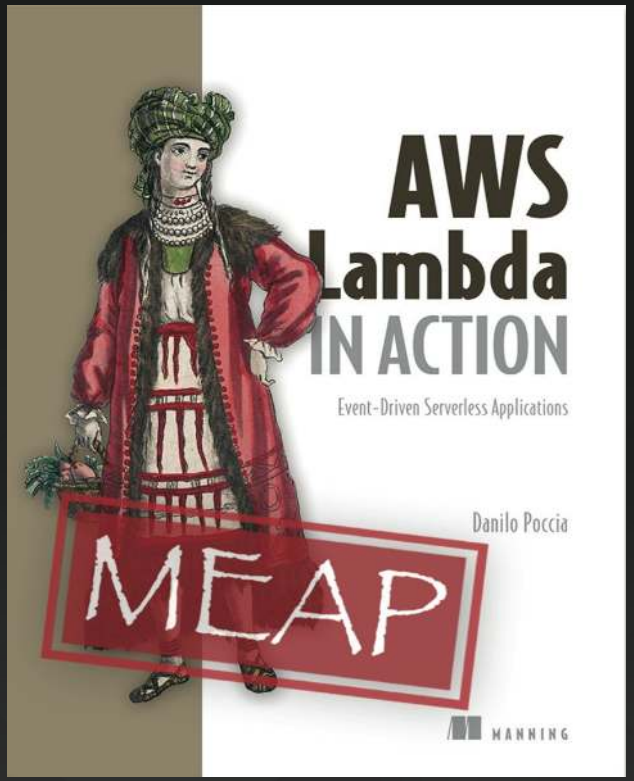
AWS re:Invent 2015 | (ARC308) The Serverless Company Using AWS Lambda
https://www.youtube.com/watch?v=U8ODkSCJpJU

AWS re:Invent 2015 | (CMP407) Lambda as Cron: Scheduling Invocations in AWS Lambda
https://www.youtube.com/watch?v=FhJxTIq81AU

Teletext.io : http://highscalability.com/blog/2015/12/7/the-serverless-start-up-down-with-servers.html

https://www.manning.com/books/serverless-architectures-on-aws
https://www.manning.com/books/aws-lambda-in-action

Upcoming book on AWS Lambda



Written by AWS Technical Evangelist Danilo Poccia

Early release available at:

https://www.manning.com/books/aws-lambda-in-action

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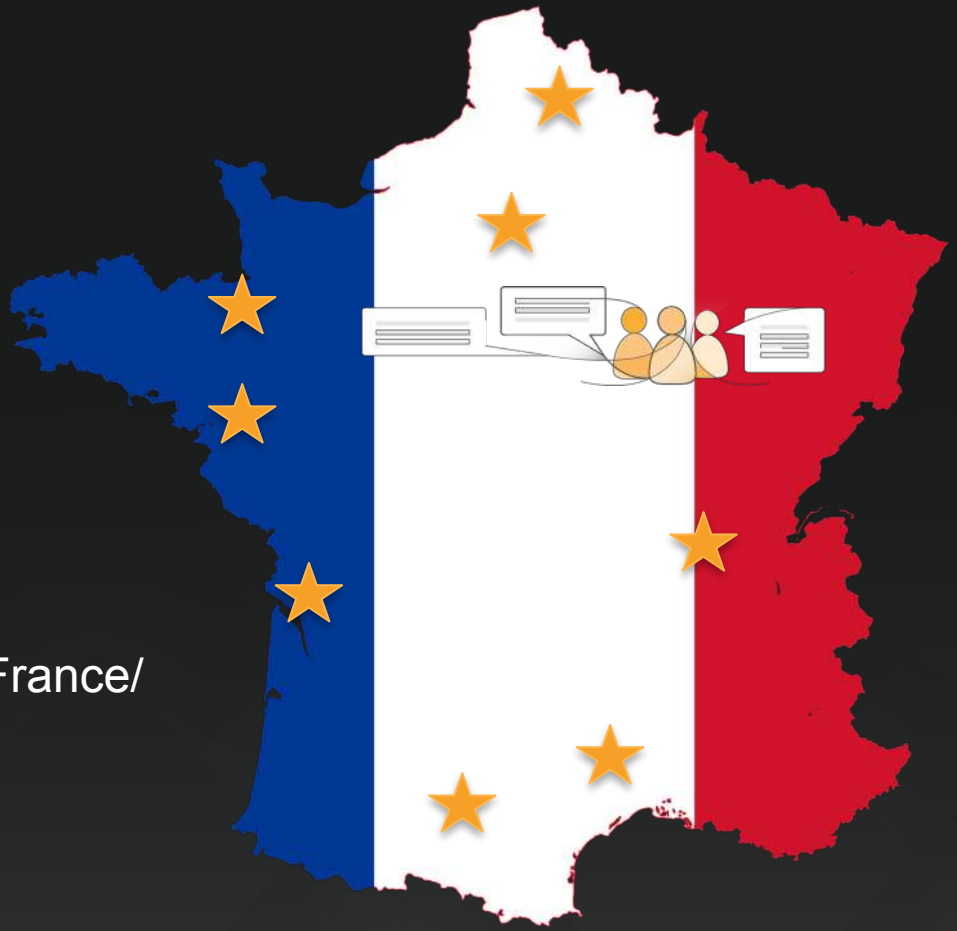
AWS User Groups

Lille
Paris
Rennes
Nantes
Bordeaux
Lyon
Montpellier
Toulouse

facebook.com/groups/AWSFrance/

@aws_actus



Thank You !

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