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STOCKHOLM

NET002

A few milliseconds in the life of an HTTP request on AWS edge network

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Solutions Architecture, Edge
Amazon Web Services

Katie Rogers
Product Owner
Acast

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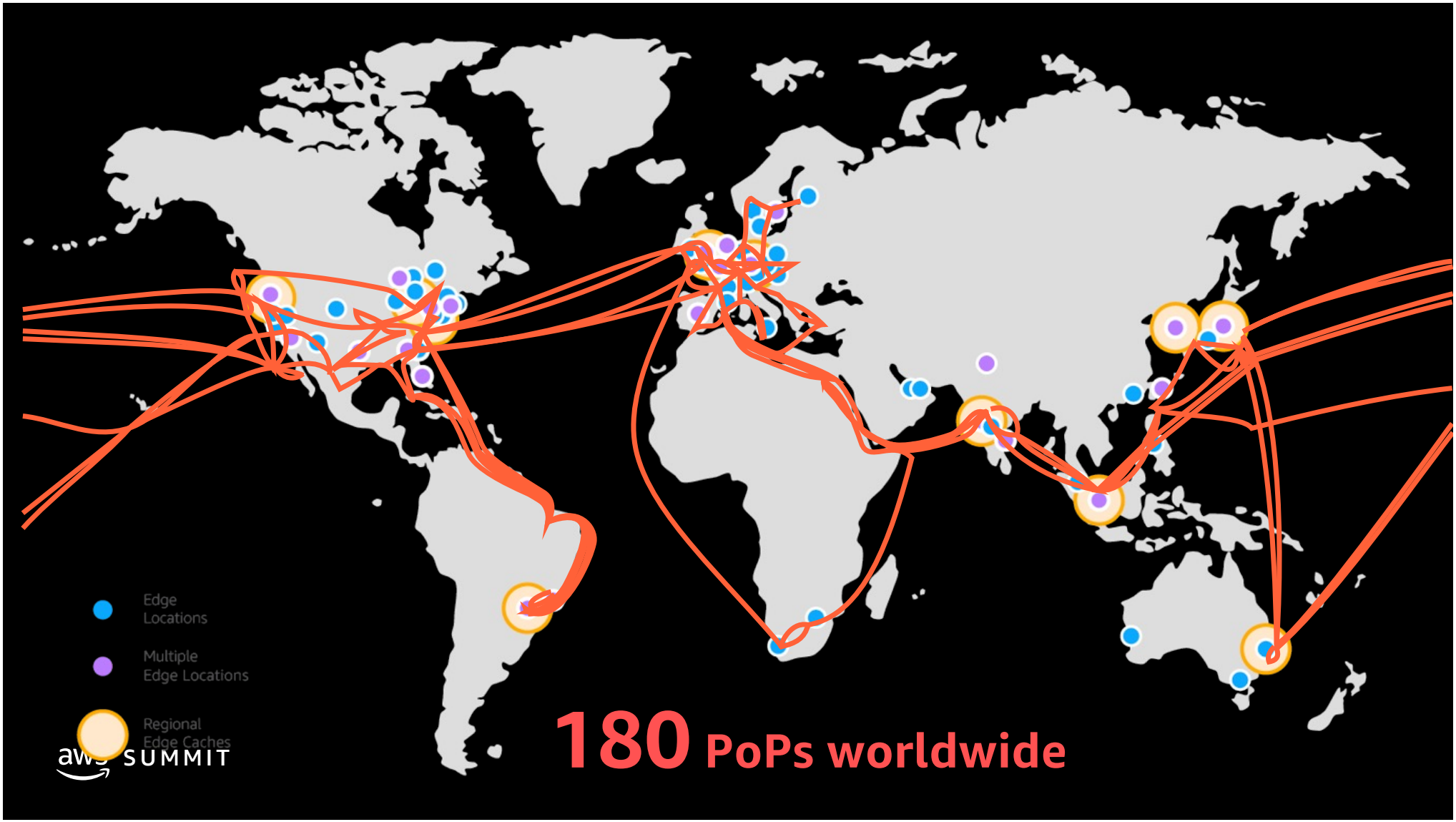
Edge Locations
Multiple Edge Locations
Regional Edge Caches
180 PoPs worldwide
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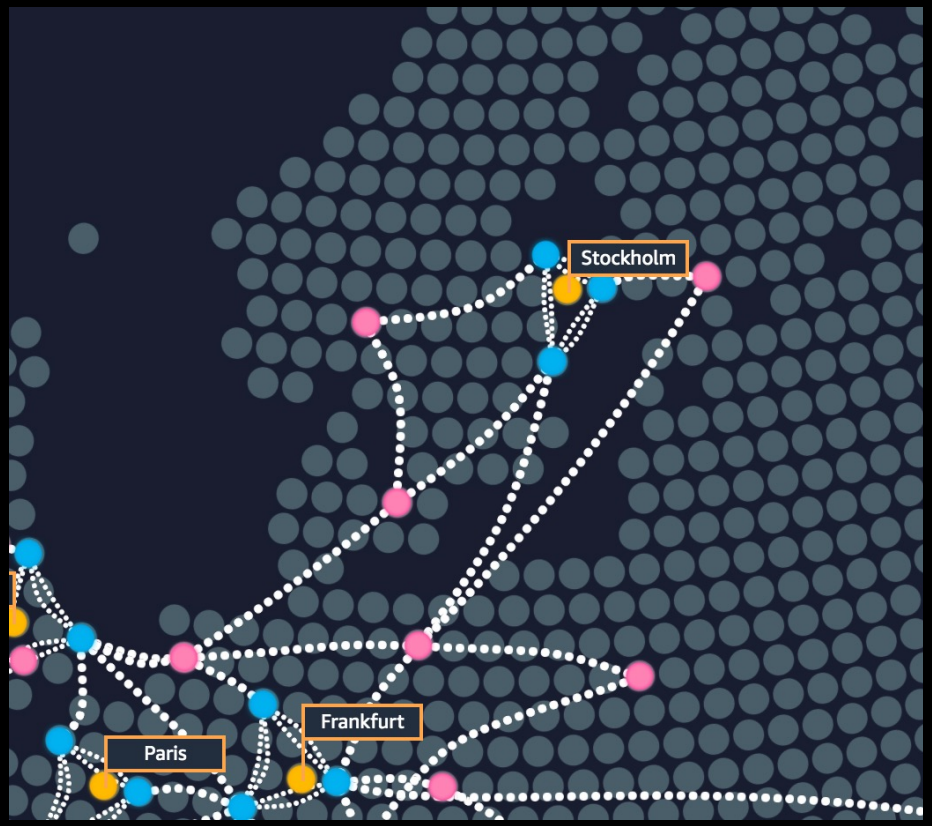
AWS Edge network in the Nordics

- 3 PoPs in Stockholm
- 1 PoP in Helsinki
- 1 PoP in Oslo
- 1 PoP in Copenhagen



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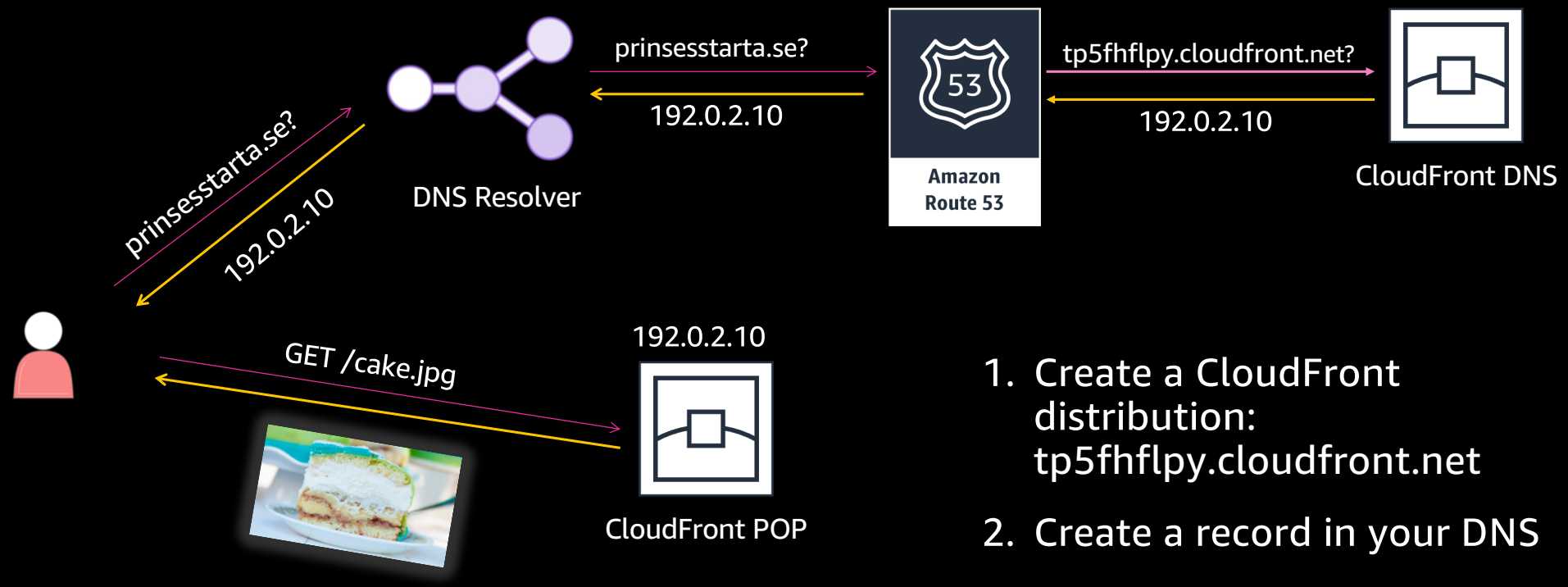
https://infrastructure.aws/

Photo by Jakob Owens on Unsplash

1000 foot view - Prinsesstarta.se



1. Create a CloudFront distribution: tp5fhflpy.cloudfront.net
2. Create a record in your DNS

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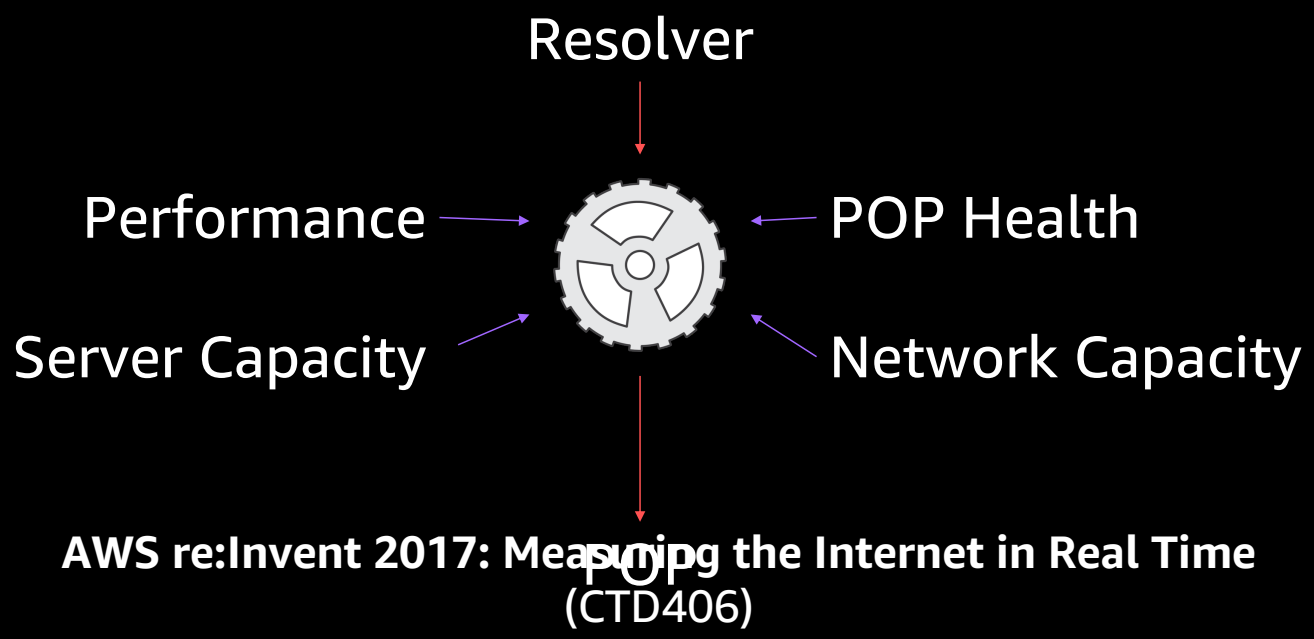
PoP selection



AWS re:Invent 2017: Measuring the Internet in Real Time
(CTD406)

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http://www.miriinthevillage.com/2014/04/prinsesstarta.html

DDoS protection

AWS Shield

- Only HTTP/HTTPS
- SYN proxy
- Suspicion-based traffic shaping

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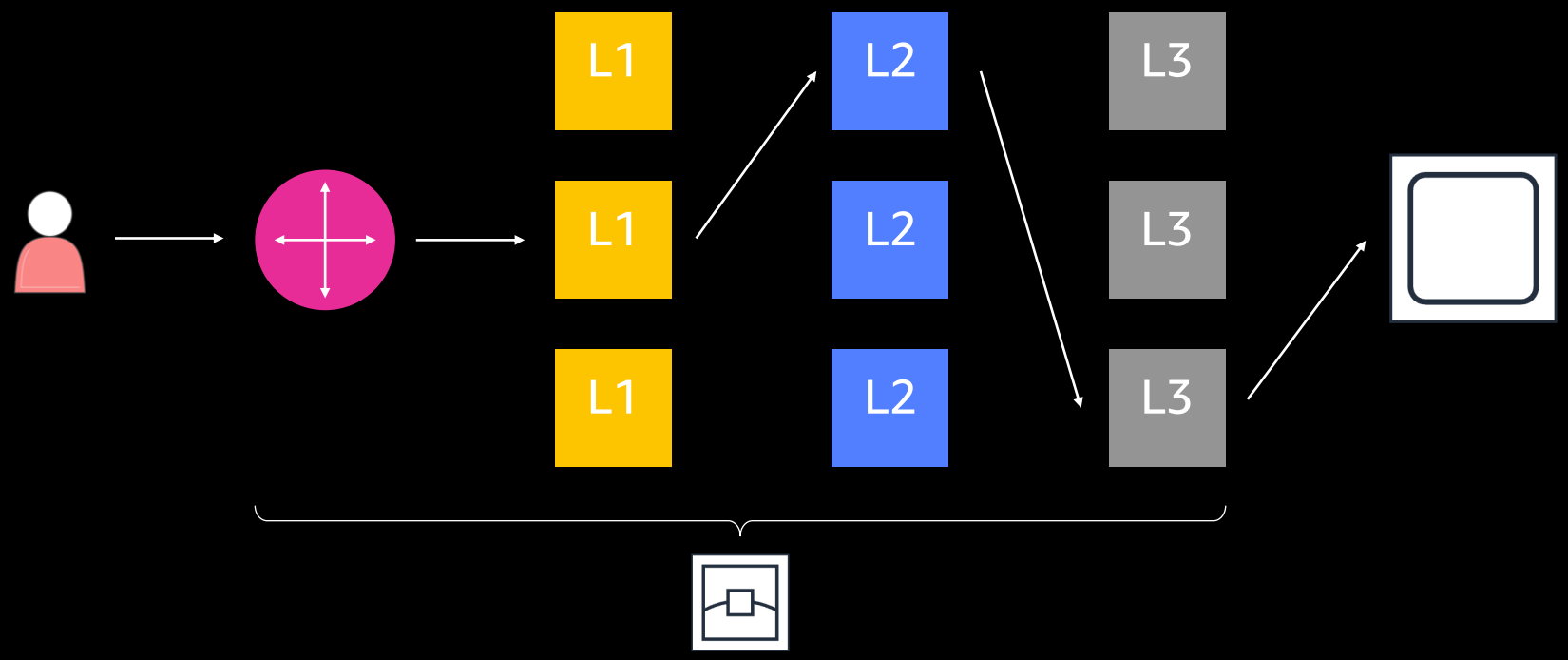
Layers of a CloudFront PoP



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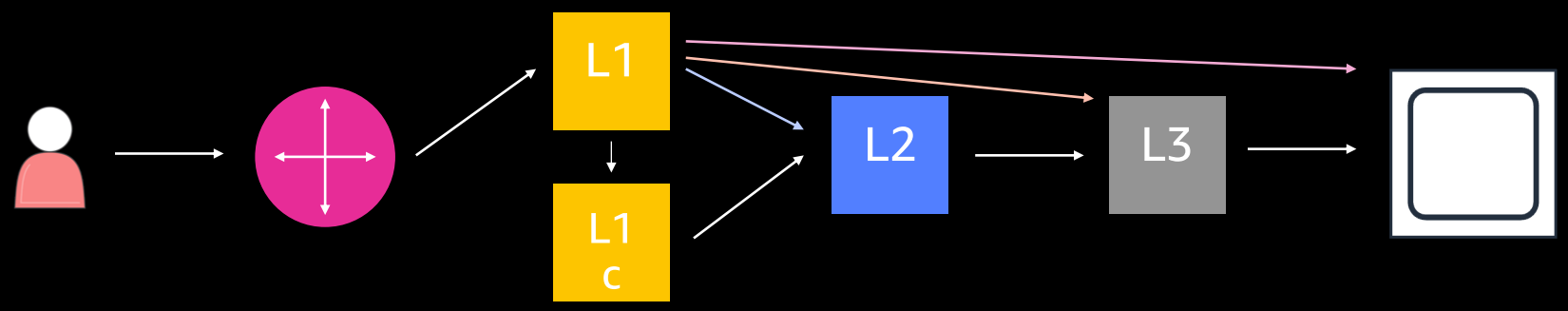
Different layers for different content



→ Popular → Less popular → Dynamic → Dynamic & frequent

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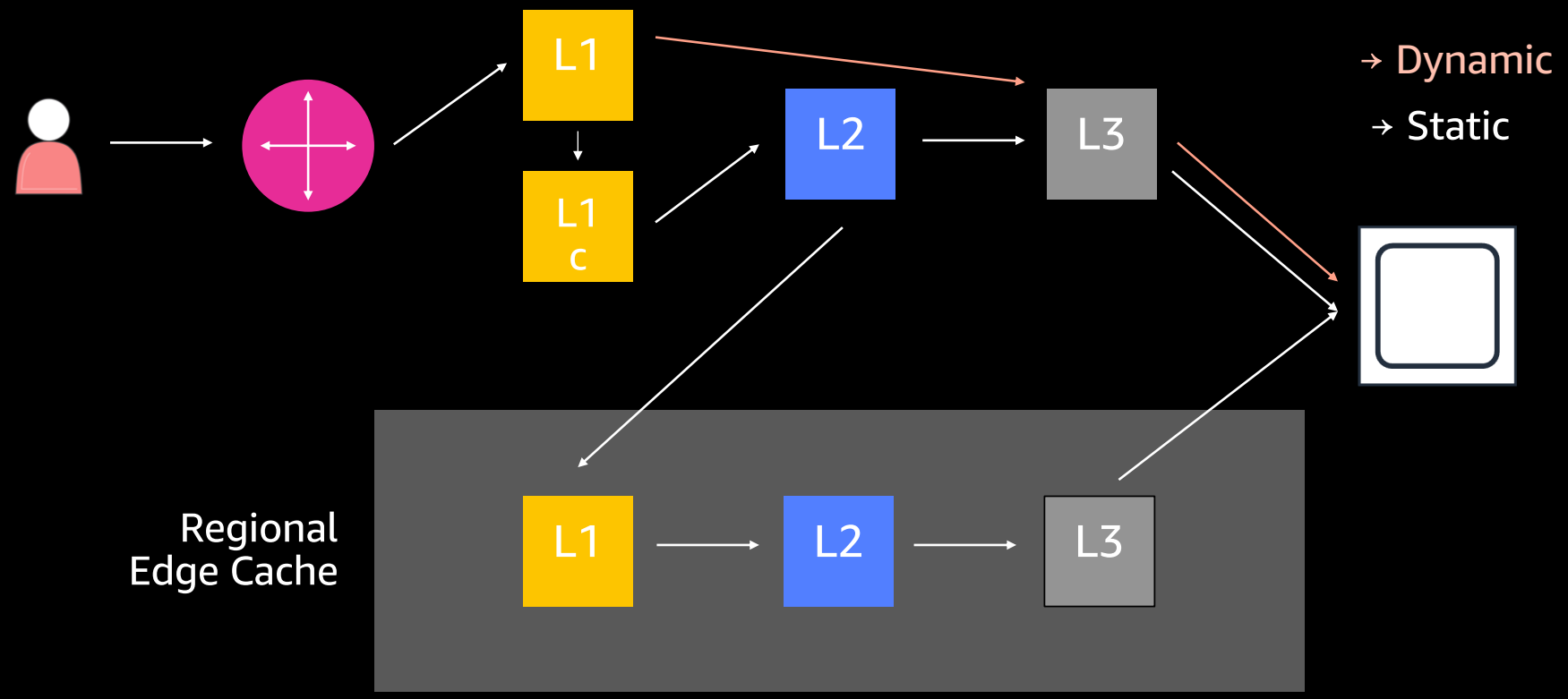
Adding Regional Edge Caches



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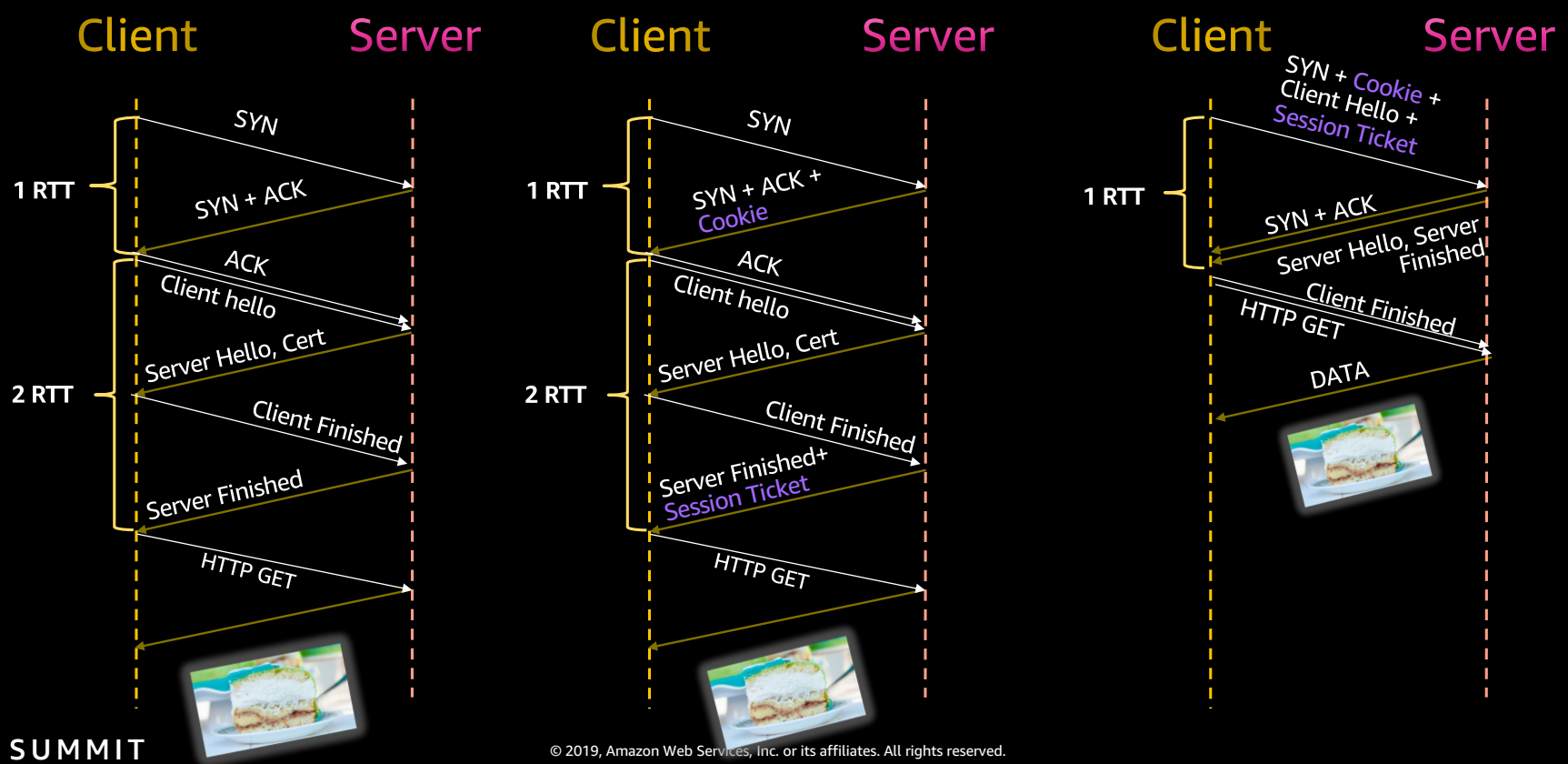
User facing L1

Photo by Matthew Henry on Unsplash

TCP/TLS acceleration



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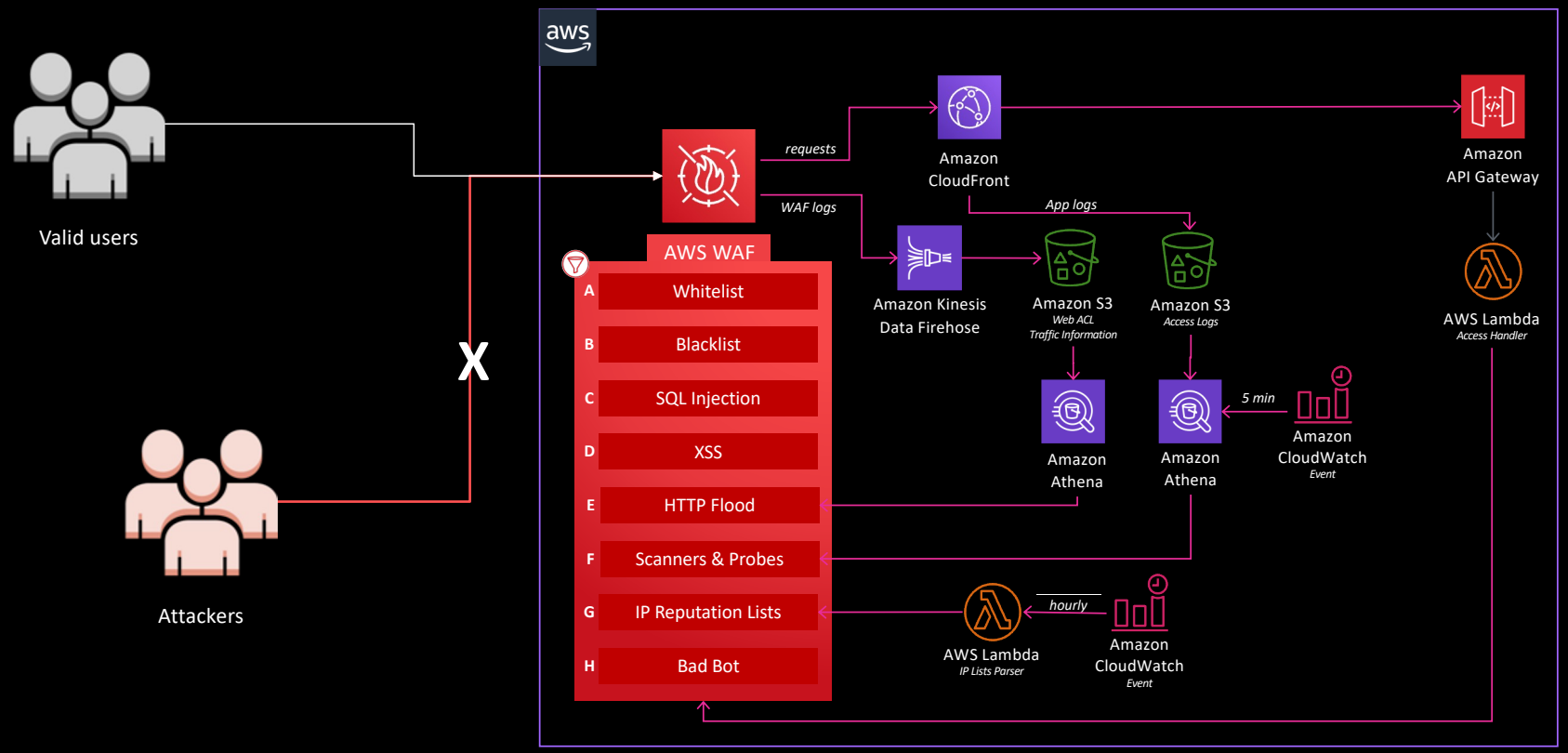
AWS WAF



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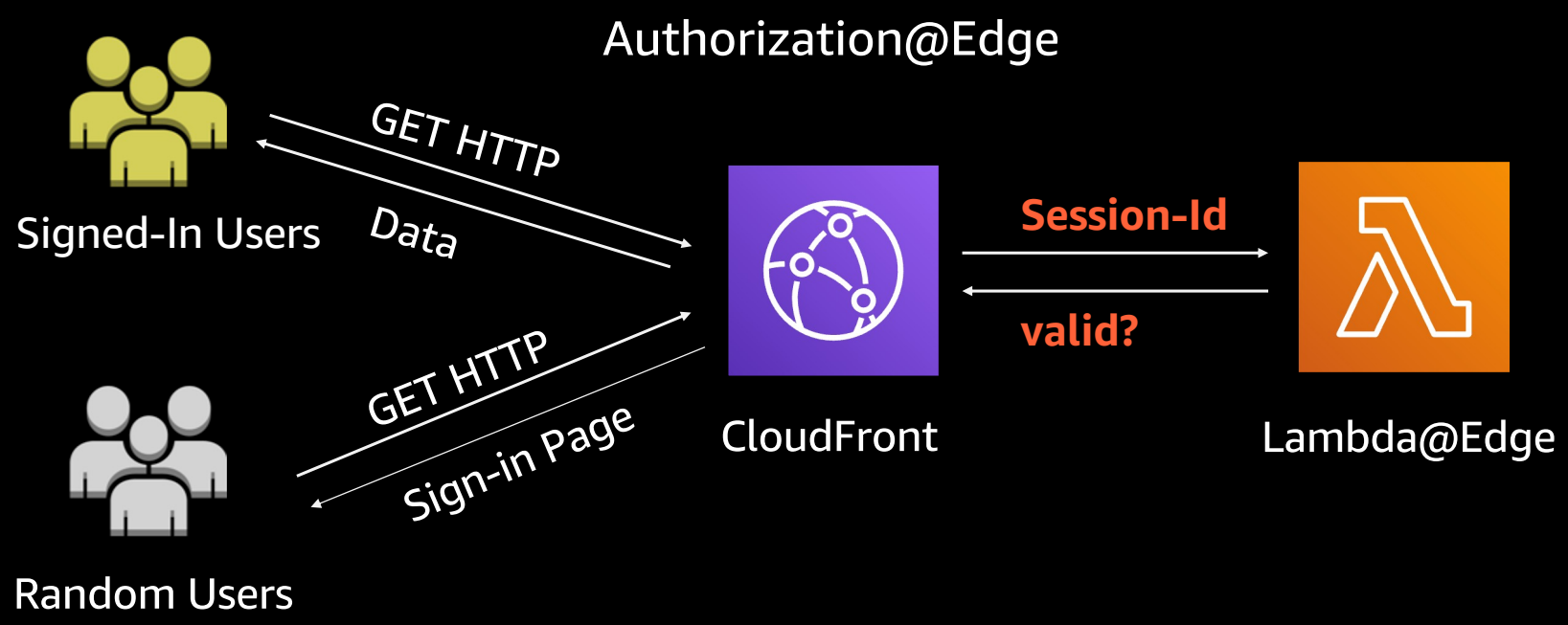
Viewer events for Lambda@Edge



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Caching layer L2

Maximizing Cache Hit Ratio

- Consistent hashing
- Regional Edge Caches
- Byte streaming
- Request collapsing

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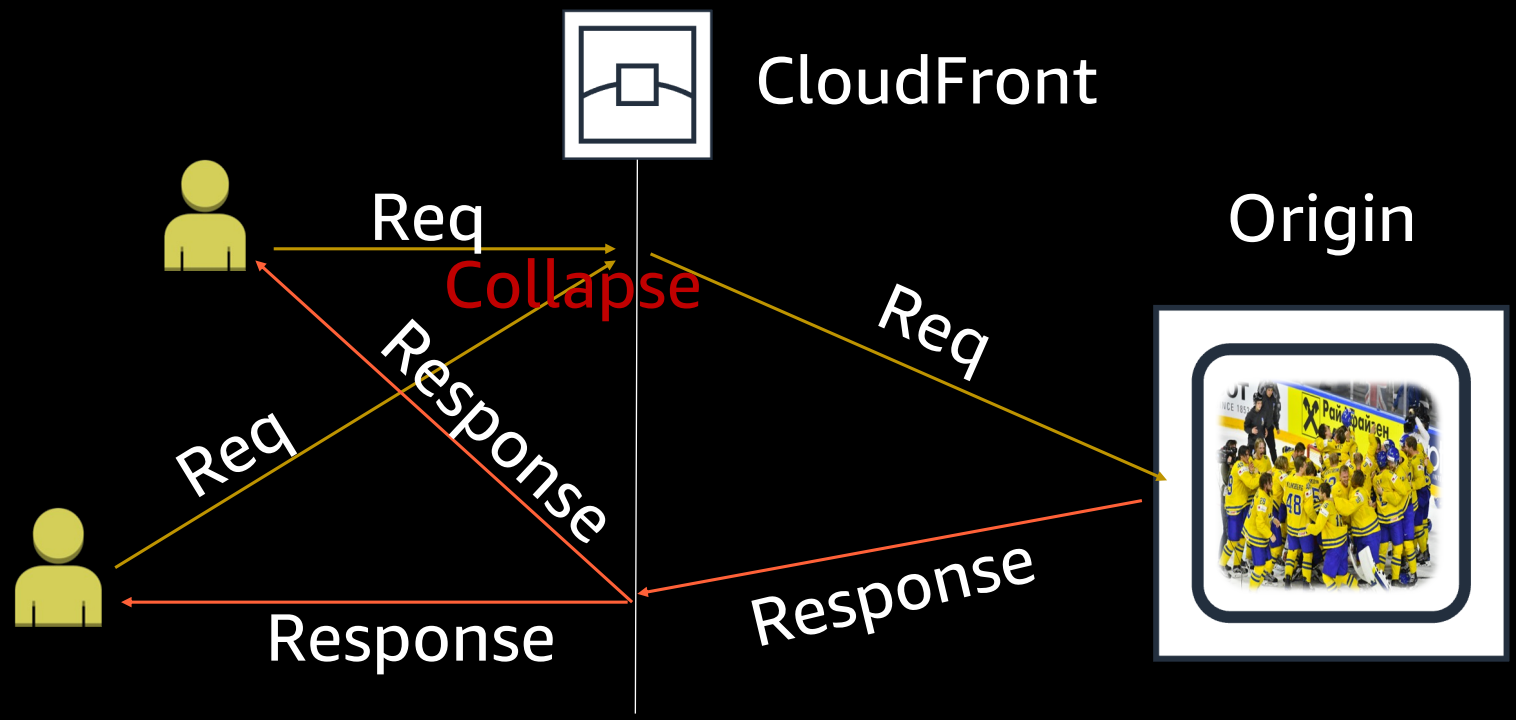
Request collapsing



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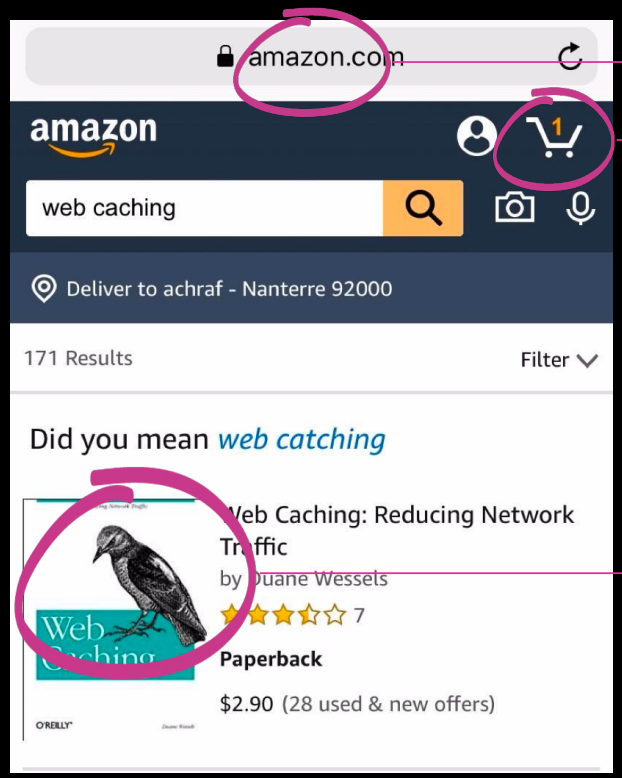
Cache control strategy



/

Cache-Control: no-cache
ETag: “fsd435fsd3dfgkjhgff”
Set MinTTL on distribution

/api/cart

`Cache-Control: no-store`
Disable caching on CloudFront
(Forward all headers)

/image.jpg

Cache-Control: max-age=31536000
ETag: “fsd435fsd3dfgkjhgff”
URL versioning

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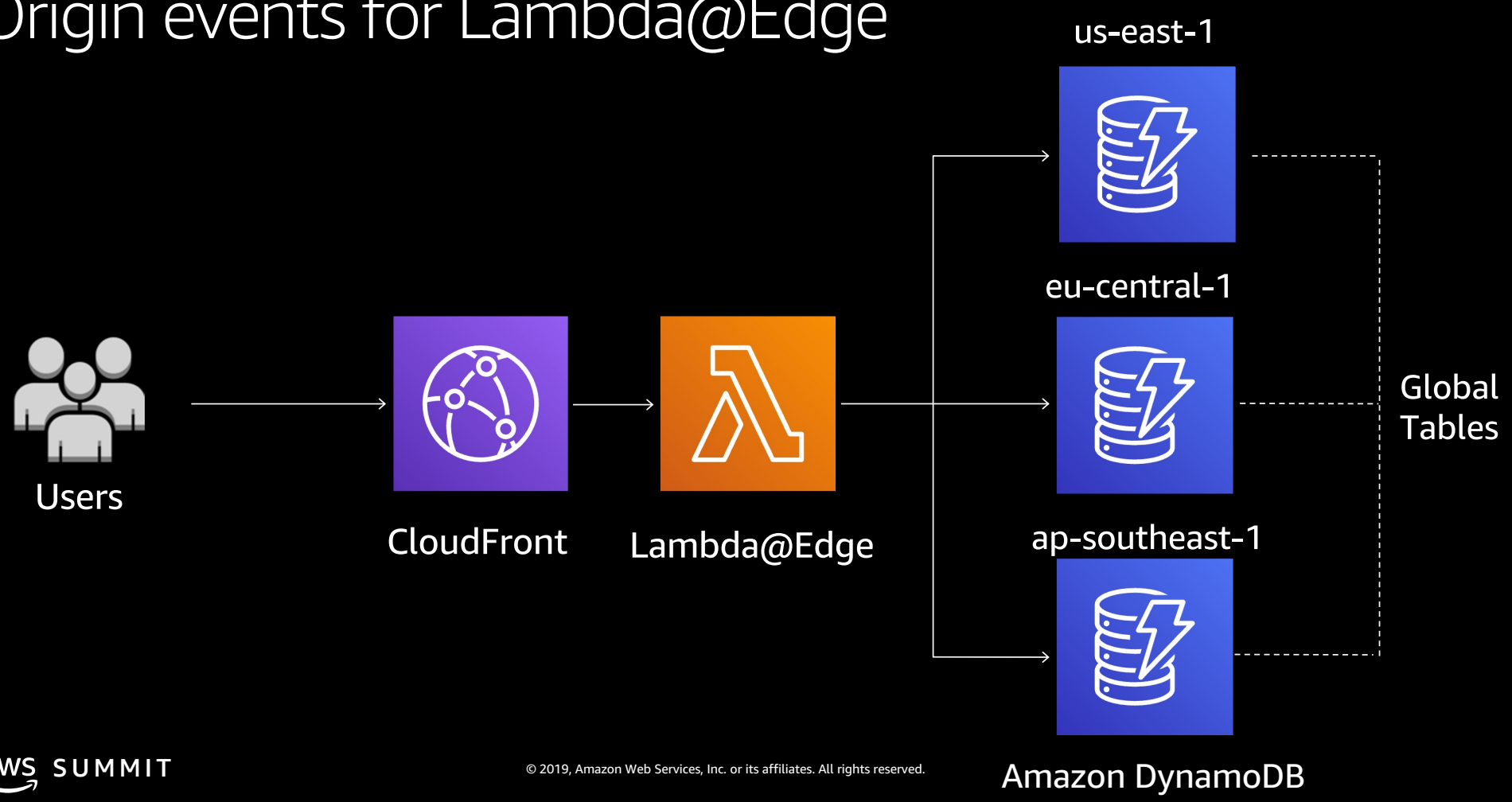
Origin facing layer L3

Photo by Erwan Hesry on Unsplash

Origin events for Lambda@Edge



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Connection to origin

- Protocol selection
- TLS minimal version
- Origin Response Timeout
- Origin Keep-alive Timeout
- Headers

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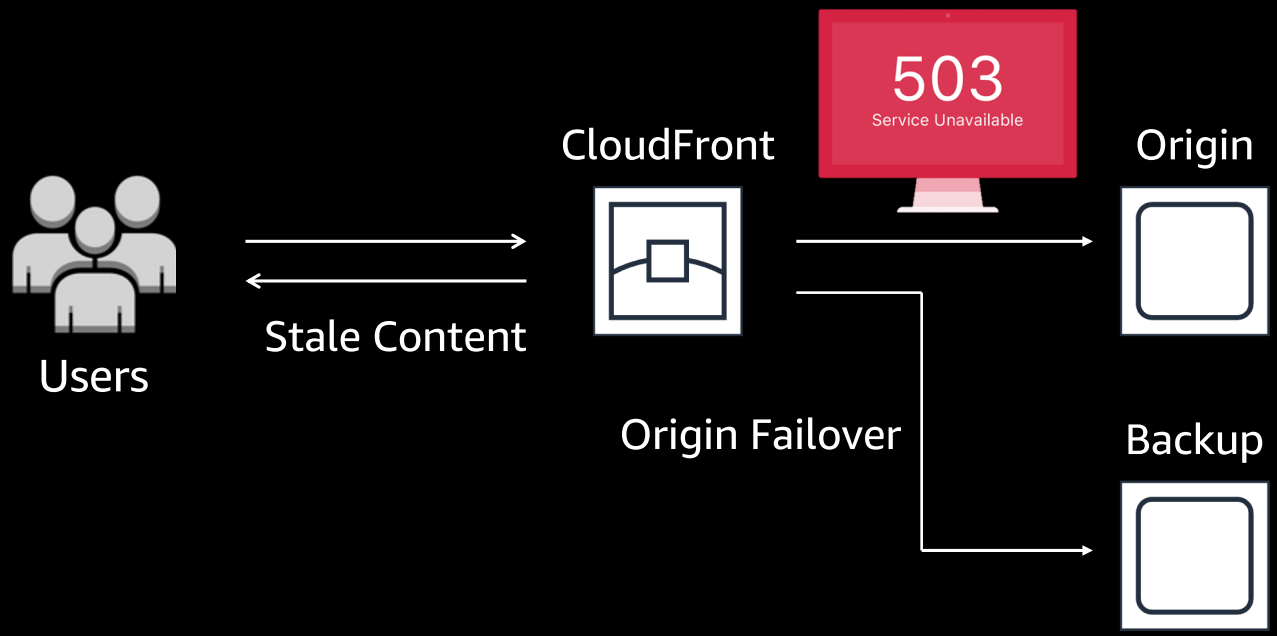
When the origin is not available?



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Acast case study

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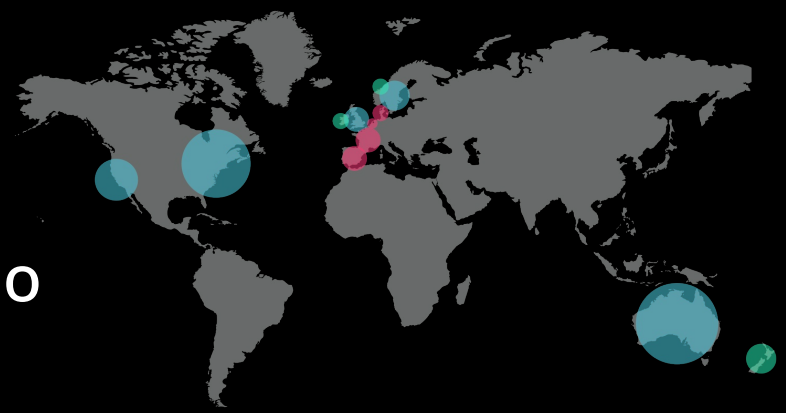
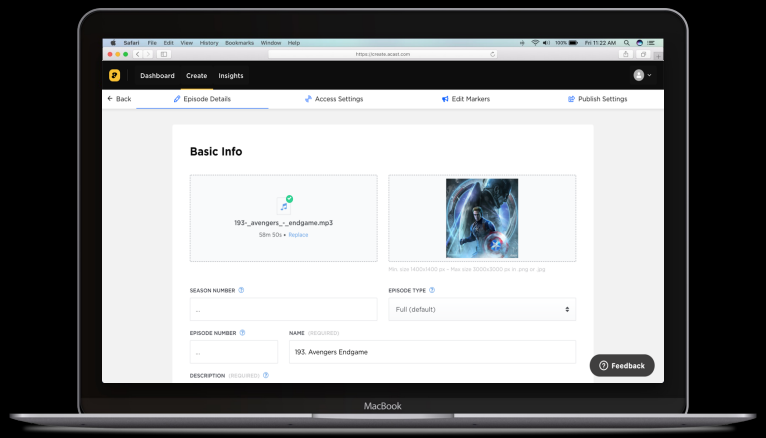


- Host, distribute and monetize audio
- Over 3,500 podcasts
- Indie creators and media houses
- 8 globally located offices



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Acast in Numbers

In the last 30 days:

- 4.2 PB of data transferred
- 50 million unique stitch combinations
- 5.6 billion minutes of audio

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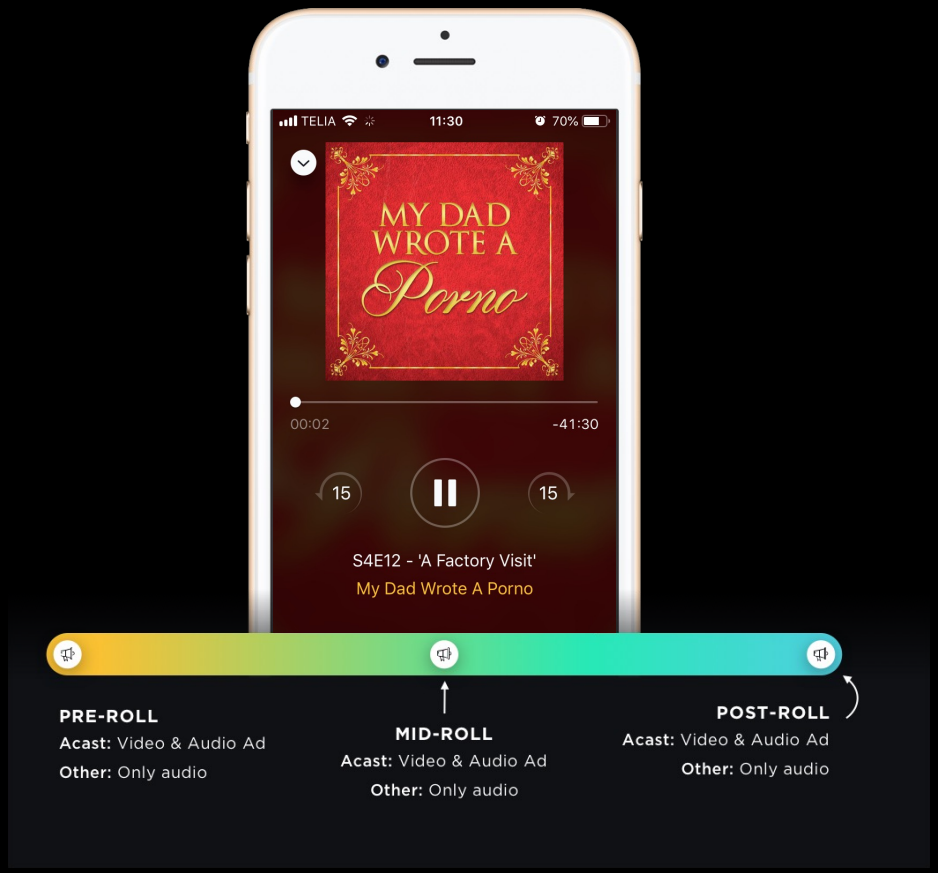
What is the stitcher service?



Real-time traffic reporting – the challenge

- Provide real-time statistics to our users
  - Hourly listens monitoring
  - Pacing ad invocation
- Adhere to industry standard filtering methodology
  - Range requests

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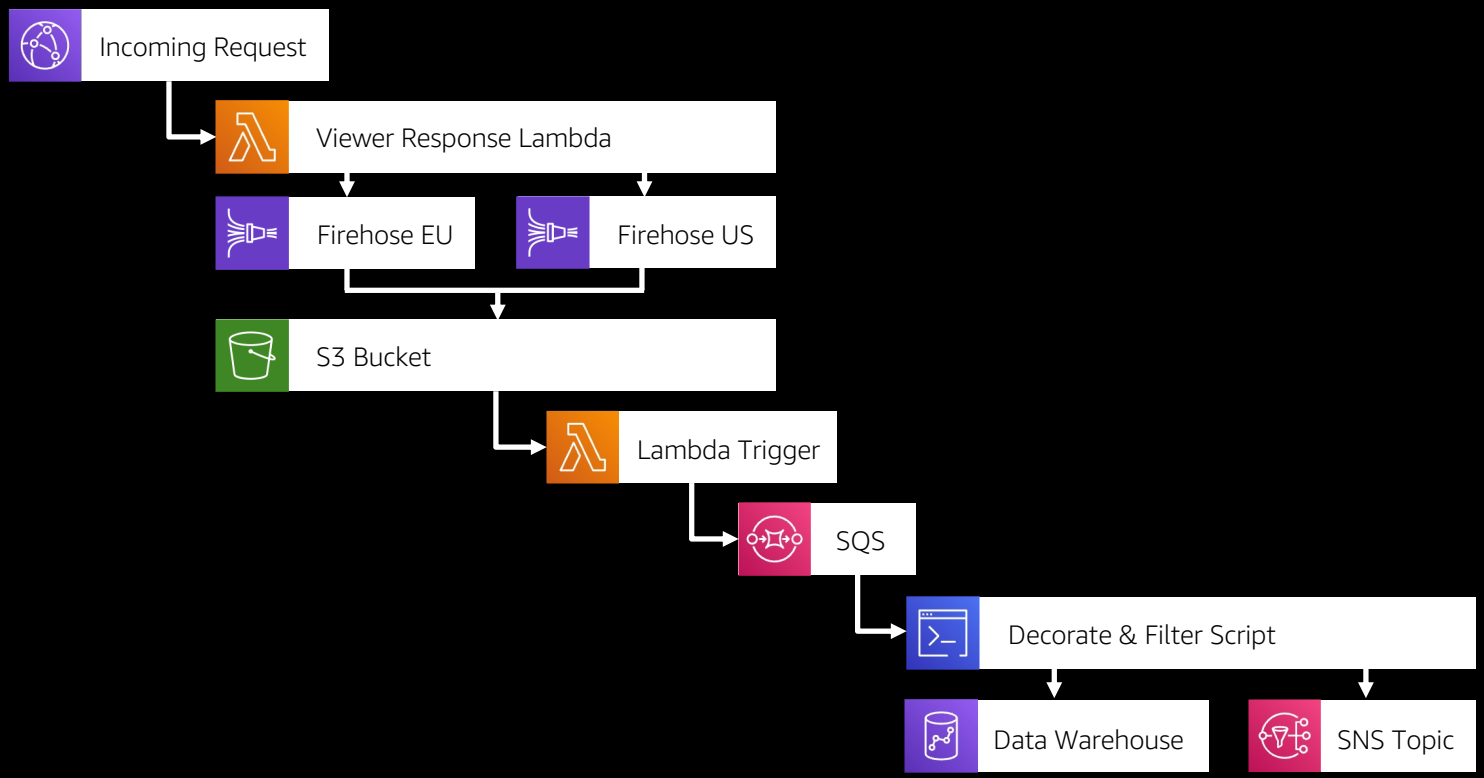
Real-time traffic reporting



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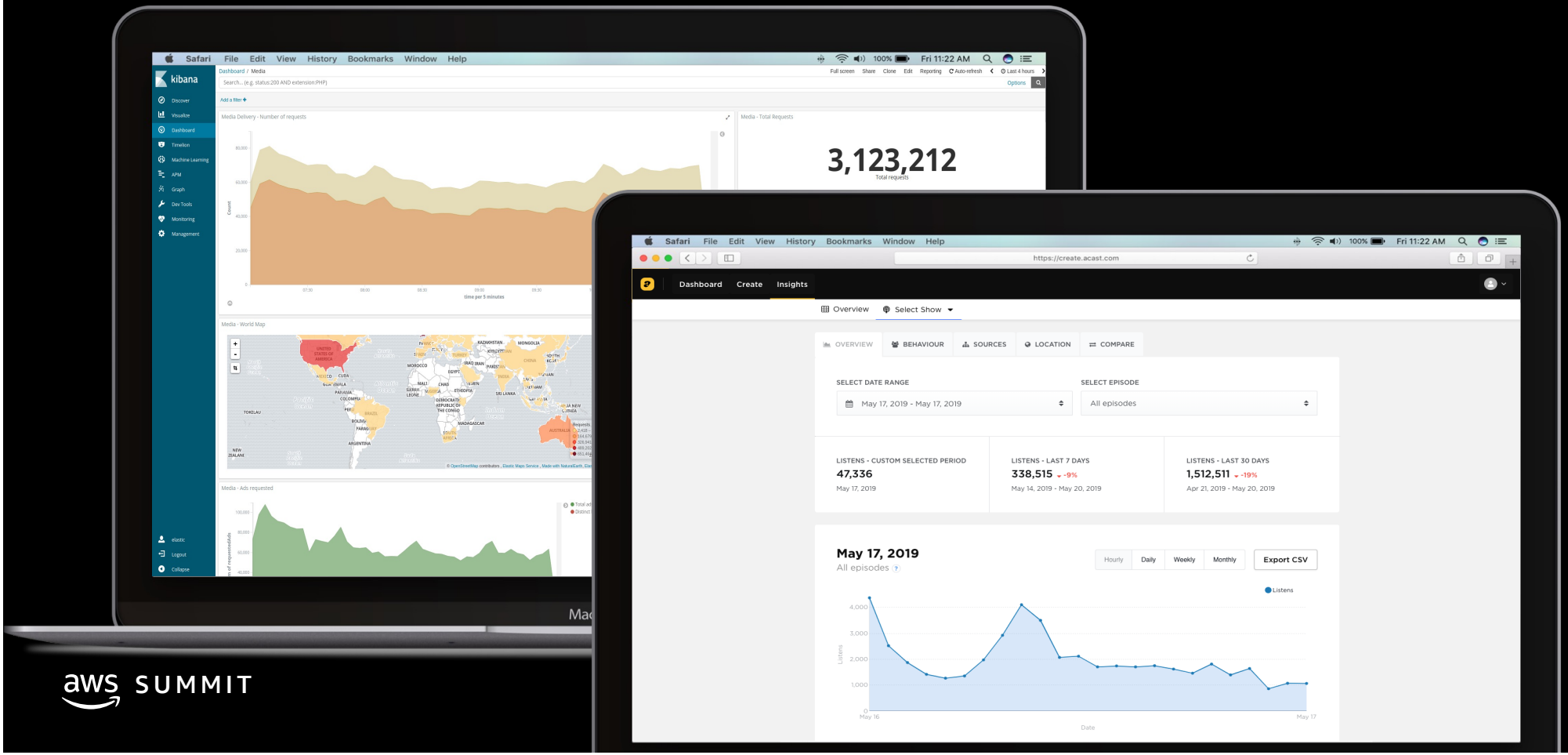
Use cases of real-time traffic reporting



Live ad stitching – the challenge

- Globally scale a live stitcher with advanced load balancing
  - Stitch each episode combination only once
  - Distributed custom rules for load balancing

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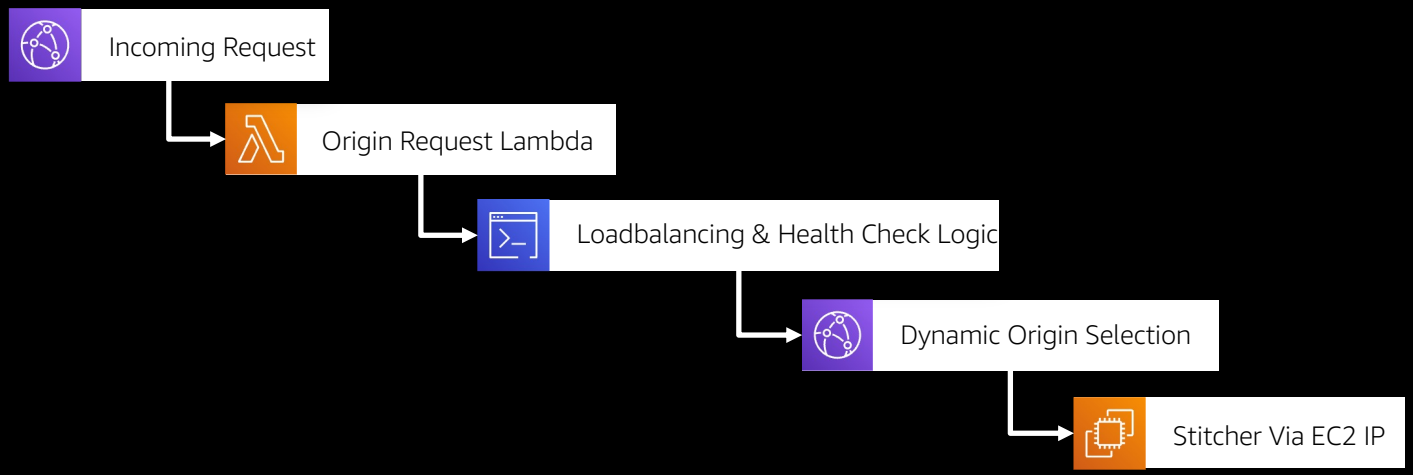
Live ad stitching



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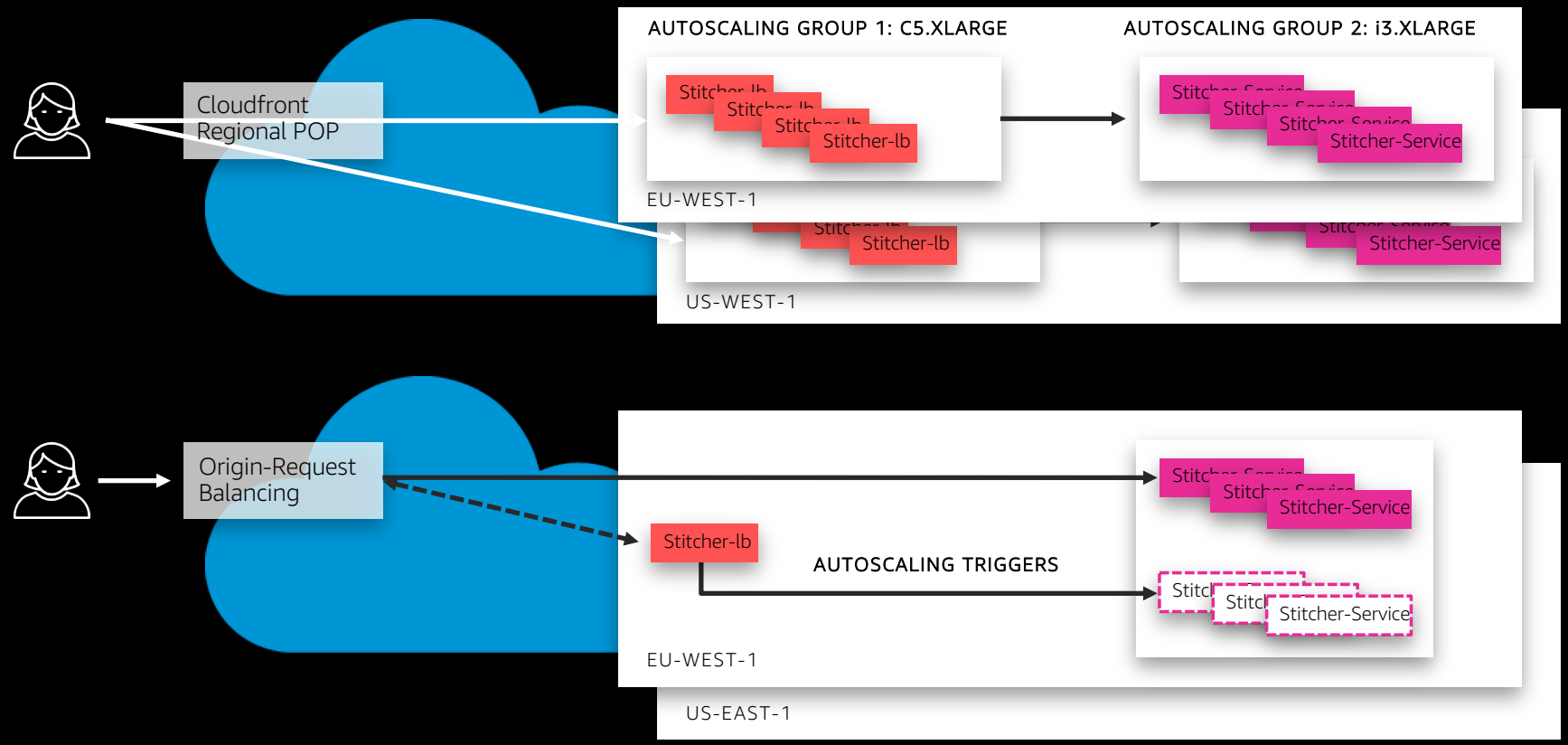
Live ad stitching



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LEARNINGS OF USING LAMDBA@EDGE

1. Dynamic origins from lambda @ edge
2. KISS: Keep it stateless, stupid
3. Know your limits

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Acast and AWS

- Edge nodes closest to our most remote listeners
- Fastest download speeds according to strict SLAs
- Support on cutting edge implementations
- Innovations that would not have been possible without edge lambda

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Acast and AWS – The Future

- AWS and CloudFront – major role in new product Acast Access
- Dynamic episodes and audio content
- Make Acast content truly dynamic on a large scale

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Join the (audio) revolution – acast.com

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Some takeaways

- Design modular / layered architectures
- Build feedback loops everywhere
- Let your customers innovate using your services
- Make security invisible for your customers
- Treat content differently

- AWS Edge services are awesome!!
- … and don’t let engineers name services!!!

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Thank you!

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