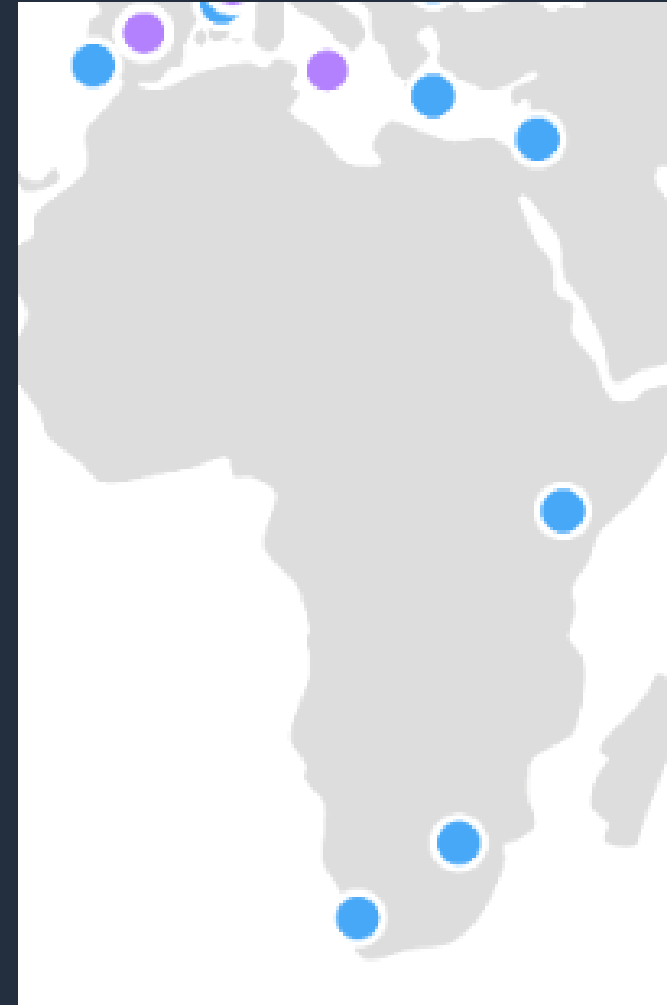# AS16509

Interconnect with Amazon and improve your users' experience

Jørgen Grinnes

AWS Interconnect

Agenda

1. About Amazon/AWS

2. Amazon in Africa

3. What's all this traffic?

4. How Amazon routes and maps traffic; routing policies

5. How can an African network influence traffic exchange with Amazon?

6. Local Zones: cloud compute in the edge

Amazon at a glance

- Amazon is an American technology company

- Amazon.com; online shopping

- Amazon Web Services; cloud computing

- Prime Video; video streaming

- Amazon Music

- Fire Tablets; Fire TV

- Echo and Alexa

- Kindle E-readers

- …and much more
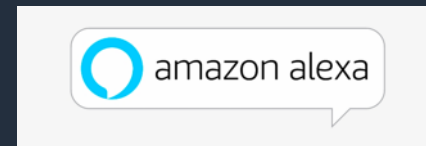
What's all this Amazon/16509 traffic?

- Amazon CDN: CloudFront
  - Amazon content
  - Third party content
  - Most of Amazon traffic into Africa

- Cloud Services traffic
  - Amazon Elastic Compute Cloud (EC2)
  - Amazon Simple Storage Service (S3)
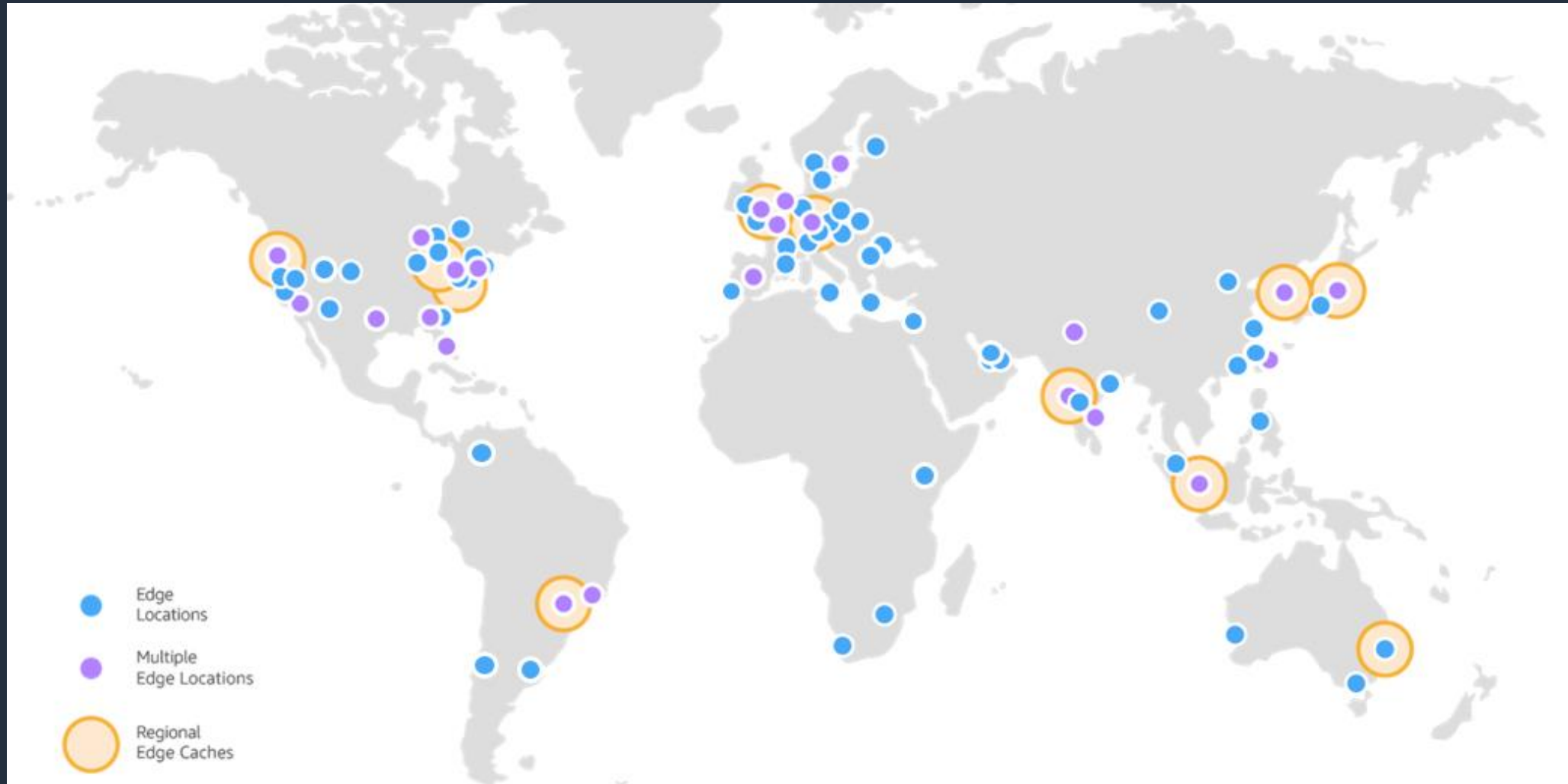 - ....and many more services (>200)

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AWS Regions host cloud compute, cloud storage and other AWS services. 26 AWS Regions – 8 new announced

Regions ● Coming soon ●

https://aws.amazon.com/about-aws/global-infrastructure/

>300 POPs world wide – just starting in Africa
One of the world's largest backbones

Edge Locations

Multiple Edge Locations

Regional Edge Caches

https://aws.amazon.com/peering/
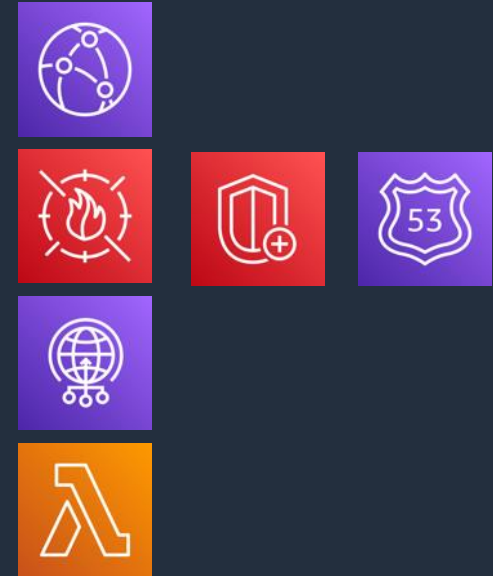
What does AS16509 serve from where?

AWS Edge Services

- Amazon CloudFront: Petabit-scale CDN
- Security: Web Application Firewall, Shield (DDOS), Route53 DNS
- Acceleration: Amazon Global Accelerator
- Computing: CloudFront Functions, Lambda@Edge (Serverless)
- Served from **>300 Global PoPs**
- CloudFront: Local egress

AWS Cloud Services

- Amazon Elastic Compute Cloud (EC2)
- Amazon Simple Storage Service (S3)
- ….and many more services (>200)
- Served from 26 AWS Regions
- Rides AWS backbone (EMEA)

Compute · Business Applications · Blockchain · App integration

Storage · Security, Identity & Compliance · Management & Governance · Analytics

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How to improve traffic exchange with AWS/16509?

Peer with us!

- Private Peering: Redundant PNIs to our edge POPs in >90 countries
  - ADC in Nairobi and Cape Town; Teraco in Johannesburg and Cape Town
  - Amazon prefers 2x100Ge
- Public Peering: >90 public exchanges
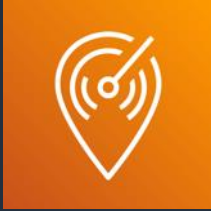 - NAPAfrica, CINX, KIXP

AWS Direct Connect

- Available in selected PoPs (115) for direct connect to the cloud-regions
  - Johannesburg and Cape Town
- Can be direct, or through a connectivity partner
- Comes with SLAs and QoS
- Receives all AWS routes
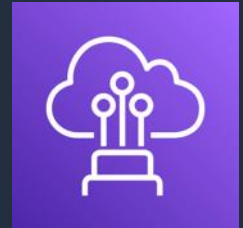
New products from AWS will further lower latencies

Local Zones
- Cloud Compute at the edge
- Supports selected compute services such as EC2
- Ties back to a parent-region through AWS' backbone
- Also coming to edge POPs in Africa

Wavelength-Zone
- Similar to Local Zone but for 5G-services
- Installed in telco-locations
- Ultra-low-latency access for 5G
- Day1 Partners are Verizon, Vodafone, KDDI and SK-Telecom

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Thank you!

Jørgen Grinnes   peering-emea@amazon.com

jgn@amazon.com   https://aws.amazon.com/peering/

AWS and RPKI, where we are today

AWS and RPKI, where we are today.

- Blogpost for full context: https://aws.amazon.com/blogs/networking-and-content-delivery/how-aws-is-helping-to-secure-internet-routing/

- We are dropping RPKI invalids in 100% of our Internet Edge Border, in over 310+ global PoPs on all eBGP-peering sessions of all kinds (Transit, IX, PNI)

- We have signed more then 99% of our announced IP-space.

- We have fully automatic ROA-renewal, creation and maintenance in our "IP-vending machine".

- Bring-Your-Own-IP (BYOIP) Relies on RPKI for Correctness

- RPKI-OV and RPKI-ROA-Creation is a 'Severity 1' service with oncall-teams on rotation.

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AWS and RPKI, where we are going

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AWS and RPKI, where we are going

1. Investing and looking more into Delegated RPKI solutions, with our own publication points.

2. Improve the BYOIP-process for customers. Specifically looking at upcoming RSC IETF Standards.

3. Work with and reach out to networks that has RPKI invalids to have them fixed.

4. Continue the work on community-projects such as MANRS to launch new initiatives and frameworks to foster the use of RPKI.

5. Help RIRs improve where needed on features and operational stability for the RPKI ecosystem as a whole.

• Questions to fkback@amazon.com

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10G/100G

- 10G on peering will be of less interest going forward and will not be offered anymore other then on an exception-basis. In our 400G edge-platform a 10G port means sacrificing 390G to 360G of potential capacity on the port (40G Breakout-optics on 400G). We must leave 10G land

- 100G continues to be the de-facto standard interconnect-method for us going forward for the forseeable future. Happy to hear and take note if anyone would be interested in 100G-LR1 instead of 100G-LR4 to optimize for cost and simplification in 400G native networks.

400G

- AWS has been a big user and supporter for 400G for a long time. Even have 400G Instances since 2020! (Based on Nvidia A100 ML/HPC)

- Migrations to 400G goes Datacenter -> Backbone -> Edge

- From now and onwards more and more sites will have 400G support at the AWS Edge-locations available for peering

- We will use 400G-LR4 in the Edge for external interconnect. Longer distance-optics is being evaluated. 8-lane options is technically impossible

- Speak with your fellow AWS-representative about YOUR plans for 400G enablement in the edge