Peering with AWS – 2022 Updates

NOG.FI

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What does the AS16509 Network Serve?

AS16509 functions as the internal carrier of the Amazon-family of companies. It works, looks and feels very much alike any large international traditional carrier network you would know, but today, probably surpasses most of them in size.

What does it serve? One of our primary customers of the AS16509 network is “the cloud”

The AWS Cloud consists today of 84 Availability Zones within 26 geographic regions around the world, with 24 more Availability Zones currently being built and 8 more AWS Regions in coming up in Australia, Canada, India, Israel, New Zealand, Spain, Switzerland, and United Arab Emirates (UAE)

Well-known home to services such EC2, S3 and DynamoDB but the service catalogue today is huge with over 200 services.

Ontop of the Cloud we also serve CDN, Anycast, DNS, VPNs, Offices, Factories, Fulfilment Centers, Satellite networks, Our Airline, Jeffs Spacethings and a lot more. So very much like any carrier these days

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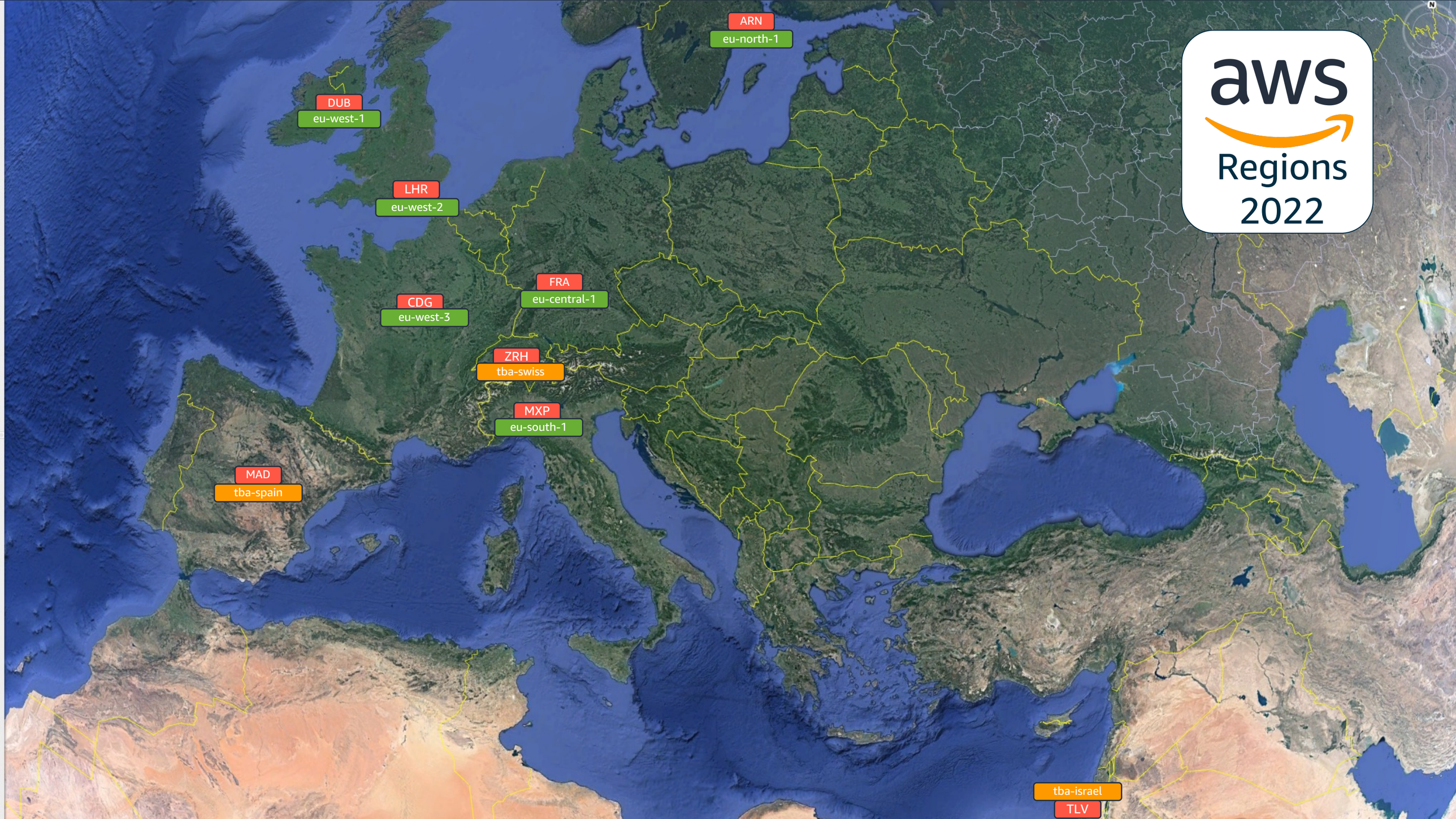
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MAD
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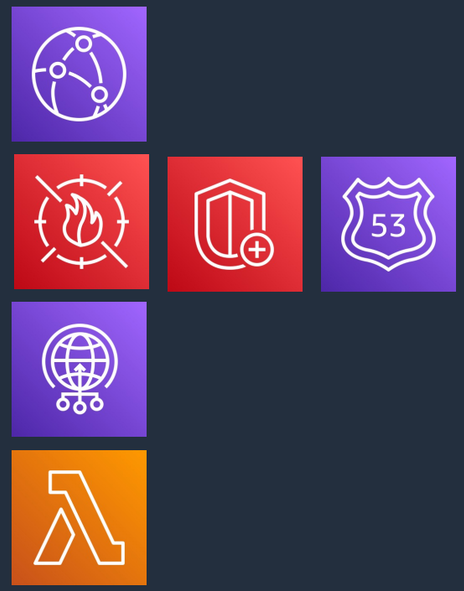
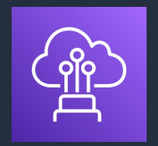
TLV
aws
Regions
2022

What does the AS16509 Network Serve?

- **AWS Edge Services. 310+ Global PoPs**
  - **Cloudfront** CDN: Multi-Petabit-scale feature rich CDN used by thousands of customers, everything from Slack to PrimeVideo
  - **Security:** WAF, Shield (DDOS), Route53 DNS
  - **Acceleration**: Global Accelerator, Anycast, Loadbalancing etc.
  - **Computing:** Cloudfront Functions, Lambda@Edge (Serverless)



- **AWS Direct Connect**
  - Available in select PoPs for direct connect to the cloud-regions.
  - Can be consumed direct, or through a connectivity partner.
  - Comes with MACSEC
  - Comes with SLA's and QoS.'
  - Is not free



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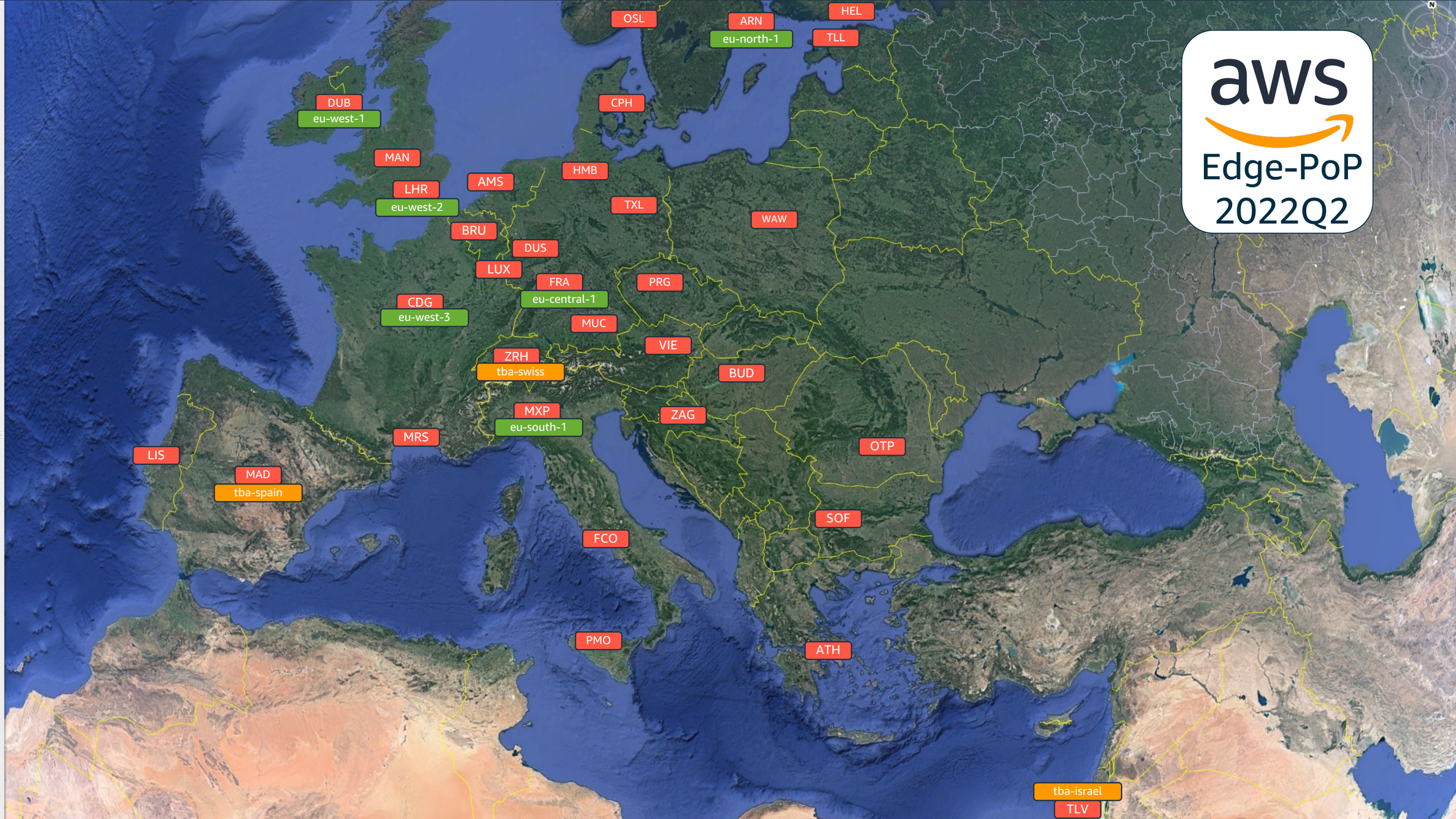
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Edge-PoP
2022Q2
OSL
ARN
eu-north-1
HEL
TLL
DUB
eu-west-1
CPH
MAN
HMB
AMS
LHR
eu-west-2
TXL
WAW
BRU
DUS
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FRA
eu-central-1
PRG
CDG
eu-west-3
MUC
VIE
ZRH
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New cool edge-things for AS16509

- **Local zones**
  - Select core-features moved into smaller single-AZ cloud-deployment in Edge-locations closer to the end-user to lower latency
  - Supports services such as EC2, EBS, ECS, EKS and VPC
  - Ties back to a parent-region for certain services
  - Uses existing connectivity
  - One of the first public references is a Finnish customer, Supercell

- **Wavelength-Zone** ***(The product, not the DWDM-wave…)***
  - Similar model to Local zone but for 5G MEC
  - Installed into ISP-locations connected into 5G aggregator nodes for ultra-low-latency access to 5G Customers
  - Day1 Partners are Verizon, Vodafone, KDDI and SK-Telecom
  - Uses connectivity from the ISP

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Edge-PoP
2022Q2
OSL
LZ-OSL
ARN
eu-north-1
HEL
LZ-HEL
TLL
DUB
eu-west-1
CPH
LZ-CPH
MAN
LZ-AMS
AMS
HMB
LHR
eu-west-2
TXL
LZ-BER
WAW
LZ-WAW
BRU
LZ-BRU
DUS
LUX
FRA
eu-central-1
PRG
LZ-PRG
CDG
eu-west-3
MUC
LZ-MUC
VIE
LZ-VIE
ZRH
tba-swiss
BUD
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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. Since im here talking, we are alreday in the Edge-cycle

- In 2022 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.

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10G/100G

- 10G on peering will be off 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.

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AWS and RPKI, where we are today

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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.

2. Improve the BYOIP-process for customers. Specifically lookint 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.

6. Look around the corner for new emerging additions to the ecosystem, such as BGPSEC and ASPA, and work with stakeholders and invest where needed to bring technology further

Questions to fkback@amazon.com

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