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BEREC Workshop "Digital networks developments: players and strategies“

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Draft Report on the entry of large content and application providers into the markets for electronic communications networks and services

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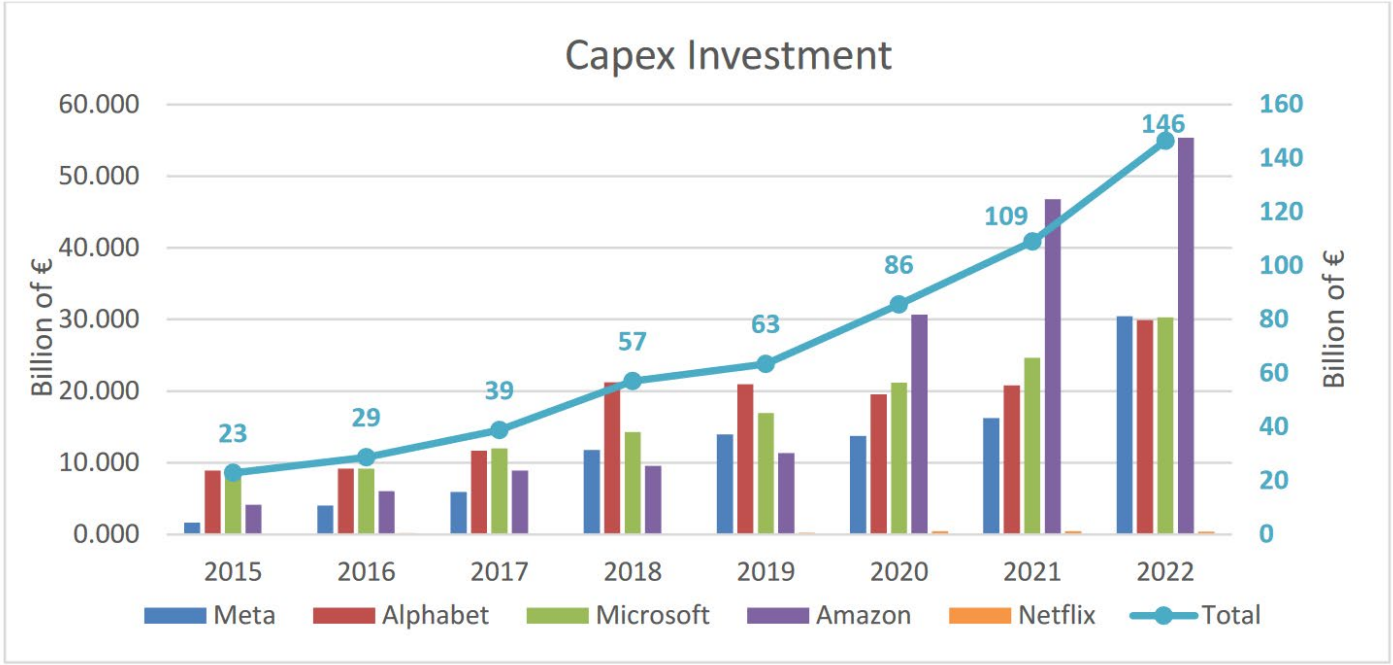
Overview

- The report gives an overview of the presence and impact of large CAPs on the markets for ECN and ECS in Europe. It presents their strategies and business models, the market dynamics, as well as CAPs' relations with traditional ECN/ECS providers in terms of competition, cooperation and interdependence.
- It provides three case studies where significant investments by large CAPs are taking place i) CDNs, ii) submarine cables and iii) internet relay services.
- It also presents some cases where ECS/ECN providers' ability to provide access to the network and/or to some functionalities and technologies may be affected
- It builds on a questionnaire sent to 9 major CAPs (Akamai, Amazon, Apple, Cloudflare, Dazn, Google, Meta, Microsoft and Netflix) and 3 workshops organised with stakeholders on submarine cables, internet relay services and cloud services

CAPs investment

- Collectively, the 5 largest CAPs invested a total of 146,3 billion euros in capital expenditures in 2022 globally, which compares with a total of 23 billion euros in 2015;
- CAPs invested on data centres, CDNs, submarine cables, terrestrial and satellite networks, mainly to support the delivery of their own services and bringing content closer to end-users.

Larger CAPs investment in Capex, 2015-2022



Source: BEREC, based on company's financial results reports

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Main take-aways - CAPs' presence in EEA

Overview of 9 major CAPs' points of presence (= physical location or facility that houses network equipment (e.g. servers and routers) to interconnect with other networks)

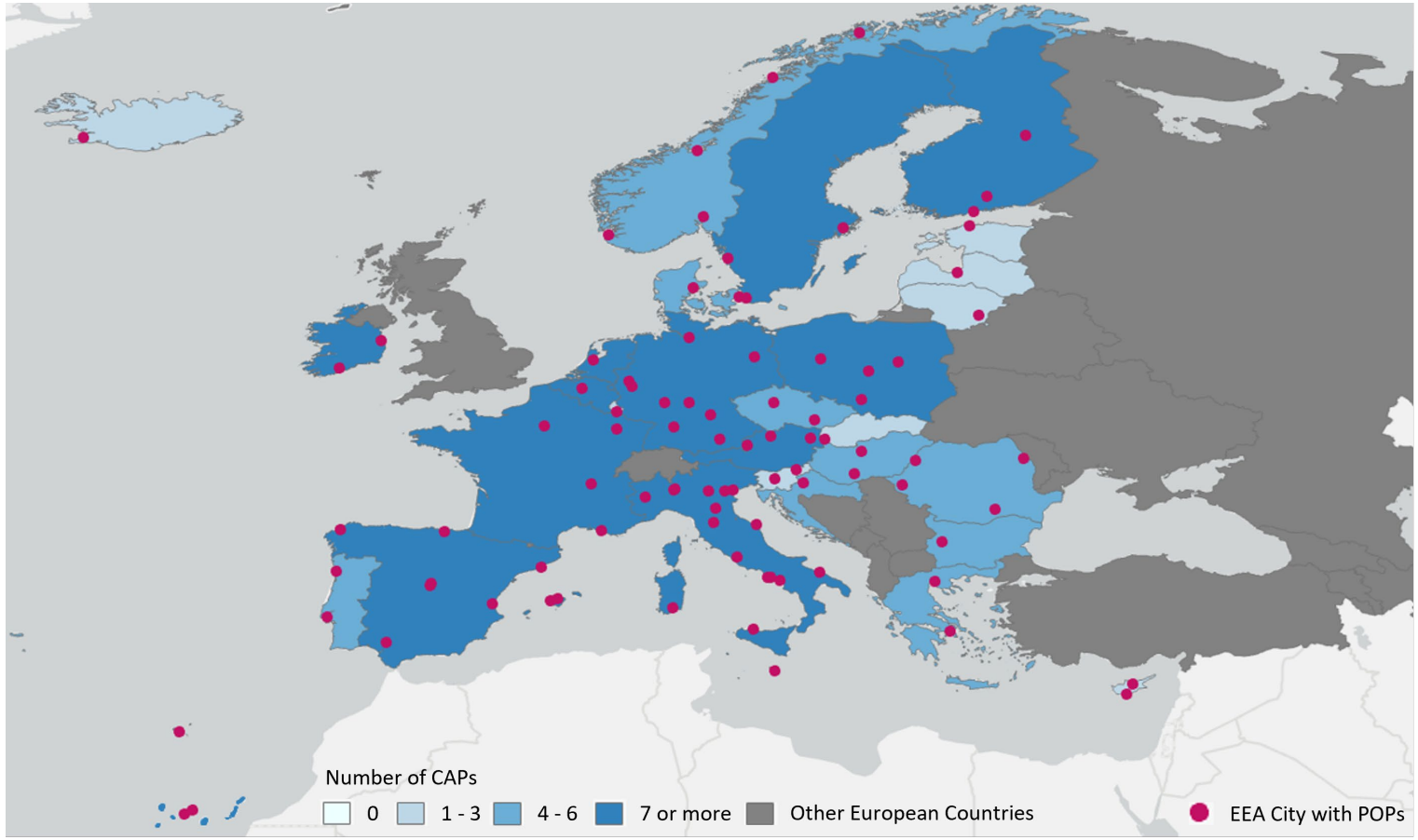

Figure: Nine large CAPs' presence and PoPs in EEA countries

Source: BEREC

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Main take-aways - CDN

- The commercial CDN services market is concentrated around few players / concentration expected to grow significantly in the coming years
- Previously, large CAPs relied on commercial CDNs providers for their services, but in recent years they have been increasingly rolling out their own CDN infrastructure networks
- CAPs mostly use their CDNs for self-provision, but also partly provide CDN services to third-parties
- The roll-out of CDNs by large CAPs – often on the internet service provider (ISP)'s network (i.e. on-net CDN) – exerts competitive pressure on the business model of transit providers
- On-net CDNs allow to reduce capacity costs for ISPs by locating content closer to end-users

Main take-aways - Submarine cables

- The ecosystem has significantly evolved in the last years
- Large CAPs have transformed from mere direct or indirect customers of wholesale capacity, to the owners and investors in transport network infrastructure
- Large CAPs deploy submarine cables primary to their own use, while traditional ECS/ECN providers still play a key role on the transmission of data for other CAPs, connecting areas which may not be economically profitable.
- Large CAPs' investments have limited impact on the global network resilience

Main take-aways - Internet relay services & potential restrictions

Internet relay services

- Used to ensure confidentiality by encrypting the data traffic directly on the users' devices or in the users' domain
- User uptake does not seem to be significant at the moment but such services deserve to be monitored because of their potential impact on traffic flow, on the utilisation of an internet access providers' current interconnections, and, as a consequence, on the decentralised approach of the internet architecture

Other potential restrictions by OS providers

- OS providers can sometimes restrict ECN/ECS providers' ability to correctly give access to services or to the network itself
- Typical examples include the access to 5G slicing functionalities or other restrictions to the provision of the slices, the potential implications of provider-specific solutions for standardised services (e.g. RCS), as well as the difficulties that some MVNOs and smaller mobile operators seem to face in setting up some functionalities of the devices or in configuring the network profile when eSIMs are used

Public consultation

- Open to public consultation from 13 March until 24 April 2024
- Final version of the report and summary of responses to the PC expected for mid-October 2024