

Draft Report on Cloud and Edge Computing Services

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#empowering
EUconnectivity

Context

General objectives

- Understand technical and market developments and the interlink between ECN/S and cloud/edge services.
- Support DA enforcement

Methodology

- Extensive desk research including
 - External study on the trends and cloudification, virtualization, and softwarization in telecommunications
 - Recent cloud studies by ACM, OFCOM and French NCA.
- Interviews with providers and associations

Index

- Cloud and edge services: definitions and taxonomies
- Cloud and edge services in the EU
- Cloud Market characteristics
- Interoperability, standards and switching
- Cloud and electronic communications interplay
- Potential regulatory considerations
- Future Trends

Definitions and taxonomies

Definitions and characteristics

- Cloud
- Edge computing
- Data processing services

Taxonomies

- Cloud stacks: IaaS; PaaS; SaaS
- Deployment models: public; private; hybrid. // multi-cloud

Cloud and edge services in the EU

Challenges

- Investment
- Competition concerns
- Skilled workforce
- Digital Sovereignty
- Sustainability
- Uptake & development of use cases
- Interoperability
- Cybersecurity

EU policies and regulation

- Digital Decade Policy Programme
- European Data Strategy
- Data Act
- Digital Markets Act

... Among others (Annex I)

Aiming to build a cloud environment:

- Interconnected
- Interoperable
- Trusted
- Sustainable
- Cloud-to-edge enabled

Cloud Market characteristics

Recent Market Studies (ACM, OFCOM, French NCA) describe

- Economies of scale
- Ecosystem and network effects
- Switching and interoperability barriers
- Barriers to entry and expansion

Leading to market concentration and raising competition concerns.

Interoperability, standards and switching

Interoperability and standards

- Types and relevance of Interoperability and standards
- Examples of public (simpl) and private initiatives (open gateway, sylva)

Switching

- Barriers to switching
- Pricing practices (egress fees, credits, expenditure anticipation)
- Effects
- Regulation (DMA & DA)

Cloud and electronic communications interplay

Competition and cooperation

- ECN/S moving towards cloud: virtualized and cloud-native architectures; NaaS; edge
- Cloud providers moving towards ECN/S: ECN investment; ECS provision
 - For the time being, partnerships are reached complementing each others know-how and infrastructures

Areas where cloud and edge services interplay

- Connectivity required for the provision of cloud and edge computing
- Migration of different ECN elements to the cloud: Core, RAN edge, Backhaul and transport network, Network operation and business support
- Provision of new and enhanced ECN/S (e.g., NaaS)
- Bundled and integrated ECN/S and IT services with cloud

Regulatory considerations in relation to ECN/S and cloud/edge convergence

- Adaptation of EECC definitions and scope to service convergence
- Market dynamics
 - Competition both on the ECN/S markets and cloud markets
 - Partnerships between ECN/S and cloud providers
 - Digital markets ecosystem effects
- APIs openness and exposure
- Investment to enable cloud-based networks and edge computing
- Interplay of EU digital legislation and the institutional setup for its enforcement
- European digital sovereignty ; Sustainability ; Digital divide

Future Trends

- Market growth
- Increasing relevance of multi-cloud and switching
- Partnerships
- Cloud to edge continuum
- ECN transformation (to adapt to the cloud continuum)
- Role of hyperscalers

Next steps

- Public consultation until **24 April 2024**. (extended deadline)
 - Structure
 - Views on the different parts of the draft report
 - 7 Questions on specific issues
 - Possibility to upload a document (proposals to be linked to specific parts of the report).
 - Not necessary to respond to all questions proposed to submit the contributions
- Final approval and publication, **October 2024**.

Thank you!