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Some discussion points about European NN Regulation and TM practices

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International Workshop - European views on Net Neutrality

24th June 2016, Ljubljana, Slovenia

Different levels of traffic management (TM)

For Internet access services (IAS)

- Ground level – agnostic to applications/endpoints
- 2nd level – differentiation of “categories of traffic”
- 3rd level – exceptional throttling/blocking

For specialised services (SpS)

- If network capacity is sufficient to provide SpS in addition to any IAS provided
- Typically, in case SpS and IAS are provided over common infrastructure

Ground level of TM – *Art 3(3) 1st subpara*

- Agnostic to applications and endpoints
- Tradition “best effort” traffic management
- *Endpoint-based* congestion control (CC) *****
  Endpoints automatically back off in case of congestion
- Transport layer protocol dependant, TCP vs. UDP
- Transport and application layer execute in endpoints
- Advanced CC: LEDBAT, RMCAT (for RTCWeb), Conex
- CC has been the solution to avoid congestion collapse on the Internet, and leads to a significant reduction of the amount of congestion on the Internet

* *Endpoint-based congestion control (CC)* must not be confused with *network-internal congestion management (CM)*
Ref. IETF RFC 5783

2nd level, reasonable TM – *Art 3(3) 2nd subpara*

- Categories of traffic are based on QoS requirements
- These categories may be linked to applications
- Such measures shall not monitor “specific content”
- BEREC Glines: = “transport layer protocol payload”
- ISPs rely on information provided in packet headers
- Implies application-controlled/user-controlled aspects
- Traffic categories may be based on IETF DiffServ
- (Limited) positive differentiation, with a goal to optimise overall transmission quality
- Negative differentiation (e.g. throttling) only allowed for the three specific exceptions

3rd level, exceptional TM – *Art 3(3) 3rd subpara*

- TM *going beyond* reasonable TM
- Three specific exceptions:
  a) compliance with other laws
  b) preservation of integrity and security
  c) congestion management measures
- General criteria of strict interpretation and proportionality
- Can be applied as necessary and as long as necessary
- *Network-internal* congestion management (CM)
  – Application-agnostic: Independent of application *****
  – Application-specific: Typically deep packet inspection (DPI)

* Examples: *IETF RFC 6057 and RFC 6789*

Specialised services (SpS) – *Art 3(5)*

- The industry maintains the opportunity to develop SpS
- SpS ensures “compatibility” between European NN Regulation and QoS-based services, e.g. 4G/5G
- It is IAS that is safeguarded from SpS, not SpS
- SpS have their own inherent “protection mechanism”

- ISPs can provide information to NRAs about SpS
- In addition, NRAs can measure IAS performance
- Based on this, regulatory assessment can be done
- NRAs shall “closely monitor and ensure compliance”