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**Response from The Telecom Industry Association - Denmark (TI) to the draft BEREC Report on the IP Interconnection ecosystem**

On 6th of June 2024, BEREC launched its Report on the IP Interconnection ecosystem. The Telecom Industry Association - Denmark (TI) appreciates the opportunity to submit our observations and contribution to the draft Report on the IP Interconnection ecosystem.

TI is a Danish industry organization, which represents the vast majority of Danish private entities related to and within the Danish telecommunications sector. Currently, TI has 31 members ranging from MNOs, MVNOs, fibre, cable and copper operators, tower cos to internet and TV- service providers.

We welcome BEREC's draft Report on the IP Interconnection ecosystem. The draft Report identifies a series of challenges related to many aspects of the IP Interconnection system as well as the question concerning the relation between content and application providers and telecoms companies and the issue of fair contribution/competition neutrality.

Recent changes in the global architecture of the internet and of interconnection have been mainly caused by the expansion of the backbone and content delivery infrastructures by the content and application providers (CAPs). Today, approximately 70% of the data transported through the backbone networks to consumers is generated by just a few large CAPs (Sandvine, 2024 Global Internet Phenomena Report: Global Internet Usage Continues to Grow, table 1). The impact of this evolution of the internet value chain will be amplified in the coming years due to the ever-increasing levels of data traffic (Arthur D. Little: The evolution of data growth in Europe, 2023). The latest data traffic forecasts project significant increases in data flows as a result of the commoditization of different types of AI applications and services (Omdia: Road to 2030: AI and the Future of Network Services – Traffic Outlook and Implications, 2024).

We welcome the notion that commercial negotiations and agreements could possibly be further facilitated by providing for a specific timeline and by considering the possibility for requests for dispute resolution mechanisms, in case commercial agreements could not be found within a reasonable period. Currently, in many cases there is little cooperative nature related to the interaction between CAPs and ISPs and the absence of a dispute resolution

mechanism for fair negotiations - contributes to increase the imbalance in bargaining power between ISPs and CAPs.

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However, due to the flattening of the internet, the interaction between large CAPs and ISPs has become closer as most large CAPs now have a direct interconnection with ISPs around the world essentially bypassing the open internet. This commercial relationship is characterized by asymmetric bargaining power due to the global size of large CAPs, their strong presence on adjacent markets and asymmetric regulation. We support the view that in a free-market economy commercial agreements should be reached based on commercial negotiations, however, due to the large asymmetries in bargaining power, there is ample evidence that such commercial negotiations are not taking place on equal footing. It is therefore not possible to restore a more balanced relationship without a binding dispute resolution mechanism.

The internet value chain is not balanced, and several factors indicate that large CAPs have superior bargaining power, namely:

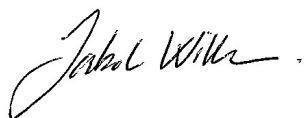
- Private peering is generally subject to charges. The reason why charges for IP data transport services are sometimes not levied is the fact that the amount of traffic in both directions is rather symmetric and respective payments would largely offset each other. This relationship is generally referred to as "settlement-free peering". Network operators are typically not inclined to provide IP data transport services on a settlement-free basis to a network with a significant traffic asymmetry, which is the case between large CAPs and ISPs. IP data transport is a valuable service, which can be charged, as already acknowledged by the Court in Germany in the case Deutsche Telekom against Meta.
- Large CAPs have become indispensable for ISPs, as they provide the content and applications that end users expect from any internet service and that play a key role in their everyday lives due to their strong network effects. The fact that large CAPs in most cases do not pay for this valuable IP data transport service and make use of their dominant position in their core revenue generating markets underlines the imbalance in the ecosystem.
- Large CAPs are less dependent on large ISPs, as they have alternative options (routes) to reach their end users via other networks, such as commercial CDNs, cloud operators, or other carriers. These networks are interconnected to the ISPs' networks through existing peering and transit agreements, which enable the free flow of traffic between different networks in line with the Open Internet Regulation (OIR). Therefore, large CAPs do not need to obtain direct connectivity from a particular ISP to access its customers. A vertically integrated ISP must deliver any traffic that enters its network to end users on a non-discriminatory basis. As a result, even without a direct commercial agreement with a carrier, a CAP is still able to reach its end users via indirect connections and/or CDNs and/or cloud operators.
- Large CAPs have a significant quality lever over ISPs, as they can influence the quality of service and network stability of ISPs by their own routing decisions. Large CAPs, which send particularly large volumes of data, can congest specific interconnection points by spontaneously re-routing a portion of their traffic via indirect connections to the ISP's network, thereby affecting the quality of service for all online services routed via the affected interconnects. This can induce a quality-adjusted price increase for end users on the ISP's network, which would deteriorate the ISP's competitive position if the CAP leaves connections to other ISPs unaffected.

- Large CAPs can impact the quality of services of a network carrier with an integrated ISP business towards its end customers, which is a central dimension of competition at retail level, and evidence shows that in case of any connection problem, end users react negatively towards their ISP and not the CAP. This effect is exacerbated by the fact that certain CAPs display to internet users ISPs ranking according to the quality level of the provision of their own service(s) with respect to CAPs' chosen criterion, effectively steering end-users to their preferred ISP. This is thus a powerful mechanism that can be used in negotiation between large CAPs and ISPs.

To conclude, we believe that the current regulatory asymmetries in the internet value-chain should be urgently corrected. This would not only restore balanced bargaining power between the parties but also incentivize all key players to use network resources efficiently. The amount of data has been increasing rapidly for a number of years. This creates challenges with network capacity and already requires increased energy consumption, a larger climate footprint and large investments in expanding sufficient capacity to handle the large data traffic. Therefore, solutions are needed to reduce data traffic.

In this context, the Danish regulator (SDFI) can facilitate a process between CAPs and ISPs to promote efficient data distribution and the use of best practice with compression technologies, caching, etc.

Best regards



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