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Contribution to BEREC's draft report on the "IP Interconnection ecosystem"

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DE-CIX welcomes the opportunity to provide feedback on the consultation on BEREC's draft report on the IP Interconnection ecosystem.

DE-CIX provides interconnection services and operates several carrier and data center neutral Internet Exchanges in Europe, the Middle East, North America, Asia, and Africa. Internet Exchanges function in supporting efficient and resilient interconnection between Internet networks. They facilitate multilateral internet data exchange (peering), which contributes to lowering costs, more competitive network dynamics, and increasing service quality for connected networks (e.g. reduced and stable latency). This increases interconnection density and route choice, improving the overall resilience of Internet infrastructure and reducing network latency.

In this draft report, BEREC assesses the status of IP interconnection (IP-IC) in Europe. The draft report contributes to the ongoing debate on IP interconnection. The focus of the draft report is the period from early 2017 to autumn 2023 and it also includes an analysis of projected developments from 2023 to 2030.

To determine if there are issues in IP-IC markets that might necessitate regulatory actions, BEREC has examined the underlying issue of relative bargaining power between CAPs and IAS providers. It concluded that various factors influence the bargaining power between providers, including the degree of substitutability between transit and peering, the cost structures of transit and peering, economies of scale, and market and technological developments. The draft report provides insights into the utilization of various IP-IC services. It analyses traffic developments as well as assesses pricing and cost trends showing that competition and technological progress continue to exert downward pressure on these trends. The report identifies that usage of on-net CDNs and bilateral peering accelerated since BEREC's report 2017.

BEREC observes that the IP-IC ecosystem continues to operate under effective market dynamics and the collaborative actions of market participants. Nevertheless, BEREC acknowledges that a few IP-IC disputes have arisen since 2017, with workshops organized by BEREC indicating similar findings. Stakeholders generally did not advocate for regulation but recommended ongoing monitoring and evaluation on a case-by-case basis.

In conclusion, BEREC believes that since its inception, the internet has successfully adapted to both increasing traffic and higher traffic peaks. Based on the findings of this report, BEREC's intends to confirm previous conclusions whereby the developments in the IP-IC ecosystem are an "evolution rather than a revolution".

DE-CIX supports the assessment and conclusion that BEREC outlined in the draft report. The assessment made essentially corresponds to our own evaluation and analysis. We endorse BEREC's observation that the IP-IC ecosystem continues to be characterized by effective market dynamics and the cooperative behavior of market participants. Overall, the entire Internet ecosystem has benefited considerably from this in recent years.

The significant increase in traffic in recent years can mainly be attributed to the growing demand of end users for broadband streaming services and similar applications, both requiring and driving demand for high-capacity broadband connections. It must be taken into account that, contrary to what is frequently assumed, this traffic growth has however not been accompanied by a corresponding increase in network costs, as traffic-related costs only account for a small part of network costs. The majority of network cost does not increase proportionally with traffic volume, but rather proportional to aggregate peak traffic. Therefore, traffic volume is an inappropriate measure of a network's contribution to a shared infrastructure. To elaborate on this, the principal network cost is not caused by data volume but rather by the peak bandwidth required to transport a given amount of data over time. The cost to support a specific peak capacity is determined by line type, interface cards, router and switch models, as well as servers for caching and distribution, irrespective if these are utilized for only a second a day or during significant periods of a day. As the respective cost of these infrastructure elements have also significantly decreased in the same time period, or even moved to a next generation of devices enabling higher bit rates, the cost of servicing the required peak capacity has basically stayed constant.

DE-CIX believes that the competitiveness of the IP interconnection market has continued to develop and has increased in the recent years. In particular, the increasing number of small, medium-sized and regional IXPs reflects the needs of the market and the functioning of competition. Especially against this background, therefore we see no signs of market failure. In the IP interconnection market, several players in the Internet ecosystem interact with each other. Interconnection agreements are based on voluntary negotiations between the interconnecting networks, driven by the mutual need to exchange data. These voluntary agreements between market participants constantly evolve and are adapted in accordance with the development of services and the changing bandwidth requirements. They are overwhelmingly (>99,995%) settlement-free

for both parties, the notable exception being so called ‘transit’ agreements with an intermediary network to reduce the complexity of direct network-to-network interconnects and to enable connectivity to networks with no physical or logical presence in the geographic region. The respective competitive conditions in the inbound and outbound traffic markets influence the adoption of transit, peering, and caching services and their respective commercial pricing.

Even though IP interconnection is not regulated, it is a very efficient and competitive market. We believe that the few sporadic court decisions in recent years between CAPs and IAPs confirm that there is a workable mechanism for resolving potential disputes and that there is no need to expose this market to the risk of ill-conceived regulation. Above all, it should be noted that these disputes and discussions are focused on the very large IAPs and CAPs and only affect a handful of companies on each side. It would therefore be wrong to generalize these individual cases and apply them to the entire IP-IC market, which affects an entire ecosystem of several thousand companies. We share BEREC's observation that only a few IP-IC disputes have arisen since 2017 and this fact must also be taken into account here. The workshops organized by BEREC have also indicated similar results. Stakeholders were generally not in favor of regulation and instead recommended ongoing monitoring and assessment on a case-by-case basis.

DE-CIX has recognized with astonishment and concern the recent revival of the debate on whether content service providers should contribute to the network costs of telecommunications network operators. The current discussion does not contain any fundamentally new proposals, and it should be noted that similar proposals have met with widespread criticism in the past. DE-CIX is very concerned about the foreseeable negative systemic impacts on the IP interconnection market implied by the potential departure from the current regulatory paradigm and possible regulatory intervention. Given the recognized competitive situation of the IP interconnection market any policy intervention aiming at regulating the interconnection market or interconnection agreements and/or imposing network fees should be in principle avoided. Furthermore, we see no evidence of a market failure that would justify regulatory intervention. Interventions risk fragmenting the global Internet, distorting competition and creating disincentives that lead to more expensive and inefficient infrastructure with poorer quality of service and higher costs. It should also be noted that IP interconnection can be used to discriminate in an anticompetitive manner with respect to the origin, destination or content of the information transmitted. The associated paradigm shift may have long-term economic consequences and counter net neutrality.

DE-CIX also supports the assessment and conclusion set out by BEREC in the draft report from this aspect. We also agree with BEREC's finding that the IP-IC ecosystem continues to be characterized by effective market dynamics and

cooperative behaviour of market participants. We believe that the BEREC report will be seen as a valuable contribution to the discussion and ongoing debate on IP interconnection and possible regulatory intervention.

In addition, we would also like to draw attention to a study that confirms and further substantiates BEREC's findings and assumptions. The study covers the recent developments in the IP Interconnection market and the observed market trends. In addition, the extent of traffic-sensitive network costs is examined and the question of how the network costs of the Internet access providers respond to the market development is investigated. The study is available here (https://www.eco.de/download/209884/).

About
DE-CIX Founded in 1995, DE-CIX Group AG today represents the world's leading IP interconnection platform. More than 3200 networks are connected to 55 exchanges in 27 countries operated by DE-CIX.
In the EU, over 20 exchanges in 12 EU member countries also include the world's leading Internet Exchange, DE-CIX Frankfurt, with more than 1100 connected networks, an aggregate of 72 Terabits of connected capacity and over 17 Terabits of peak traffic.