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European Commission
DGCONNECT

Our ref: 24-004

Netnod welcomes the opportunity to provide feedback on the consultation launched on 24 February 2024 on the European Commission's White Paper "How to Master Europe's Digital Infrastructure Needs?" (hereinafter "WP").

Netnod has the following comments:

- The leitmotif of the WP concerns further convergence and vertical integration of networks in the EU
  This is contrary to the Internet model and contrary to the findings of BEREC
- The WP confuses access technologies, such as 5G, copper and optofibre, with backbone infrastructure, which is only optofibre.
  The commission needs to take account of the fact that 5G and copper are access technologies. They do not provide end-to-end connectivity, and only access to backbone networks.
- The WP does not in any meaningful detail discuss the Internet
  The commission should consider that digital and electronic communication today is based on the Internet architecture using an Internet infrastructure

Please see the attached paper for further motivations and elaborations.

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Attachment 1 - Detailed comments

1. Introduction

Netnod is the largest provider of IX-services in the Nordics. IXes perform a crucial function in supporting efficient and resilient interconnection between networks facilitating multilateral Internet traffic exchange (peering). IXes enable lower costs, more competitive network dynamics, and increasing service quality for the connected networks.

This in turn further increases interconnection density and route choice, thereby improving the overall resilience of Internet infrastructure and reducing network latency. In a world where societal functions, including hospitals, PDDR-functions, civil contingencies management, and so forth, rely on the Internet, the resilience of the Internet is of the utmost importance. Organisations providing IX-services are recognised as "Operators of Essential Services" for Digital Infrastructure in the Network and Information Systems Directive (2016/1148) and are be deemed "*Essential Entities*" under NIS2.

Netnod is also a member of Euro-IX, the association of European Internet Exchange Points. The members of Euro-IX represent the majority of traffic exchanged at IXs, networks served as well as overall network capacity.

2. Convergence and integration

The WP is seemingly based on the assumption that there is ongoing convergence, partly based on cloudification and virtualization. According to the Commission, this evolution would drive the whole sector through disruptive changes and would justify a regulatory overhaul. Along the same lines, the connectivity markets are seen as facing transformative technological developments, the result of which will be both a converged supply (i.e. network and service provision) as well as a converged demand by end-users. While observing this alleged progressing convergence between electronic communications networks and cloud, the Commission observes that "*yesterday's separation between "**traditional**" electronic communications networks/service providers and cloud or other digital service providers will tomorrow be superseded by a complex converged ecosystem*". The Commission then proposes Scenario 4 focusing on a so-called "*regulatory level playing field*" amongst telecom and cloud providers.

Netnod respectfully notes that cloudification and virtualization technologies are not "game changers". In particular, Netnod agrees with the following statements of BEREC:

> The EECC takes into consideration the functionality provided by the services independently of the underlying technology used. Such general approach for the definition of the services is applied as well on cloud-based networks, in line with the abovementioned recital 14 EECC. Therefore, in general terms, the substitution of physical elements by software elements would not impact the definitions and, thus, the scope of application of the EECC.
>
> *BEREC, BoR (24) 70*

> Some cloud services fall also under the definition of article 2 of the EECC and, thus, are at the same time ECN/S. Consequently, these particular services need to comply with the electronic communications' regulatory framework. Some examples include ... Communications as a Service - CaaS (real-time interaction and collaboration); Network as a Service – NaaS - (transport connectivity and related network capabilities); Email as a Service - EaaS (email service including related support services such as storing, receiving, transmitting, backing up and restoring email).
>
> *BEREC, BoR (24) 70*

As such, neither cloudification nor virtualization requires a review of the scope of the EECC.

In this respect, Netnod believes the conclusions reached by BEREC are consistent with Netnod's view:

> In networks based on SDN and NFV ["cloudification and virtualization"], passive network infrastructure is used in the same way as in the networks of today. Therefore, SDN and NFV do not have any impact on the access to passive network infrastructure
>
> *BEREC, BoR (16) 97*

It should, however, be noted that 5G networks are access networks in an interconnected world, that is they connect end-users, such as individuals, companies and hospitals to the Internet and phone services. These networks rely on the same optofibre infrastructure as the Internet. A move towards SDN and 5G does not in any way diminish the need for fibre, nor data centres or interconnection at IXs.

As a consequence, Netnod objects and asks for a reconsideration of Scenario 4. In particular, policy makers should be focused on existing legislation enacted to deal with the competition problems encountered with digital platforms of which cloud is one important part among many.

3. Interconnection and competitiveness

Interestingly, the WP acknowledges that the IP interconnection market is competitive, while reiterating that regulatory intervention may be needed with respect to dispute resolution between providers of content and Internet access providers. These two statements clearly contradict each other.

Without any explicit mention, this argument echoes the well-known "fair share" regulatory intervention which has been extensively discussed (and rebutted) in recent times. Whether or not the WP intends to resuscitate the "fair share" concept, we believe that a comprehensive impact assessment, taking into account all factors in a fair and transparent manner, is an essential prerequisite for the introduction of such a framework.

This should also consider that market developments differ greatly between individual European countries with regard to key factors such as interconnection paths, competition between Internet access providers and communications operator models, national investment models for optofibre infrastructure and deployment, and resulting business models of involved actors. It is important not to merely look at the impact on network investment, but to also consider the impact on content and application providers, as the indirect impact on network demand.

In light of the above, Netnod respectfully observes that the fair share model may risk being detrimental to the correct functioning of the Internet connectivity and peering market and distort competition therein. Citizens' experience in basic business operations, sharing data, accessing cloud services and developing research projects will be negatively impacted.

Netnod remains neutral on the question of whether regulatory adjustments are justified in the context of subsidising network investment and deployment. We do, however, believe that policy-makers should give paramount priority to protecting the integrity of critical infrastructure: no policy changes aimed at improving investment returns should be considered without complete certainty that they are safe in terms of the Union's and the public's vital interests. The Internet and its users are a complex ecosystem, and it is policy-makers who are ultimately responsible for systemic effects resulting from policy choices.

Netnod believes that if subsidy is given for passive infrastructure like optofibre, access to that infrastructure must be made available to the market on non-discriminatory terms.

The current interconnection and peering market has a high proportion of peering relationships which are concluded entirely "settlement free". This has enabled the emergence of a broad variety of IXs serving local markets, from very large IXs in major regional interconnection centres to much smaller IXs focussed on a single nation or metropolitan area.

Given such an efficient starting point, it appears inevitable that moving to a potential administrative determination with a regulated price (mandatory litigation) would add considerable costs for concluding interconnection agreements.

Reducing networks' propensity to peer could only lead to an aggregate reduction in the number of points of interconnection between access and content networks. This would make Internet connectivity more fragile and less resilient against local equipment failures, with the potential to increase both the frequency and severity of large-scale technical outages, including outages that directly impact end-users and critical services.

Such a systemic change in the aggregate architecture of network interconnection could never be compensated by improvements in the levels of reliability of individual networks, no matter how strict the regulatory requirements for individual actors.

The significant growth of IXs across Europe in response to interconnection demand from network operators constitutes a major success for the European Union's world-leading regulatory approach.

As a consequence, Netnod objects and asks for a reconsideration of Scenario 4.

4. The Internet is communications

In our connected world the Internet serves as the primary and *de facto* infrastructure for connectivity. The WP seems to ignore this, and seems to discuss all networks as comparable.

Most digital services depend upon the network of networks commonly referred to as the Internet. It is not simply any network, and EU policy needs to support specifically the Internet as the carrier of most digital services.

It is worrying that the WP discusses the business models of network operators, and sees the complaints of legacy and incumbent providers as issues, rather than embracing the ongoing paradigm shift where legacy telecommunications business models are being replaced by digital and Internet based modern ones where the Internet is the carrier of communications.

This shift represents a layered architectural model for digitization and connectivity, not a vertical model, such as the architecture proposed with New IP[1].

Netnod urges reconsideration of the position of the Internet in the EU overarching policy goals for connectivity.

5. Summary

Electronic communications today is *de facto* the Internet.

Overall, Netnod is worried that the commission and its investigators seem to be pushing a political agenda rather than investigating the necessary models for mastering the communications infrastructure requirement for the coming decades.

[1] The name for "New IP" changes often, and has through the years been called "FVCN", "Future Vertical Communications Networks", and similar.