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RIPE NCC contribution to the public consultation on the draft BEREC report on Member States' best practices to support the defining of adequate broadband internet access service

The RIPE NCC appreciates the opportunity to respond to BEREC's draft report on Member States' best practices to support the defining of adequate broadband Internet access service and greatly supports the open and collaborative nature of the consultation in allowing all stakeholders' perspectives to be heard.

As one of the world's five Regional Internet Registries, the RIPE NCC's mandate focuses on a specific aspect of the Internet's operation; namely, the administration of Internet number resources (IP addresses and Autonomous Systems). As such, we haven't responded to the consultation's questions in full, as several lie outside that mandate.

However, we believe a crucial component of defining adequate broadband Internet access service that was not highlighted in the draft report is that of IPv6 and the need for widespread IPv6 adoption in order to support the future growth of the Internet.

New users continue to connect to the Internet each day in every Member State, while new and emerging technologies – including 5G and the Internet of Things – place ever greater demands on the Internet's capacity. Meanwhile, the available pools of unused IPv4 address space held by the Regional Internet Registries are quickly running out.

Without transitioning to IPv6, access providers must either turn to technological workarounds, such as network address translation (NAT), or the secondary IPv4 market. However, neither of these provide a sustainable solution capable of meeting the growing demands on broadband access.

Even setting aside the issue of new and emerging technologies, it will be increasingly expensive and difficult – and eventually impossible – to meet the demands of a growing online population within the different Member States without moving to IPv6. To give an example, the RIPE NCC recently published a Country Report focusing on Germany's Internet landscape that estimated that the country will require an additional 14.2 million IPv4 addresses to reach a rate of 100% mobile data subscriptions. Looking at trends in other advanced economies, it's likely that market demand in many Member States could eventually exceed one device per person. To reach a saturation point of 1.25 devices per person, for example, Germany would require an additional 34.9 million addresses for mobile subscriptions alone.[1] Many other Member States face a similar challenge.

The only way for the Internet to be able to support an increasingly connected population and the growing digitalisation of our societies and economies is to ensure

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[1] https://labs.ripe.net/country-reports/germany-country-report/view

that pubic policies are developed to support and encourage the rapid adoption of IPv6 across sectors and geographical regions.

While the practical work of widespread IPv6 adoption will fall to the network operators, there is an important role for governments and regulators to stimulate development and remove regulatory barriers that hinder the widespread adoption of IPv6 and, therefore, widespread access to broadband Internet service.

Many governments and regulators have started to proactively encourage the timely and efficient adoption of IPv6 to ensure they remain competitive as new technologies come online, and the RIPE NCC strongly supports emerging best practices in this arena, which focus on the need to engage stakeholders across all sectors.

With regards to question four and the issue of quality of service, the RIPE NCC would like to suggest that this concept should extend beyond simple metrics such as packet loss rates, and should instead encompass a more holistic understanding of the end user's experience.

For example, innovation could be significantly hampered by extending the use of IPv4 addresses through NAT, which places constraints on the way in which connections are established and their lifetime, thereby imposing technological restraints on how those Internet connections can be used. Indeed, the gaming industry has raised issues about the negative way that NAT limits the online experience,[2] while banks struggle with the constraints that NAT places on efficient fraud detection. [3]

The concept of quality of service can also be extended to encompass the question of acceptable downtime. Acceptable thresholds will depend on the nature of the connection, of course, with medical institutions that rely on life-saving connected devices taking precedence over many other less essential uses. However, as more and more technologies become connected, we're likely to see more and more of those connections becoming "essential." Consider, for example, smart home technologies that require connectivity to manage heating and ventilation systems.

The question of how to define adequate Internet broadband access service depends on many factors, as the draft report clearly indicates, and is indeed a crucial one in ensuring that all members of society can benefit from the vast potential that exists in the online world, from government e-services to social networking to e-commerce to smart cities.

However, in order for that potential to be realized, it's crucial that the underlying infrastructure responsible for managing all of those connections – the Internet itself – is healthy, robust and capable of evolving and expanding to meet the growing demands that an increasingly connected society places on it. The RIPE NCC encourages BEREC to take these considerations into account in determining best practices to define adequate Internet broadband access service.

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[2] https://www.intgovforum.org/multilingual/content/igf-2018-ws-306-game-over-ipv4-the-need-of-ipv6-for-the-future-of-games

[3] https://ripe74.ripe.net/wp-content/uploads/presentations/3-That-is-why-Rabobank-has-IPv6.pdf