

# Having your cake and eating it: network slicing and net neutrality rules in Europe

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Network slicing is a form of network virtualisation in which different services with different needs can be provided with different performance characteristics (such as latency, priority, or throughput) on a single physical network. These services might include voice, augmented reality, massive IoT, vehicle-to-vehicle, and emergency service communications. It is an important feature of proposed 5G mobile networks.

European net neutrality has been established by a Regulation<sup>1</sup> that allows operators providing Internet access services to offer “*services other than internet access services which are optimised for specific content, applications or services, or a combination thereof, where the optimisation is necessary in order to meet requirements of the content, applications or services for a specific level of quality*” – otherwise known in the literature as ‘specialised services’. In this context, a network slice would be a specialised service.

Under the Regulation, national regulatory authorities (NRAs) must verify that the optimisation within the specialised service is “objectively necessary”. For example, the NRA may require operators to show that the required level of quality cannot be assured over the Internet access service. As these networks are new, and largely empty, we expect that any such demonstration will need to be a theoretical or model-based approach.

This process will have costs, and will slow down the process of deploying a specific network slice, hampering innovation in this area; therefore, a simplified approvals system may be a good idea for low-risk cases. This process may also need to be repeated as the general level of quality of Internet access services increases, which may simply increase the administrative burden. Indeed, verifying that the service is objectively necessary is largely a wasted effort because if the Internet access service is already good enough, there will be no demand for the slice.

The Regulation also states that “*Such services shall not be usable or offered as a replacement for internet access services, and shall not be to the detriment of the availability or general quality of internet access services for end-users.*” This raises two issues.

- There is a potential difficulty relating to whether the slice can be used as a replacement for Internet access services: many of these ‘slice-based’ services will involve sending and receiving traffic from IP networks, most of which will be connected to the Internet in some way. Some traffic may therefore use the slice-based service to reach the Internet (and, vice versa, some traffic from the Internet may reach the device of the end user of the slice). Thankfully, in its guidelines for the NRAs that will be responsible for monitoring

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<sup>1</sup> Regulation (EU) 2015/2120 of the European Parliament and of the Council of 25 November 2015, available at: <https://ec.europa.eu/digital-single-market/en/news/regulation-concerning-open-internet-access-and-amending-directive-universal-service-and-users>. Unlike a Directive, which must be transposed into national law, a Regulation is EU law and applies directly in Member States.

operators' compliance with the Regulation, BEREC recognises that VPNs can be valid specialised services, which implies that slices with similar characteristics to VPNs would also be acceptable.<sup>2</sup>

- The notion of “detriment” to the general quality of Internet access services is complex. Regulators will be concerned with whether the Internet access service offered is of sufficient quality.
  - For example, infrequent and/or localised loss of quality may occur as a result of the specialised service (for instance, during a major fire, emergency service communications may use a significant amount of the local capacity, but this should be acceptable). BEREC notes that *“In mobile networks, the general quality of internet access services for end-users should not be deemed to incur a detriment where the aggregate negative impact of services other than internet access services is unavoidable, minimal and limited to a short duration”*.
  - It would cause perverse outcomes (for example, encouraging the throttling of the performance of newly deployed networks) to require that the actual quality of Internet access offered was never to decrease.

In summary: to implement network slicing in the European Union, operators will need to work closely with NRAs to find an efficient way to agree that the enhanced quality of service (QoS) is necessary, to monitor the performance of Internet access services, and to understand whether slices cause any detrimental impact on that performance.

If you are interested in discussing these issues, please contact [James Allen](#) or [Caroline Gabriel](#).

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<sup>2</sup> For more information, see BEREC's *Guidelines on the Implementation by National Regulators of European Net Neutrality Rules*, (BOR (16) 127, August 2016). Available at: [http://berec.europa.eu/eng/document\\_register/subject\\_matter/berec/regulatory\\_best\\_practices/guidelines/6160-berec-guidelines-on-the-implementation-by-national-regulators-of-european-net-neutrality-rules](http://berec.europa.eu/eng/document_register/subject_matter/berec/regulatory_best_practices/guidelines/6160-berec-guidelines-on-the-implementation-by-national-regulators-of-european-net-neutrality-rules).