Network neutrality

The demarcation line described in *Extract from "Internet as a Multiple Graph Structure: The Role of the Transport Layer" by Jan A. Audestad* is the basis for the notion called *network neutrality* – or as cartoonist Peter Steiner has put it: "on the internet, nobody knows you're a dog". The applications residing above the demarcation line are egalitarian in the meaning that everybody's information packets are treated in the same way by the IP network. This allows business models where everyone may create content and distribute it without being treated differently depending upon the type of content being distributed and what the provider is: a broadcast company or an entrepreneur working out of the garage. However, as is explained below, this causes problems for the network providers because old business model based on volume and time charging may no longer be feasible.

Network neutrality encompasses the following four freedoms (of course, subject to legal restrictions) for the users of the internet:

- Freedom to access content on the network; in other words, the access to the information can only be regulated by the owner of the information and not by an ISP or another third party not operating on behalf of the owner of the information.
- Freedom to run applications of any kind alone or together with other users.
- Freedom to attach any hardware to the network (routers, servers, PCs etc.) that satisfies the internet specifications.
- Freedom to obtain information about all services and electronic goods available on the network.

Network neutrality is, of course, subject to political debate. The supporters of network neutrality claim that the principle is in favour of competitive market evolution since many applications and content provides can operate on the same arena and thus increase the total national revenues generated by the network. Network neutrality also favours innovation, experimentation, and provision of services that are too small and too special to be considered seriously by the large application service providers (ASP).

The opponents claim that network neutrality is bad for the network and the national economy since the revenues from network operation will become too small to support the future evolution of the network. Therefore, it is claimed that the price of the access should depend on the quality of service (QoS) offered by the ISP. Such QoS parameters may include bandwidth, secure delivery of data, real-time operation, privacy and integrity of data, and priority. This includes both fixed access charges and variable charges depending on volume. The supporters of network neutrality claim that the result of this strategy may be that it becomes too expensive for small innovators to do trials with new services and applications, thus reducing the overall innovation in society. Some of the largest successes on the internet were built by single persons or very small groups with little or no money to invest. Tim Bernes-Lee developed the Web software almost alone; Opera, Skype, Facebook and Utube were developed by small groups.

The supporters of network neutrality also claim that this use of QoS will make the network no longer neutral but favour those who will pay more for the access and thus introduce an unfair competition arena. The opponents claim that the ISP should be entitled to recover their investments by charging for the actual use of network resources.

It is likely that this debate will continue for a long time. There are strong commercial interests among both the supporters and the opponents of network neutrality.