

Getting Virtualization into the Wild

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Virtualization is often referred to as one of the enabling key technologies for the Future Internet. It allows coexistence of different network architectures, thus making it easy to roll out new architectures in parallel to other existing networks. It offers a more flexible way for shared resource utilization, and thereby enables the emergence of new business models, like virtual network providers and trading of surplus virtual resources.

The technical talk will tackle some of the virtualization concepts being investigated within the 4WARD project, some experiences with small-scale testbed prototypes and plans for the upcoming OneLab2 project on how to bring in "Virtualization below IP" into the well-known large-scale testbed PlanetLab in order to enable the so-called "Routing in a slice". The 4WARD project is aiming at developing a comprehensive architecture and design for the Future Internet. One of its workpackages (WP3 Vnet) is particularly developing an approach and related technical concepts for using network virtualisation as the basis for a flexible, evolvable, and innovation-friendly network architecture.

In this context a small-scale virtualization testbed has been developed in order to support the conceptual work with experimental experiences. The testbed comprises virtual routers, virtual wireless access points and virtual links that can be created on demand. These virtual resources can be used independently for different networks (IPv4, IPv6, PubSub, ...).

Finally the concepts developed in 4WARD, as soon as they have been implemented and tested in small-scale testbeds, shall be rolled out and evaluated on a large-scale testbed like PlanetLab. In the OneLab2 project, which aims at extending and deepening the European part of PlanetLab, the benefits of virtualization shall be made available to a broad community and enable them to test their new protocols and services not only based on IP but on any other protocol (Layer 2+) and thereby enabling new routing concepts for new network protocols.