

Multi Provider Access Networks

Purposes and achievements of MUSE

European IST FP6 integrated project (2004-2007)

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In serving the growth of the number of subscribers and the magnitude of access services the leading role of the Ethernet-based technologies in the access networks is indisputable nowadays. However, new and unified solutions are required in the range of services, the quality of services and the reliability of networks to keep the costs of investment (CAPEX) and operation (OPEX) low.

In 2003 the European Project MUSE – Multi Service Access Everywhere (<http://www.ist-muse.org/>) – aimed at developing such solutions which are able to serve tens of thousands of users under favorable, low costs. To carry out this task, several European telecommunication institutes (e.g. Alcatel-Lucent, Ericsson, Siemens, Deutsche Telekom, British Telecom, France Telecom, Poland Telecom and other research institutes) joined to perform such research and technical deployments and developments which are able to expand the services of network (such as quality, reliability, security, etc.) by using primarily the already existing elements and to improve the ability of network management by utilizing the already existing tools and solutions. In design of the probable and feasible solutions a great deal of architectural aspects and service provider roles had to be taken into account.

These are depicted in *the figure below*.

The Department of Telecommunications and Media Informatics (<http://www.tmit.bme.hu/>) of Budapest University of Technology and Economics took its share of this work, certainly in the topics closely related to applied and basic research.

The participation of the department focused essentially on the performance analysis and network management of Ethernet networks however, we have proposed research results e.g. of addressing and switching schemes of IPv6.

Our main achievements were attained in the traffic optimization of the Ethernet access networks which takes criteria into account such as quality of services and reliability of networks, and in modeling of DSL packet-level scheduling, as well as in the performance analysis of spanning-tree protocol process. From the first mentioned subject an entire thesis has been materialized, but the other subjects are also taken place in other dissertations.

Besides the research subjects, the demonstration of multi layer topology discovery methods of heterogeneous access networks is also important to mention, which traveled through Europe in the last two years (2006-2007) of the project. The demo was shown in open and exclusive presentations in Vienna, Stockholm and Antwerp.

Beyond the research goals – if we would like to evaluate the results of the project – it is also an important aspect that the European participants, including ourselves, were able to receive a good picture about the future goals of their partners and competitors, so the common shaping of the determinant guidelines and policies in telecommunications might be possible in the near future.

To common satisfaction, we took our part from the work in proportion to our role.

MUSE access architecture

