Multi-service access network GSB architecture (Task Force 1)

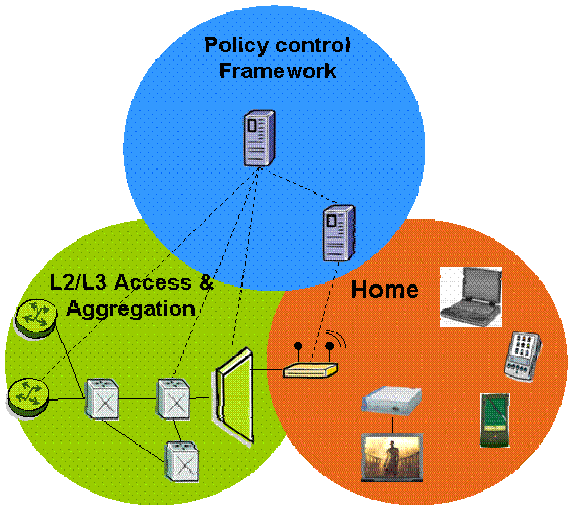
A multi-service access network GSB architecture for improved delivery of multimedia services and preparation for convergence with mobile services

Key Features

- An architecture supporting a wide variety of business roles from the customer to the content provider that can be combined in a flexible way to reflect real life business entities
- Ethernet based network with IP capabilities for a QoS enabled architecture
- Support of residential and business customers with QoS differentiation and improved security
- Integration of added-value service enablers in order to improve service delivery to the customer
- Migration from PPP (Point-to-Point Protocol) based to DHCP (Dynamic Host Configuration Protocol) based architecture with definition of AAA (Authentication, Authorisation, Accounting) mechanisms allowing the support of both host and nomadic users
- Definition of an architecture providing allowing fix-mobile network convergence (FMC) for nomadic services and session continuity
- Free access of deliverables via www.ist-muse.org

MUSE defined a multi-service access architecture that provides connectivity for today's triple play services, as well as for other future broadband services. The defined network architecture is branded as "GSB" (Global System for Broadband) and allows for interoperability between access/edge network elements and CPE (Customer Premises Equipment) across different network layers.

During MUSE, the vision of a standard multi-service access architecture also started to live outside of MUSE in standardisation bodies, such as DSL Forum for home and access networks, ETSI TISPAN for policy control framework, and HGI for home network. MUSE therefore decided to position itself as a think-tank and present the European view on multi-service access architecture in international standardisation bodies. MUSE has been very influential in successfully promoting its technical recommendations in technical reports standards bodies. It is expected that standardisation of concepts studied in MUSE will continue beyond the end of the project.



The final deliverable (reference DTF1.9) contains a reference document with a summary of the architecture and the main recommendations. The reference document is accompanied by a set of white papers that provide a more detailed description about fundamental aspects of the architecture such as business models, AAA (Authentication, Authorisation, Accounting), QoS (Quality of Service) strategy, and FMC (Fixed Mobile Convergence) capabilities in a fixed access architecture. The summary document also makes reference to more information in the many other deliverables released by MUSE and available via the website.

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Specification of Multi-service access and aggregation network architecture

Business role model

MUSE has developed a business model that allows for describing real life actors by a combination of different generic roles. In this context, MUSE has analysed the business responsibilities and technical responsibilities for each role. The model is a tool to describe the network architectural requirements when unbundling the value chain.

AAA

Authentication is a cornerstone in the control of resource consumption, delivery of guaranteed services, and compliance to regulatory requirements on traceability and legal intercept. The recommended solution for AAA overcomes the shortcomings of today's PPP approaches and allows for nomadic services

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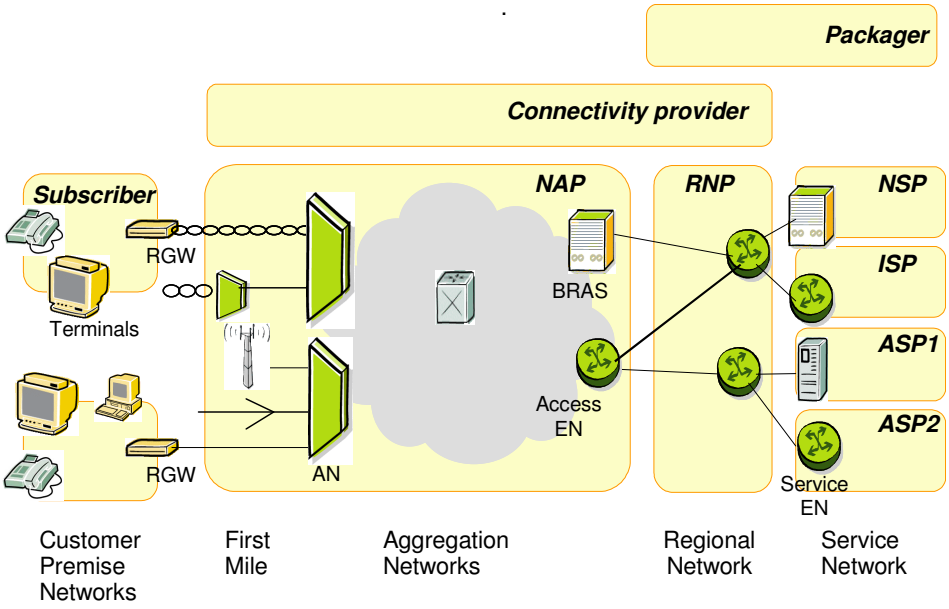

Service enablers

MUSE investigated how integration of higher layer service enablers (above the link and network layer) in access and edge nodes can help to enhance the efficiency of the network deployment or improve the QoE (Quality of Experience) of multimedia services.

FMC

GSB model describes an FMC architecture that supports nomadic services, mobility with session continuity, and roaming. Understanding the implications of these three features and providing solutions for them in fixed networks has turned out to be a formidable task by itself.

GSB data plane models

MUSE has developed two network models as part of the GSB architecture, which represent the evolution from the current ATM-based networks. Both rely on Ethernet as the link layer and their use is closely connected to business roles of network operators and local constraints. The Ethernet network model relies on Ethernet practices to achieve connectivity in the network with additional mechanisms in order to ensure security, multicasting and configuration. The IP network model adds some IP awareness in the access nodes and allows for an even better security, QoS handling, and optimised routing of local traffic.

QoS

MUSE advocates a pragmatic solution which is based on one hand on appropriate traffic engineering coupled with traffic classes differentiation and on the other hand on CAC (Call Admission Control) for dedicated applications or those services or network segments in which congestion is expected. Distributed CAC is recommended when a fast response response is required, while centralised CAC gives the most optimal usage of resources.

Residential and SME support

The MUSE architecture was mainly defined for residential subscribers. Network convergence between residential and business customers will however significantly reduce investment and operational costs of operators. MUSE has therefore also considered SME type of services. The project focused on three topics (security, VoIP and L2VPN), which were considered as particularly important in a GSB architecture.

MUSE is a European consortium of vendors, operators and universities, active from January 2004-March 2008. The aim is cooperation on research and development of future, low cost, multi-service access networks.

MUSE is partly funded from the FP6 programme of the European Commission and the many network architecture deliverables are an important part of the technical work.

More information on MUSE and on obtaining the deliverables can be found on the MUSE website:

www.ist-muse.eu

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