

Video distribution over MPLS networks supporting heterogeneous format environments

VIDIOS will optimise the quality of video services transmitted over a state-of-the-art Internet infrastructure to a DSL broadband access network. The project aims at integrating bandwidth-on-demand and video-service error protection into video distribution, contribution and conferencing services.

Main focus

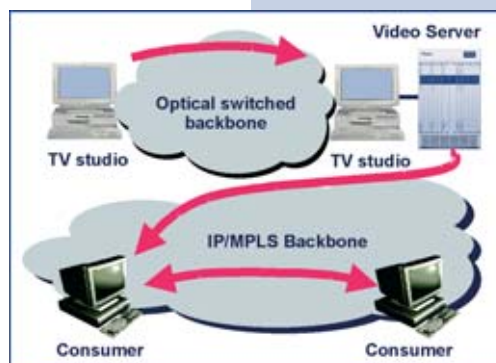
As a first step, VIDIOS will design and deploy a video-streaming architecture suitable for state-of-the-art DSL broadband access. Most European Internet backbone networks are based on Multi Protocol Label Switching (MPLS) technology and offer QoS according to IETF's DiffServ architecture. The quick and affordable roll-out of a simple video streaming service as designed by VIDIOS can only be implemented if the existing network architecture is applied unchanged wherever possible. To adjust for potential network shortcomings, VIDIOS will optimise the video-distribution architecture, video coding, Internet and Ethernet / ATM broadband access QoS features. Charging will be based on content access and, hence, will be decoupled from the communication service. Digital Rights Management features will be investigated to ensure copyright protection and access control.

In a second step, VIDIOS will develop more demanding advanced video-communication and media-chain products: personal video conferencing and video contribution. Both will be enhanced by bandwidth on demand services and video streaming integrated with, "on-demand" services by signalling and QoS for bandwidth guarantees. Architecture interfaces and video-codecs obviously are strictly different for video-conferencing, distribution and contribution. Developing advanced video services at the lowest possible cost is the

fundamental paradigm of VIDIOS. VIDIOS limits new interfaces and QoS signalling to local networks and backbone edge routers. Measurement based admission control minimises changes within the backbone by introducing a new QoS architecture that doesn't require backbone signalling support. Especially personal video conferencing will bring about new charging and security features. Efforts required to produce a value added service access justify extra charges.



TV stream in the VIDIOS environment



VIDIOS test laboratory

Settling of bills and protection against service misuse will require authentication. Users and network providers will prefer the consumption of "expensive" resources on an on-demand basis rather than a static configuration. Signalling, access- and admission-control features are an integral part of on-demand end-to-end QoS.



VIDIOS

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Partners

University of Murcia, Spain

Quix, Israel

Satec, Spain

Scopus, Israel

Telefónica I+D, Spain

T-Systems, Germany (until December 2005)

University of Applied Sciences Mannheim, Germany (until December 2005)

University of Göttingen, Germany (until December 2005)

Co-ordinator

Antonio F. Gomez Skarmeta

University of Murcia, Spain

E-mail: Skarmeta@dif.um.es

Project web site

www.celtic-initiative.org/projects/vidios

Approach

The VIDIOS project is structured into six work packages and the tasks "Dissemination" and "Project management". The work packages are:

1. Video Distribution Architecture

The video distribution architecture optimizes an IP/MPLS network for video distribution supported by statically assigned network quality of service. A general design aim is to minimize additional investment into existing networking platforms.

2. Codec Adaptation

Architecture design of video distribution over IP/MPLS networks - optimization of video service components by error concealment and error protection adjusted for transmission over IP/MPLS networks.

3. VoD Application and Trial

As a first key application, VIDIOS will design and deploy a video-on-demand (VoD) environment over MPLS with users having state-of-the-art DSL broadband accesses. The VIDIOS VoD service demonstrates the extension of IP network capabilities for "triple play".

4. Bandwidth on Demand (BoD)

Architecture

WP4 specifies a bandwidth-on-demand service based on end-system- and measurement-based admission control in the core network, combined with signaled QoS resource administration on the access line.

5. Video Contribution over (G)MPLS

The MPLS and GMPLS based video contribution architecture models consist of QoS models, fast rerouting models, QoS monitoring and a user-service management including the definition of a Network to User Interface (UNI).

6. Bandwidth on Demand (BoD)

applications and trial

WP6 validates the infrastructure, technologies, services, and applications analyzed, designed and/or deployed within the project via a trial network.

Main results

The VIDIOS consortium will deliver an integrated communication system solution. VIDIOS unites the most important players of video communication and distribution within a single project, which designs trials and validates all elements of the "media chain" of a video service produced over an IP/MPLS network. Adding more value to broadband access technology by enabling advanced video services, VIDIOS will increase the attractiveness of broadband accesses themselves. VIDIOS ensures convergence by supporting DSL broadband access types, secure service access and content management, application of open standards and interfaces. The full system and services are developed, integrated and tested in a network environment. VIDIOS results will help to keep the European ICT sector at the forefront of global development.

Impact

Internet Service Providers, IP backbone carriers and multimedia vendors recognize the impact and chances resulting from media content creation, transport and distribution over Internet backbones and broadband access networks. VIDIOS develops, integrates and tests all parts of the "media chain" over DSL broadband Internet access networks and Multi Protocol Label Switching (MPLS) backbones. By applying application-oriented state-of-the-art technology, VIDIOS innovations will create opportunities for maximizing the investment returns of the telecommunication industry. Widespread access to reliable video services is an important precondition, ensuring economic success of multimedia production and distribution across Internet backbones. The architecture designed by VIDIOS applies open interfaces and standards supporting the required inter-workings and interoperation wherever they are available.

About CELTIC

CELTIC is a European research and development programme designed to strengthen Europe's competitiveness in telecommunications through short and medium term collaborative R&D projects. CELTIC is the only European R&D programme fully dedicated to end-to-end telecommunication solutions.

Timeframe: 5 years, from 2004 to 2008

Cluster budget: in the range of 1 billion euro, shared between governments and private participants

Participants: small, medium and large companies from the telecommunications industry, universities, research institutes, and local authorities from 33 countries

CELTIC Office

c/o Eurescom,
Schloss-Wolfsbrunnenweg 35,
69118 Heidelberg, Germany
Phone: +49 6221 989 372, e-mail: office@celtic-initiative.org
www.celtic-initiative.org

