

A Appendix European IP Telephony Projects

A. 1 Evolute

<http://evolute.intranet.gr>

The Evolute project addresses the issue of supporting multimedia services in general and SIP-based Voice over IP service in particular in heterogeneous networking environments. The focus here is on supporting secure access to such services regardless of the used access authentication technology. In this context, a SIP platform was enhanced with acAAA functionalities as well as gateways to SMS and Jabber and user credentials saved in SIM cards were used for authentication of the user. The project finished in 01.2004.

A. 2 6NET

<http://www.6net.org>

6NET is a three-year European project to demonstrate that continued growth of the Internet can be met using new IPv6 technology. It also aims to help European research and industry play a leading role in defining and developing the next generation of networking technologies. In the context of Voice over IP, the 6NET partners are deploying and experimenting with Voice over IP solutions, both SIP and H.323, using IPv6. This work involves porting of open source Voice over IP solutions such as the SIP Express Router to IPv6, provisioning of components to allow transparent Voice over IP communication between IPv4 and IPv6 networks and finally testing and deploying SIP and H.323 IPv6 capable components over a European wide IPv6 network. The project will be finished in 12.2004.

A. 3 Eurescom P1111 (Next-Gen open Service Solutions over IP (N-GOSSIP))

<http://www.eurescom.de/public/projects/P1100-series/P1111/default.asp>

This project was funded by various telecommunication companies in Europe including Deutsche Telecom, Telecom Italia, Elisa Communication, OTE and France Telecom. The major goal of the project was to investigate the major problems hindering a vast and fast deployment of SIP such as QoS and NAT traversal, provisioning of intelligent services over SIP and demonstration of SIP-based services. The project finished in 2001.

A. 4 HITEC

The project HITEC (H.323-based IP Telephony Control) have dealt with the planning, the implementation and the prototyping of 'PBX VoIP', a managing system for the packet voice communication into an administratively, homogeneous Voice over IP network. The project aims to the design an intelligent 'PABX VoIP' system, which includes the functions of the H.323 terminal, the MCU system and the H.323-PSTN gateway in a 'GateKeeper Brain' functional element.

The prospective of an integration of telephone- and Web-based services enabled by the new technology. 'Voice over IP' has produced the realisation of various commercial equipments offering the voice/data integration at different levels; the peculiar feature of these solutions is that they are in compliance with the standards in a more-or-less pronounced manner. In this framework, the HITEC project, carried out by META center of Consorzio Pisa Ricerche (<http://www.meta.cpr.it> and funded by Fondazione Cassa Risparmio di Pisa (<http://www.fondazioneCARIPISA.it/>), aims to design a 'PABX VoIP' system, which includes the functions of the H.323 terminal, the MCU system and the H.323-PSTN gateway. Besides these, the system is characterised by the addition of 'gatekeeper' traditional management functions, new auxiliary functions in an entity denoted as 'GateKeeper Brain' (GKB).

These new functions are necessary to support the H.323 entity in the implementation of services either already defined in the H.323 systems, such as the supplementary services of the H.450 series, or services not yet standardised. The innovative approach of the HITEC project is the realisation of a PABX VoIP prototype in compliance with the H.323 standard, and characterised by limited hardware requirements (a simple PC with Linux O.S. and cards needed for the implementation of the gateway and GKB functions). These features should permit to the designed prototype to provide, at lower cost, the same functions as commercial systems already present in the market (legacy PABX or VoIP architectures, often based on proprietary solutions), to guarantee the interoperability with system-compliant to H.323 standard, and to make available a platform where users can develop new services exploiting the voice and data integration. An example of such integration is the introduction of call-centre services for supporting traditional Web-based services such as home banking and electronic commerce. This enhancement permits to the service operators to offer vocal support, which can give an important added value to the customer.

The project aims also at overcoming the limits of the H.323 architecture maintaining one rigid adhesion to the standard mechanisms, thanks to the introduction of new control centres of the H.323 zones. The intelligence of H.323 architecture is distributed on the gatekeepers, whose management operations (authorisations management of the H.323 clients, accounting of the calls, etc.) are not detailed by the H.323 standard. Thus, at the state-of-the-art, the implementations of gatekeepers is characterised either by a rather ingenuous management plan (for example, it is not possible to insert policy on the customers enabled to register themselves or to use the communication services), or by proprietary control architectures (an example is the AVVID architecture of the Cisco Systems).

The innovative contribution of this project is the definition of a system where the management functions (the ‘GKB’) are located. The GKB is defined in order to increase the flexibility and the capillarity of the management plane of the VoIP architecture while maintaining compatibility with the H.323 standards. In the project vision, the gatekeeper interacts with the GKB and depends on it for whichever decision related to the normal procedures of H.225/H.245 protocols. The transfer of some typical functions of gatekeeper in the auxiliary subsystem GKB and their integration with management function of the H.323 zone produces two main advantages:

- Access to the management system (configuration, logging or accounting procedures) is allowed to several client levels (administrator or normal client), without influencing the standard mechanisms of the gatekeeper, by means of disparate management interfaces (e.g., Web interface);
- The subsystem GKB constitutes an interaction point among H.323 zones allowing the improvement of inter-zone communication processes.

The realisation of the PABX VoIP system is based on the approach of open architecture ‘Openh323’, on platform IA32 with Linux O.S., according to the paradigm application/server. The advantages of this solution are the high reliability, flexibility and robustness of the Linux O.S. and in the perfect conformity to the H.323 standards implemented by the Openh323 library. Furthermore, this library constitutes a powerful development environment of H.323 applications, and, therefore, it is considered, not only by academic and standardisation entity, but, above all, by several manufacturers.

A. 5 The GRNET/RTS project

<http://rts.grnet.gr>

The Greek Research Network (GRNET) has been developing central videoconferencing services at the national level for the academic and research community. The main points of action of the project are: a scheduling interface for facilitating the organisation of meetings through automated invitations to conferences and for managing MCU and Gateway resource reservation. The Web interface is based on Apache/PHP/MySQL/LDAP. Authentication mechanisms for securing endpoint participation in specific, scheduled meetings are applied. The techniques involve gatekeeper interaction with RADIUS, MySQL, and LDAP, as well as the Cisco MCM GKAPI which has been explored as a means of controlling ARQs targeting scheduled MCU calls from legitimate, registered participants. Also, limited SNMP management of MCU conferences through a Web interface has been implemented.

A. 6 SURFWorks

<http://www.surfnet.nl/innovatie/surfworks/voip>

The SURFnet project called ‘SURFWorks’ has a component to stimulate the use of Voice over IP and VC, obtain knowledge and disseminate it and provide an H.323 and SIP service.

A. 7 VC Stroom

<http://www.surf.nl/projecten/index2.php?oid=136>

VC Stroom is a project of multiple institutions in the Netherlands to promote the use of VC in the educational setting.

A. 8 Voice services in the CESNET2 network

<http://www.cesnet.cz/english/project/iptelephony>

The CESNET IP Telephony project started in 1999 with the goal of investigating the possibilities of data and voice network convergence. CESNET operates the Czech NREN. A lot of experience was acquired about the optimal interconnection configurations of various telephony devices (PBXs with different interfaces, voice gateways, gatekeepers, IP phones, etc.). It turned out that most popular IP Telephony service has been least-cost routing. Over time, the 24 PBXs in universities and research institutes have been interconnected over the Czech NREN with two gateways to PSTN. The network structure is illustrated in Figure A.1.

Figure A.1. CESNET IP Telephony Network

