salzburg research

AQUILA – End of the World Wide Wait?

Adaptive Resource Control for QoS Using an IP-based Layered Architecture

Conception, design and development of an architecture to enable different service classes in the Internet

Today's Internet offers only one "best effort service" class which is used by various applications – from web surfing and file transfer to radio and video applications. Various applications have different demands. As a basic principle we differentiate between interactive applications (Voice over IP, online games), which demand a very low delay, and non-interactive applications like Video on Demand.

AQUILA defines, evaluates, and implements an enhanced architecture for Quality of Service (QoS) in the Internet. Existing approaches e.g. Differentiated Services, Integrated Services and label switching technologies will be exploited and significantly enhanced, contributing to international standardisation. The architecture will be designed to be cost-effective and scalable. It introduces a software layer for distributed and adaptive resource control and facilitates migration from existing networks and end-user applications. Technical solutions will be verified by testbed experiments and user trials, including QoS-enhanced on-line multimedia services. Business plans for further exploitation will be studied.

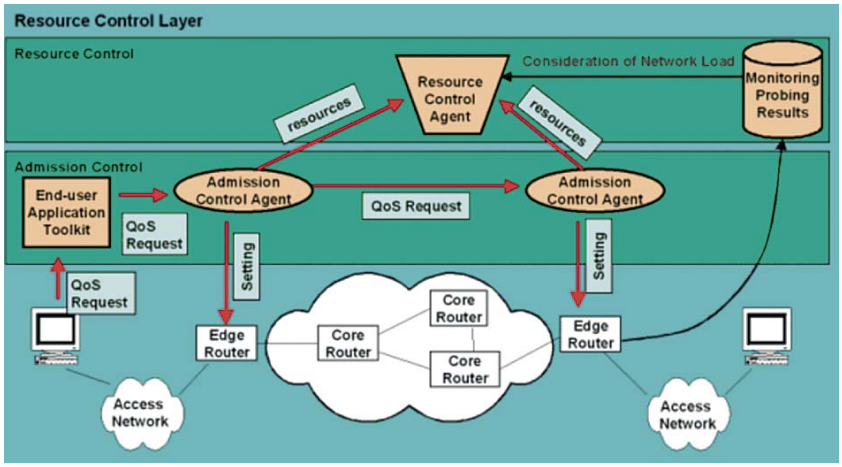
The research department Advanced Networking Center (ANC) at Salzburg Research was working with two working groups within the project AQUILA. The first group dealt with distributed measurement of QoS in IP networks, the second was researching the traffic control.

Objectives

- To enable dynamic end to end QoS provisioning in IP networks for QoS sensitive applications
- To continuously analyse customer requirements and market situations and to create applicable business plans
- To design a cost-effective, scalable and backward compatible QoS architecture enhancing the Differentiated Services architecture with dynamic resource and admission control
- To enable migration to and deployment of QoS-enabled networks
- To develop a novel resource control layer extending Bandwidth Broker functionality
- To implement prototypes of the QoS architecture as well as QoS based end user services
- To provide a toolkit for migration of end user applications to QoS To create tools for QoS monitoring and management
- To develop and integrate a distributed QoS measurement infrastructure
- To contribute to standardisation bodies like IETF, ITU, OMG

AQUILA

Information Society Technologies



Innovations

- Innovative network architecture for QoS in the Internet
- Analysis of relevant traffic control mechanisms
- Distributed resource control layer for IP networks
- QoS management tool

Real Player application in overloaded situation
Left: standard service, right: premium service with 256 kbit/s bandwidth reservation

Milestones

9/2000	Design and specification of the first prototype
3/2001	Usage and evaluation of the first prototype in the lab
12/2001	Design and specification of an advanced prototype
10/2002	Usage and evaluation of the advanced prototype by end user

Basic Data

Project Type	EU RTD Project (IST-1999-10077)
Duration	39 months (01/2000 – 03/2003)
Project Information	www.ist-aquila.org

Projekt Partner

Siemens AG, Germany (Co-ordinator) | Bertelsmann mediaSystems, Germany | T-Systems Nova GmbH, Germany | Telekom Austria AG | Helsinki Telephone Corporation (Elisa Communications), Finland | Telekomunikacja Polska S.A. (Polish Telecom) | National Technical University of Athens, Greece | Politechnika Warszawska (Warsaw University of Technology), Poland | Consorzio di Ricerca sulle Telecomunicazioni (CoRiTeL), Italy | Dresden University of Technology, Germany | Salzburg Research Forschungsgesellschaft mbH, Austria | Q Systems Association, Greece

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