

Rising to the challenge of managing bandwidth

March 29 2006



Emerging mobile services are demanding an ever-increasing amount of bandwidth, but the radio spectrum for third generation (3G) and beyond systems is in short supply. Algorithms developed by European researchers are helping operators better manage their precious bandwidth resources.

The EVEREST project developed and tested advanced algorithms to provide mobile operators with enhanced Radio Resource Management (RRM) techniques aimed at reducing the risk of communications bottlenecks at a time when mobile devices are increasingly being used for much more than just voice calls. Email, video conferencing, live television and streaming music, together with a range of other emerging mobile services and applications all increase the pressure on limited network resources.

“Operators will therefore have to manage the scarce resources they have more efficiently if they are to maintain service quality and increase network capacity while meeting consumers’ demands for new services,” explains Fernando Casadevall, coordinator of this IST project. “The goal is for users to be provided with just the sufficient bandwidth necessary to ensure end-to-end Quality of Service (QoS).”

RRM techniques to control traffic, prioritise some services and clients over others, and switch clients between different wireless communications systems depending on their location and needs are an increasingly necessary feature of network management. Operators benefit by being able to handle more traffic and therefore more clients, while consumers receive better quality services.

EVEREST’s approach addressed heterogeneous networks in particular, where operators can allocate traffic to different generations of communications systems (from GSM and GPRS to UMTS and, eventually, beyond 3G systems) as well as Wireless Local Area Networks (WLANs) depending on the types of services being used.

“Clients who only want to make a phone call can be switched over to GSM, thereby keeping UMTS bandwidth free for people who are holding a video conference, while automatic handover to high bandwidth WLANs in a building cuts pressure on other networks,” Casadevall notes. “This balancing of resources is essential as more and more applications with different bandwidth needs are run over mobile devices.”

The advanced RRM algorithms were validated under real-time and realistic conditions in a testbed supporting Internet Protocol (IP)-based mobile multimedia applications with end-to-end QoS capabilities.

The testbed is being used by mobile operators involved in the project to

test different RRM techniques, while the algorithms themselves are public and available for use by other operators. “Operators are likely to modify them for their individual needs and use them commercially,” Casadevall says.

The project partners have also launched a follow-up IST project, AROMA, focusing on resource management strategies and algorithms to guarantee end-to-end QoS in the context of an all-IP heterogeneous network.

Source: [IST Results](#)

Citation: Rising to the challenge of managing bandwidth (2006, March 29) retrieved 18 April 2024 from <https://phys.org/news/2006-03-bandwidth.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.