

*NetworkShop'2007 Conference  
Eger, Hungary, April 11-13, 2007.*

## **Network Traffic Evaluation of Real-time Group Communication and Collaboration Services**

*Zoltan Gal, [zgal@unideb.hu](mailto:zgal@unideb.hu)  
Tamas Balla, [ballat@dragon.unideb.hu](mailto:ballat@dragon.unideb.hu)*

Center for Information Technology of Centre of Arts, Humanities and Sciences  
University of Debrecen

**Keywords:** *TCP/IP, H.323, H.264, H.261, GCC service, AES, NAT/PAT, best effort, burst, VPN, VoIP, SOHO, ADSL.*

### **Abstract**

Deep studies of available real-time group communication and collaboration (GCC) solutions such as voice, video and data teamwork tools have been performed by several international projects. The main goal of these works is to compare the applicability of these tools in the production job environment, and give recommendations on how such services can be provided to these groups, including how to (re)use existing services available in practice.

The total bandwidth allowed per client is 256-2048 kbps for current GCC tools. This amount includes audio, video, control, and web content and whiteboard traffic as well. The IEEE 802.α type LAN/MAN communication technologies with best effort characteristics need quality of service (QoS) guarantees to provide real time service for the multimedia applications. The H.323/H.264 and the H.261 network protocols use relatively high number of UDP ports to accommodate automatically to the network layer compartment deeply influenced by bursts. This aspect explains the reduced number of service class configuration possibilities at the GCC client software.

In the production environment these applications are used over VPN logical connections established through NAT/PAT servers. Even SOHO users with 256-512 kbps ADSL access need connection to the GCC servers. Because the overhead of the 256 bit AES encrypted multimedia channel consumes considerably amount of the bandwidth available, analysis of mechanisms influencing traffic QoS is required.

In the presentation statistical evaluation of network traffic of the group communication and collaboration applications will be executed with special interest regarding efficient regulation possibilities of the low traffic rate transmission mechanisms. These mechanisms will be presented based on real environment measurement time series. Because the GCC services are considered very efficient teamwork tools, the main utilization roles (moderator, presenter, attendee, listener) at the user side will be explained as well.