

SM3 – QUALITY OF SERVICE (QoS) EVALUATION TOOL FOR TELEMEDICINE-BASED NEW HEALTHCARE SERVICES

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ABSTRACT

This work presents a tool (Service Multimedia Measuring & Modelling, SM3) developed according to a methodology of technical evaluation. It permits to study the Quality of Service (QoS) associated to the new telemedicine services and to model their network tomography and related applications traffic. In this study the tool has been specifically used to characterize multimedia real-time services based on ECG transmissions and medical videoconference.

SM3 provides a quantitative and qualitative analysis of each part of the measured scenario, as it is shown in Fig. 1. It includes three modules that determine the service characterization (*QoS basic*), the application traffic model (*QoS application*), and the interconnection devices, buffers and links performance evaluation (*QoS network*).

Thus, SM3 allows evaluating whether a determined service fulfils the network QoS requirements. For example, Fig. 2 shows the BandWidth (BW) evolution in a specific telemedicine scenario through four consecutive communication links for a medical videoconference. The service consists of two Real-Time (RT) services based on audio (Adaptative Multimedia Rate, AMR encoder) and video (H.263 encoder). Since full capacity is shared with other traffic sources, SM3 indicates when the service does not fit to the required thresholds (third and fourth links).

Moreover, SM3 constitutes a versatile tool to evaluate health networks and to optimize the new healthcare services design (e.g. by adjusting encoder types, compression ratios, simultaneous connections, suitable packet sizes or rates, etc.) according to available resources.

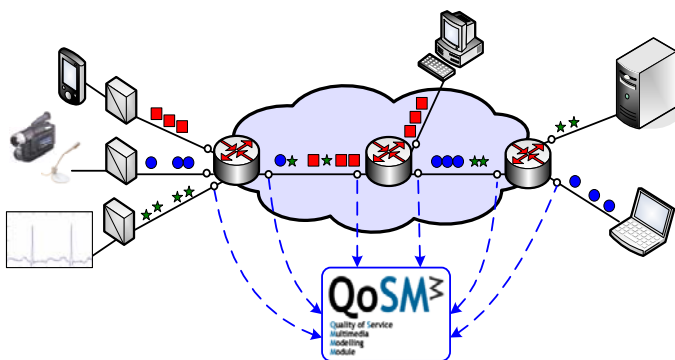


Figure 1. Evaluation scenario scheme.

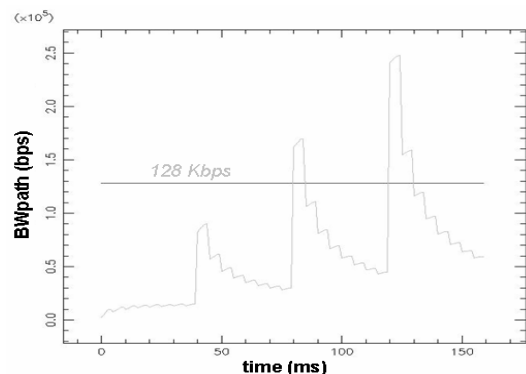


Figure 2. Evaluation of RT-services QoS.