VoIP demonstration for teaching laboratory application

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Abstract

The project is undertaken for developing software for training first year students about VoIP (voice over internet protocol) based errors by demonstrating to a first year lab the effects of errors on a normal VoIP call. This would help students understand the effects which happen when networking errors occur over real time on a VoIP call. It is essential to observe the shortcomings of network used in a VoIP call, to be able to understand and rectify the problems when they occur. Developing VoIP software can be handy. Some of the outcomes of the simulation may come as a surprise to most students and may reorientate their perception of VoIP based errors.

This thesis will help in understanding VoIP and will also explain in increments how we can build software for simulating some basic errors occurring over the network, such as delay, jitter and packet loss. The first phase of the thesis gives a broad understanding of SIP (session initialization protocol), media compression and QoS (quality of service). It also sets out designs for the proposed system such as application system design, SIP design and QoS simulation design. The second phase of the thesis takes on the implementation and testing of SIP and QoS simulations. Finally, the thesis ends with evaluating the software and suggesting any future work to be carried out.

The system is capable of getting speech from microphone and also plays it back through a simulated VoIP system. The network' may be perfect but can be downgraded by introducing delay, packet loss, varying jitter etc controlled by the user. The effect of the error introduced is to be discerned in the playback.