Overview

The purpose of this document is to capture the design and implementation of several telemetry systems via Ethernet. One of them is a protocol conversion system of the RS-232 to the Ethernet and vice versa. This system can be applied to a telemedicine application, in which the vital constants of a patient are taken and are acquired in a remote PC through the local area network.

The other one, the most important, is a voice over IP (VoIP) transmission system, in which two users can have a conversation through the Ethernet. The idea is to join the previous two systems, of data and voice, and implement only one system of telemedicine, applicable to hospitals, where the doctor can offer the patient to take the vital constants by means of the voice, to have a conversation in real time and to receive the biomedical information in a remote PC.

For the accomplishment of these systems I have used TINI (Tiny InterNet Interface), an embedded device with capacity to communicate through the Ethernet. TINI's software has been designed to be used as data server and to be web controlled, to realise the gateway functions between the RS-232 and the Ethernet protocols.

For VoIP's system, I have designed and implemented a voice circuit, which takes voice signals and turns them into RS-232 data in order to communicate with the TINI. The TINI is in charge of receiving data of the voice circuit and of transmitting it to another TINI in another end through the Ethernet, which will take these data and order it to another voice circuit so as to reproduce the voice signals. Hereby a bi-directional voice conversation is obtained through an IP network with an embedded platform, of small size and very cheap.