Computer Interfacing

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Today was spent working on a basic TCP/IP server and client application for a computer. We want to make it possible for a computer to be able to act as a "master controller" for a network of THAT modules.

Basically, the computer will be able to provide more intelligent, powerful control over a THAT system, while adding useful functionality such as remote access, E-mail notifications, telephone notifications, etc, etc. For now, we want to develope a simple proof-of-concept application to show that we can communicate with a THAT module from a PC.

The initial goal was to develop a simple software application that could communicate messages through TCP sockets listening on port 8428. We developed two small applications using the Python programming language that act as a TCP client and server, respectively.

Both the client and server applications were run on the same computer and then on different computers to ensure that basic TCP communication worked correctly between them. These applications are both console/text-based, and use the Python socket module to handle the low-level TCP communication.

Simple TCP server using Python:
Below is the source code for the simple TCP server program I wrote using Python. This software was tested and shown to be working on a Linux PC.

tcp_server (Python Code File)

The tcp_server.py program emulates a THAT module listening on port 8428. It is useful for testing basic TCP communication capabilities of our TCP client software. It will also come in handy for helping us test the client functionaility of a THAT module.

Simple TCP client using Python:
Below is the source code for the simple TCP client program I wrote using Python. This software was tested and shown to be working on a Linux PC.

tcp_client (Python Code File)

The tcp_client.py program is a simple program which allows us to connect to a TCP server on port 8428. We have successfully used it to establish communication with a "dummy" THAT module. The "dummy" THAT module is a real hardware module consisting of the Atmel ATmega168 Microcontroller and Microchip ENC28J60 Ethernet controller IC. The microcontroller is running a modified version of the excellent TCP/UDP stack provided by Guido Socher and http://www.tuxgraphics.org/