

Abstract

The vast development of embedded systems has made the dimensions of digital device become smaller but still power full. The popularity of TCP/IP protocol that made communication process and transferring information process become very easy to be conducted, has formed a global internet network which connects various device types with various technological backgrounds in very wide scale.

Integration between embedded systems with the TCP/IP network will bring some advantages, like practicability and higher connectivity. This integration known as embedded Ethernet. This case is another alternative for distant control system that majority still use computer to connect into TCP/IP network. Various developments supporting embedded Ethernet have been introduced, started from software development, for example TCP/IP stack code development, and from hardware development which is more compatible for embedded system.

The purpose of this final work is to design and implement distant control system based on embedded Ethernet and AVR microcontroller. This system can be used for controlling device using TCP/IP standard protocol. This final project covers hardware and software implementation. The result obtained from this final work is a functional control system which is able to connect with computer network, able to communicated with standard protocol (Ethernet, ICMP, TCP, IP, and HTTP), controlling two digital ports, and able to be accessed using standard web browser (Mozilla Firefox or Internet Explorer).

Keywords: Embedded Ethernet, TCP/IP, AVR microcontroller