Abstract

As the communication via internet is growing very fast, network security becoming the essential need of an organization or user. It include protecting data from unauthorized access, protecting data from damage and implementing policies and procedures for network security breaches and data losses. Due to exhaustion problem of IPv4 addresses we will soon switch over IPv6. To solve this problem we are presenting a Framework of a firewall for IPv6 and IPv4 networks using a field-programmable gate array (FPGA). The FPGA implements, the accept or deny rules of the firewall in Hardware using Verilog Hardware Description Language. A hardware based firewall offers the advantages of speed over a software firewall, in addition to direct interfacing with network devices, such as an Ethernet. This firewall would have the ability to process the data packets based on source and destination TCP/UDP port number, source and destination IPv4 and IPv6 address, and combination of source IP address, and destination port number. Incoming and outgoing IPv6 packets addresses first converted into IPv4 addresses for filtering decisions.
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**Index Terms**

Computer Science

Network Security

**Keywords**

Firewall  IP  FPGA  Protocol  ROM  Packet