

Abstract

The new Internet Protocol Version 6(IPv6) or Internet Protocol Next Generation (IPNG) is bound to replace the existing Internet Protocol Version 4(IPv4). This new protocol is to address and resolve the limitations of the existing Internet Protocols. At the moment the new protocol is still in its infancy stage, and it is being implemented by both the research society and the private sector.

The x-kernel being a research project done by University of Arizona is freely available on the Internet. This x-kernel is a networking software almost similar to the Berkeley version (BSD) and it is bundled together with a simulation software called x-sim. This x-kernel simulator enables the user to test various protocols available in the software itself or newly developed ones. The x-kernel package comes with an existing set of protocol modules for the TCP/IP protocol stack and other network implementation. The TCP/IP protocol stack uses the IPv4 for its IP layer.

The main intention of this dissertation is to look at the issues in implementing IPv6 in the x-kernel simulator. The issues needed in implementing IPv6 are basically derived from the existing IPv4 implementation. The issues here can be used for the real implementation later, as these issues fills the purpose of a test-bed for the IPv6 based network simulation. The simulation issues that was looked upon was a minimal IPv6 based network simulation consisting of two hosts connected via an Ethernet internetwork with no routing, fragmentation and other options enabled in the IP layer.