

## ABSTRACT

Security in IPv4 located in Application layer. So that IPv4 was designed to work in save connection and friendly environment. Nowadays, the reality of that condition was impossible. There are many security weakness in IPv4 turned up. In IPv6, security located in Network layer, so that they can seize all of Application layer. IPv6 use security protocol IPSec, where already one unit (embedded) in stack protocol or network implementation software. Whereas in IPv4, IPSec just a separate optional where must be installed if want to be used. One of multimedia service where susceptible security in network and need security is Voice over Internet Protocol (VoIP). VoIP use several method to secure their data, among other are access with use password and data encryption so that can be more secure.

IPv4 IPSec show that the performance better than IPv6. When the video and voice are transmited, the result for video delay 9,89 ms compare with delay in IPv6 10,47 ms with background traffic 500 kbps and the result for voice delay 53,67 ms compare with delay in IPv6 64,33 ms with background traffic 500 kbps.

The utility of memory and processor in IPv4 IPSec and IPv6 have significant differentiation. Appeared to be true that IPv6 where was already realize simplify header has memory speed and processor utility better than IPSec IPv4, IPv6 just needed 14,6 % but IPv4 IPSec needed 17,5 %.