Abstract

Voice Over Internet Protocol (VOIP) is a technology that can pass data such as voice over IP networks and Voice and Video Over Internet Protocol (VVOIP) is a technology that can pass data such as voice and video over IP networks. Protocol SIP (Session Initiation Protocol) is one of the standard protocol that used in VoIP and VVOIP. VOIP and VVOIP base on SIP has two important components, there are signaling and media streams. SIP servers are generally only provide limited security facility that is only used authentication with a password. With this facility still can not guarantee the security dimensions such as authentication, data confidentiality, data integrity and availability. Therefore, it is necessary to increase the security for the systems by using encryption such as TLS (Transport Layer Secure) and ZRTP (Zimmermann Real - Time Protocol).

By using TLS for signaling, this can ensure security aspect such as authentication, data confidentiality and data integrity but still can not guarantee the availability. The time required in the process of using TLS registers to be longer than without using TLS with the increasement 70 414%. By using ZRTP for media stream this can guarantee the security aspect such as data confidentiality, data integrity and availability. When ZRTP, RTP packets are encrypted after the key agreement process complete. ZRTP can effect on the performance aspect with value for delay, jitter, and throughput are higher that without using ZRTP.

Key words*: *VOIP, VVOIP, SIP, TLS, ZRTP