

## ABSTRACT

The functions of centrals as communication centre makes many manufactures feel interest to develop and increase their quality, also enrichment their features. One of manufacture's concerns is Private Branch Exchange (PBX). PBX is small central to corporate consumption and provides call between their employees. Along with telecommunication growth toward packet network, encourage many PBX's producer to make it based on IP technology, and now known as Internet Protocol PBX (IP-PBX). IP-PBX or IP-PABX has rich features than PBX, one of them IP-PABX can be integrated with the Public Switch Telephone Network (PSTN) and IP network by direct, because in their hardware there is integrated interface for communicate with the networks. At growth hereinafter IP-PABX producer not only determinate for big manufacture but a group or single people can make them, dint using a personal computer and installing open source and free ware software, the software is Asterisk<sup>TM</sup>. With the capability of Asterisk<sup>TM</sup> which provide many features like Voice over IP (VoIP), because the software is open source and free ware make this software is cheap so can be choice for small company to provide communication in the company self.

In this final project has developed server as IP-PABX based on PC by using Asterisk<sup>TM</sup> as application software so produced a server which have feature like IP-PABX which have features like existing IP-PABX, and can handle many terminals like softphone and ip phone by using VoIP service. To know the performance of implementation which have made, the field study is needed, from this way gotten data which is used for performance analyze. The test is communication between softphone and softphone, softphone and ip phone, softphone or ip phone and PSTN, and vice versa, by using codec G729, and G711  $\mu$ -Law as audio codec and H.263 as video codec.

The result give good MOS value, that is greater than 3,5 for total background traffic in the network is less 30Mbps. And, IP-PABX is created give ease for administrators to maintenance their server, because the IP-PABX equipped with back-up and restore system, so important data can be save.

Keyword: IP-PABX, VoIP, Asterisk<sup>TM</sup>, LAN, PSTN, W-LAN, IP Phone, Softphone, Codec, Personal Computer, Server.