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## ABSTRACT

PBX (Private Branch eXchange) is a private telephone switch used for communication facilities in a corporation. Developed technology at present is IP-based PBX (IP PBX). Because IP-based, a PBX can be made using a PC which is cheaper than IP PBX devices manufactured by vendors whose prices are relatively expensive.

In this final task will be create PC-based IP PBX using asterisk software application that serve the extension (IP phone and softphone) to accommodate the needs of VoIP service which operated on LAN network that already exist. The result of these design then will be tested to determined the service capability based on certain technical specification PC.

From the implementation which is done, has successfully built an IP PBX server using a PC which relatively low specification (Processor Intel R pentium 4 @1.8 Ghz, 256 MB memory) using AsteriskNow application software. Based on some experiment, known patterns of arrival ( $\chi$ ) and the pattern of the server service ( $\mu$ ), are negative exponential distribution. There are differences in the result (Tsys value) of measurement methods and analytical calculation for 0.013s to 0.27s in the first scenario (without background traffic) and 0.285s to 1.115s in the second scenario (with background traffic). According to the standard queuing / buffering delay [Odom, Wendell. (2004). *Computer Networking First-Step*. Cisco Press.], server is running into the category of “medium” (CPU speed 1-2Gbps with 2-3 second Tsys). In term of cost, the use of IP PBX based PC can reduce cost up to 20% and even up tu 70% when compared with dedicated IP PBX classmates small office / business at a price of  $\pm$  U\$300 to U\$1200.

Keywords in this final project are IP PBX, VoIP, and extension.