ABSTRACT

A variety of business areas in the world have shifted their choice of wired telephone system to VoIP for reduce telephone costs are high. *Voice Over* IP (VoIP) is a telecommunications technology that is able to let through the message service, *voice* and video into Internet Protocol network to perform telecommunications links between users who are connected to the IP network. The excess is efficiency of bandwidth, efficiency of cost management,. One of the component used in the manufacture of VoIP is IP PBX (Internet Protocol Private Branch Exchange), which serves to switching, control, and termination of the phone. But to get this device, the price is expensive so that there is no other alternative tools that will be used as an IP PBX.

In the development of this final project will be focused on making VoIP Server will use the Linux operating system as the main foundation with application-based opensource Asterisk and IP PBX integrated into Mini PC as Raspberry Pi. So that to be able main communicator multiplatform like OpenBTS, Mobile VoIP and Web Applications on the client side. The processing is install the operating system RasPBX to Raspberry Pi then configure RasPBX in Raspberry Pi that serves to IP-based telephony services and mobile VoIP applications and connect the PC to the VoIP server via the Raspberry Pi as well as to test the performance of QoS and VoIP server performance when making a call.

Results of this final project is an implementation of the VoIP server using the Raspberry Pi at 10 times for testing of QoS parameters an average *voice* call delay (19.83ms), average jitter (0.09s), average packet loss (0.24%), average *Throughput* (0.09Mbps), MOS (4.4 or very satisfied), while for average *video call* delay (9.28ms), average jitter (0.05s), average packet loss (0.79%), average *Throughput* (0.71Mbps) and MOS (4.1 or satisfied) that is sufficient to meet requirement QoS standards and percentage of server CPU usage (57%) can serve as many as 12 client by communicating simultaneously.

Keywords : *VoIP Server, Asterisk, Rasperry Pi, IP PBX, RasPBX.*