ABSTRACT

ANALYSIS AND DESIGN QUALITY OF SERVICE FOR VOICE OVER INTERNET NETWORK BASED ON SESSION INITIATION PROTOCOL

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Voice over Internet Protocol (VoIP) is a technology that can pass the traffic of voice, video and data based on packet form over an IP network. IP network itself is a data communications network based on packet-switching. Unlike analog phone which using fixed line, VoIP using IP networks or Internet. This make a lot of advantages such as cheaper than analog phone rates, even up to 70% on International call. Using IP networks, makes distance will not become a problem, because all call will be treated as local call. Others, reduced maintenance costs because voice and data networks are separated, so the IP Phone can be added, removed and changed. This is because VoIP can be installed in any ethernet and IP address, unlike conventional phone must have its own port in Central or PBX.

VoIP technology is beneficial because it uses IP-based network that already has a strong network in the world so that the cost to make calls much more efficient than using an analog phone. But VoIP has the disadvantage that the bandwidth required for transmission use RTP packets. This is a problem because the price of bandwidth in our country is still expensive, while the traffic, other traffic should also be sent by either the network connection is available. From this problem came an idea about how to manage the existing network connections and improve performance of VoIP networks themselves. One of the solutions is using QoS (Quality of Service). QoS itself is well known as one of a reliable method in dealing with network management issues, particularly for the delivery of important data. To implement these ideas, VoIP system on LAN was build which applying QoS Priority Queuing techniques. Then, the performances of VoIP systems before and after using QoS are analyzed. Is voice generated by the VoIP system meet the ITU-T standards based on delay, jitter and packet loss. From the testing using G711 codec, we found that the network performance after priority queuing is increasing sharply compared with before using priority queing. Parameters necessary to maintain the quality of VoIP networks can be maintained toward standardization value issued by the ITU-T which includes delay, jitter, packet loss and MOS (Mean Opinion Score).

Keywords: VoIP, QoS, delay, jitter, MOS, Priority queuing and mikrotik.