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PERFORMANCE ANALYSIS ON THE EFFECT OF G.729, SPEEX AND GSM SPEECH CODEC ON 802.11g WIRELESS LOCAL AREA NETWORK

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ABSTRACT

Performance analysis on the effect of G.729, Speex and GSM speech codec on 802.11g wireless local area network.

Key Words: G.729, Speex, GSM, VoIP, 802.11g, SNR

The widespread use of wireless local area network together with the emerging of VoIP has lead to an increased interest in the study of voice over wireless LANs. Users clearly defined the most decisive factor in selecting VoIP applications will be a voice quality. Voice quality is the perceived quality that can be heard during a conversation. Considering WLAN signal strength by referring to SNR value, the choice of the right speech codec is essential to determine high quality of VoWLAN call. Theoretically, the higher the bit rate of a speech codec, the better the speech quality but requires high network resources. In this dissertation, three speech codecs; G.729 (8 kbps), Speex (8kbps) and GSM (13kbps) were tested together with several predetermined SNR value ranging from 10dB to 45dB with a sample of 8 second speech. VoIP QoS such as packet jitter, packet loss, MOS Score and R-factor were analyzed in order to make a comparison of speech quality of two speech codec in wireless LAN 802.11g environment. Result shows that at lower SNR, GSM outperform G.729 and Speex in terms of higher R-Factor and MOS Score but substantial to higher packet jitter and loss. At higher SNR, G.729 and Speex outperform GSM in terms of higher R-factor and MOS score but lower packet jitter and loss. Results also shows that lower bit rate codec such as G.729 and Speex at 8 kbps perform better than higher bit rate codec such as GSM at 13 kbps at higher SNR.

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