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Classification of VoIP packets and network anomaly detection using fuzzy logic

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The voice over internet protocol (VoIP) technology has proven to be revolutionary and cheap because it does not need new infrastructure, as it has an underlying available global IP infrastructure. However the transition from public switched telephone network (PSTN) to VoIP has not yet been so poignant because of the compromised quality of service (QoS) such as delay, packet drop and packet loss that cause unstable voice packet delivery, packet jitter, packet loss and echo. Priority queuing algorithm offers an easy escape to reduce delays, however it can result into repetition and next queue remaining starved. To solve these problems, we have tried to mount a fuzzy logic based inference system to classify the queuing-incoming packets (voice, video and text). Network management is becoming increasingly essential with the acute rise in the number of applications that use computer networks and the advent of ubiquitous internet access. Thus availability, integrity and competency of computer networks became a priority today and a crucial resource to be managed. To assess the effectiveness of these networks, the traffic parameters need to be analyzed. This paper attempts to apply a fuzzy logic scheme based on descriptors like energy, centrality, concentration etc. to recognize whether an instance represents an anomaly or not. Indeed the paper proposes an intelligent system with the capability to monitor the network's traffic (specifically VoIP) flow. The proposed anomaly detection system exposes network problems autonomously issuing alarms when a possible problem is present.