

QUALITY OF SERVICE (QOS) ANALYSIS OF EMERGENCY CALL BOX FOR HIGHWAY TRAFFIC MANAGEMENT SYSTEM

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Abstract

With more than 3 lakh kilometers of completed roads, India has the second largest road network in the world. Of this a mere 2% consist of highways which carry around 40% of the total goods transported in the country. A high degree of automation is being introduced into the current highway systems so as to minimize congestion and improve the travel experience for the user. The major thrust though, is on the safety aspect of the system. One of the important components of Highway Safety System is the Emergency Call Box. These systems, although already implemented in several parts of the country, are connected through wired network. There are several practical difficulties and obstacles encountered during the deployment and operation of reliable wired networks for very long distances. Providing a wireless network instead, would solve these issues. This paper proposes to provide a comparison of four wireless topologies with VoIP as an application for the QoS analysis of ECB using NS-2 simulator. This comparison can be utilized to improve the systems overall efficacy as well as help in actual deployment by providing the minimum acceptable "quality requirements" defined in terms of throughput, latency, number of packets received and number of packets dropped. It also proposes the advantages of using an advanced Atom processor board along with VoIP communication protocol which when incorporated in the ECB architecture shall make the system robust.

Keywords : Emergency, VoIP, QoS, highway traffic management system, emergency call box, NS-2.