

Sirinya Tabsombat 2010: The SIP-Based Radio Over Internet Protocol Interoperability Communication System for Emergency Situation. Master of Engineering (Information and Communication Technology for Embedded Systems), Major Field: Information and Communication Technology for Embedded Systems, Department of Electrical Engineering. Thesis Advisor: Associate Professor Mongkol Raksapatcharawong, Ph.D. 126 pages.

A policy-based network such as a communication system for an emergency situation needs a good reliability. In this work, we present a Linux-based Radio over IP system. The system is a cost-effective IP interoperability communication system that integrated the mobile radio, typical public switched telephone network lines, cell phone, native IP devices etc. All equipment can access the communication with each other via IP network using hardware-software cooperated by asterisk SIP IP-PBX, running under Linux OS.

First, we investigated the current open source technologies to find an appropriate technology mainly based on its stability, ease of use, supported CODECs, and then integrate to our solution. After that, we developed necessary hardware to support effective use of RoIP on existing VoIP technology. And finally, we find an appropriate configuration for emergency use. The main constraints are: satellite link bandwidth, codec selection, jitter buffer setting, and VOX threshold.

After the evaluation of performance tests, we can determine the basic configurations for the system in order to readily for use as an interoperability system to support an emergency situation communication

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