THE EMYNOS ESINET

Newsletter March 2017

WHAT YOU SHOULD KNOW ABOUT NG112

Introducing IP to emergency systems in Europe, also called Next Generation 112 – NG112, will be focusing on the transition of the legacy emergency infrastructure to an all-IP solution. The NG112 infrastructure allow emergency calls using audio, video and instant messaging.

A significant step toward achieving the vision of NG112 is the document entitled "**NG112, Long Term Definition (LTD)**" produced by the European Emergency Number Association (**EENA**) in 2012. The purpose of this document is to define a long-term definition of a European emergency services architecture. LTD is based on the National Emergency Number Association (**NENA**) i3 architecture. Technically, i3 describes the standards for NG911 (in US) and was achieved in cooperation with IETF ECRIT and Geopriv working groups. In fact, significant work in standards and technologies has already been accomplished in NG911. Therefore, EENA NG112 Technical Committee has decided to take the NENA Detailed Functional and Interface Specification for the NENA i3 Solution stage 3 and adapt it to European standards and emergency services requirements.

The main concept in the i3 solution is the Emergency Services Internet Protocol Network (**ESInet**) which is an IP-based inter-network that can be shared by all the Public Safety Answering Points (PSAPs). The ESInet includes various core services including the Border Control Function (BCF), Emergency Call Routing Function (ECRF), and the Emergency Services Routing Proxy (ESRP).

OVERVIEW

The next generation emergency communications (**EMYNOS)** project is co-funded by the European Commission/H2020 under the grant agreement No 653762. It aims at developing a Next Generation platform for enabling European citizens to make IP based emergency calls (to police, ambulance and fire brigade). This platform intersects the NG112 architecture, described in NG112 LTD, and implements the related functionalities according to the project consortium needs and requirements. The EMYNOS ESInet simply provides a testbed towards the NG112 environment. In this newsletter, we describe the progress in the development of the EMYNOS ESInet.

Emergency Calls issuing

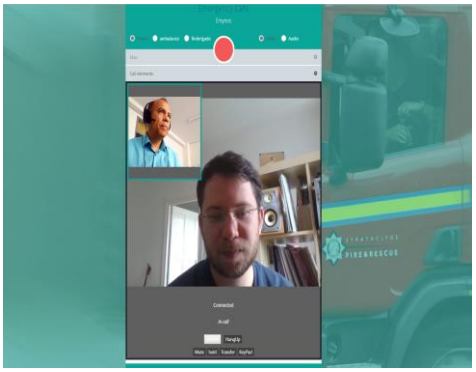
- Emergency calls can be issued from a native SIP client (Linphone) or a WebRTC enabled browser
- Linux, Android, and windows platforms are supported
- Emergency services URNs (RFC 5031) are used
- The SIP client supports voice, video, and Real Time Text (so far based on RFC 4103)
- The SIP client as well as the WebRTC enabled browser support a HELD interface to the Location Information System (LIS)
- The SIP client supports location information retrieval from DHCP
- Location can be either sent by value (including PIDF-LO in the SIP body), or by reference
- Ability of sending sensorML based sensor data within an emergency session
- Ability of updating sensed data using SIP subscribe/notify

Emergency Calls answering

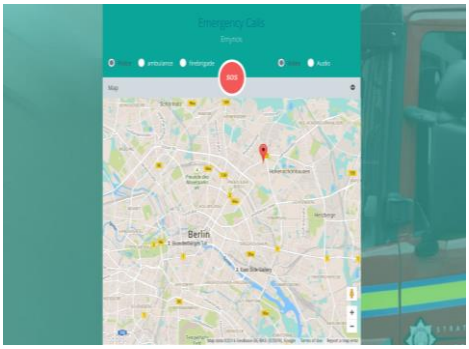
- Calls are managed by a PBX (Asterisk)
- Both native SIP clients (Linphone) and WebRTC enabled browsers are supported for calls answering
- Receiving location by value or by reference are both available
- Both civic and geodesic location information are supported by the call answering client
- Location information can be visualized on GoogleMap
- Possibility of comparing between several received locations
- PSAP call taker access control (authentication, authorization)
- Emergency event reporting based on the CAP protocol
- Possibility of visualizing received sensors data
- Asterisk was extended to support location information, Real Time Time Text, and sensor data

Emergency Call Routing Function (ECRF)

- Based on the LoST server from Colombia University
- GIS database with location to service mappings
- Implements the Location to Service Translation (LoST) protocol
- Supports mapping of both civic and geodesic location information



WebRTC Emergency Client



WebRTC Emergency Client

Emergency Services Routing Proxy (ESRP)

- Based on the Kamailio SIP server
- Supports a Location to Service Translation (LoST) interface to the ECRF
- Supports a https dereferencing interface to the Location Information System

Location Information Encoding and Retrieval

- Location information encoding and retrieval is implemented in the EMYNOS ESInet according to the IETF standards (Location-by-Value, Location by Reference, PIDF-Lo geodesic and civic formats)
- SIP client on Android can also get directly the GPS coordinates from the mobile device
- Location Configuration Protocols (LCP) supported: DHCP, HELD, and LLDP-MED

WebRTC Emergency Client

- The web based emergency client uses standard SIP messages (uses Websocket instead of UDP/TCP) as well as the pre-defined emergency service URNs
- Location information is retrieved from the browser (Geolocation API)
- Retrieved location is shown on Google Map
- Location information is conveyed conforming to the standards (PIDF-LO implemented in JavaScript)
- Requires encrypted media transport (DTLS-SRTP)
- Allows to make both audio and video calls as well as send instant messages

Emergency Calls through the IP Multimedia Subsystem (IMS)

- The Emergency branch of the OpenIMSCore developed by Fraunhofer Fokus is extended and used
- Ability to communicate with CellID services such OpenCellID and Combain to retrieve CellID GPS coordinates
- The Linphone is extended to communicate with IMS and initiate emergency calls

LEARN MORE

For more information about the OpenESInet, visit www.emynos.eu, or contact,

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